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ARCHEOLOGICAL INVESTIGATIONS IN BRITISH GUIANA

By CLIFFORD EVANS and BETTY J. MEGGERS

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LETTER OF TRANSMITTAL

Smithsonian Institution,
Bureau of American Ethnology,
Washington, D.C., June 25, 1959.

Sir: I have the honor to transmit herewith a manuscript entitled "Archeological Investigations in British Guiana," by Clifford Evans and Betty J. Meggers, and to recommend that it be published as a bulletin of the Bureau of American Ethnology.

Very respectfully yours,

Frank H. H. Roberts, Jr.,
Director.

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

Circ.

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PREFACE

The presentation of any archeological report covering a large area brings to the authors the duty and the pleasure of calling attention to the many other individuals whose advice and assistance made it possible. In this case, the ready cooperation and friendly aid that we encountered everywhere in British Guiana makes acknowledgment of our indebtedness an unusually pleasant task.

Our research was made possible by financial support from a United States Educational Exchange Research Grant under the Fulbright Act and by a grant from the Smithsonian Institution. By the terms of the Fulbright Act we were required to work under the auspices of a recognized local educational institution, and the University College of the West Indies agreed to undertake sponsorship. Their representative in British Guiana, Mr. A. A. Thompson, made a hotel reservation for us in Georgetown and offered his services if they should be needed to facilitate our work. A more logical institutional sponsor was the British Guiana Museum, and largely because of the personal interest of the director, Mr. Vincent Roth, it was with the Museum that we worked most closely.

From the day of our arrival until the day of our departure, we were guided and assisted by Mr. Roth. He put us in touch with the local officials, and his personal introductions made them predisposed to help us as much as possible. His intimate knowledge of much of the Colony, acquired during years as a surveyor for the Government, helped us to plan an itinerary that gave us a maximum archeological return for the time available. In addition, he allowed us to store our specimens and equipment at the Museum, which was not only a convenience but an insurance of their safety. Beyond this aid furnished in his capacity as director of the Museum, we are indebted to Mr. Roth for his personal hospitality, including a memorable, belated Christmas dinner in February at his home. For all of these and many smaller kindnesses, we wish to express our deepest gratitude.

For the solution of many of the frustrating problems that confront archeologists in a strange country, we are indebted to Ram S. Singh, chief taxidermist of the British Guiana Museum. Whatever was required, Mr. Singh always knew where to find it better, cheaper, and faster than anyone else. He piloted us through the intricacies of purchasing tickets, opening a bank account, and arranging for the export of our collections. During a visit to Plantation Lusignan on east coast Demerara, he was an indispensable interpreter from English to Guianese. Our final trip to the Abary River was organized by him from start to finish. He introduced us to many aspects of Guianese life we would otherwise have missed, and his generosity and unfailing good humor contributed in large part to create the fond memories we have of British Guiana.

Among the Government officials who received us graciously and facilitated our work are: Mr. J. L. Fletcher, then Acting Colonial Secretary; Mr. J. B. Bamford, Commissioner of Interior; Mr. W. T. Lord, Commissioner of Lands and Mines; Mr. W. A. Angoy, District Commissioner, Rupununi District; Mr. J. Young, District Commissioner, Northwest District; and Dr. C. R. Jones, Medical Officer to the Amerindians. These gentlemen introduced us to local residents, helped us with transportation, and in several cases took considerable interest in our work. Their cooperation was invaluable and we regret that public acknowledgment has taken so long.

Although much of the area in which we worked is public domain, we occasionally had to seek permission to trespass from private owners, especially in the Rupununi District. This was readily granted, and in most cases was accompanied by an invitation to come as guests of the owner. For a warm welcome and generous hospitality, we wish to express our thanks to Mr. B. L. Hart and his family of Pirara, Mr. and Mrs. Caesar Gorinsky of Good Hope, Mr. and Mrs. Harry Turner of Dadanawa, all on the Rupununi savannas; to Mr. and Mrs. Robert Hawkins and Miss Florence Riedle of Kanashen on the upper Essequibo River; and to Mr. Alfred Read of Taurakuli on the Abary River. Among the many others who gave us help, we should like to mention Sgt. Cornelius Douglas and Constable Leslie Chin then of the Annai Police Station, Father J. V. McKenna of Sand Creek, Mr. Edward E. Melville of Lethem, Mr. James Brown of Dadanawa, Mr. Lawrence Hart of Pirara, Mr. W. M. C. Bagshaw of the Forestry Department, Northwest District, Mr. Harry Madramoto, Department of Agriculture, Hosororo Station, Mr. and Mrs. Claude W. Leavitt of the Unevangelized Fields Mission, Mr. R. J. McKenzie, Manager of Plantation Lusignan, and Col. A. J. Williams of British Guiana Airways.

A special word of thanks is due Robert and Florine Hawkins, missionaries of the Unevangelized Fields Mission among the Wai Wai Indians of the upper Essequibo. Without their invitation, it would have been impractical to try to do archeological work in that region in the short time available to us. They placed a boat at our disposal, acted as interpreters between us and the Wai Wai, allowed us to make their mission our base of operations, and cooperated in many other ways, with the result that this part of the survey was one of the most successful. When we took a picnic lunch with sandwiches of Florine's homemade bread, it required some mental effort to realize we were actually in the heart of the Guiana forests.

We met many other Guianese in all walks of life and of all races. We found them delightful companions, friendly, helpful, cheerful, and willing workers, even though in many cases we shared no common language. Although we cannot list them all by name, we can truthfully say that they have not been forgotten, and that they have each contributed to our image of British Guiana as a charming as well as a beautiful country.

The drudgery in archeology falls to the lot of those who must wash and number the sherds preparatory to analysis. For carrying out this monotonous task efficiently, we wish to thank Mr. Charles T. Terry, Jr., and Mr. Robert C. Jenkins of the Division of Archeology, U.S. National Museum. Line drawings of specimens were done by Miss Betty Baker and the manuscript was typed by Mrs. Jeraldine M. Whitmore, also of the Division of Archeology.

Various members of the U.S. National Museum curatorial staff provided identification of faunal, floral, skeletal, and cultural remains, including Dr. T. D. Stewart of the Division of Physical Anthropology, Dr. Harold Rehder of the Division of Mollusks, Dr. A. C. Smith, then of the Department of Botany, Dr. Tucker Abbott, now on the staff of the Philadelphia Academy of Sciences, Mr. C. Malcolm Watkins of the Division of Cultural History, Mr. Edgar M. Howell of the Division of Military History, and Mr. George Metcalf of the Division of Archeology.

As a basis for interpreting the archeological remains in British Guiana, it was necessary to examine materials from adjacent areas. We are greatly indebted to Dr. Peter Goethals, Dr. John Goggin, and Dr. Irving Rouse for generously permitting us to review sherd collections from unpublished fieldwork in Dutch Guiana, Trinidad, and Venezuela, and thus greatly facilitating the task of comparison.

Students who may wish to use the British Guiana materials in comparative studies will find type collections of sherds representing all but the rare pottery types at the following museums: University Museum, Philadelphia; American Museum of Natural History, New York; Peabody Museum, Yale University, New Haven; Peabody Museum, Harvard University, Cambridge; Chicago Natural History Museum, Chicago; University Museum, University of California, Berkeley; Göteborg Museum, Göteborg, Sweden; and the British Guiana Museum, Georgetown, British Guiana. A complete collection of sherds, stone, trade materials, and miscellaneous objects can be found in the Division of Archeology, U.S. National Museum, Washington, D.C.

C. E.
B. J. M.

Division of Archeology
U.S. National Museum
Smithsonian Institution
Washington 25, D.C., April 1, 1959

ARCHEOLOGICAL INVESTIGATIONS IN BRITISH GUIANA

By Clifford Evans and Betty J. Meggers

INTRODUCTION

BACKGROUND OF THE BRITISH GUIANA ARCHEOLOGICAL SURVEY

Contributions to the archeology of British Guiana can be traced sporadically for nearly a hundred years. The pioneer was W. H. Brett, whose interest in the local shell middens was aroused during his residence as a missionary in the Pomeroon District in the latter half of the 19th century. During approximately the same period, E. F. Im Thurn devoted considerable time to the investigation and reporting of ethnography and archeology in the colony. Since the bulk of our own monograph deals with pottery, it is somewhat surprising to note Im Thurn's comment that "up to February in the present year (1884), in the course of much digging and collecting of the stone and other implements of the old inhabitants of Guiana, I had met with surprisingly few pieces of pottery; nor had I even heard rumors of any large deposits of such objects" (1884, p. 123). As is typical in the development of scientific archeology, the attention of most travelers was attracted principally to petroglyphs. Unfortunately, they are among the most difficult type of archeological remains to place in a chronological or cultural framework and therefore of little use in the reconstruction of local prehistory.

During the 20th century, a number of coastal sites were visited by A. Hyatt Verrill, Walter E. Roth, J. E. L. Carter, Vincent Roth, and Cornelius Osgood. These people laid the basis for a generalized picture of coastal archeology, leading to the formulation of various theories about the racial, tribal, and linguistic affiliations and origins of the people who left the sites. The data accumulated up to 1945 and the hypotheses they inspired have been admirably summarized by Osgood (1946, pp. 21–42), and the reader who wishes more details on the history of archeology in British Guiana will find them in his report.

As long as intensive archeological work remained largely restricted to the Andean portion of South America, there was little reason to devote more attention to British Guiana. However, the past decade has brought an increased interest in the lowlands, with the result that the Guiana coast has shifted from a marginal to a strategic position for the solution of problems of South American prehistory. The work of Rouse, Cruxent, and Goggin in eastern Venezuela and Trinidad has permitted the construction of a detailed cultural sequence to the northwest. Similar investigations by Meggers and Evans have established a chronological framework at the mouth of the Amazon. Several hypotheses about cultural development in the Guiana area have resulted from these new data, and knowledge of the archeology in the intervening area is important for their evaluation. This was the primary consideration behind our decision to undertake fieldwork in the Guianas.

The selection of British Guiana rather than one of the other two European colonies was motivated by two principal factors. Although archeological research should not be limited by artificial boundaries, the formalization of international relations in modern times makes it practical to remain within one country. British Guiana, being the largest of the three Guianas, provided the maximum areal coverage. In addition, it presented the most promising topographic characteristics. The Essequibo River and its tributaries constitute a ready route of access to the center of the Guianas, and it is only a short distance from their headwaters to the sources of major tributaries of the Amazon. During the rainy season, it is possible to pass from the Rupununi River in the center of British Guiana to the Takutu on the border with Brazil in a canoe across the flooded savanna. If evidence of prehistoric communication between the coast and the interior was to be found, British Guiana seemed to be a logical place to look for it.

Our itinerary was planned to include parts of the colony where evidence of migration or diffusion might be expected to show up if it existed: the Rupununi savanna, spanning one part of the watershed between the Atlantic and Amazonian drainage systems; and the upper Essequibo, which forms part of a similar intersection somewhat to the southeast. Survey of each of these regions was continued until more than 30 sites had been investigated, and the results made it apparent that neither had been occupied until very recently by pottery-making groups. The final portion of the survey was devoted to the coast, in the effort to trace movements from west to east, and to secure chronological information that would help to establish the relative antiquity of settlement of the coastal and interior portions of the colony by sedentary peoples.

ITINERARY AND FIELD CONDITIONS

Among the more interesting aspects of an archeological field trip is the story that is seldom told except in informal gatherings of anthropologists: the story of the problems, "adventures," and incidental experiences that are encountered by anyone who ventures off the usual tourist paths. Since the lowlands of South America have attracted little attention from archeologists, an account of the manner in which fieldwork was conducted in British Guiana may serve to show that while the way is not always easy, neither is it exceptionally difficult or dangerous. The satisfaction of placing new facts in the archeological record and of visiting interesting people and places more than compensates for any discomforts that may be temporarily endured.

We arrived at Georgetown, British Guiana, on October 15, 1952, by air (fig. 1). Interviews with the director of the British Guiana Museum and with officials in various Government agencies produced such ready cooperation that 9 days later, on October 24, we were able to take a British Guiana Airways plane for the interior, where we remained for more than 3 months. The 1½-hour flight by DC–3 cargo plane from the coast to the Government administrative station at Lethem on the Brazilian border was a pleasant surprise, since we had expected to go by river, a trip that because of the numerous portages consumes several weeks.

In Lethem, we were given permission to make the Government rest house our headquarters, and trips to various parts of the north savanna were arranged from this center. On November 23, we moved to the south savanna, where we were invited to make our base of operations at Dadanawa, headquarters of the Rupununi Development Company. Transportation on the savanna was by foot (pl. 1), horseback (pl. 2), Fordson truck (pl. 3, *a*), Land Rover (pl. 3, *b*), tractor and trailer, or bullock cart (pl. 4, *a*), whichever method was available or suitable. We hung our hammocks in schoolhouses (pl. 5, *a*), police stations, ranchhouses, Indian verandas, abandoned thatched huts, cattle outstations, or in the house of a resident priest. When we were not guests at a ranch, we usually cooked our own meals on a small Swedish kerosene primus stove, with corned beef and rice as the staple diet. Army C-rations were ideal for cold lunches at the sites, since they were tasty and no time was lost in their preparation. Our guides were ranchers, Indians, a schoolteacher, a medical aide, and on occasion we scouted around by ourselves.

We were in the Rupununi during the early part of the dry season, when the grass was still green and the weather was ideal. The beauty of the landscape was enhanced by a bright blue sky and magnificent, fluffy white cumulus clouds in the afternoons. Although the days were hot, the nights were cool and pleasant. We spent many an evening chatting with the ranchers about local and international topics, and were amazed to find a lively interest in the outcome of the 1952 United States presidential election, which took place during

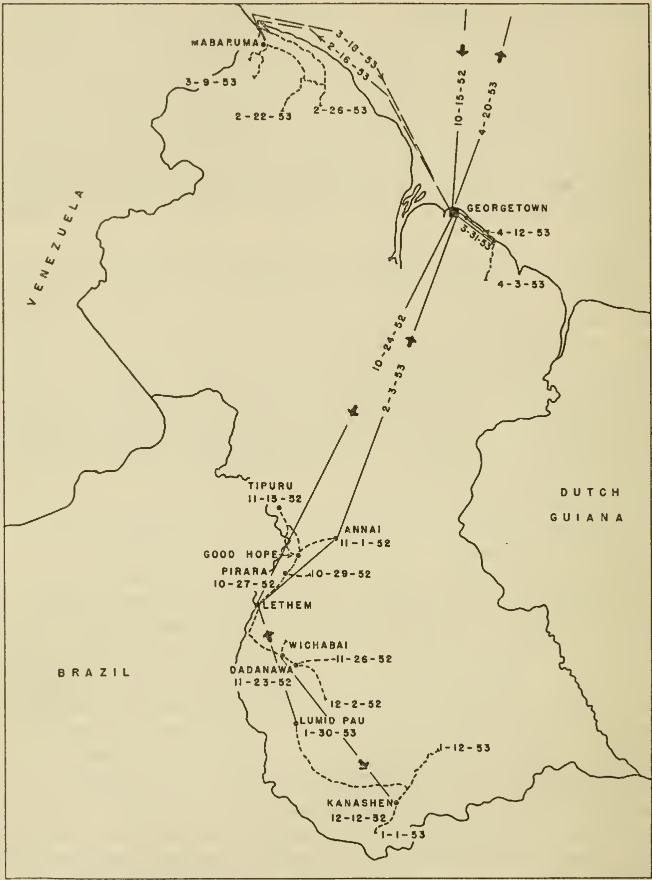

Figure 1.—Map of British Guiana showing general itinerary during archeological investigations.

our stay. The Indians, acculturated into the British colonial pattern of life, generally kept their distance, but on one occasion we spent several days in the house of a Wapisiana family with a total possession of four words of English. Gestures served very well in most situations, except when it came to calling a halt on the sherd collecting, and, as a result, we always ended up with a load for every man, woman, and child.

The greatest problem of savanna archeology was transportation of the specimens. People of the Rupununi Phase practiced secondary burial in large urns, and it seemed desirable to collect some of these complete specimens for the British Guiana Museum and the U.S. National Museum. Burial sites were always relatively remote rock shelters accessible by foot or at best by horse. The form and size of the jars made them ill adapted for carrying lashed to a pack saddle on a horse or bullock, but we managed to transport some of them this way. Once we resorted to a bullock cart (pl. 4, *a*), which jolted and twisted so badly that it was necessary to ride with the load of vessels and sherds resting on specimen bags filled with grass to keep it from being thrown to the ground. The iron wheels transmitted the resistance of every pebble, tuft of grass, or ant hill to the riders and this method of transportation was unquestionably the most unpleasant that we encountered anywhere in South America.

On December 11, we boarded a chartered DC–3 plane at Wichabai, and landed half an hour later in a small clearing called Gunn's Strip (pl. 4, *b*), an hour's walk from the bank of the Essequibo River. We were met by Wai Wai Indians, who carried our baggage, with that of our hosts, representatives of the Unevangelized Fields Mission, to the water's edge. Here it was placed in dugouts and taken upriver to Kanashen, the missionaries' home (fig. 1) and our main base of operations for the next 6 weeks. Work in this part of British Guiana was simplified immensely by the generous cooperation of the missionaries, who spoke the Wai Wai language and thus were able to convey our wishes to the Indians and to arrange for one or more of them to accompany us as paddlers, hunters, and guides.

This part of the trip was a unique and delightful experience. We traveled both up and down the Essequibo River and minor tributaries, locating and excavating sites and stopping to camp wherever nightfall caught us (pl. 6, *a*). For the most part, we were out of contact with other human beings. Yukumá, our Wai Wai guide, was an excellent hunter and kept us provided with a variety of fresh fish, fowl, and occasional small mammals and monkeys, which he roasted by night on a *babricot* over a smoky fire with delicious results. Although we were working during the "little rainy season," the rain fortunately came almost exclusively at night. Waterproof nylon tarps stretched over our hammocks protected us from the torrential downpour that frequently came before dawn. Lack of insects at this time of year made sleep possible without nets. When we camped near a Wai Wai village, the Indians showed friendly interest in us and our belongings. The canvas water bucket was a source of constant amazement, and the primus stove was always an object of much discussion. We were offered pepper pot and cassava bread (pl. 6, *b*) or one of their slightly fermented drinks when we paid a visit to any village, and in return we offered the Wai Wai whatever exotic foods we had at the moment—cookies, sugar, crackers, guava paste, or fried plantain strips.

Traveling along the river in a dugout (pls. 7, *a;* 40, *a*), we always joined in the paddling, partly to avoid the necessity of taking additional paddlers and thus diminishing the space available for potsherds, and partly for enjoyment. The first day a few muscles ached but afterward we made long trips with constant paddling and felt little or no fatigue. We learned to hit the hull at each stroke of the paddle in good Wai Wai fashion, and engaged in several races with the saucy otters who sped ahead underwater and then raised their heads and jeered at us for falling behind. When we came to rapids, the Indians took over and steered us skillfully through fast water and between the rocks. Once through, they always wanted to stop to try their luck at catching the large, flat, red *paku* (*Myletes setiger; M. paku*), a delicious fish that lives in the rushing water and puts up a strong fight when shot with a harpoon arrow.

Locating sites in this area would have been difficult and slow without a guide. The river banks are densely forested, and vegetation conceals the ground so effectively that hills are often not visible from the river. An interview shortly after our arrival with the Wai Wai chief, the oldest man in the tribe, produced a long list of places that he said were "old villages." On questioning, he was firm in his identification, although he had never seen potsherds at any of them. We were consequently somewhat dubious as we proceeded to the first such spot. Testing revealed sherds, however, and we found this to be true of all the places listed by the chief with rare exceptions, which probably were old field clearings. Tests on high spots above the flood level not mentioned by the chief always proved sterile.

The return from Kanashen to Lumid Pau on the southern Rupununi savanna took 8 days. The first 4 were by dugout with three Wai Wai paddlers plus the two of us, down the Essequibo and up the Kassikaityu River to a point where the trail began (fig. 1). We had radioed for two savanna Indians to meet us on a specific day with bullocks to carry our essential equipment, leaving all archeological and ethnological specimens and expendable baggage at Kanashen for later removal by plane. Miraculously, the bullocks arrived shortly after we did, and we began the second part of the trip on foot. The trail was generally clear and passed through virgin forest, now and probably always uninhabited. The only living things we saw during the first 3 days of walking were a tortoise and a few birds. On the third night we emerged into savanna and slept at the Wapisiana village of Tararton. The following day we reached Lumid Pau, consisting of two adobe huts beside an airstrip where British Guiana Airways landed on a regular schedule once every 2 months. We were 2½ days early, but hung our hammocks and stuck close to them to be sure we would not miss our plane.

The flight to Georgetown in the DC–3 cargo ship was routine. Stops at Lethem and Annai gave us a glimpse of the savanna at the end of the dry season, with the grass burned brown. We landed at Atkinson Field on February 3, 1953, and spent the first evening in Georgetown walking around admiring the bright lights, having seen nothing stronger than a lantern for nearly 3 months. The manager of the Hotel Woodbine greeted us with joy, having concluded weeks before that we had succumbed to one of the numerous perils that all coastal inhabitants are certain abound in the interior.

Since our research time was now running short, we arranged to take the next coastwise steamer for the Northwest District, which left on February 16. Although the trip took only 20 hours, the ship was subjected during this entire time to constant lateral wave action, which rocked and rolled it severely and rhythmically from side to side and reduced most of the passengers to a state of acute misery. On arrival at the district headquarters at Mabaruma (fig. 1), we were once again permitted to stay at the Government Rest House. The District Commissioner and other Government officials were very cooperative, which greatly simplified the problem of transportation. Travel is by water, and without access to a motor launch we would have had to restrict our investigations to the immediate vicinity of Mabaruma. As it was, we accompanied several officials on trips up the Waini, Barima, and Aruka Rivers, making shorter trips up shallow, narrow creeks and between sites in small dugouts (pl. 7, *b*). Dry land is so infrequent that camping is almost impossible, and small rest houses have been constructed by the Government for the use of traveling officials (pl. 5, *b*). We slept in these or we hung our hammocks in a schoolhouse or store.

The inclement weather in the Northwest District made up for the conveniences of travel. Heavy showers fell almost daily, often several times a day. We frequently had either to suspend work, covering the excavation with a waterproof tarp and awaiting the rain to pass, or to continue digging in soil that soon turned into muck. The sherds were usually wet in any case, and the bags had to be watched carefully for traces of mildew. When the sun came out after a shower the humidity was intense. Partly because of the high humidity, nights were frequently chilly enough to make us shiver in our hammocks in spite of a woolen blanket.

A number of the sites of the Alaka Phase were surrounded by mangrove swamp and accessible only on foot. After making our way to several of these, sliding off slippery logs and sinking above our boottops into the ooze, suffering the attacks of mosquitoes, and inhaling the smell of decaying vegetation, we were able to understand why the tapirs enjoy this environment, but not why it was sought out by man as a place to live.

We had with us on several trips a boatman who felt it his duty to warn us nightly of the perils that surrounded us. He maintained that it was unsafe to sleep anywhere except on the launch, and described in detail a few of the creatures that might attack us as we slept on land. In addition to "turtle tigers," "labba tigers" and "warakaubra tigers," there was a monster in human shape with a globular head, flat on top "like a military cap" and darting fire from its eyes, and another river-dwelling beast with 20 horns on its head. We personally felt that the mosquitoes were more likely to do us in than the "jumbies," and used our nets for the first time in the Colony.

On March 18, we returned to Georgetown by the coastal steamer and made arrangements for the final trip eastward along the coast to the Abary River (fig. 1). This trip was organized by the British Guiana Museum taxidermist, Ram Singh, who decided that we should have the experience of one "real" expedition before leaving the Colony. He hired a cook, Ivan Vyphius, who brought an assistant, and we laid in a huge quantity of supplies, including a tin of "biscuits" (soda crackers) 18 inches in diameter and a foot high. We went by train from Georgetown to the Abary River on March 31, and then by the milk launch upstream, stopping at the sites. Ivan prepared fancy salads and other gastronomic delights, including a fine stew of howler monkey. In the evening, he regaled us with the story of his life, and especially the experiences of a Negro Guianese with Colonial British officials, using such inimitable phraseology that we were completely convulsed with laughter.

On April 12, we returned to Georgetown and spent the rest of our time finishing notes on the collections in the British Guiana Museum, packing specimens for shipment, and attending to other details. The rainy season was in full force by then throughout most of the colony, and in Georgetown rain fell in remarkable quantities, taxing the 3-foot-deep gutters to their capacity. One of our last duties was an interview with the press, purportedly for the benefit of science and the British Guiana Museum, following which one paper reported that we had deposited in the Museum "10 complete Indian chiefs" (we said "pots") ! At 10:30 a.m. on April 20, we took off from Atkinson Field, and 14 hours later landed at Idlewild Airport in New York. After 6 months' absence, it took only one look at the traffic to convince us that the interior of South America holds less hazards than a modern

United States city. We wholeheartedly support the comments made by another visitor to the tropical forests of South America more than 50 years before us:

> Whenever a European hears that a traveller has buried himself in the solitudes of Amazonia, he willingly believes that this is a most exceptional exploit, and that the lucky mortal who returns from it has been in countries where never before has the foot of civilised man been set. It must be admitted that the tales of adventure which now appear as if they were serious stories of travel, are likely to spread these gross errors. Let us hasten to warn these imaginative persons, who are too prone to credit the picturesque and the marvellous. The authors of the books to which we refer only journeyed through parts inhabited by Brazilians, or by foreigners established in Brazil, where reside Government officials, merchants, soldiers, and very sociable human beings. As to the famous Indians of whom such wonderful tales are told, they remain almost always out of sight, unless they can make themselves useful by their special knowledge of the country. In any case they are generally much less to be feared than . . . the savages in the great European cities. [Nery, 1901, p. 308.]

PRESENTATION OF THE DATA

The writing of a large archeological report always raises the problem of how to organize the material to permit both easy reference to data by the technical scholar and quick access to the major conclusions by a reader concerned only with the general results. It is probably impossible to achieve maximum compliance simultaneously with two such different requirements, but as a step in this direction, we have tried to separate the factual and interpretative portions of the report as completely as possible, and to subdivide the presentation of data in a logical manner.

The two chapters following the Introduction deal with British Guiana as a whole. The geographical description is designed to highlight differences and to bring out the major topographical, vegetational, and climatic features that may have influenced aboriginal settlement, and it does not aim to be exhaustive in its coverage. The preceramic lithic horizon is treated in terms of the colony as a whole rather than by geographical subdivisions because what little information is available makes more sense viewed on a larger scale than the areal subdivisions permit. The remainder of the report is organized under four geographical areas: the Northwest lowlands, the Abary River, the upper Essequibo rain forest, and the Rupununi savanna. Each of these is distinct geographically and each exhibits a unique archeological sequence. The order of presentation is chronological throughout. The Northwest lowlands was the first region to be occupied by pottery-making groups, the Rupununi savanna the last. Within each area, description of the archeological phases begins with the earliest, and presentation of the data follows a standard order. Except for the section on "The site sequence and its implications," the content under each Phase is purely descriptive. All of the archeological data resulting from fieldwork and laboratory analysis of the materials collected are included.

For the reader interested mainly in the overall results, there are two principal places to look: the conclusions to each geographical section (pp. 23–24, 145–153, 183–190, 326–332) and the last chapter of the volume (pp. 333–347). The final chapter on the cultural sequence in British Guiana summarizes the general conclusions and appraises their significance not only in archeological terms but also in terms of anthropological problems of various kinds. The reasoning upon which these statements are based can be found in the conclusions to each of the four major sections of the report. Here, archeological, ethnographic and historical data are brought to bear on the problem of reconstructing the origin, duration, and nature of each of the archeological phases and through this the prehistory of the region.

Presentation of the data follows generally accepted lines of current archeological monographs and needs no detailed explanation. We would like, however, to say a few words about the methods of analysis and classification used for the artifacts. Whenever possible, the artifacts are described as types showing their range of variation as well as their most typical features rather than as individual specimens. It has been our experience that this is not only the most practical method of dealing with a large bulk of material, but also it objectifies and clarifies the data and makes the results easier to assess. Unfortunately, stone tools usually were not sufficiently abundant to permit the substitution of type descriptions for the description of each example, but where possible this has been done. All pottery was classified into types, and those few sherds that were distinctive but rare were called "unclassified" and not given type names.

The theory of pottery type classification has been set forth by many others (e.g., Ford, 1949, pp. 38–44; 1954; Krieger, 1944; 1949, pp. 71–80; Spaulding, 1953) and there is still much controversy about which system is the "best." This report is not the place to debate the issue. However, in order to leave no confusion in the mind of the reader about our purpose or procedure, we will describe briefly the steps followed in handling the pottery. The principal reason for making pottery type classifications is, in our opinion, to detect significant differences that will permit the recognition of cultural and temporal change. Consequently, the first question we ask in beginning the classification of a new batch of sherds is, "Are there any readily observable differences?" From extensive experience with sherds from Tropical Forest cultures of South America we have discovered that temper differences are often easily distinguishable and generally reflect change through time. Thus, we first attempt to classify the sherds on this basis, recognizing such widely divergent temper materials as cariapé, crushed potsherds, crushed shell, sponge spicules, crushed steatite, mica, or less distinct differences such as fine sand and coarse sand.

When temper variations are not present or do not show a consistent trend of change through time, the problem is to find some feature or combination of features that will. Under Tropical Forest conditions, in contrast to those in the Andean and Mesoamerican culture areas, the surface erosion of the sherds is always sufficient to make surface treatment unusable. Consequently, a choice of a primary basis for classification must be made from the characteristics manifested by the paste. Aside from temper, firing differences are easiest to recognize and define with consistency. It has been our experience that separation of sherds into those that are completely oxidized, producing a totally orange, tan, or brown cross section, and those that are incompletely oxidized, leaving a gray core of variable width, frequently provides a basis for seriation. After the primary features of the sherd types are established, the type categories are refined and other features are sometimes discovered to be additionally significant in showing change through time, such as rim shapes, vessel shapes, or even at times surface treatment.

In making these classifications of plain pottery types we are not concerned with the significance, if any, of the type distinctions to the potters (in fact, we are not sure how this could be determined on pure archeological materials without ethnographic correlations), but only with the ability of the types to reflect change through time. If the pottery types from the successive levels of a strata cut do not show consistent trends through time, the first classification is abandoned and another is attempted. It should be emphasized that the classification finally presented is not superior to other possible classifications in theory, in the criteria employed, or in terms of ceramic technology, but only in its ability to reflect chronology.

During the preliminary classification all decorated sherds were set aside to be handled later, and the sites and levels of strata cuts were seriated on the basis of the plain ware trends. Subsequently, the decorated sherds were examined by level and classified into types, but with decorative technique taking precedence over paste characteristics as the basis for classification. Theoretically, it would be feasible to combine the two criteria but in practice this often works to multiply the number of decorated types (sometimes reduced to a few sherds per type due to the scarcity of decorated sherds) with no compensating advantage. For example, such a classification would create four decorated types in the place of Akawabi Incised and Modeled in the Mabaruma Phase, since the same decoration was applied at

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various times to all four of the plain wares. Such a subdivision would reveal the same trends as the plain wares themselves show, however, and while obscuring any change in popularity of the decorative techniques and motifs. It might have been possible in a few cases to subdivide decorated types on the basis of differences in motif, but when the technique was uniform and the sample was small we preferred to consider the complex as a single type characterized by the presence of several motifs. When some evolutionary change can be detected, this is mentioned in each pottery type description under the heading, "Temporal differences within the type." In contrast to the plain wares, decorated types rarely show any clear-cut changes in popularity in cultures of the level of development represented by the archeological phases in the Tropical Forest area of South America. Consequently, this test of classificatory validity does not apply, and the principal consideration becomes one of separating combinations of technique and motif that appear to have some descriptive unity.

The adoption of this philosophy of pottery type classification inevitably colors our approach to the discrimination of archeological phases. The ceramic complexes by which the phases are principally identified are composed of continuously changing pottery types. These changes may be either evolutionary or the effect of outside influence, but in either case the alteration is usually slow. Such a point of view emphasizes the continuum rather than the innovations, and makes subdivision of a phase seem exceedingly arbitrary or even unrealistic. While the combination of traits at the end of a phase sequence may be easy to distinguish from that at the beginning, the transition from one to the other is very gradual. This orientation should be kept in mind when our descriptions of the British Guiana archeological phases are compared with the styles distinguished by Cruxent and Rouse (1959) for eastern Venezuela. These authors have followed another approach, which emphasizes differences rather than similarities, with the consequence that a sequence of change such as that encompassed within our Mabaruma Phase, for example, may be represented by two or more styles in their scheme. It should be recognized that this is not a situation in which one result is necessarily right and the other wrong, but a consequence of approaching similar data from different theoretical premises.

Several devices for recording and presenting archeological evidence that we use consistently appear in this report. An archeological culture has been called a "Phase" because this term carries no specific ethnographic connotations (see Meggers and Evans, 1957, pp. 13–14). All sites are designated by a key letter and number, the letter referring to the geographical area in which the site is located (N=Northwest

District, B=Berbice Province, E=upper Essequibo River, R=Rupununi District), and the number to the particular site in question. In two cases where the correlation is unquestionable, phases were given the names of the actual tribe to which they correspond. Otherwise a local geographical term was chosen. Pottery types were named according to the binomial system, coupling a proper noun of the region with a descriptive adjective. Color terms, such as red or white, in the name of a pottery type indicate the use of a slip; unslipped surfaces of whatever color are referred to as "plain." In the figures illustrating vessel shapes and rim profiles, solid, blacked-in rims are used for plain wares and outlined ones for decorated types. Where the data were sufficient, we have tried to apply and to test the formula for calculating site duration from rate of sherd accumulation that we first proposed in an earlier monograph (Meggers and Evans, 1957, pp. 245–257). We have brought this method up again not because we are convinced of its validity, but because we feel that it cannot be either accepted or rejected without further testing, and that if we do not make the effort to apply it we cannot expect others to do so.

Finally, an explanation of the system of measurements should be made. Because the metric system is easier to use and is the accepted system in Latin American countries, we measured all distances and altitudes in meters and kilometers and all specimens in centimeters and millimeters. However, British Guiana being a British colony, all the published geographical descriptions and current linear measurements are in miles, feet, and inches. As a compromise, geographical references were quoted in both systems, while our own measurements and observations are given only in the metric system. Spelling of geographical names follows British Guiana usage except in the case of the sites of the Taruma and Wai Wai Phases. These words are unwritten and no attempt has been made to provide an exact phonetic equivalent.

GEOGRAPHICAL DESCRIPTION

British Guiana is the largest of the three European colonies surviving on the northeastern coast of South America. It stretches in a north-south direction for a distance of about 800 km. (500 miles), between 1 and 9 degrees north latitude. Width varies from about 160 km. (100 miles) near the center to nearly 480 km. (300 miles) in the north.

To a larger degree than is usual, the boundaries of British Guiana coincide with distinct natural features. The northeastern frontier is the Atlantic Ocean. The Courantyne River makes the separation from Dutch Guiana on the east. The southern and southwestern boundaries follow the continental divide, formed by the low mountains of the central Guiana range. Only in the northwest is the border partly an arbitrary line joining sections of several different rivers.

As a consequence of the coincidence between political and natural boundaries, the drainage pattern of British Guiana is dominated by a single large network. The colony is almost bisected by the Essequibo River, which flows from the southern border in a generally northward course to empty into the Atlantic Ocean. Most of the other major rivers are its tributaries: the Rupununi, the Mazaruni, and the Cuyuni, all flowing from the west. Each of these is fed by a multiplicity of small streams, many of which cease to flow in the dry season. A number of smaller rivers drain the coast. All are comparatively short except the Berbice which runs generally parallel to the Essequibo between it and the Dutch Guiana border. The lower courses of the Barima, Waini, and Pomeroon Rivers parallel the coast for some distance before emptying into the sea. None of the larger rivers is navigable uninterruptedly for its entire length, although there may be long stretches where no portage is necessary. The rapids were not an obstacle to aboriginal travel, and their major effect is to eliminate tidal variations except near the coast. The headwaters of the Rupununi and Essequibo come within a short distance of the headwaters of rivers flowing into the Amazon. The transition from the Rupununi River to the Takutu River and thence to the Rio Branco and into the Amazon is particularly easy, since there are no mountain barriers. It was this situation, seemingly providing a ready

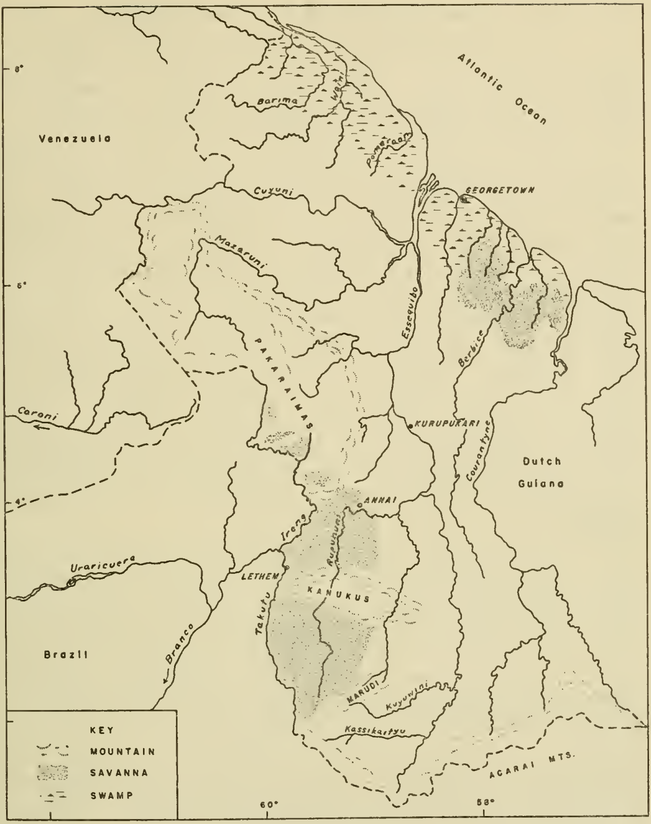


Figure 2.—Map of British Guiana showing principal geographical features.

route for aboriginal contact or migration, that prompted the choice of British Guiana for archeological investigation.

In very general terms, the colony can be divided into three geographical zones (fig. 2). The narrowest is the tidal swamp along the coast, a band of some 50 miles in width. This is dominated by mangrove vegetation and dissected by countless small creeks, most of which are emptied during low tide. Travel overland is laborious because of the combination of densely intertwined branches and above-surface roots with fine-grained muck that offers no resistance to weight. Occasional elevations ranging from small rises to high hills occur in this zone, the most prominent being in the Northwest District (fig. 4; pl. 9). For the most part, however, except on occasional high spots along the rivers, the coastal zone became desirable for habitation by agricultural groups only after extensive drainage operations had been introduced subsequent to European occupation of the area.

The largest part of the colony is rolling, rather low terrain covered with forest. The elevation at 1.5 degrees north latitude on the upper Essequibo is only about 152 meters (500 feet) above sea level. Toward the west, in the drainage of the Mazaruni River, the landscape is more rugged and is dominated by high plateaus. The frequency of rivers and streams is an obstacle to overland travel, and even today transportation is principally by water or by air. The present population of the forest zone is predominantly Indian, and this region shelters several groups that retain their aboriginal pattern of life largely unaltered. The land is exploitable by slash-and-burn agriculture, but does not lend itself to intensive utilization. In the absence of outstanding commercially valuable vegetable or mineral resources, except bauxite near the coast, there has been little penetration of European settlement, and the forest areas, which represent the major portion of the colony, remain unaltered from their aboriginal condition.

The third zone is the Rupununi savanna, occupying the southwestern portion of the colony between the Pakarima range (pl. 2) and Marudi Mountain, and extending westward into adjacent Brazil. The savannas cover an area of approximately 13,934 square km. (5,380 square miles), and have an elevation of 91.4 to 213.3 meters (300 to 700 feet) (Baldwin, 1946). They are divided into two nearly equal parts by the Kanuku Mountains that run in an east-west direction for about 120 km. (75 miles), measure 40 to 48 km. (25 to 30 miles) wide, and rise some 609.6 meters (2,000 feet). The terrain is generally level north of the Kanuku Mountains, becoming more rolling and broken by small tree-covered hills to the south. The vegetation is also more open in the north, although large areas devoid of scattered trees are few even here. In the south savanna, groves of trees become increasingly frequent, gradually blending together and replacing the savanna entirely. Much of the savanna floods during the rainy season, when the rainfall exceeds the capacity of the rivers to drain it off. At this time the Takutu River rises about 12.2 meters (40 feet) above its dry season level, and other rivers overflow their banks. During the dry season, the clay and laterite, which are the dominant soil types, bake into a hard mass that offers little nourishment to the grass and is unsuitable for agriculture. In spite of its poor pasture quality, the Rupununi savanna is the most developed and most populous interior region because of the cattle industry.

During the aboriginal period, its use appears to have been restricted to hunting grounds for groups inhabiting the adjacent forests.

These three geographical zones are correlated to some degree with differences in climate, particularly rainfall. The contrast is especially pronounced between the savanna and the forest. Records of average rainfall over a period of 10 years give a figure of 143.2 cm. (56.4 inches) at Bon Success (now Lethem) in the center of the savanna and 173 cm. (68.2 inches) at Annai, 11.2 km. (7 miles) from the edge of the forest. At Kurupukari, on the Essequibo River within the forest zone, the average for the same period is 209 cm. (82.4 inches) (Baldwin, 1946, p. 7). On the coast, rainfall averages around 228 cm. (90 inches) with a maximum of 492.5 cm. (193.89 inches) recorded in 1922 (Colonial Office, 1952, p. 104). Records kept for the 3 years 1954–57 at a station on the upper Essequibo, above the mouth of the Kassikaityu, give an average annual rainfall there of between 254 and 382 cm. (100 and 150 inches) (Leavitt, Pers. commun.). In addition to a difference in total annual rainfall, there is a difference in the distribution of the rain over the year. The savanna not only receives less rain than the forest but most of it is concentrated during the wet season from mid-May to the end of August. Elsewhere there is a "little rainy season" in December or January, a long rainy season from March to August, and occasional showers during the other months. In the upper Essequibo, monthly records show a fall of between 5 and 20.3 cm. (2 and 8 inches) during the "dry season" months. More evenly distributed rainfall was probably as important as differences in soil fertility in explaining the concentration of aboriginal habitation in the forests.

Temperature differences between the coast and the interior are not pronounced. The coastal annual mean is about 26.8° C. (80.3° F.) with extremes during 87 years ranging from 20 to 35.6° C. (68 to 96° F.) (Colonial Office, 1952, p. 104). Temperature records on the Rupununi savanna during 1942 gave a mean maximum of 31.2° C. (88° F.) and a mean minimum of 23.6° C. (74.5° F.) (Baldwin, 1946, p. 7).

Archeological survey and excavations were undertaken in four separate parts of British Guiana, representing all three of the geographical zones: the coastal swamp, the savanna, and the forest. A detailed description of the particular regions investigated will assist in understanding the differences in aboriginal settlement.

THE NORTHWEST LOWLANDS

The area administratively known as the Northwest District occupies the northwestern corner of British Guiana and includes the drainage systems of the Barima, Barama, and Waini Rivers. Archeological survey was confined to the lowland zone, occupying the coastal half of the District. The rivers are placid, the water flowing gently back and forth with fluctuations in the tide except during the rainy season when tidal effects are minimized. Black-water creeks have surfaces like a polished black mirror, reflecting the overhanging vegetation. Between the rivers extend the mangrove swamps—mucky, slimy, and insect-ridden. There are scattered forest-covered elevations, most of them rising less than 10 to 15 meters (32.8 to 49.2 feet) above high tide level. However, in the west along the Aruka and Koriabo Rivers a series of high hills (fig. 4) rises from 39 to 96 meters (130 to 320 feet) in elevation (Osgood, 1946, fig. 7). The summit of such a hill affords a fine view over the surrounding lowland (pl. 9). The hills are steep-sided and have rather small, flat or rounded summits. Although most have no water supply on the summit, many were used aboriginally for village sites. Soil composition on the hills is mainly coarse decomposed granite and red clay with abundant lateritic concretions. Except for citrus trees and coffee, the hilltops or hillsides are little used for agriculture today.

The swamps presented little attraction for habitation in aboriginal times. The only sites are small shell midden accumulations. The soil is relatively fertile when drained, however, and efforts are now being made to drain and exploit it. This is done by the construction of a large, high dirt bank along the river's edge and the excavation of deep drainage ditches, which lower the water table sufficiently for crops to grow. There is no way to determine whether small scale operations of this sort were undertaken by the aboriginal groups, although it seems doubtful. The high land, although scattered, was probably sufficiently extensive to serve their needs. The rivers supplied fish and the forests the usual variety of game.

THE ABARY RIVER

The Abary is a small river that weaves back and forth across the boundary separating Demerara and Berbice Provinces. Its lower course passes through the low coastal plain, which in this area is grassy rather than covered with mangrove swamp. During the rainy season the entire area is flooded and the banks of the river are indistinguishable. Between the mouth of the Abary River and the margin of the high land, about 90 km. (56 miles) inland, elevations above flood level are few (pl. 38). Houses today are frequently raised on stilts, and during the rainy season stand in water 3 to 4 feet in depth.

The Abary savanna is comparable to savanna in the Rupununi District in general appearance. Both have scattered trees, and the grass gives way to forest when the land increases slightly in elevation. Both are flooded during the rainy season. Both appear to have offered little attraction to aboriginal habitation. Both have been utilized in recent times for cattle, now being superseded in the Abary by the cultivation of wet rice.

THE UPPER ESSEQUIBO

The upper Essequibo River and its major tributaries, the Kassikaityu and Kuyuwini, flow through forest that extends unbroken in all directions except to the northwest, where it fades into the Rupununi savanna. Along the Brazilian border, a ridge rises to 304.8 meters (1,000 feet) elevation, but the rest of the area slopes gradually from 152.4 meters (500 feet) in the headwaters to sea level at the coast. In keeping with the generally low and level character of the terrain, riverbanks are typically low and the major part of the area floods at some time during the rainy season. Sticks and debris lodged in the overhanging branches of trees showed the level of the Essequibo to rise annually 4 to 5 meters (13.1 to 15.4 feet) above its lowest level, or about 3 meters (9.8 feet) above the December-January water level. The banks are not uniform in height, but in most places their elevation is low enough to flood at the peak of the rainy season. Above the mouth of the Kassikaityu, two small rapids interrupt the smooth flow of the river. Rock outcrops are more frequent below the Kassikaityu mouth, where they often jut spectacularly into the Essequibo River.

The riverbanks form dense walls of vegetation, whose composition varies with the elevation (pl. 40). Tall slender palms, their trunks bristling with downward pointing spines, grow where the land is readily flooded. On high banks, the large trees are festooned with clumps of epiphytic plants whose long, slender aerial roots hang down like streamers. Behind this wall, where sunlight is filtered out by the high canopy of tree tops, undergrowth tends to be spindly, delicate, and sparse.

The forest shelters a variety of animal life, the majority of which is rarely visible. Birds and monkeys are most commonly seen, but tapir, peccary, and smaller mammals are hunted for food by the present Indians. The river contains quantities of many varieties of fish, which are easily caught. Land high enough to escape flooding and thus suitable for agriculture is available along the river, but such areas are typically small and may be isolated by wide stretches of low land that is inundated during half of the year.

THE RUPUNUNI SAVANNA

The Rupununi savanna is the eastern edge of a formation that extends over adjacent Brazil and into parts of Venezuela. In British Guiana, it divides naturally into two parts. The north savanna lies between the foothills of the Pakaraima Mountains and the Kanuku Mountains. The northern part is flat and contains wide treeless expanses (pls. 53; 54, *a*). Moving southward, scattered trees or groves of trees occur and the terrain becomes increasingly rolling. Toward the east, trees are more concentrated and there is an almost equal division between grass and forested areas. Between the west side of the Kanuku Mountains and the Takutu River, the land is rolling low hills thickly sprinkled with trees, with intervening depressions that tend to be swampy. The south savanna, south of the Kanuku Mountains, is relatively open and flat only in the northwest. Several mountains rise steeply from the savanna floor (pls. 55, *a;* 59, *a*). Moving eastward, the terrain becomes rolling, and low hills covered with bare, weathered, black granite outcrops and trees are characteristic. Groves of trees increase in area toward the south, until forest gradually replaces the grass. The 59th parallel marks the approximate limit of the savanna on the east.

The Rupununi savanna straddles the continental watershed. Tributaries of the Rupununi River interlock with creeks flowing into the Takutu and Ireng Rivers, which contribute their waters to the Amazon system (fig. 2). A consequence is a marked annual variation in water level, and hence in the navigability of rivers. In the wet season, river cargo boats can reach a point almost midway into the south savanna. In the dry season, a small canoe cannot travel above Annai, at the base of the Pakaraima Mountains. Correspondingly, creeks and waterholes overflowing in the rainy season become stagnant or dry in November and December.

The vegetation of the savanna offers little in the way of subsistence resources. Animal life is difficult to assess now that cattle have been introduced, but it is probable that deer were once more common. Several small shallow lakes contain arapaima (*Sudis gigas* or *Arapaima gigas*) and other fish, as well as cayman. The forest provided the major hunting and gathering as well as the only possibility for agricultural exploitation in aboriginal times. Even today, savanna-dwelling Indians have their fields in the forests and spend part of the year living at their gardens to plant and harvest their crops.

CONCLUSION

Although the coastal, forest, and savanna zones of British Guiana differ strikingly in superficial features, their potentialities for human exploitation are generally similar. None has outstanding soil fertility [1] or other natural resources. All offer a variety of subsistence possibilities, but all of them are time consuming in their realization. The geographical setting is consequently highly significant in explaining the archeological picture and reference will be made to its role in the conclusion to this report.

[1] For detailed analysis of soils and agricultural potential, see Duthie, 1939 a and 1939 b, and Evans, 1939. More specific data on vegetation can be obtained from Fanshawe, 1952.

PRECERAMIC LITHIC HORIZON

SITES AND ARTIFACTS

Evidence of early lithic remains in British Guiana is very slight. With the exception of a chipping station encountered during the 1952–53 survey, finds are restricted to a few scattered projectile points. All these specimens apparently have been recovered independently and accidentally. Consequently, nothing is known of their associations, and provenience is usually vaguely stated in terms of a river drainage. All specimens are from various districts in Essequibo Province, and all projectile points are in the collections of the British Guiana Museum.

BARIMA RIVER, NORTHWEST DISTRICT

The only example from the Northwest District is of red jasper (W. E. Roth, 1924, pl. 36 A, right). It is a large parallel-sided blade tapering to a short pointed tip that is missing, with a short parallel-sided stemmed base. The chipping is grossly done except for delicately retouched edges. The total existing length is 16 cm., maximum width at the junction with stem 5 cm., stem length 2 cm. and stem width 2 cm.

CUYUNI RIVER, MAZARUNI DISTRICT

Four stemmed projectile points, all of slightly different size and shape have been recovered from the Cuyuni River. A broad, thin specimen of quartz (pl. 8, *d*) has a slightly contracting stem with a flat base. The edges show careful secondary chipping, producing a marked slope at the sides of the stem. The length is 10.6 cm. and the maximum width 4 cm.

Another point (pl. 8, *b*) of chalcedony is slightly narrower and thicker. The shoulders are much less pronounced and the stem contracts to a rounded base. All edges show secondary retouching. The tip of the point is broken off. Existing length is 11.7 cm. and maximum width 3.5 cm.

The third example is chert (pl. 8, *c*). It is more even and symmetrical than the others but is of the same general form, with pronounced shoulders and a slightly contracting stem. The length is 8 cm. and the maximum width 2.5 cm.

The remaining point is of chalcedony with the same general form and complete secondary chipping as the others, but with a more crudely executed stem contracting to a rounded base (W. E. Roth, 1929, pl. 1 A, a). The length is 5.8 cm. and the maximum width 2.8 cm.

IRENG RIVER, RUPUNUNI DISTRICT

A beautifully chipped, symmetrical projectile point of red jasper is reported to have been dredged from the bed of the Ireng River near the Good Hope ranch on the northern savanna of the Rupununi District. The specimen (pl. 8, *a*) has a long stem with parallel sides and a rounded base. The blade narrows from the base to the point, the tip of which is broken off. The margins are straight for almost half the distance from the base, where the even edge is broken by three serrations on each side. Above the serrated area, there is a small expansion producing a slightly bulbous outline, followed by contraction to a long, narrow, tapering point. Existing length is 14 cm., stem length 2.6 cm., stem width 1.4 cm., width at base of blade 3.4 cm., distance from base to serrations 4.0 cm., length of serrated zone 2 cm., width at serrations 2.4 cm., width at upper end of serrations 2.0 cm., width at broken tip 0.7 cm.

PALIKÚA CREEK, RUPUNUNI DISTRICT

A point of quite different form is described by W. E. Roth (1929, p. 9 and pl. 1 A, c) as coming from Palikúa Creek, a tributary of the Rupununi River. It is short and broad, and has shoulder barbs and a narrow, straight-sided stem with a straight base. The material is said to be a kind of agate. The length is 6.7 cm. and the width 3.8 cm.

TABATINGA RIVER, RUPUNUNI DISTRICT

The only nonceramic site discovered during the 1952 survey of the Rupununi savanna was R–4: Tabatinga, a small chipping station about 100 meters in from the left bank of the Tabatinga River, some 500 meters above its junction with the Takutu (fig. 109). Fragments of felsite, chert, and quartz were scattered over a small rise in the savanna. No well-defined artifacts, either complete or fragmentary, were found, and there was no pottery. Two stones show evidence of chipping. One (fig. 3, *a–c*) is an ovoid flake of felsite with a bulb of percussion near the center of one long edge and slight retouch along the opposite edge. Surfaces measure 4.5 by 2.8 cm., with the thickness 1.2 cm. at the center tapering down toward the edges. The other (fig. 3, *d–f*) is a trianguloid flake of chert, smooth on one surface as a result of the natural concoidal fracture, and chipped on the opposite face. The smooth surface has slight use retouch along one

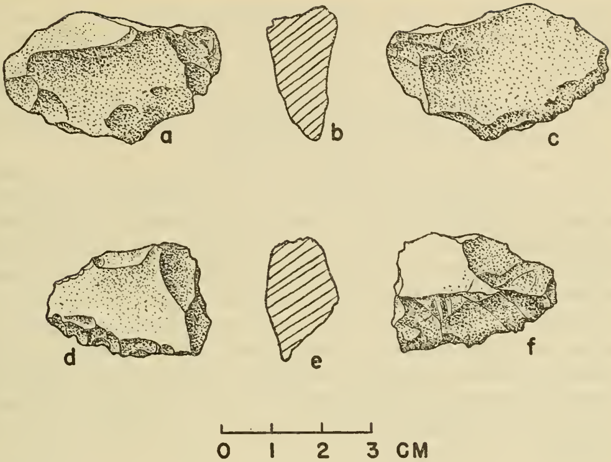


FIGURE 3.—Worked stones from the nonceramic site of R–4: Tabatinga, on the Rupununi savanna.

side. The fragment is 3.5 cm. long, 2.5 cm. wide at one end, tapering to 0.8 cm. at the other end. Maximum thickness is 1.1 cm. at the wide end and middle, tapering toward the point. Two small quartz chips were associated, but these show no evidence of working.

COMPARATIVE DATA, CONCLUSIONS, AND INTERPRETATIONS

The preceramic lithic artifacts in British Guiana present a problem when it comes to interpreting the significance of the finds. Although the evidence of this cultural horizon is meager, the fact that no similar stoneworking tradition occurs associated with any of the pottery-making cultures of British Guiana indicates that it represents a separate and earlier occupation. There is no indication of how much earlier it may have been. Comparative analysis is hampered by the fact that the shape and size of the points, type of workmanship, and stone material are different from those of any of the other known preceramic lithic complexes in South America, including scattered finds from the Gran Sabana of eastern Venezuela in the region adjoining British Guiana (Dupouy, 1958). This does not mean that resemblances cannot be seen in isolated specimens from the lithic complexes of the caves of the Sierras Centrales and the pampas of Argentina (Gonzalez, MS.; Holmes, 1912, pl. 13), Palli Aike Cave in Patagonia (Bird, 1946, figs. 20–27), or the early sites of coastal Peru, such as Pampa de los Fósiles (Larco Hoyle, 1948, pp. 11, 63), Pampa de Paijan (Engel, 1957, pl. XXXIV, lower), or the caves of the Lagoa Santa region of Minas Gerais, Brazil (Walter, 1958, figs. 9, 16, 22, 38). However, when the total complex of features in each of these areas is considered, differences loom larger than similarities and no direct relationships can be postulated with the possible exception of the specimens from eastern Venezuela.

In view of the wandering life associated with a hunting economy and of the unexcelled opportunities for concealment of artifact remains provided by the forested terrain, it is doubtful that our knowledge of these hunting cultures in British Guiana will ever be much more complete than it is at present. Discouraging as the situation may seem by contrast with North America or the stratified cave sites of southern South America, it is surprisingly good by contrast with the rest of Tropical Forest South America where evidence of early hunting groups is completely negative. The British Guiana finds suggest that more widespread appreciation of their significance might bring similar artifacts to light in other parts of the South American lowlands.

THE NORTHWEST LOWLANDS

THE ALAKA PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

Two types of shell middens occur in the Northwest District, but only one belongs to the Alaka Phase. Mounds consisting mainly of small, striped snail (*Neritina*) shells mixed with no dirt and little ash appear to be associated with one of the pottery-making cultures. Alaka Phase shell middens are densely compacted refuse composed of shells (oyster, clam, mussel, snail, etc.), crab carapaces, and fish and animal bones and containing very crude percussion-made stone tools. Occasionally potsherds occur on the surface or in the uppermost levels, and sometimes human skeletal fragments are scattered haphazardly in the midden. Six Alaka Phase sites were investigated (fig. 4).

N–6: LITTLE KANIABALLI

A few kilometers downstream from its junction with the Barama River, a series of small tributaries drains into the Waini River. Their mouths are concealed by heavy growth of mangrove trees along the swampy bank. Little Kaniaballi Creek, one of these streams, drains into the right bank of the Waini. Near its headwaters, several kilometers from the mouth, a truncated conical shell mound rises prominently out of the surrounding swampy land.

The first mention of this site is by Brett (1868, pp. 435–436), who speaks of a shell midden discovered by an Indian while hunting near the "Comonoballi," above the confluence of the Morebo and the Waini Rivers. In 1920, the site was visited by Vincent Roth. His unpublished journal describes the difficulties in reaching it, the armadillo holes that riddled the surface, and the mucky conditions of the surrounding swamp. Digging in the black dirt and shell refuse with machetes and sticks, he and his companions found a "portion of a human thigh bone and several fish-bones and similar relics" (V. Roth, MS., p. 110).

At the time of our visit in 1953, the shell mound measured roughly 10 meters in diameter at its flattened top and 30 meters in diameter at its base. As a result of an irregularity in the surface of the swamp, elevation ranges from 4 meters above the swamp on the south to 5 meters above it on the north. The mound, like the surrounding area, was overgrown with trees and bushes. The surface was disturbed in several places by animal burrowing, and a depression on one side suggested previous excavation. Shell, ash, and bones were encountered in all parts of the site. A 2- by 1-meter cut was placed in the summit and carried to a depth of 1.50 meters, at which depth it was no longer practical to dig in so small a hole, owing to the necessity of using a pick on the hard compact refuse. To test the entire midden to its core, however, overlapping test holes were dug on each meter down to sterile ground. These demonstrated that the midden was a 4-meter-thick accumulation of shell refuse resting on a natural knoll of medium-gray clay that rose about a meter above the surrounding low swamp.

Cut 1, dug in 8-cm. levels, had the following characteristics:

Level .00–.08 m__ Black loose humus containing few shells.

Level .08–.16 m__ Badly broken, pulverized shells and crab claws intermixed with ash; fish and human bones scattered in refuse; compact masses of shell cemented together.

Level .16–.24 m__ Same conditions.

Level .24–.32 m__ Entire level compacted into hard layers 2–5 cm. thick; some dirt mixed in the refuse. Majority of shells are mussels and clams with some striped snail (*Neritina*); crab claws and carapaces also very common.

Level .32–.40 m__ Mussel shells pulverized into fine, flaky particles intermixed with dirt and ash; occasionally the shell refuse is cemented into large hunks.

Level .40–.48 m__ Same conditions.

Level .48–.56 m__ More dirt mixed with shell than in previous level; otherwise conditions the same.

Level .56–.64 m__ Same as previous level.

Level .64–.72 m__ Similar conditions to above.

Level .72–.80 m__ Refuse less compacted and without cemented layers.

Level .80–.88 m__ Same conditions.

Level .88–.96 m__ Pulverized shell intermixed with ash, dirt and fire-burnt stones suggests a hearth.

Level 0.96–1.04 m__ Dirt more abundant; a dark-gray loam intermixed with finely pulverized shell.

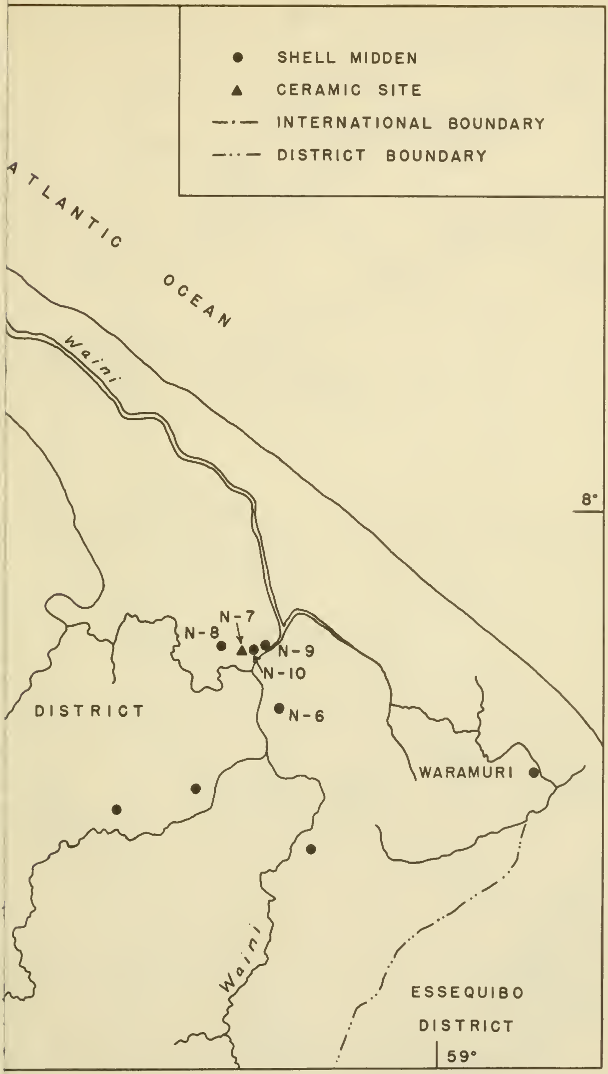
Level 1.04–1.12 m__ Same conditions.

Level 1.12–1.20 m__ Light-gray soil with tiny fragments of shell and fine ash.

Level 1.20–1.27 m__ Hard layer of cemented shell.

Level 1.27–1.50 m__ More abundant shell refuse below the cemented layer, with much of the shell in whole fragments rather than pulverized; soil light-tan to gray.

Cut 1 was not carried below this depth owing to the problems of digging, explained previously. The other tests were not controlled by levels but it was observed that the same general conditions continued to the bottom of the deposit. Broken stones occurred throughout and were saved to be examined later in the laboratory for traces of use.


SHELL MIDDEN
CERAMIC SITE
INTERNATIONAL BOUNDARY
DISTRICT BOUNDARY
ATLANTIC
OCEAN
Waini
8°
N-7
N-8
N-9
N-10
N-6
DISTRICT
WARAMURI
Waini
ESSEQUIBO
DISTRICT
59°

in feet.

FIGURE 4.—Map of the Northwest District, showing the location of archeological sites. Elevations are given in feet.

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A sample of shells from the various levels was identified,[2] with the species listed generally in their order of most frequent occurrence:

Neritina zebra Bruguière—a common brackish-water, intertidal snail, herbivorous, ranging along the north coast of South America from Honduras to Brazil.

Phacoides pectinatus Gmelin—a common intertidal clam preferring warm, sandy mud, usually not far from mangroves. Although a marine species, it can tolerate intermittent fresh water.

Mytilus falcatus Orbigny—a common mussel of brackish water.

Melongena melongena Linné—a common conch of the West Indies living in marine to slightly brackish water not far from mangroves; carnivorous, likes sandy mud.

N–8: ALAKA CREEK

The Morebo River drains into the left bank of the Waini River a few kilometers upstream from the junction of the latter with the Warapoco River. Alaka Creek is a small tributary on the north (left) bank of the Morebo River. On the right bank of Alaka Creek, near its headwaters, are two large shell middens. Although the sites can be reached by water, they are also accessible overland from the Warapoco River.

This site came to the attention of Brett in 1866, and he sent his representative, Mr. D. Campbell, to investigate it. He described it as "about sixteen feet in height, with a base of 400 feet in circumference. It stands hard by a small stream, called after it 'Alaka,' the shells . . ." (Brett, 1868, p. 435). The site was visited by Vincent Roth (MS., pp. 134–135) on September 21, 1920, and his general description coincides with ours except that during testing he uncovered fragments of human skeletal material intermixed in the midden refuse.

The Alaka Creek shell middens are located at the edge of a long ridge 3 meters in elevation, which extends from the Warapoco River to Alaka Creek. There are two distinct knolls (fig. 5), the margins of which overlap slightly giving a continuous deposit. Mound 1, the smaller of the two, is 8.0 meters in diameter at the base and 4.5 meters high. It rises at the edge of the slope, where the land drops down to the Alaka Creek, 5 meters away. The opposite side of the creek is swamp. Mound 2, 12 meters in base diameter and 6 meters high, is farther back from the edge and separated from the slope by Mound 1. It has a flattened top 4 meters in diameter, perhaps leveled by agricultural activity, since the high land including the site was under cultivation by the modern inhabitants. Several tests were made to determine the limits of the refuse deposit, and these produced a variety

[2] All identifications of the shells and statements about their habitat throughout the entire section on the Alaka Phase were made by Dr. Harald Rehder, curator of the Division of Mollusks, U.S. National Museum, and Dr. Tucker Abbott, Philadelphia Academy of Sciences, formerly on the staff of the U.S. National Museum.

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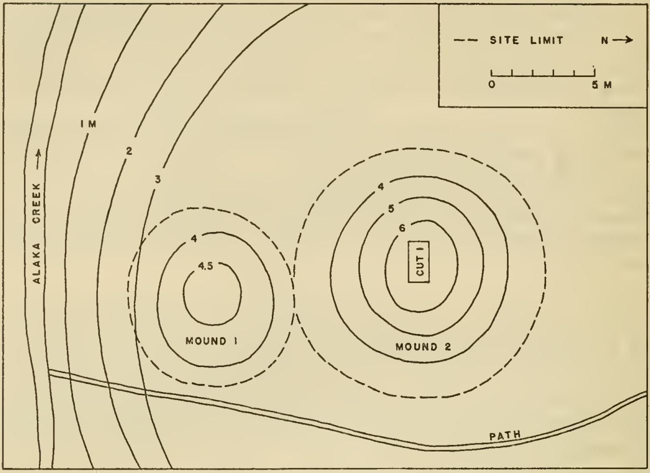

FIGURE 5.—Sketch map of N–8: Alaka Creek, a shell midden site of the Alaka Phase.

of miscellaneous rocks, 1 plain sherd, and quantities of shell, bone, and carapaces of crustacea. Cut 1, a 2- by 1-meter stratigraphic excavation controlled in 25 centimeter levels, was dug in the summit of Mound 2. Sterile soil encountered at 2.60 meters, indicated that the mound was built on a small, natural rise of the same sandy, decomposed granite as the natural soil of the surrounding area.

The contents of Cut 1 by levels are:

Level .00–.25 m.__ Loose black loam; scattered fish bones, stone chips, small striped snail shells, a few mussels and clams. Disturbed by cultivation. Shell not common until after a depth of 16 cm., but fish bones rather abundant. A small drilled shark's tooth found from 16–24 cm. (fig. 7, *e*). Seven sherds came from the surface and 1 small sherd was found at a depth of 8–16 cm. Natural quartz spalls and limonite and hematite concretions very abundant.

Level .25–.50 m.__ Fish bones and stone chips less abundant from 25–32 cm. than in previous level, but pulverized mussel shells increase in frequency; all intermixed with considerable dirt. From 30–32 cm. there is a stratum of cemented shells, crab carapaces and claws, and fish bones in the southwest and northeast corners of the cut. Otherwise, the composition is a rather even intermixture of shell, fine ash, iron concretions, fire-burnt gneiss fragments, and gray-brown soil. From 40–50 cm. in the south half of the cut, there was an unusually large concentration of crab claws and carapaces.

Level .50–.75 m.__ Up to 70 cm. the conditions are the same as above, with a rather even intermixture of well pulverized shell, bone, crab claws and carapaces, ash and dirt. At 70 cm. there was a deposit of well compacted shells of many species, intermixed with fish bones, remains of crabs, palm seeds and a minimum of dirt.

Level 0.75–1.00 m.__ Pulverized, broken shells abundant. All bones are so incrusted with calcium carbonate that they are unidentifiable in the field. Dirt still intermixed with the shell in streaks of black to gray-brown. Hard layers from 2–3 cm. thick are scattered throughout the level suggesting that when a basket of ashes was dumped, chemical action caused by water filtering through the ash and onto the shell cemented the mass together.

Level 1.00–1.25 m.__ All conditions the same except at 1.10 meters, where a cemented layer of shells, etc. from 2–3 cm. thick, extends across the entire cut. Natural, unworked pieces of quartz, feldspar, andesite, and limonite concretions also present.

Level 1.25–1.50 m.__ Dirt and shell intermixed; at 1.25 meters there are large hunks of cemented material reaching 10 cm. thick.

Level 1.50–1.75 m.__ Dirt and pulverized shell continue but stone less common; fire-burnt piece of quartz.

Level 1.75–2.00 m.__ After the removal of several large hunks of cemented materials at 1.75 meters, no more compacted material was found. Dirt and pulverized shell with the dirt now tending to be a lighter tan and brown. Fire-burnt hunks of granite.

Level 2.00–2.25 m.__ Streaks of orange, fire-burnt areas containing black and gray ash intermixed with dirt, pulverized shell, and fire-burnt andesite rocks.

Level 2.25–2.60 m.__ Same conditions as above layer. At 2.60 meters sterile, natural soil of light-gray sand containing coarse, large, decomposed-granite particles appeared.

The shells from the midden include: *Neritina zebra* Bruguière, *Mytilus falcatus* Orbigny, *Phacoides pectinatus* Gmelin, *Melongena melongena* Linné, and *Thais coronata* Lamarck. The last species is the first record for this type of snail in the Guianas. It is an estuary, brackish-water snail that clings to the roots of mangrove trees. Detailed comments of distribution and ecological adaptation are found for the other species under the discussion for Site N–6 (p. 27).

N–9: ALAKA ISLAND

The land around the mouth of Warapoco Creek is mangrove swamp. Thirty meters inward from the bank of the Waini, on the left side of Warapoco Creek, is an elevated spot with large granite outcrops. Black dirt and shells were scattered widely, churned up by the burrowings of armadillos and their hunters. Although the midden was overgrown principally with small trees, hanging vines and shrubs, a few trees measured up to 1 meter in diameter. In addition to shells, a few plain sherds were on the surface. A large granite boulder rising 5 meters out of the ground marks the northern limit of the site, which extends 30 meters to the south and 25 meters in an east-west direction (fig. 6). The 1.50 and 2.00 meter contour line above high-water level outlines a small rise. The midden deposit is smaller in area than the natural knoll, leaving a sterile strip 2 to 15 meters wide around the

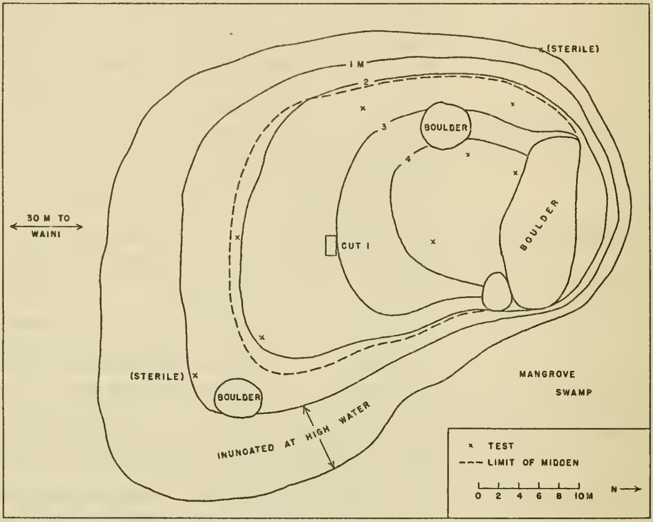

Figure 6.—Sketch map of N–9: Alaka Island, a shell midden site of the Alaka Phase.

border. The midden surface is irregular but rises generally to the north. The highest part, near the large rock, has an elevation of 4 meters above the surrounding swamp. The depth of the refuse accumulation is 2.50 meters at the location of the strata cut, but on top of the mound it decreases to 1.25 to 1.50 meters.

The area was tested extensively to determine the limits of the midden. A 2- by 1-meter strata cut, controlled in 25 cm. levels, was placed in a level place near the middle of the southern flank, in an area apparently free from animal burrows. The refuse deposits had the following characteristics:

Level .00–.25 m.__ Rich black loam and shell in a mixture that contained over 80 percent dirt. 16 potsherds were recovered from the level, and 8 potsherds were found on the surface.

Level .25–.50 m.__ Black dirt; shells rather sparse, mostly oyster; 12 sherds.

Level .50–.75 m.— At 65 cm. the dirt turns grayer. Oyster and clam shells are still present, but small, striped, snail shells (Neritina) are now more common. 10 potsherds scattered in the refuse. Fragments of badly broken adult human bones (patella, distal end of femur, fragment of a lower jaw with a few teeth in place) were scattered haphazardly throughout the refuse.

Level 0.75–1.00 m.— Soil now gray; Neritina snail and oyster shells common; 1 sherd, and 1 egg-shaped fired clay object.

Level 1.00–1.25 m.— No change in conditions up to 1.10 meters. At this point several large hunks of rotten granite were found and the soil changed to light tan and gray tan. Large oyster shells abundant. Evidence of an old armadillo burrow ran horizontally across this level at one end of the cut.

Level 1.25–1.50 m.— One oval-shaped piece of fired clay. Tan ash and sterile sand mixed with shell suggests a load of clean river sand had been dumped in one area.

Level 1.50–2.45 m.— At 1.50 meters the amount of shell increases noticeably, but the bone and stone fragments decrease. Crab claws and carapaces appear for first time below 2.00 meters. The soil is now a distinct tan color. These conditions continue until sterile, brown, sandy soil appears at 2.45 meters.

Whereas the other shell middens contained several species, this site produced only two: *Neritina zebra* Bruguière and *Crassostrea rhizophorae* Guilding. The latter is a common, intertidal, brackish-water oyster that usually grows attached to mangrove trees.

N-10: SAND CREEK

Three-quarters of the way downstream from Warapoco Mission School, Sand Creek enters the left bank of Warapoco Creek. This small tributary drains an area that at high tide is completely flooded and during low tide is swamp, except for a few scattered high spots surmounted by large granite boulders. Several of these outcrops, 4 to 5 meters high, are located 85 meters inland from the left bank of Warapoco Creek in a northeasterly direction. Behind these rocks the land rises 3 meters above the surrounding swamp and is sprinkled with small granite boulders. The soil is black and flecked with decomposed mussel shells. Oyster, clam, Neritina snail shells, fish bones, crab claws, and carapaces are intermixed. Testing over the area revealed a midden accumulation similar to that at N–9 except that the quantity of pulverized mussel shells was greater. The depth of the deposit ranges from 0.75 to 1.00 meter on a foundation of decomposing granite rock. The extent of the midden refuse is irregular, covering an area 40 by 25 meters above the 2-meter contour line. A collection of stone chips and artifacts was made from test pits. A few plain, sand-tempered sherds were collected. The shell sample from this site contained *Neritina zebra* Bruguière, *Crassostrea rhizophorae* Guilding, *Thais coronata* Lamarck, and *Melongena melongena* Linné.

N-11: HOSORORO CREEK

Driving from the Government headquarters at Mabaruma in a southwesterly direction, one comes to the Northwest District Government Agricultural Station on the top of Hosororo Hill. This hill, on the left bank of the Aruka River, is one of the highest in the area. Hosororo Creek flows down the hillside in a series of cascades to the flat bottom lands between the foot of the hill and the Aruka River (figs. 4, 22). This low area has been cleared of mangrove trees and drained for agricultural purposes by means of deep ditches. Where Hosororo Creek makes a sharp curve, it cuts into the left bank exposing a large quantity of shell midden refuse, rocks, chips, some sherds, and a few human skeletal fragments. By sporadic testing, as well as checking the soil discoloration, and the presence of shells in the cultivated areas and drainage ditches, the midden was found to cover an oval area extending inward from the left bank of Hosororo Creek roughly 35 meters wide and 47 meters long. The front edge of the midden is 100 meters back from the Aruka River and the opposite flank of the midden is 70 meters from the foot of Hosororo Hill (fig. 21). During low tide, Hosororo Creek has only 8 to 10 cm. of water, but at high tide depth increases to about 1 meter. The original height of the midden cannot be determined with accuracy today because the embouldering and the agricultural activity has leveled the area considerably and there has been a sinking of the heavy midden refuse into the soft muck beneath. Today the midden area is only 75 cm. higher than the adjacent land on the west end and 1 meter higher on the northeast end. In addition to making a surface collection from the cultivated area and the exposed, eroding bank, a small strata cut, 1 by 1 meter dug in 25-cm. levels, was placed in the approximate center of the midden. The deposit had the following features:

Level 0–25 cm.___ Disturbed from garden use and drainage ditch construction. Soil a black muck with reddish tinge below 15 cm. Stone chips and stone artifacts are fairly common; shells rare. 261 sherds were collected from the surface and 53 from the level.

Level 25–50 cm.___ Soil a dark, reddish brown. Stone chips abundant as well as lots of natural iron concretions washed down from the lateritic soil of Hosororo Hill. 214 potsherds came from this level: all badly eroded. At 30 cm. the soil with its natural rock inclusions and the midden refuse are cemented into a hard conglomerate in which the sherds, artifacts, etc. are embedded. This continues until 45 cm.; from 45 to 50 cm. the refuse is loose and uncemented.

Level 50–80 cm___ Black, oozy, wet muck with sherds, shells, and rock intermixed occurs from 55 to 80 cm. Most of the 61 sherds were in a zone from 55 to 65 cm., with a thick shell and ash layer below. Water reached at 80 cm.

A small sample of shells was collected from this site. This included *Mytilus falcatus* Orbigny, *Crassostrea rhizophorae* Guilding, *Neritina zebra* Bruguière, and *Phacoides pectinatus* Gmelin.

N–16: AKAWABI CREEK SHELL MIDDEN

Akawabi Creek flows into the Wauna River, which in turn is a tributary of the Koriabo River. A shell midden is located on the left bank of Akawabi Creek at the first sharp bend above the mouth (figs. 4, 22). The bank here rises to 3 meters above creek level and then levels off over a rather large area. At the front, along the creek, there is a knoll a meter higher in elevation than the bank (fig. 24), and the shell midden is located on the northeast part of this rise. Later, a Mabaruma Phase village reoccupied the site and the surrounding area (see pp. 73–75). More recently, the whole area has been under cultivation, and the part occupied by the site has been leveled and a school constructed. In 1953 there was a house on the high knoll, northwest of the edge of the shell midden.

Verrill (1918 a, pp. 13–15) visited Akawabi Creek and tested the shell deposit. He found it to be 3 to 6 feet in thickness and "in most places it was very barren of relics" (op. cit., p. 14). The three burials he encountered appear from their associated pottery (op. cit., figs. 10–12) to belong to the later Mabaruma Phase occupation (see p. 75).

At the time of our visit, the shell midden was 12 meters long by 5 meters wide (fig. 24). Test A, at the center of the site near the edge of the 4-meter contour line, showed the deposit to be 85 cm. deep. Soil was mixed with ash, shells, crab remnants, and rock chips throughout the entire deposit. Sherds were encountered only in the upper 10 cm. In contrast to the dark-gray midden refuse, the sterile soil was granular, gray-brown sand containing particles of decomposed granite.

Cut 1, a 2- by 1-meter excavation, was placed near the high knoll, 25 meters from the margin of the major shell midden concentration. Each 15-cm. level had the following materials and characteristics:

Level .00–.15 m__ Disturbed soil from recent leveling of the land for agricultural purposes; 124 sherds, quartz chips, fragments of stone tools; black loose loam with numerous lateritic concretions.

Level .15–.30 m__ Soil conditions the same; 33 sherds; 1 bone fragment.

Level .30–.45 m__ Black soil; no shell; 6 sherds; lateritic rocks abundant.

Level .45–.65 m__ Same conditions as previous level; no sherds.
Level .65–.90 m__ Reddish, rusty-brown with black granules, giving it a dark-grayish tint. Sterile.

The stone artifact types from this excavation are counted in the Appendix, table 1. The shell refuse included *Mytilus falcatus* Orbigny, *Phacoides pectinatus* Gmelin, *Crassostrea rhizophorae* Guilding and *Neritina zebra* Bruguière.

DATA FROM OTHER INVESTIGATIONS

The shell middens of the Northwest District and Pomeroon District attracted attention in British Guiana as early as 1845, and the literature referring to them ranges from serious discussions and speculations about these "man-made" structures to fanciful comments by travelers, public officials, missionaries, and teachers. The best summary of our knowledge of the subject has been made by Osgood (1946, pp. 23–37). He suggests that not all of the shell middens belong to the same cultural periods. Only those that belong to the Alaka Phase are considered in this section.

BARAMBINA (BARABINA) MIDDEN

The most carefully studied and described site in A. Hyatt Verrill's archeological explorations in British Guiana in 1917 is Barambina shell midden (fig. 4, adjacent to N–23), which extends over an area 150 by 300 feet on the extreme western slope of Barambina hill in the Northwest District (Verrill, 1918 a, pp. 13–14; Osgood, 1946, p. 34). Verrill tested the area extensively with pits and trenches. He found no fancy, modeled pottery but mentions many fragments of plain, poorly made pottery from the surface to the bottom of the deposit, which he determined to be as much as 5 feet in depth (loc. cit.). At three places in the digging, complete human skeletons were found in sitting or kneeling position, facing east, with a rough slab of earthenware over the occiput (Verrill, 1918 a, p. 13). Osgood revisited the site in 1944 and excavated a trench 2 meters wide and 12 meters long, controlled in 25-cm. levels (Osgood, 1946, p. 49). This check confirmed Verrill's observations with one exception; Osgood found sherds only in the first level (0–25 cm.), even though he carried the excavation to sterile soil at a depth of 1.50 cm. These sherds were not decorated. The details of Osgood's work and the tabulation of the artifacts, etc., should be consulted for comparative purposes in the original source (Osgood, 1946, pp. 49–50). Although these sherds and stone artifacts were destroyed in the Georgetown fire of 1945, the general characteristics of this midden conform to those we examined, and it can be identified as belonging to the Alaka Phase.

MISCELLANEOUS NORTHWEST DISTRICT SHELL MIDDENS

Certain other sites listed by Verrill (1918 a, pp. 13–17) and by Osgood (1946, pp. 61–63) can be classified as probably belonging to the Alaka Phase. However, the site and artifact descriptions are too sketchy to do more than expand the distribution of the Phase. Undoubtedly, other sites could be found by systematic survey.

A concentrated effort was made by us to relocate the sites of Hobo and Atopani (Attibani) on small tributaries of the left bank of the Aruka River near the Government Headquarters at Mabaruma (Osgood, 1946, Sites #6 and #7, p. 61). Unfortunately, even with the help of the present inhabitants of the region, the search was in vain, and yet all the local guides knew what we were talking about for they constantly made reference to Barambina shell mound.

Other Alaka Phase sites described by Verrill, and also classified from his descriptive data as shell middens by Osgood are Simri (Simiri), Hotohana, and Hotokwaia (Osgood, 1946, Appendix: Sites #64, #16, and #12, respectively).

Our guides and workman reported that middens of approximately the same size and shape, with the same type and amount of shell refuse, rocks, bones, crab remains, and crude tools as those in which we were working occurred in the following places (fig. 4): (1) at the head of Bamboo, or sometimes called Kamuata Creek, which is the next tributary of the Waini River below the Little Kaniaballi Creek; (2) at the head of the Waiwa River, a tributary of the Barama River; (3) about 15 km. above the mouth of the Waiwa River; (4) at the head of the Morebo River; (5) on the Querow (Quiaro) Creek, a tributary of the Waini River below Kwabanna Creek.

WARAMURI SHELL MIDDEN

Waramuri shell mound was discovered in 1844–45 when the hill was cleared for a mission among the Warrau Indians in the Pomeroon District. A 20-foot-wide trench was dug into the mound by a school teacher, D. Campbell, at the direction of W. H. Brett, a missionary interested in the ethnography of British Guiana. The discovery created such excitement that the Governor of the Colony came from Georgetown in 1866 to view the site. E. F. Im Thurn and W. H. Brett both wrote extensive descriptions and it is from their data that Osgood drew the information for his excellent summary (1946, p. 25).

The midden is approximately one-quarter of a mile from Moruka near the junction of the Moruka (Moruca) River with the Haimara-Cabura (Haimara-cabra) Creek (fig. 4). The midden has also been referred to by the name of this Creek. It is 120 feet in diameter and rises 20 to 25 feet above the surrounding sand dune, which is 80 to 90 feet above the surrounding swamp. A clear pool of fresh water fed by a spring offers a constant water supply even during the driest season. Excavations in the mound were carried to sterile sand through shell deposits consisting of striped Neritina snails, oysters, conchs, clams, crab remains, and mussels, with bones scattered throughout. Near the bottom of the refuse, ashes, charcoal, shell, and bones had cemented into a hard conglomerate. Human skeletal materials were scattered throughout the refuse, except for the upper 5 to 6 feet. Their haphazard arrangement is described by Brett (1868, p. 423):

> . . . human bones [were encountered] in irregular positions, and at unequal depths.
>
> These bones were not found stretched out, either in horizontal or perpendicular positions, but huddled and jumbled together in a manner impossible to describe. The skulls, some of which were of great thickness, were in fragments;—the long bones had all been cracked open and contained sand and dust. Each mass appeared to have been deposited without ceremony in the common heap. There they had become welded into singular clusters during the lapse of years. An elbow bone, for instance, was found so tightly fixed in the spinal vertebrae, that the brittle substance would break ere they could be separated. Bones from various parts of the body, and in some instances of more than one body, were dug up in masses, which also had fish-bones and shells adhering to and consolidated with them. Scarcely any were found in natural juxtaposition.

In the extensive diggings by various people no pottery has been discovered. However, there is a discussion about "baked clay" in the writings of Brett (1868, p. 422), Im Thurn (1883, p. 414), and Osgood (1946, footnote 34, pp. 25–27), which should be mentioned. Brett (loc. cit.) describes "some hard slabs of clayey substance which resembled the baking-pans or plates used by the wilder tribes at the present day and which the shells, &c., plentifully adhered to and encrusted." Im Thurn interpreted these as parts of burnt surfaces stretching in several parallel strata over the mound and resulting from Indian fires. Osgood's comments about the fact that careful excavation would have solved the point are well taken, but his further statement that lumps of clay and platter fragments have been excavated by him from British Guiana sites is not wholly relevant. From our brief excavations in various Alaka Phase shell middens in British Guiana, it is our firm conviction that Im Thurn's interpretation is the correct one. We found burnt areas in the shell midden refuse and attribute them either to a large fire for roasting purposes built immediately on the spot, or the dumpings of a cleaned-out hearth or firepit on shell refuse. Although at times the clay has been fire burnt, the fragments do not resemble griddle sherds known in any of the ceramic sites of British Guiana.

Unfortunately, descriptions of the stone artifacts leave much to be desired. Brett (1868, p. 438) illustrates and describes stone axes as "rude . . . even those with sharpened edges." The collection of artifacts from "Waramuri Mound" and "Haimaracabra Shell Mound" (two names for the same site) in the British Guiana Museum suggests both selectivity for better-made specimens and mixture with some of the later occupants of the site during the past few centuries. Types of polished tools not found in any other sites in the Northwest District are mixed with these collections along with cruder, percussion-made specimens.

CABACABURI SHELL MIDDEN

Aside from Waramuri, the best-described shell midden in the Pomeroon District is Cabacaburi, on a hillside at the mission of the same name about 40 miles above the mouth of the Pomeroon River (fig. 58). Although both Brett and Im Thurn visited the site, neither gives the dimensions. Brett (1868, p. 441) dug several pits and a large trench. He found skeletal remains haphazardly scattered through the lower levels of refuse, with some of the bones cracked open (op. cit., pp. 440–442). In the upper 3 feet, the skeletons were better preserved and the bones uncracked. Since European red bricks were uncovered at a depth of 3 feet, Brett interprets these upper bones as recent intrusions, perhaps dating from the Dutch colonization (op. cit. p. 442).

The nonceramic artifacts include broken axes, quartz chips, a small stone chisel, and lumps of red pigment. A pair of thin, silver plates, perforated and used as ear ornaments, was found associated with a skull at a depth of 4 feet and Brett (1868, p. 439) mentions finding a few small sherds at the same depth. Im Thurn (1884, p. 123), who excavated for 2 days in 1877, reports finding "a small and broken animal mask of clay, which might have been a boss, or other ornament, on some clay vessel." He also mentions that a friend found two fragments of a pottery griddle. There is no question that the pottery head, the griddle, and probably the silver earrings belong to a later culture than the Alaka Phase. In view of the intrusive bricks and skeletal remains, they may even date from the contact period.

AKAWINI SHELL MOUND

Two men sent by Brett to search for other shell middens in the Pomeroon District reported a site on the Pomeroon River near the Akawini Creek (fig. 58). No details are given other than that the midden is located near a swamp and is similar to Waramuri but broader and flatter (Brett, 1868, p. 433).

SIRIKI MOUND

Siriki mound is located near Siriki, a small stream on the eastern side of the Pomeroon River, and adjacent to a swamp (fig. 58). It is larger than Akawini, 250 feet long, 90 feet wide, and 20 to 25 feet high. Brett's (loc. cit.) five test pits produced the typical shell refuse and large amounts of human bone.

PIRACCA MIDDEN

Piracca midden, located by Im Thurn in 1877 when he was working at Cabacaburi, is presumably named for a small tributary (fig. 58). This midden, reported to be 38 feet high, was on an island in the middle of a swamp. Osgood (1946, p. 27) notes that although Im Thurn describes the contents as similar to shell middens, he mentions in later publications the finding of a European pipe stem at a depth of 3 feet and of potsherds at an unspecified depth.

ANALYSIS OF MATERIALS

Alaka Phase artifacts are made of bone, a shark's tooth, pottery or stone, with the latter by far the most common.

Objects of Bone and Teeth

Awls (fig. 7, *a–d*).—Striations produced by wear on two fishbones indicate that they were used as awls. The complete specimen comes from N–8, level 0.75–1.00 meter. It is small and slender, 4.6 cm. long, and dark brown in color. One end is sharpened to a point, and the surfaces are smooth and polished from usage (fig. 7, *c–d*).

The other specimen is broken, but striations from use on the tapered end suggest it to be of the same type as described above. This fragment came from N–6, level 0–24 cm. It measures 6 cm. long to the broken end, and originally was probably several centimeters longer (fig. 7, *a–b*).

Punch (fig. 7, *f–g*).—A dense, heavy, compact section of bone probably split from one of the long bones of a tapir, but too fragmentary for positive identification, has been abraded and one end polished to a blunt point. The total length is 10.0 cm., with the polished, blunt end 2.8 cm. long; thickness varies from 1.0–1.2 cm. The punch came from N–9, level 0.75–1.00 meter.

Drilled shark's tooth (fig. 7, *e*).—A small fragmentary shark's tooth, drilled biconically for suspension, came from N–8, level 0–25 cm. The tooth fragment measures 1.5 by 1.3 cm. The perforation is 3 mm. in diameter.

Stone Artifact Types

From the large number of stones excavated, 496 were identified as artifacts and 187 as flakes. While the work was underway and even when some of the specimens were being washed in the laboratory, many appeared to be only miscellaneous pieces of broken rock. How-

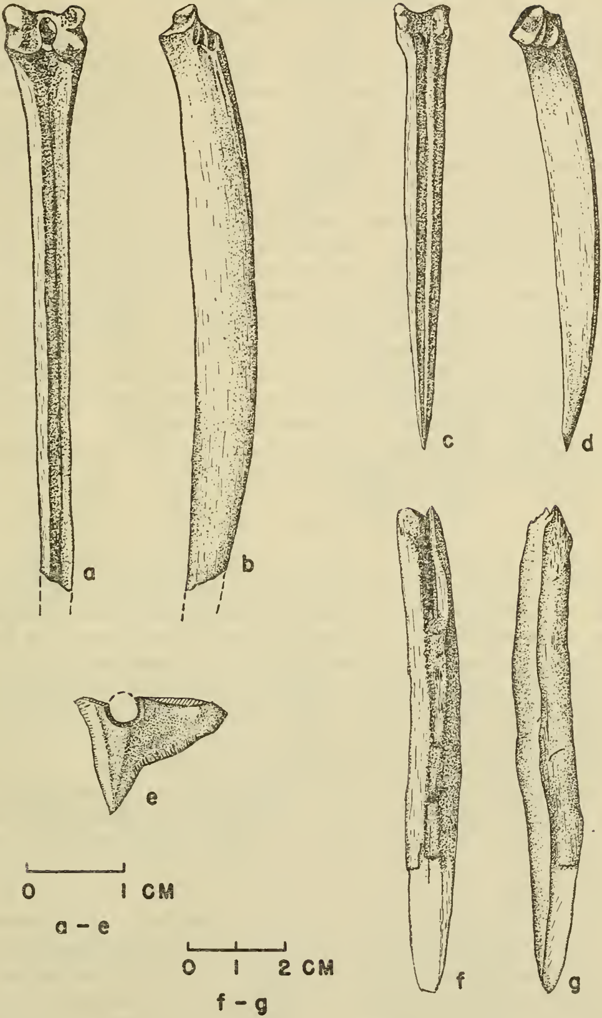

FIGURE 7.—Objects of bone and teeth from Alaka Phase sites. *a–d*, Fishbone awls. *e*, Drilled shark's tooth. *f–g*, Bone punch.

ever, as more of the specimens were handled it became clear that specific tool types were represented. A discussion of the problem with geologists indicated that the type of fracture involved could not have been produced by any natural agency, but must have been the result of intentionally struck blows. In some cases, as with the objects classed as choppers or chopper-hammerstones, the fracture appears to be the result of use. In other tools, such as picks, there seems to have been some attempt at shaping. Thus, even though some of the types appear to be only roughly shaped, the fact that they occur consistently from site to site and could not have been accidentally formed by nature indicates they represent characteristic tool types of the Alaka Phase. The type descriptions of the stone artifacts are grouped according to method of manufacture. The first two categories include tools shaped solely by percussion without any further modification, using either the core or the percussion struck flakes; the third category is percussion-struck tools with some modification by abrasion, especially the bit of celts; the fourth category contains well polished tools shaped by pecking and grinding.

The artifact types, their rock material, and their exact provenience are shown in detail in the Appendix, table 1.

PERCUSSION-MADE CORE TOOLS

Choppers (fig. 8; pl. 10).—Large waterworn cobblestones usually of andesite, range from 6–15 cm. long, 6–10 cm. wide, and 3–6 cm. thick. A few large flakes have been struck off the sides and working edge, either deliberately or from hard use. Sometimes a core fragment has been used as a chopper and the edge shows battering (fig. 8, *d*). The characteristic feature of these objects is a chopping edge, which in cross section tapers from a thickness of 2–3 cm. to a blunt edge 2 to 5 mm. wide. These tools show use fracture in the form of long fracture planes at right angles to the cutting edge.

Chopper-hammerstones.—Some of the choppers have one edge that is so blunt and rounded that it could not have been used in any way other than to strike a blow or for pounding. The size and irregular shape are within the range of the previously described choppers.

Hammerstones (fig. 9).—Waterworn cobblestones, usually of andesite, showing a battered edge, have been classified as hammerstones. Size varies considerably; length is 5–10 cm., width from 4–8 cm. The surfaces are usually badly eroded, especially the battered edge.

Hafted hammerstones (fig. 10).—Three hammerstones from N–11 have been pecked at the center on opposite sides to form a depression for hafting. They measure roughly 11 cm. long by 5 cm. wide, with the pecked area 3–4 cm. wide and the depression 5–8 mm. deep. The

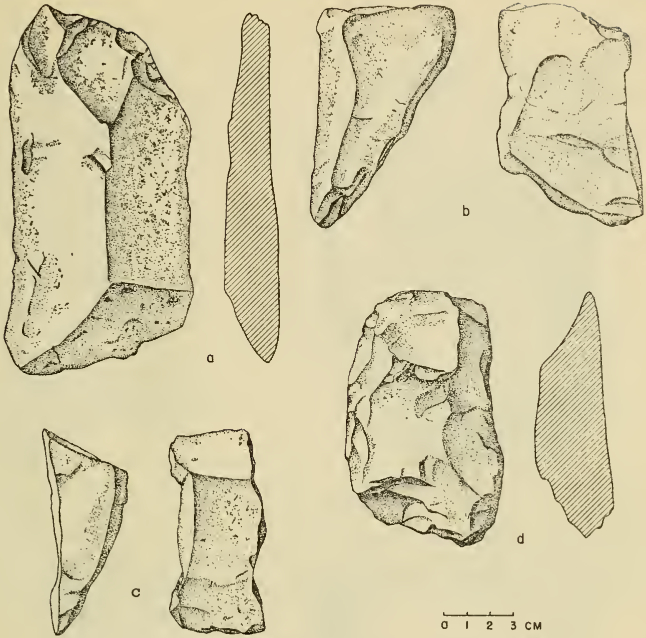

FIGURE 8.—Choppers: percussion-made core tools of the Alaka Phase.

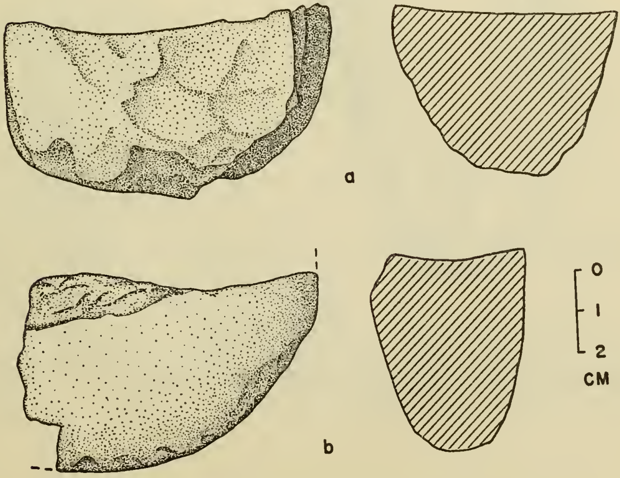

FIGURE 9.—Hammerstones: percussion-made core tools of the Alaka Phase.

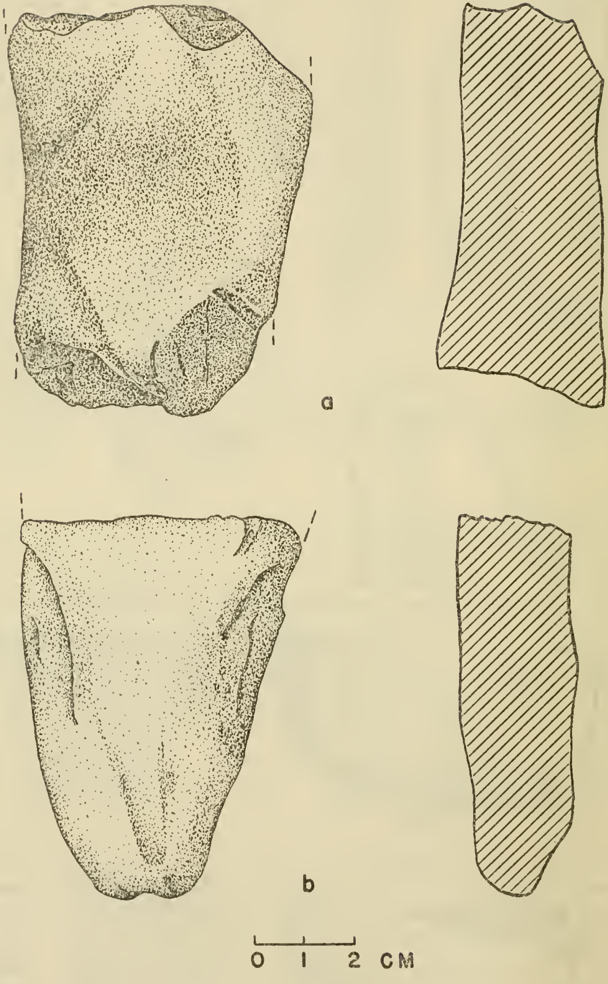

Figure 10.—Hafted hammerstones: percussion-made core tools of the Alaka Phase.

ends are highly battered and blunt. All of these specimens are made from fine-grained, micaceous schist, roughly shaped by percussion.

Hoes.—The surface of N–11 produced three specimens that cannot be classified as celts, choppers, or hammerstones. The high polish or uneven surfaces suggests that they may have been used as a digging tool, such as a hoe. All are of fine-grained, micaceous schist, roughly shaped by percussion into a long, rectangular form. The only complete specimen measures 11.0 cm. long, 4.5 cm. wide, and 1.2 cm. thick, but the fragments suggest objects of similar size and proportion. The used, polished end is beveled with a blunt edge.

Large core picks (fig. 11, *b–e*). Large core tools made from andesite cobbles by striking off large flakes are classified, for want of a better name, as "picks." The characteristic feature is a long, curved, blunt point usually formed by three or four intersecting concoidal fracture planes. The point has been well used and often worn or broken off. The "butt" end is bulbous and irregular. Size and shape vary, the bulbous end measuring 3–6 cm. across and ranging in length from 5–10 cm. with the majority around 5–7 cm. long. The tip ends usually form a blunt point and the butt ends would fit into the palm of the hand quite well. These tools might have been used to pry off shells from their attachments or perhaps even to open larger shells. That they were used for picking or prying something is demonstrated by the fact that the tips are worn and often broken off with a 90-degree fracture that resulted from pressure applied when the point was used as a lever.

PERCUSSION-MADE FLAKE TOOLS

Blades (fig. 12; pl. 11).—If they were viewed individually, one might conclude that these specimens were merely flakes struck from a core by percussion blows. However, when dozens of them are placed side by side, it is immediately clear that the flakes were struck off in a regular manner and given additional percussion shaping to produce what has been called a "flake blade." Although the blade edge is not retouched or regular, it is sufficiently sharp to be used for cutting. As a result of the fracture and the bulb of percussion, the cross section tends to be triangular. The most common rock material is andesite, with some quartz and fine-grained, micaceous schist. Thickness ranges from 0.8–2.0 cm., width from 2.5–5.0 cm., and length from 3.5–6.0 cm.

Flake picks (figs. 11, *a*, 13–15; pl. 12).—This group of artifacts can be divided into two categories, large and small, but both are manufactured in the same manner and are merely size variations of a single tool type. A flake 3–10 cm. long was struck from a core by a per-

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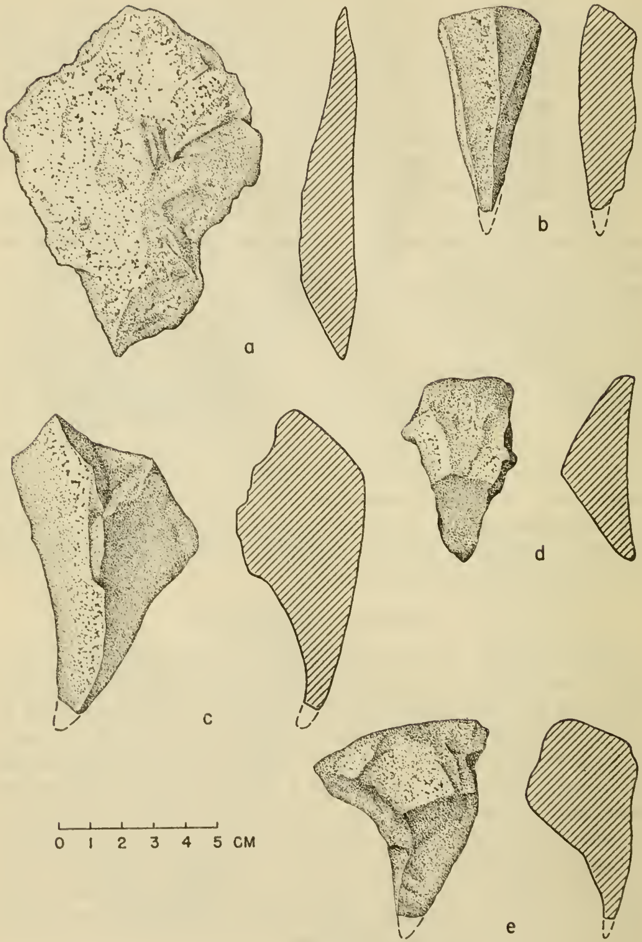

FIGURE 11.—Picks of the Alaka Phase. *a*, Percussion-made flake tool. *b–e*, Percussion made core tools.

cussion blow. The width of the flakes ranges from 2–5 cm. There is little reshaping of the flake except at one end, where a few extra percussion blows are struck to form a point ranging from blunt to long and sharp. At first glance some of these artifacts might be classified as drills, but a careful examination of the wear and the type of stone material suggests all were used to pry open shells or pick out the meat. Originally, those falling into the smaller category were called projectile points, but their irregularity, complete absence of reshaping except at the tip, and their lack of consistent shape or symmetry favor the classification as picks.

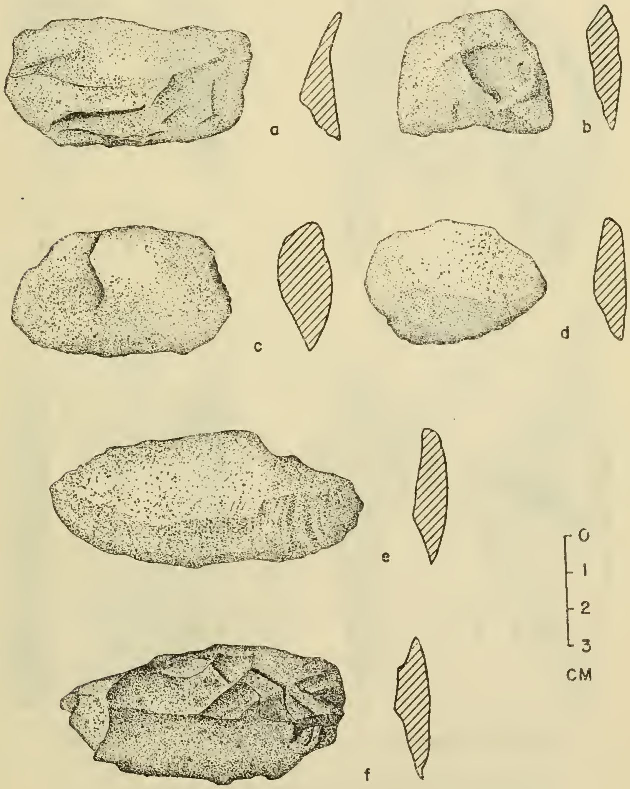

FIGURE 12.—Blades: percussion-made flake tools of the Alaka Phase.

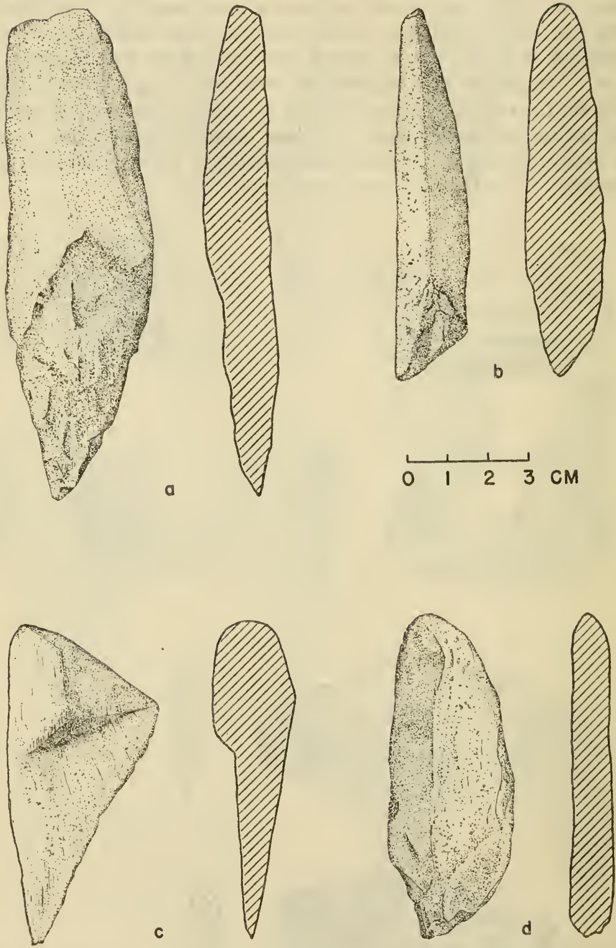

FIGURE 13.—Large, percussion-made flake picks of the Alaka Phase.

Percussion flake picks of the large variety range from 5–10 cm. in length, 2.5–5.0 cm. in width, and 5–15 mm. in thickness (figs. 13–14; pl. 12, *a–h*); the small variety ranges from 3–5 cm. in length, 2–3 cm. in width, and 5–8 mm. in thickness (fig. 15; pl. 12, *i–p*). Although andesite is the most common rock material, fine-grained micaceous schist, quartz, limonite concretions, and gneiss are also used.

Scrapers (fig. 16).—A series of quartz tools from several sites are classified as scrapers. The quartz of this area is poor quality and difficult to work by percussion chipping. However, by taking advantage of the natural cleavage of the rock, it was possible to produce

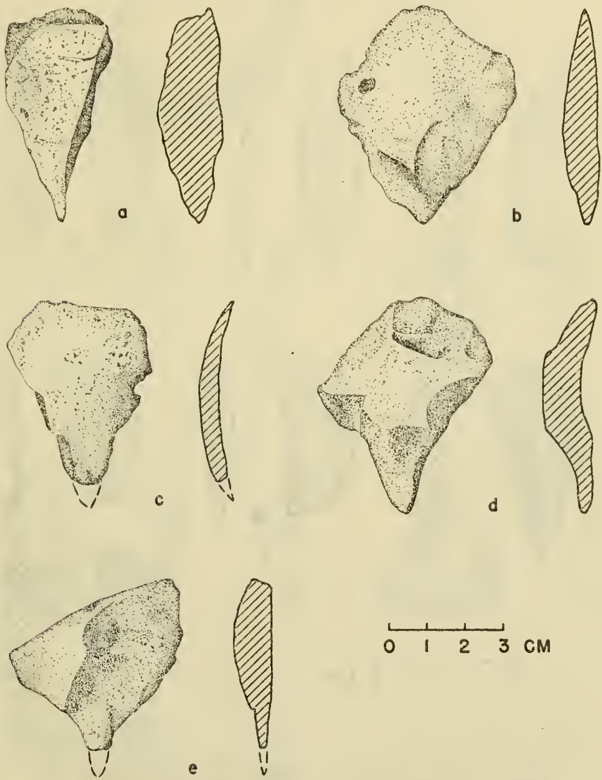

Figure 14.—Large, percussion-made flake picks of the Alaka Phase.

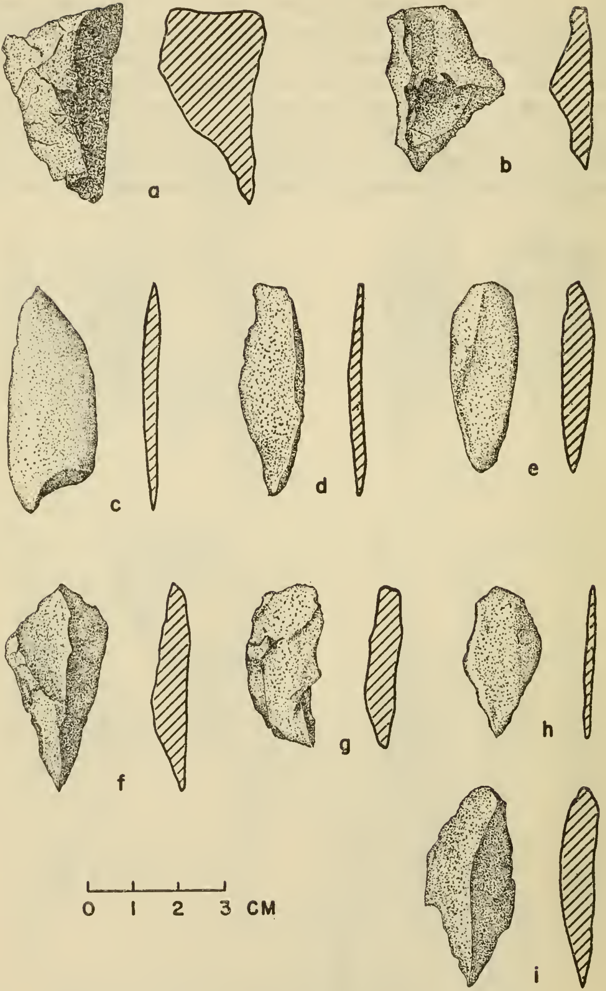

FIGURE 15.—Small, percussion-made flake picks of the Alaka Phase.

a large enough flake to have a long, sharp edge. Although somewhat irregular, this edge could be used for scraping. The tools are crude, but their form is distinct from the natural quartz spalls found in the area. The length is 2.5–5.0 cm., width 1.5–3.0 cm., thickness 8–10 mm.

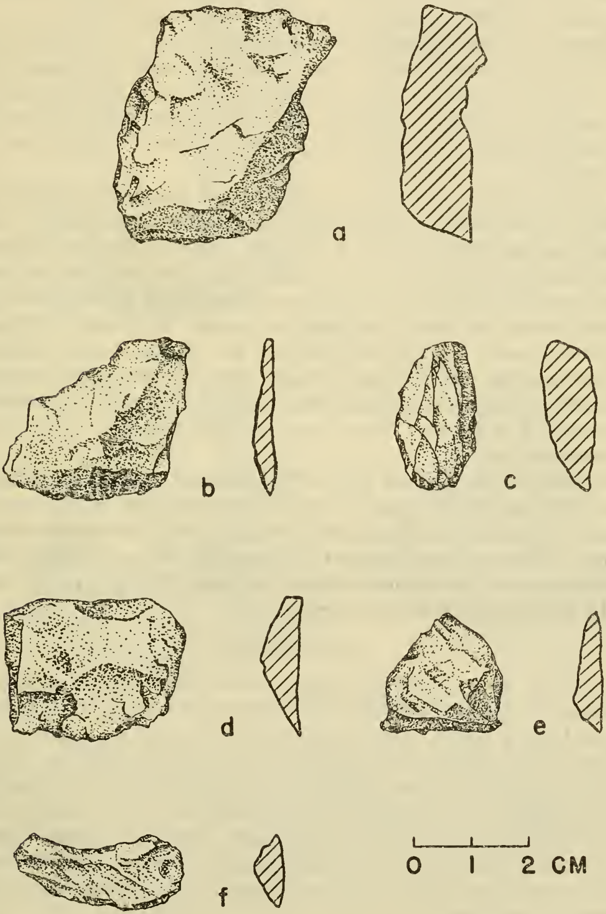

FIGURE 16.—Percussion-made flake scrapers of the Alaka Phase.

PERCUSSION-MADE TOOLS WITH SOME ABRASION

Celts (fig. 18, *a*).—Two artifacts of fine-grained micaceous schist, shaped by percussion and abraded to produce a tapering at one end, come from N–11. Both are flat, with relatively even surfaces and one end broken off. The remaining end shows abrasion on one face. The blade is rounded in cross section. The length of the two examples is 8 and 10 cm., width 3.0 and 6.5 cm., thickness 1.2 and 2.2 cm.

Mortar.—A rim fragment from a shallow bowl or mortar of fine-grained andesite was found in the lowest level at N–9. The surfaces are even. From a flat-topped rim, 1.2 cm. thick, the walls slope slightly inward and increase in thickness. Existing depth is 3.5 cm., and the fragment appears to be broken off close to the bottom. Mouth diameter is 16 cm.

Pestles (fig. 17).—Except for the lower end, which is well smoothed from use, the pestles are irregularly shaped by percussion. A complete example from N–9 is a natural, irregularly shaped almost hexagonal, waterworn, andesite cobblestone. In addition to being worn smooth on both ends, it shows some abrasion on the sides, suggesting it may also have been used as a mano. The length is 12 cm., and the diameter 7 cm. at the lower end and 4.5 cm. at the upper end. Other examples are roughly conical, with the broad end showing abrasion. This surface varies from elongated, 5.0 by 1.3 cm., to nearly circular, 6.0 by 7.5 cm. Stone materials include gneiss, granite, and micaceous schist.

Rubbing stones (fig. 18, *e–g*).—Fragments of limonite or hematite concretions and other types of rock have one or more well-worn surfaces. All of these have been put into the general category of rubbing stones. They are very irregular in shape, the only uniformity being the existence of one or more abraded surfaces. The size ranges from 5.5 by 5.2 by 0.8 cm. to 3.8 by 1.8 by 0.7 cm.

POLISHED TOOLS

Celts (fig. 18, *a*, *b*).—Well polished, rectanguloid celts or ungrooved axes were found only at N–11. Of the three specimens, two are quartzite, and one is felsite. One is complete and two are fragments of the bit end. The surfaces are slightly rounded, the bit slightly to strongly convex and the sides nearly straight and parallel. The complete celt has a rounded butt. Maximum thickness is toward the butt, the surfaces tapering gradually toward the blade. Between 1 and 2 cm. from the bit, they curve strongly meeting at a sharp edge. The complete specimen is 7 cm. long, 5.5 cm. in maximum width, 4 cm. wide at the blade and 3 cm. thick.

Chisels or gouges (fig. 18, *c–d*).—Small polished tools, probably used as chisels or gouges, were made of fine-grained micaceous schist or

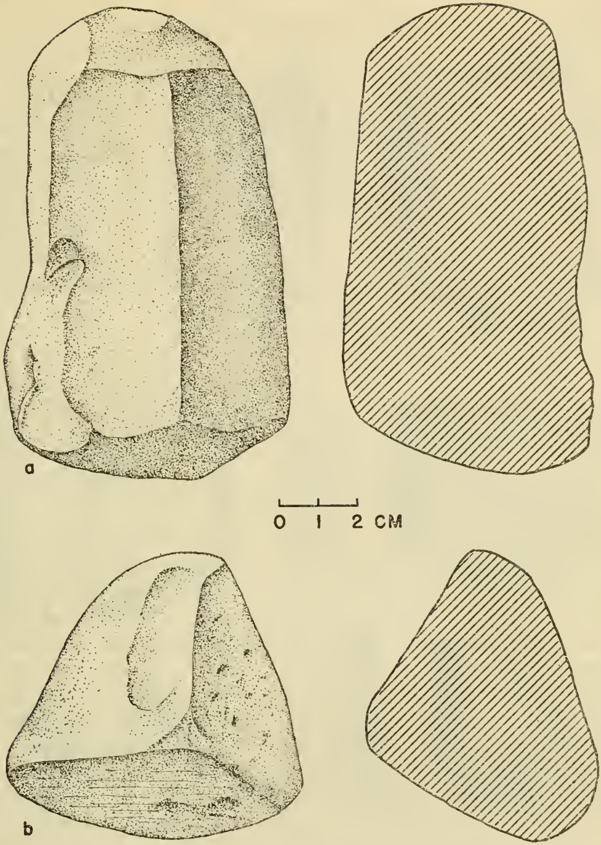

FIGURE 17.—Percussion-made pestles of the Alaka Phase showing surfaces worn by grinding.

shale. Two fragments were found at N–8, both of which probably had a rectanguloid shape when complete. The larger, made of polished shale, measures 5.3 cm. long by 3.6 cm. wide. One edge is highly polished to a sharp cutting edge and the opposite end flattened and smoothed (fig. 18, *d*). It is split lengthwise so the existing thickness is only 8 mm., but the original thickness must have been at least 1.5 cm. The other artifact is smaller and more fragmentary, measuring 3.2 cm. long, 2.8 cm. wide, and 5 mm. thick.

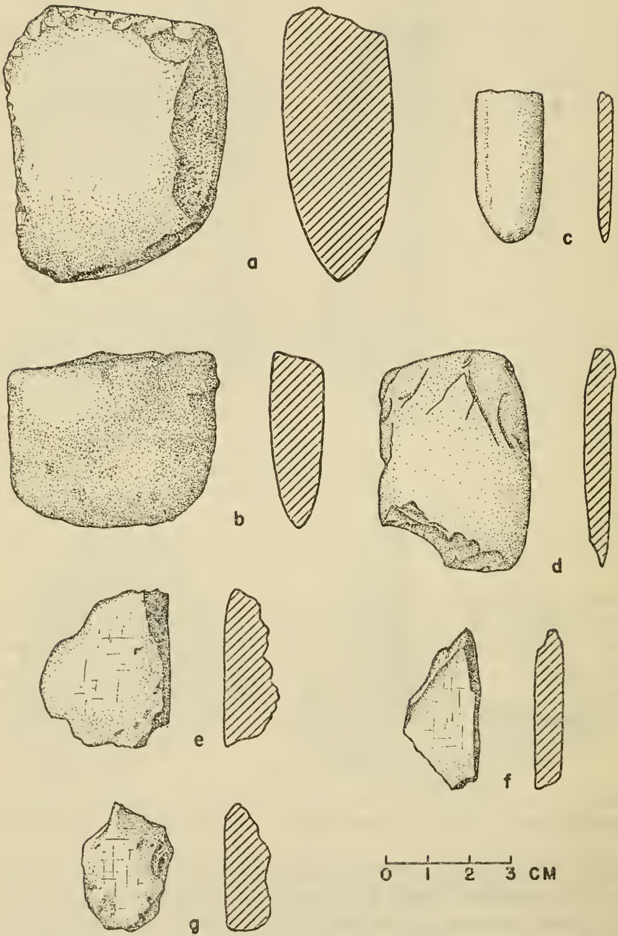

Figure 18.—Alaka Phase stone tools showing polishing. *a–b*, Celts. *c–d*, Chisels or gouges. *e–g*, Rubbing stones.

A long, narrow chisel of fine schist came from N–9. It is slightly curved from side to side in cross section, with parallel sides tapering to a blade 1.0 cm. wide. The maximum width of the tool is 1.7 cm., existing length 3.6 cm., and thickness 5 mm. (fig. 18, *c*).

Mano (fig. 19, *a*).—Although hand-size grinding stones are not common in the Alaka Phase, one mano of granite was found at N–11. The flat surfaces and slightly convex edges all have been well smoothed by abrasion, the surfaces showing the most wear. The form is rectanguloid, 7.5 cm. long, 5.0 cm. wide, and 3.5 cm. thick.

Metate (fig. 19, *b*).—A metate fragment upon which the above-described mano may have been used also came from N–11. It is a thin piece of granite with biotite inclusions. The fragment is 10.5 cm. long, 7.0 cm. wide, and 2.8 cm. thick. The upper surface has been worn slightly concave by backward and forward grinding action. The depression measures 2 mm. deep.

Miscellaneous polished tools.—In the collections of the British Guiana Museum a series of artifacts is cataloged as "Waramuri Mound, on the Moruka River" and "Haimaracabra Shell Mound." Both these names refer to the same site, but since some of the objects were given one designation and some the other, they probably represent two separate collections made at different times. The specimens on the whole fit the general pattern of Alaka Phase stone artifacts, with a majority of percussion-made tools; however intermixed among typical materials is a series of highly polished celts, petalloid celts, and notched, rectangular axes all of which seem incongruous to the culture complex. Since the Waramuri Mound has been occupied by many different aboriginal groups up to the present day and was the site of an early European mission that attracted Indians from the surrounding area, this material could be of more recent origin. Alternatively, it may reflect influence from an unidentified group with a polished stone tradition. Only careful future excavation and study of the whole shell midden complex of the Guianas will resolve the problem.

Pottery Type Descriptions

All the pottery fragments from Alaka Phase sites were found either on the surface or in the upper levels of the refuse middens. Although there are few sherds, distinctive features of paste, temper, etc., set them apart from pottery types of other archeological Phases in the Northwest District and therefore they have been classified and described as separate pottery types. The predominant pottery type of the middens clearly associated with typical Alaka Phase stone artifacts is a mica and sand-tempered plain ware (Sand Creek Plain). At Sites N–9 and N–11, shell-tempered sherds (Wanaina Plain) occur; pottery with this temper was not found in any other site in the whole

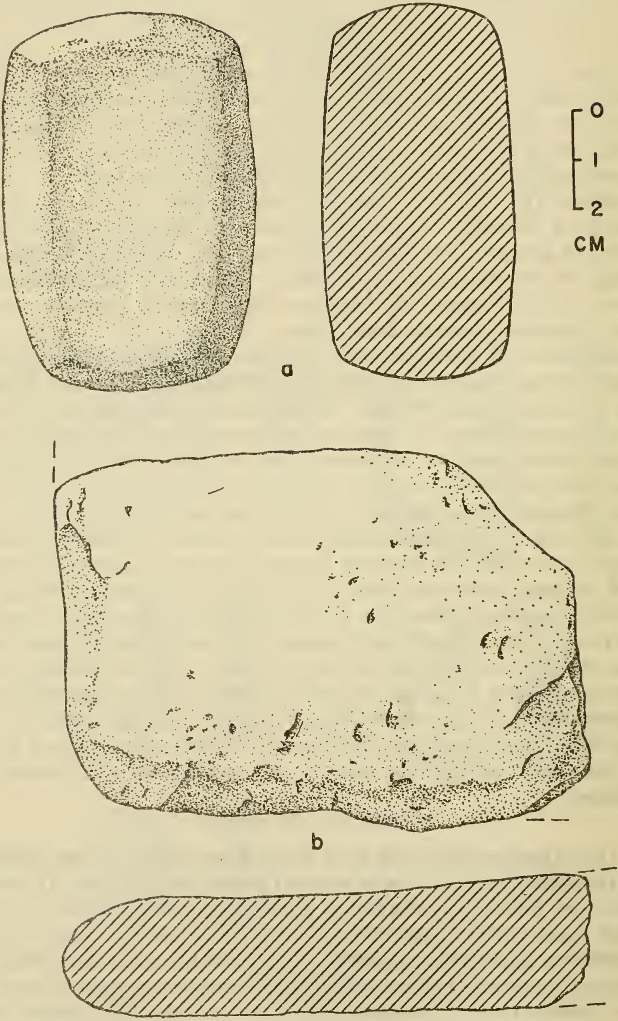

Figure 19.—Mano and metate fragment from N-11, a site of the Alaka Phase.

of British Guiana. It is possible that the modern cultivation and drainage ditches have disturbed the deposits at N–11; however, since the shell-tempered sherds occur at N–9 also, it does not seem likely that their association with the Alaka Phase stone complex at N–11 is accidental.

A tabulation of the occurrence of pottery at the various levels and from the surface of Alaka Phase sites is given for reference in table A (p. 58).

Sand Creek Plain

Paste:

Method of manufacture: Coiling.

Temper: Sand with minute mica particles; amount of quartz sand varies greatly from almost none to about 40 percent of the volume of the paste; size of particles ranges from minute to 3 mm. The only constant factor is the presence of fine mica.

Texture: Fine-grained; temper well mixed in the paste; no air pockets.

Color: Tan to gray to gray brown; about half have a gray core, the remainder an orange core.

Firing: Oxidized, poorly controlled; some fire clouding.

Surface:

Color: Both surfaces tan, brown, or, rarely, dark gray.

Treatment: Even, smooth, with small irregularities readily visible; occasional temper particles protrude.

Hardness: 3–3.5.

Form:

Rim: Direct with rounded, tapered or flattened lip; rarely, slightly thickened with rounded lip. Rim tends to be uneven and wavy.

Body wall thickness: Range 4–9 mm.; majority 6–7 mm.

Base: Flat, diameter 6 cm., or slightly rounded.

Major vessel forms reconstructed from sherds:

1. Open bowls with outslanting sides, direct rim and rounded to flattened lip. Rim diameter 22–34 cm. (fig. 20–1, *top*).
2. Deep bowls with vertical sides, direct or slightly thickened rim and rounded lip. Rim diameter 10–28 cm. (fig. 20–2, *top*).
3. Jars with walls incurving to constricted mouth. Body wall thickness tapers down to direct rim with rounded or flattened lip. Mouth diameter 12–22 cm. (fig. 20–3, *top*).

Temporal Differences Within the Type: None.

Chronological Position of the Type: Since Sand Creek Plain is found at the largest number of sites (N–8, N–9, and N–11), it might be considered most characteristic pottery type of the Alaka Phase. It is never common, however (see table A for sherd counts).

Wanaina Plain

Paste:

Method of manufacture: Coiling; breaks along the coil line are very distinct, with the coil width averaging 1 cm. wide.

Temper: Crushed shell (pl. 13). Except in a few sherds the temper is completely leached out, leaving platy, irregularly shaped holes. The white flecky shell is well distributed throughout the paste, constituting about

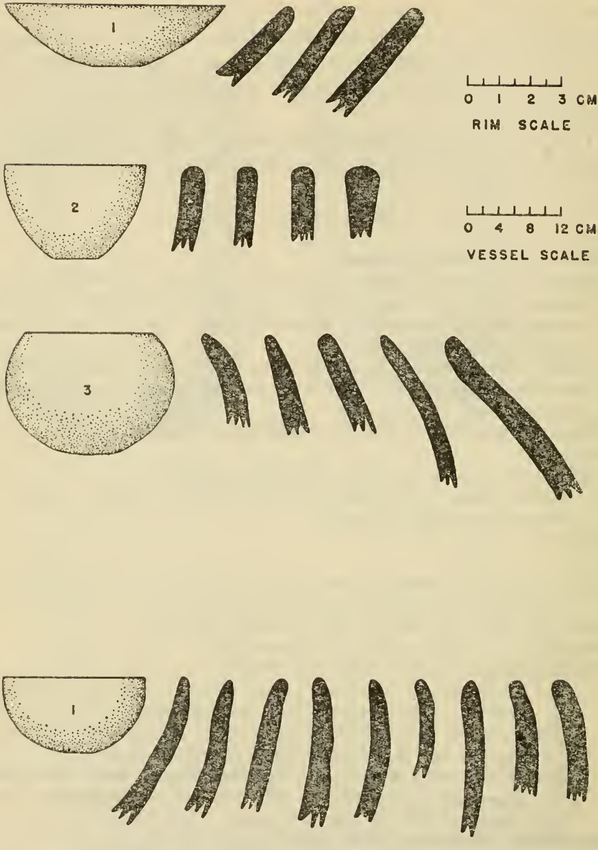

Figure 20.—Rim profiles and reconstructed vessel shapes of Alaka Phase pottery types. Top: Sand Creek Plain. Bottom: Wanaina Plain.

15–25 percent of the mixture. The species of shell cannot be identified because of leaching and the fineness of the particles except that it is not mussel. Some particles are as large as 1 cm.

Texture: Platy; leached and eroded sherds full of holes; not friable, although soft.

Color: Medium- to dark-gray core with a thin area of lighter gray or gray tan adjacent to the surfaces.

Firing: Incomplete oxidizing, poorly controlled.

Surface:

Color: Uneroded sherds are usually light tan to gray tan on exterior and interior.

Treatment: Smoothed with hand, but remaining very uneven and irregular causing the body wall thickness to vary considerably on a single sherd.

Hardness: 2–2.5, easily scratched.

FORM:

Rim: Direct, with tapering, rounded or slightly flattened lip. General crudity of manufacture is reflected in the variation of the rim profile on a single sherd.

Body wall thickness: 4–14 mm.; majority 5–7 mm.

Base: Rounded or slightly flattened, but not sufficiently sharply demarcated from the side wall for reliable measurement of diameter. Thickness slightly greater than adjacent side walls.

Vessel shapes reconstructed from sherds: All rim sherds represent deep bowls, with a variation in rim angle from slightly outsloping to slightly incurving; the majority are incurved. Mouth diameter 14–30 cm.; majority 14–22 cm. (fig. 20–1, *bottom*).

TEMPORAL DIFFERENCES WITHIN THE TYPE: None evident in the small time span represented.

CHRONOLOGICAL POSITION OF THE TYPE: The most abundant pottery type at the end of the Alaka Phase (table A).

UNCLASSIFIED CARIAPÉ-TEMPERED PLAIN

Only one sherd from Alaka Phase sites can be definitely recognized as cariapé tempered. It has a dark-gray core in which white flecks of finely ground cariapé stand out clearly. Surface color of the exterior and interior is light tan to cream tan. Parts of the exterior have a reddish color as if rubbed with a piece of red ocher. Body wall thickness is 5 mm.

UNCLASSIFIED CLAY-TEMPERED PLAIN

PASTE:

Method of manufacture: Coiling.

Temper: Particles of bright-orange, light-orange, or light-tan clay, typically under 1 mm., but occasionally 2 mm. in diameter, stand out sharply in the gray paste. Microscopic examination of the sherds suggests these might be natural inclusions and impurities in the raw material rather than intentional tempering.

Texture: Clayey; no sand, mica, or other gritty components. Tendency to layering; occasional irregularly shaped air pockets. Breaks with a very irregular, jagged edge.

Color: Typically a medium- to dark-gray core, fired orange or tan only on the surfaces or to a depth of 3 mm. from the exterior. Color of the temper makes strong contrast with the paste.

Firing: Oxidizing, incomplete and unevenly controlled.

SURFACE:

Color: Exterior and interior are typically the same, ranging from gray to light tan to pinkish orange. A few sherds have a gray interior and tan or orange exterior.

Treatment: Superficially smoothed, leaving unevenness and depressions. Some of the excessive unevenness may be the result of differential erosion of soft surfaces.

Hardness: 2.5–3.

FORM:

Rim: Direct with slightly tapered, rounded lip.

Body wall thickness: Majority 7 mm.

Base: Rounded and thickened to 1.1 cm. at center.

Vessel shape reconstructed from sherds: The only rim sherd is from a vertical-sided bowl with a mouth diameter of about 26 cm.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None evident in the small sample.

CHRONOLOGICAL POSITION OF THE TYPE: Contemporary with Wanaina Plain (see table A).

UNCLASSIFIED DECORATED

A body sherd with crude, incised decoration from N–9 has a fine, clayey textured paste that is unlike that of any of the plain pottery types from Alaka Phase sites. The surfaces have suffered erosion, but appear never to have been well smoothed or even. The interior surface and cross section are medium gray, the exterior light orange. Two pairs of parallel, slightly curved lines are lightly incised on the exterior. The lines in each pair are 1 mm. wide and 2–3 mm. apart, with the pairs 1.2 cm. apart. Body wall thickness is 1.0 cm., body diameter about 18 cm.

TRADE SHERDS FROM THE MABARUMA PHASE

Sherds of Mabaruma Phase pottery types, both plain and decorated, were recovered from the surface and excavations at N–11 and N–16 (see sherd counts in table A). These sherds are unquestionably of Mabaruma Phase origin and the pottery type descriptions can be found under that Phase (pp. 86–116).

TABLE A.—*Frequency of pottery types at Alaka Phase sites*

Pottery type	N–8		N–9					N–10	N–11				N–16			Total of each pottery type
	N–8 Surface	Level 0–25 cm.	N–9 Surface	Level 0–25 cm.	Level 25–50 cm.	Level 50–75 cm.	Level 75–100 cm.	N–10 Surface	N–11 Surface	Level 0–25 cm.	Level 25–50 cm.	Level 50–75 cm.	N–16 Level 0–15 cm.	Level 15–30 cm.	Level 30–45 cm.	
Alaka Phase types:																
Sand Creek Plain	7	1	7	10	8	8	----	7	----	----	----	----	----	----	----	48
Unclassified Clay-tempered Plain	----	----	1	2	----	----	----	----	13	----	----	----	----	----	----	16
Unclassified Cariapé-tempered Plain	----	----	----	----	----	----	----	----	2	----	----	----	----	----	----	2
Wanaina Plain	----	----	----	2	4	2	1	----	145	26	210	61	15	8	2	476
Unclassified Decorated	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	1
Mabaruma Phase types:																
Hosororo Plain	----	----	----	----	----	----	----	----	15	----	----	----	21	6	1	43
Hotokawai Plain	----	----	----	----	----	----	----	----	21	----	----	----	4	----	----	25
Koberimo Plain	----	----	----	----	----	----	----	----	7	----	----	----	34	10	1	52
Mabaruma Plain	----	----	----	----	----	----	----	----	56	----	----	----	35	7	2	100
Aruka Incised	----	----	----	----	----	----	----	----	----	9	3	----	8	2	----	22
Akawabi Incised and Modeled	----	----	----	----	----	----	----	----	----	4	----	----	3	----	----	7
Kaitima Incised and Punctate	----	----	----	----	----	----	----	----	----	13	1	----	2	----	----	16
Mabaruma Incised	----	----	----	----	----	----	----	----	----	1	----	----	1	----	----	2
Total per level	7	1	8	15	12	10	1	7	259	53	214	61	123	33	6	810

POTTERY ARTIFACTS

An egg-shaped lump of sandy-textured, yellow to bright-orange pottery was found at N–9, level 1.00–1.25 meters. The surface is relatively smooth, although with some irregularities. Length is 4.4 cm., diameter 3.5 at the center, tapering slightly toward the ends. A fragment of what appears to be a similar object comes from level 0–25 cm. of the same site. If these are artifacts, their use is problematical.

THE SITE SEQUENCE AND ITS IMPLICATIONS

The Alaka Phase is represented by six sites, five of which were tested stratigraphically. Although the deepest deposit reached 2.60 meters, the number of stone implements per 25-cm. level was too small for a percentage analysis of artifact type frequency. There are, however, two kinds of evidence that make it possible to distinguish subperiods within the Phase. These are the presence or absence of pottery and the presence or absence of stone implements showing abrasion in their manufacture or use. The data reveal several interesting tendencies in the development of Alaka Phase culture and these are outlined as a basis for future investigation. It should be emphasized, however, that the evidence is not sufficiently strong or clear-cut for the interpretations suggested here to be considered final.

Five of the Alaka Phase sites produced pottery (tables A, B). No sherds were found at N–6. N–8 produced pottery only in the upper 16 cm. of a 2.60 meter deposit, indicating that pottery was introduced into an earlier non-pottery-making culture. The sherds from N–8 and N–10 are all Sand Creek Plain. Although not of outstanding quality, this sand-tempered pottery is by no means experimental and is more reasonably explained as derived by trade than as the beginning of pottery making in the Alaka Phase. The very small quantity of sherds from these early sites suggests a scarcity of pottery vessels that is in keeping with this interpretation. Further support for the trade theory comes from the pattern of pottery-type frequency at the remaining Alaka Phase sites (table A).

The stratigraphic excavation at N–9 produced a majority of sherds of Sand Creek Plain, but in addition each level contained a few sherds of Wanaina Plain, a more crudely made, shell-tempered ware. Unlike Sand Creek Plain, Wanaina Plain has certain characteristics that suggest it may be of Alaka Phase origin. The readiness with which sherds break along coil junctions indicates handling of the clay when too dry to form a good bond, and improper kneading together of the coils. When these features are added to the irregular thickness of the vessel walls and superficial hand swiping to smooth the surfaces, the total impression is one of incomplete mastery of the pottery-making technique. Another argument for Alaka Phase manufacture rather than derivation by trade of Wanaina Plain is the fact that it is the only ware in the Northwest District employing crushed shell as temper. This tempering material would seem a natural choice for a group living on middens largely composed of shells. In keeping with the conclusion that Wanaina Plain is of Alaka Phase origin is its great increase in frequency at N–11 after what seems to be a "slow, experimental" beginning at N–9 and N–16.

The presence of both decorated and plain sherds of types belonging to the Mabaruma Phase in association with Wanaina Plain at the late Alaka Phase sites of N–11 and N–16 provides further indication that Wanaina Plain is an Alaka Phase ware. The Mabaruma Phase pottery was unquestionably acquired through some kind of contact. However, since shell tempering is not found in the ceramics of the Mabaruma Phase, Wanaina Plain must either be of Alaka Phase origin or trade from another source. It is difficult to conceive of a primitive shellfish-gathering group carrying out extensive commerce simultaneously with two separate pottery-making groups. When we consider that Wanaina Plain is much inferior technically and artistically to the pottery of the Mabaruma Phase, and to be derived by trade it must have come from a more distant source, the alternative conclusion that it is of Alaka Phase origin seems more likely.[3] The fact that the cruder Wanaina Plain is more abundant than the Mabaruma Phase types also supports the inference that it is of local manufacture.

Table B.—*Sequence of Alaka Phase sites derived from the distribution of pottery and stone tool types*

Period	Site	Pottery			Stone tools	
		Absent	Alaka Phase types only	Alaka Phase and Mabaruma Phase types	Percussion-made only	Percussion-made and abraded
Mabaruma Phase contact	N–11			×		×
	N–16			×		×
Incipient ceramic	N–9		×			×
	N–8		×			×
	N–10		×		×	
Preceramic	N–6	×			×	

The distribution of pottery types divides the Alaka Phase sites into three periods: preceramic, incipient ceramic, and Mabaruma Phase contact (table B). Incipient ceramic includes the sites that have only what may be termed "Alaka Phase types," that is, Wanaina Plain and the early trade wares of unidentified origin, Sand Creek Plain and Unclassified Clay-tempered Plain. Alaka Phase sites showing contact with the Mabaruma Phase produce Wanaina Plain in association

[3] The only other shell-tempered pottery reported from this general region is that of the Bontour style on Trinidad. This, however, is dated by Rouse (1953, p. 97) as protohistoric and historic, and consequently could not be related to the Alaka Phase occurrence.

with typical plain and decorated types of the Mabaruma Phase. Presumably, this contact eventually resulted in the assimilation of the Alaka Phase population.

Analysis of the stone artifacts from Alaka Phase sites shows a parallel pattern of change. Crude, percussion-made tools, such as choppers, core picks, flake picks, and scrapers, occur at all sites and are diagnostic of the Phase as a whole rather than of any of its parts (Appendix, table 1). Implements showing abrasion or polishing occur only at the pottery-producing sites. The only abraded tool from N–8 is a small flat object that may have been part of the polished bit of a chisellike tool.[4] However, the remaining three sites, N–9, N–11, and N–16 have celts, manos, metates, mortars, and pestles in sufficient quantity to indicate a significant change in the stone-tool inventory. This change, although not exactly correlated with the pottery sequence of innovations, nevertheless is sufficiently parallel to it to suggest that a general alteration in the total culture was taking place (table B).[5]

The addition of manos, metates, pestles, and possible hoes to the stone-tool inventory implies the appearance of a new subsistence resource in the latter part of the Alaka Phase. Since it does not seem likely that this new tool complex would have developed to exploit a previously unused wild food, it must reflect the introduction of agriculture. This conclusion could be strengthened if it were possible to show an alteration in the wild food diet or settlement pattern corresponding with the appearance of these artifacts. Unfortunately such evidence is not clear-cut.

Two kinds of locations were selected for habitation by the Alaka Phase people. Four of the sites are surrounded by mangrove swamp where the ground surface is subject to inundation at high tide and in the rainy season, and covered with slippery, soft mud and roots when the water is out. Two of the sites are on high land at the edge of the swamp. Since the shellfish food supply was no less accessible to one location than to the other, a reasonable excuse for swamp living seems to be superior advantages for defense. This being the case, the acquisition of incipient agriculture would not necessarily be accompanied by an exit from the swamp as would be expected if swamp living were primarily motivated by accessibility to the food supply.

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[4] The major portion of this site is preceramic and a more refined seriation would have to distinguish between the preceramic and incipient ceramic aspects. However, for the purposes of this analysis, sites are classified in terms of their total artifact sample. In the case of N–8, this technique suppresses the preceramic component, while the analysis of shellfish species brings it out (table C).

[5] Osgood's (1946, p. 50) tabulation of the artifacts from the Barambina stratigraphic excavation shows the same addition of pottery and ground and polished stone tools to a preceramic, percussion-made tool industry.

Analysis of the shellfish species composing the midden refuse is not conclusive, but there is some evidence to suggest that a dietary change was taking place. In addition to crabs, fish, and occasional mammals and birds, six types of shellfish were eaten by people of the Alaka Phase: two species of snails (*Neritina zebra* Bruguière and *Thais coronata* Lamarck), a brackish-water mussel (*Mytilus falcatus* Orbigny), a mangrove oyster (*Crassostrea rhizophorae* Guilding), an intertidal clam (*Phacoides pectinatus* Gmelin), and a marine or brackish-water conch (*Melongena melongena* Linné). However, not all these species occur at all sites, and when the sites are grouped in the order indicated by the pottery and stone artifact analysis (table B), the result shows that four species occur throughout the sequence but two others were exploited only at the early sites (table C). Geographical distribution will not account for this difference since N–9 is in the vicinity of N–8 and N–10. The alternative explanation that the two species are absent from the later sites because they became extinct owing to overharvesting by the Alaka Phase peoples does not receive support from either malacologists or archeologists, since these two species were not eaten in any greater quantity than the ones that continued to thrive and be eaten. In view of these factors, it seems probable that the decrease in the variety of shellfish exploited is related to an addition of other kinds of food to the diet.

TABLE C.—*Distribution of shellfish species at Alaka Phase sites*

Site	Species of —					
	Melongena	*Thais*	*Neritina*	*Phacoides*	*Mytilus*	*Crassostrea*
N–11			×	×	×	×
N–16			×	×	×	×
N–9			×			×
N–8	×	×	×	×	×	
N–10	×	×	×			×
N–6	×		×	×	×	

In addition to a decline in the number of species utilized, there is a notable decline in the density of the shell refuse in the late sites, particularly in N–11 and N–16. N–11 is somewhat unique because of the disturbance it has suffered from drainage and cultivation, but if the shell refuse had ever been as densely compacted and cemented together as in the earlier sites the disturbance would have had to be greater than it is to destroy this evidence. At N–16 the shells are loosely mixed with dirt and other refuse in a manner similar to that at N–11. In the four earlier sites, by contrast, shell was very concentrated, with little dirt intermixture. Percolating water produced chemical action in which lime was dissolved and redeposited, resulting in a series of cemented strata. The absence of this condition of the refuse at the late sites, while not conclusive in itself, supports the interpretation of a decline in shellfish eating and its replacement by a different food.

The only other evidence about the culture of the Alaka Phase comes from the presence of human bones haphazardly scattered in the midden refuse. If these are burials, the body was interred with little care and possibly disarranged by continuing habitation of the same spot. Bones found in the excavations were frequently broken several times, and it could not be established whether this damage occurred before or after burial. Brett also mentions finding human remains scattered in the refuse of the Waramuri midden. Verrill (1918 a; Osgood, 1946, pp. 33–34) describes burials in a sitting or kneeling position, but it is probable that the sites in which these occur were subject to Mabaruma Phase influence, especially since pottery bowls are often associated with the skeleton. In any case, this type of burial does not appear to be characteristic of the Alaka Phase, nor is there evidence of its presence in the early part of the Phase. Whether or not cannibalism was practiced in the Alaka Phase, as has sometimes been suggested because of the condition of the human bones (e.g., Im Thurn in Osgood, 1946, p. 29), cannot be settled on the basis of the present evidence.

Data on dress and ornament are confined to a single shark tooth drilled for suspension, probably on a necklace, and two awls of fish bone whose exact use cannot be established, but which could have been employed in the manufacture of articles of apparel or basketry.

DIAGNOSTIC FEATURES OF THE ALAKA PHASE

Alaka Phase sites are shell middens, typically located in, or adjacent to, mangrove swamps. They have been built up as a result of people living on a foundation provided by a small natural elevation that did not flood during high water. The middens vary from small, conical mounds 12 meters in diameter to large deposits 80 meters in length by 30 meters wide. Maximum height is 1 to 15 meters; the Waramuri and Sirika middens are reported to be several meters higher but it is not certain whether this is an estimate or a measurement. The deposit is composed principally of snail (*Neritina zebra* Bruguière and *Thais coronata* Lamarck), mussel (*Mytilus falcatus* Orbigny), oyster (*Crassostrea rhizophorae* Guilding), clam (*Phacoides pectinatus* Gmelin), and conch (*Melongena melongena* Linné) shells, mixed with crab carapace fragments, mammal, bird, and fish bones, fire-cracked rocks, chips, ash, and a little dirt. Percolating water has dissolved calcium carbonate from the shells and redeposited it, creating thick, hard cemented layers of refuse in the midden. Occasional human bones in the refuse possibly represent burials.

Typical stone artifacts of the Alaka Phase are crude, percussion-made tools showing little shaping except at the working point or edge and no secondary retouching. Most commonly employed rocks are andesite and micaceous schist, with occasional use of quartz, gneiss, and concretions of limonite and hematite. Characteristic percussion-made core tools include choppers, hammerstones (sometimes with a slightly pecked groove for hafting), and large picks. Blades, small picks, and scrapers were percussion-made from flakes. The majority of these tools are probably employed in food gathering and preparation. Except for a few rubbing stones, implements showing abrasion in manufacture or use are restricted to the late part of the Phase. They consist principally of celts, mortars, pestles, manos, and metates, all of which suggest the introduction of a new subsistence resource, probably agriculture.

The sequence of Alaka Phase sites is based on the presence or absence of pottery, and the pottery types represented. Pottery is absent at the early part of the Phase, labeled "preceramic." This period is followed by a transitional, "incipient ceramic" period, characterized by a few sherds identified as trade and the beginnings of pottery making by the Alaka Phase in the form of a very crude, shell-tempered ware given the name of Wanaina Plain. In the third period, "Mabaruma Phase contact," Wanaina Plain increases greatly in abundance and is associated with plain and decorated pottery types of Mabaruma Phase origin.

There is no means as yet of dating the inception of the Alaka Phase in the Northwest District, or its duration as a preceramic culture. The diffusion and adoption of pottery making and probably also agriculture seems to have preceded the arrival of the Mabaruma Phase and perhaps stemmed from a different source. Strong Mabaruma Phase contact in the late Alaka Phase sites suggests that the Phase ultimately succumbed to domination and probably assimilation by the immigrants.

THE MABARUMA PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

Fourteen sites in the Northwest District produced pottery that has been classified as belonging to the Mabaruma Phase. All are on the Aruka River except one, which is on the Barima River. All are habitations. Six had refuse deposits of sufficient depth for stratigraphic excavation.

N–1: MABARUMA HEADQUARTERS

This large habitation site on the summit of Kumaka hill (pl. 9, *a*) is one of the best known in the Northwest District (figs. 4, 22). It has been occupied in recent years by the District Government Headquarters (pl. 14), and during building construction, road grading, drainage ditches, and other improvements, many specimens have been recovered. As a result of its accessibility, the site has been visited by a number of people interested in the archeology. Walter E. Roth (MS.) made a collection and described some of the materials. Verrill (1918 a, p. 16) "obtained a very large collection of heads, many fine pieces of decorated pottery and a number of stone implements," in 1917. In 1944 Osgood (1946, pp. 44–48) made a stratigraphic excavation by the flagpole between the District Commissioner's house and office, but the results were destroyed by the Georgetown fire in 1945. To avoid future confusion with other sites on Kumaka Hill, Osgood called the site "Mabaruma Headquarters," and we have followed suit.

In spite of the modern occupation, many parts of the site remain undisturbed below the surface. Limits of the refuse accumulation are readily perceived by examining the profile of the drainage ditches. These show the deposit to be approximately coterminous with the level top of the hill, an area 251 meters east-west by 70 meters north-south. Beyond the north and south limits the land slopes rapidly, dropping 2 meters in a distance of 15 meters. The slope is considerably steeper at the east and west sides, dropping precipitously some 265 meters to the swamp bordering the Aruka River (Osgood, 1946, p. 44). There is no fresh water supply on the hilltop. Today the inhabitants collect rainwater for domestic use.

At the time of our visit a new sewage ditch had been dug in back of the District Commissioner's Headquarters to a depth of 1.00 to 1.50 meters, exposing a good profile of the soil conditions. The lateritic clay in the upper 20 cm. was a darker grayish red due to the presence of ash; below this the natural, undisturbed lateritic clay was a bright orange red. This same color line is evident in ditches throughout the site, the only difference being that in some places the refuse deposit extends to a depth of 50 cm.

A stratigraphic excavation was placed in an undisturbed sector of the lawn near the northeast corner of the Government Rest House (pl. 14, *b*). This was near the center of the site and not far from a drainage ditch in which potsherds were exposed. The cut was laid out 2 meters in a north-south direction by 4 meters in an east-west direction. The grass layer 1 to 2 cm. thick was removed and then the excavation was controlled in 8-cm. levels. Conditions were as follows:

Level 0–8 cm ------- Soil compact, dull reddish-orange with a gray hue. Iron concretions abundant. Sherds rather small and very soft due to the damp soil.

Level 8–16 cm ------ Soil conditions the same.

Level 16–24 cm ---- No change in conditions; refuse concentrated in the eastern ⅓ of the cut.

Level 24–32 cm ----- Eastern end of the cut produced 90 percent of the sherds of this level. This area shows decided soil discoloration with a blackish red-orange hue.

Level 32–40 cm ----- Concentrations of dark soil and fine ash intermixed continues in the east end of the cut.

Level 40–48 cm ----- Except at the east end of the cut, the soil has turned to sterile, bright orange red, lateritic clay with abundant iron concretions. Hearth area with fire-burnt rocks in east end, 1 meter from the east wall and 25 cm. from the south wall; the area measured 20 cm. square with rocks arranged to form a bed 7–9 cm. thick. All the sherds in this level came from either the hearth itself or within a radius of 50 cm. around it.

Level 48–56 cm ----- Sterile, bright red-orange lateritic soil appears at 52 cm. A complete Aruka Incised bowl surrounded with fire-burnt rocks and miscellaneous sherds came from this level, partially embedded in the southeast corner of the cut. Since the adjacent drainage ditch was 80 cm. deep and a nearby sewage channel went to a depth of 1.50 meters, it was not necessary to test the sterile soil of the bottom of this cut beyond making a few test holes to guarantee that the entire cut had reached the red-orange lateritic clay composing the natural hill.

East end extension -- In order to increase the sherd sample the east end, which had produced the darkest soil discoloration and greatest refuse concentration, was extended 50 cm. to the east by 1.25 cm. wide. Soil conditions identical to the rest of cut. All the specimens from this extension placed under a separate catalog number.

The only restorable vessel from N–1 is an Aruka Incised bowl, now in the collections of the British Guiana Museum, Georgetown. It has the following characteristics:

Aruka Incised Bowl (pl. 22).—All sherds were found except the annular base, but wear showed this to be an old break. The remaining portion is 7.2 cm. in diameter and 8 mm. high. The vessel walls slope outward to a maximum diameter of 18.5 cm. at a height of 4 cm., then curve inward to a constricted mouth 9 cm. in diameter with a flattened lip. Total height is 10 cm. All features of paste and decoration are typical of Aruka Incised. The interior is smoothed and quite even; the exterior has been polished, giving a low luster. The surfaces are light tan except where small fire clouds darken one side and half of the bottom. Decoration is on the exterior of the insloping upper wall and consists of bold, broad (2–3 mm.), U-shaped incisions ranging in depth from 1–3 mm. The lines are not equally spaced or regularly parallel, and the freehand execution of the curved lines and spirals gives a pleasing effect.

N–4: KORIABO POINT

A short distance below its junction with the Koriabo River, the Barima River makes a sharp bend creating a point on the right bank. N–4 is on a 4-meter high bank above this bend, separated from the point by a low area (fig. 4). A small creek flows along the base of the high bank, emptying into the river just below the site. Habitation refuse extends 25 meters inward from the Barima River and 35 meters along the bank. Recent clearing for a garden left the whole area covered with a tangle of low secondary growth sprinkled with lemon, papaya, and banana trees.

Adjacent to the east (inland) edge of the habitation area is a large shell midden, about 20 meters in diameter and rising 5 meters above the natural surface of the ground. The top was originally slightly higher but had been flattened off to plant 6 lemon trees. This deposit was tested by digging small holes on the summit and at every meter contour on the slopes. The composition was uniform throughout: burned and unburned shell (predominantly *Neritina zebra* Bruguière), ash, fire-burnt stones, quartz spalls, a few animal and fish bones, with very little dirt intermixed. Weathering had caused cementing together of the shell into hard masses. A few Mabaruma Phase sherds were found on the surface and in some of the test holes. No artifacts of the Alaka Phase were encountered, suggesting that this midden may have been accumulated by the occupants of the adjacent habitation site. However, none of the other Mabaruma Phase sites contain any shell refuse.

This is the only Mabaruma Phase site found on the Barima River. However, nearby Koriabo Phase sites contain much Mabaruma Phase trade pottery so that it cannot with certainty be identified with the "Koriabo Hill" visited by Verrill (1918 a, p. 17). The fact that he specifies "no shells" suggests he must not be referring to N–4.

A small stratigraphic cut 2 by 1 meters, controlled in 8 cm. levels, was placed in the center of the sherd area. It had the following characteristics:

Level 0–8 cm	Disturbed by modern tomato cultivation; soil a black loam mixed with large quantities of natural float quartz, iron concretions, granite fragments, and large hunks of modern charcoal from recent slash and burn clearing. Sherds fairly abundant.
Level 8–16 cm	Same conditions.
Level 16–24 cm	Rocks more abundant, sherds sparse.
Level 24–32 cm	Soil continues dark gray until 32 cm., where it changes to light gray. Sherds sparse; small, angular, granite fragments becoming more common.
Level 32–65 cm	Sterile; from 32–45 cm. the soil is light gray; 45–55 cm., orange gray; below 65 cm. very sandy clay.

N–12: HOSORORO HILL

This site is on the summit of a hill in a chain southwest of the one occupied by N–1 (figs. 4, 22) and, being nearly as accessible, it has been visited repeatedly. It is mentioned by Walter E. Roth (MS.), Verrill (1918 a, p. 16), and Osgood (1946, p. 33). As Verrill notes, there are two sites (fig. 21): an Alaka Phase shell midden at the base of the hill, which we have desigated as N–11: Hosororo Creek, and a Mabaruma Phase site high up on the slope, which we have designated as N–12: Hosororo Hill. A collection of artifacts from "Hosororo" is in the British Guiana Museum.

Hosororo (Ossororo, Issororo) Hill rises on the left bank of the Aruka River to a height of some 90 meters. The base of the hill is separated from the river by a strip of mangrove swamp, now drained for agriculture (pl. 9, *b*). The slope facing the river rises in a series of broad steps or shelves, whose nearly flat or gently sloping surfaces are separated by narrower areas of steeper rise (fig. 21). The largest shelf is between the 50- and 60-meter contours, and its size and relative levelness make the area ideal for habitation. A further advantage is Hosororo Creek, a small stream with clear, fresh water, that plunges down a series of small falls at the south edge of the shelf. Behind, the hill rises some 30 meters higher to its summit.

The whole hill was originally covered with trees. In 1917, part of the summit had been cleared for a rubber plantation (Verrill, 1918 a, p. 16). In 1953, the upper shelf was occupied by the District Government Agricultural Station, consisting of a house and a fenced experimental garden (fig. 21). The hillside had been cleared of the

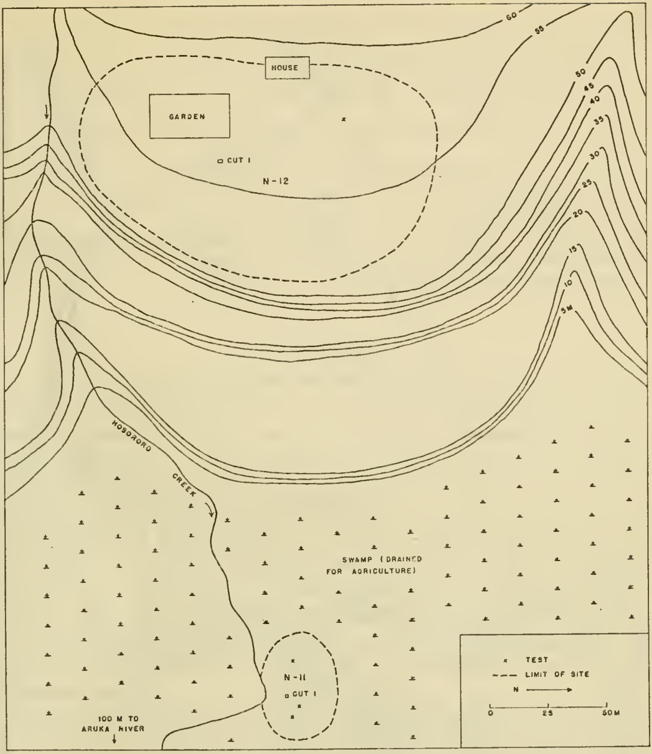

FIGURE 21.—Sketch map showing the location of N–11: Hosororo Creek, a shell midden of the Alaka Phase, and N–12: Hosororo Hill, a habitation site of the Mabaruma Phase.

majority of trees, leaving a few for shade. Sherds were visible in the cultivated garden and in paths leading down the hillside. Tests in the intervening and surrounding area indicated that a former habitation site occupied the major part of the shelf, extending over an approximately oval area 160 meters in a north-south direction by 95 meters east-west. Refuse varied from 25 cm. deep toward the north edge to 30 or 35 cm. deep on the south side. Sherds were abundant in the garden, where the soil had been loosened around the plants. The adjacent area to the east seemed undisturbed and was selected for a 2- by 1-meter stratigraphic excavation (Cut 1), which was controlled in 8-cm. levels. Cut 1 had the following characteristics:

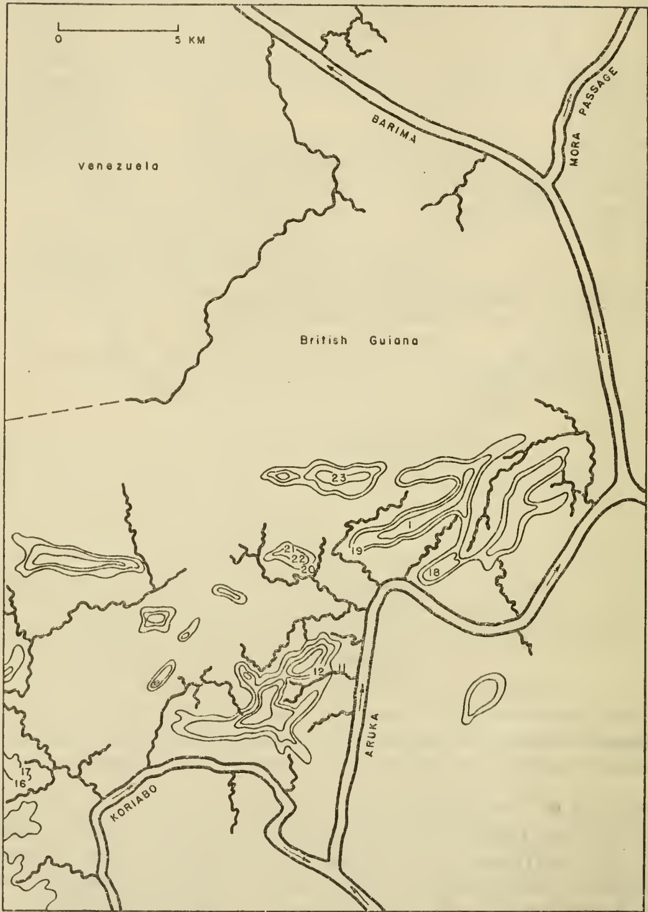

Figure 22.—Detailed map of the Aruka River area, showing the distribution of hills in this part of the Northwest District. Numbers designate archeological sites included in the survey. (Map after Osgood, 1946, fig. 7.)

Level 0–8 cm.. Loose, reddish-black soil with abundant lateritic concretions; sherds small.
Level 8–16 cm.. Soil same as previous level; sherds sparse and small.
Level 16–24 cm.. Soil conditions same; two small, thin sheets of mica, 1 by 2 cm.
Level 24–32 cm.. Soil conditions same, concretions larger; a few scraps of mica.
Level 32–40 cm.. Same until 36 cm.; between 36 and 40 cm. the soil changes to light-gray-orange color with small iron concretions, and with no sherds.
Level 40–85 cm.. Sterile, natural, lateritic soil; compact, with heavy concentration of iron concretions and hunks of clay. This same natural soil condition was also encountered in the test holes.

N–13: HOBODEIA

N–13 is on the right bank of the Aruka River, just above the mouth of Hanobasa Creek (fig. 4). The land here rises steeply to between 3 and 4 meters above the river level so that the summit is safe from flooding (pl. 15, *a*). Since high land in the vicinity is rare, the site was being lived on in 1953 by several Guianese families, who had built houses and planted a garden. Testing and surface sherds showed the sherd refuse to extend for 55 meters along the riverbank by 30 meters inland. Its northern and eastern boundaries were along the edge of the bank where it sloped down to the river and the creek. High land extended beyond the site to the south and west.

A small strata cut 1 by 1 meter was placed 25 meters from the modern settlement. It was controlled in 15-cm. levels and gave the following results:

Level 0–15 cm.. Black loam with fragments of modern charcoal from slash an burn agriculture, 1 large modern spike and a rusty knife blade indicating disturbance. Sherds abundant, also small iron concretions and a few fragments of badly decomposed granite.
Level 15–30 cm.. Soil conditions the same; sherds abundant.
Level 30–45 cm.. From 30 to 38 cm. small fragments of decomposed granite were mixed with the sherds. Soil color is a lighter gray than in previous levels.
Level 45–60 cm.. Soil grayer, more compact; rocks larger and more abundant.
Level 60–75 cm.. From 60–75 cm. an occasional sherd; at 70 cm. the soil turns to grayish tan and is sterile. Tested to 1.50 meters, revealing a uniform deposit of sterile sandy clay.

N–14: HOBODEIA SCHOOL

The Roman Catholic School of Hobodeia is on the right bank of the Aruka River, 5 minutes by motorboat upstream from N–13 (fig. 4). The shore between N–13 and N–14 is tidal flat, but inland the two sites are connected by the low rolling Hobodeia Hills. At N–14, the flat is 10 meters wide, flooded at high tide and soft muck at low tide. The riverbank rises steeply to 2 meters and more gradually to 3 meters above low water. Just downstream from the site, the swampy tidal flat widens abruptly so that the site is on a point, with the river and swamp bounding the northwest and northeast sides and the high land extending to the southeast and southwest. The sherd refuse extends for 70 meters along the bank by 55 meters inward. The southwest half of the site is on the 3-meter elevation, the remainder on the slope to the point. The present school buildings and clearing are on the slope and the teacher's manioc garden on the summit, so that no part of the site is free from erosion or disturbance (pl 15, *b*). Tests made over the entire area showed the soil to be medium to light-gray sandy loam, with sherds most abundant in a zone between 10 and 15 cm. below the surface. Below 15 cm. the soil was sterile light-tan to brown, sandy clay. A 1- by 1-meter test in the southwest end of the site produced 185 sherds, all from between 10 and 15 cm. below the surface. These were added to the general sherd sample from the site.

N–15: HOTOKWAI (HOTAKWAIA, HOTAKWAI)

"Hotakwaia Hill" was visited by Verrill (1918 a, p. 17), who describes it as a granite formation with no shell heaps and no pottery. He found one stone ax. Osgood (1946, p. 61) lists it as No. 12 in his inventory of British Guiana sites. Hotokwai Hill is a prominent rise on the left bank of the Aruka River, a little above its junction with the Aruau River (fig. 4). A low projection extends from the east side of the hill toward the river. Hotokwai Creek flows along the northeast edge of this high area. A 60-meter-wide strip of low swamp separates the edge of the rise from the Aruka River, and the swamp widens out to surround the base of the hill. Behind the shelflike spur, the hillside rises steeply to a height that commands a view over the swamp in all directions.

N–15 occupies the major portion of the spur (fig. 23). Sherd refuse extends inward from the front edge for 40 meters to the beginning of the steep slope and 60 meters from side to side. In this distance, the land rises from 50 cm. in elevation to 2 meters, with the major portion of the site area about 1.50 meters above the swamp level. The modern Hotokwai school is on the upper part of the site, and several houses occupied the edge near the creek in 1953. Clumps of large bamboo covered the southwest part of the spur, at the edge of the site area. Extensive testing revealed sherds at a depth of 5 cm. below the surface except in the vicinity of the bamboo, where a layer of sterile soil 10 to 15 cm. thick covered the refuse deposit. The soil was light to medium-gray, sandy clay, becoming light-tan

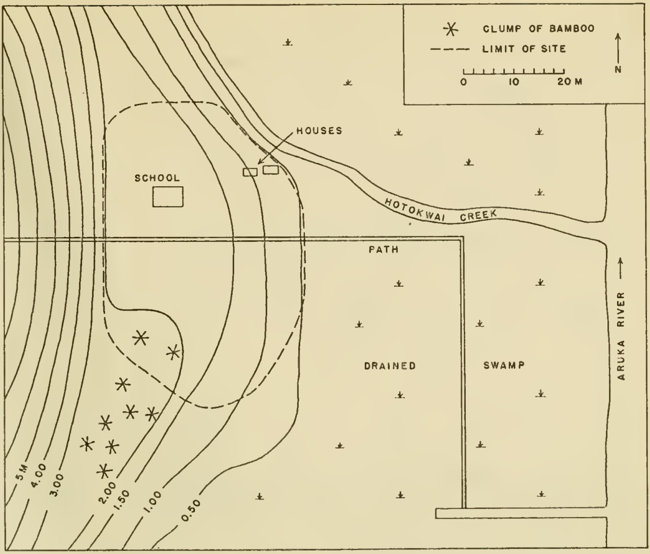

FIGURE 23.—Sketch map of N–15: Hotokwai, a habitation site of the Mabaruma Phase.

sand below the refuse layer. A 1- by 1-meter test excavation near the creek produced only 40 sherds and a few fire-burnt stones.

N–16: AKAWABI CREEK

N–16 has two occupations, a shell midden belonging to the Alaka Phase and a later site belonging to the Mabaruma Phase. The details of the site location are given under the Alaka Phase (pp. 33–34) and will not be repeated here (figs. 4, 22).

Whereas the Alaka Phase midden occupies a very small area near the bank of Akawabi Creek, the Mabaruma Phase refuse extends 75 meters inward from the bank and 100 meters north-south along the edge (fig. 24). Behind the site, some 300 meters away, Akawabi Hill rises 4 to 5 meters above the site elevation. Its slopes are covered with clumps of bamboo. The major portion of the site area has suffered from recent disturbance, especially leveling of the surface. Consequently, little reliable data could be obtained about the depth of the refuse deposit. Sherds occur on the surface, on the eroded slopes leading to the swamp and the creek, and in the path that had been cut through the rise separating the school building from the creek. In the walls of this path, Mabaruma Phase sherds were found in

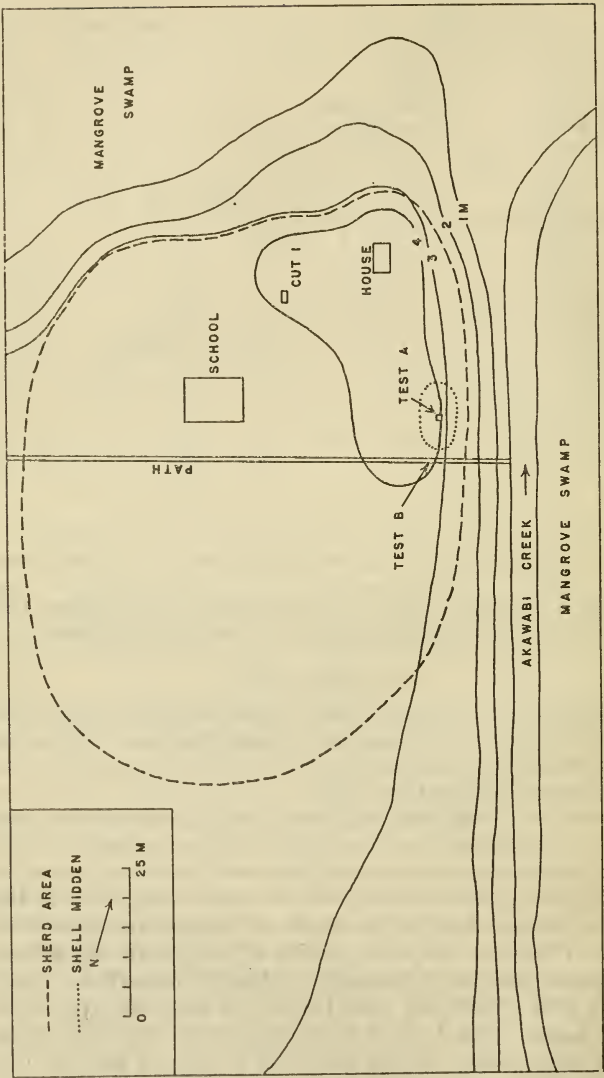

FIGURE 24.—Sketch map of N–16: Akawabi Creek, showing the location of the Alaka Phase shell midden and the subsequent Mabaruma Phase habitation site.

abundance to a depth of 40 cm. Associated were quartz chips, fire-burnt stones and a few bones incuding the shaft of a human femur. Since this was the most productive part of the site, the bank was cut inward to enlarge the sample. This excavation, designated as Test B, covered 3 square meters. An attempt at a controlled stratigraphic excavation proved unsuccessful. A 2- by 1-meter cut was placed in the high part of the site as far as possible from the area of intense Alaka Phase occupation, but Alaka Phase refuse was nevertheless intermixed with Mabaruma Phase artifacts from each level. The sherd sample was small, and analysis showed it to be contemporary with the material from Test B, so the two collections were combined to increase the sample for seriation purposes.

Although we encountered no burials, Verrill (1918 a, pp. 14–15, figs. 7–12) reports excavating three skeletons on his visit to N–16 in 1917. These came from the shell midden, but Verrill concludes that "the condition of the shells proved that the dead had been placed in graves dug in the shell mound" (op. cit., p. 15). Further evidence that the burials belong to the later occupation is the association of a pottery vessel with one of the skeletons. It had been placed inverted over the occiput. The type of plain pottery cannot be identified from the photograph (op. cit., fig. 11), but the shape is typical of the Mabaruma Phase. The three skeletons were side by side, with the legs flexed and the faces toward the east. Verrill (op. cit., p. 15) identifies the central skeleton (which had the bowl) as male and the others as female. A few crude stone implements were found in the vicinity, but Verrill is probably correct in suggesting that these are accidental associations from the shell refuse midden rather than burial offerings. Verrill's "very careful search of the entire hill" (loc. cit.) failed to locate any other burials.

N–17: WAUNA

In 1917, Verrill searched the hills near Akawabi for additional sites and found only one place that produced "several earthenware heads and fragments of decorated pottery" (1918 a, p. 15). This may be the same place we discovered on the bank of the Wauna River, just above its junction with Akawabi Creek (figs. 4, 22). Here, the bank rises 2 meters and then slopes back up the flank of the high Wauna Hills that rise to the west. The site covers an area 65 meters along the bank by 20 meters wide. A modern settlement occupied the same area in 1953 and the ground surface had been cleaned of all vegetation, exposing the black soil and sherd refuse. Tests showed the deposit to be 10 to 20 cm. deep, but erosion and modern habitation made it possible to collect only a small sherd sample. This identifies the site as belonging to the Mabaruma Phase, but is not large enough to use for seriation.

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N-18: HOBO HILL

Hobo Hill is a finger of the same chain on which N-1 is located (figs. 4, 22), lying southeast of Kumaka Hill. The northwest side rises steeply, flattening out just below the crest. Here sherds were found over a gradually sloping area 15 meters in diameter in a manioc field. The nearest fresh water source is the headwaters of the Attabani Creek 100 meters to the northeast. The soil was slightly darker in the site area than the surrounding bright orange laterite. Sherds occurred only from the surface to a depth of 5 cm. and were all badly eroded. A few glass and earthenware fragments from the same area appeared to be associated with recent gardening activity. The 199 sherds include the Mabaruma Phase types, Mabaruma Plain, Hosororo Plain, and Koberimo Plain.

N-19: KUMAKA CREEK

Kumaka Creek was visited by Verrill in 1917 (1918 a, p. 16). He describes the site as located on the eastern slope of Kumaka Hill (figs. 4, 22). The reddish soil produced no shell refuse, only potsherds and stone. In 1920 Vincent Roth spent half an hour at the site in the company of a geologist, J. A. Bullbrook. At that time, a road had been cut through the slope and Roth noticed that "a small portion of the road has been metalled with the material removed from the midden so that one can now find pieces of pre-historic pottery in the middle of the road" (V. Roth, MS., p. 12). On the afternoon of September 19, 1944, Osgood dug on the slopes of Kumaka Hill, collecting sherds that included examples of a decorative style not found at Mabaruma Headquarters (N-1). Osgood (1946, pp. 48-49) searched for a place with sufficient depth of refuse to show the relative age of the two sites, but was unsuccessful.

In 1953 the site was essentially as the earlier visitors reported it. The road, which leads from Mabaruma Government Headquarters to the dock, has been paved but its course has not changed. It runs down the steep western slope of Kumaka Hill to the base of the hill, skirting the tidal swamp, and passes close to Kumaka Creek, which flows along the base of the hill before turning into the swamp (fig. 25). The site is on the slope, beginning at the bend in the creek and extending 70 meters to the northeast. The lower edge is bounded by the flat and the upper limit is 17 meters up the hillside, between 5 and 6 meters above the creek level. The northeast third of the site is occupied by the Kumaka Spirit Shop, surrounded by a lawn. Large clumps of bamboo grew along the southeast side of the road. The southwestern part of the site was covered with orange, guava, and banana trees entangled with abundant thorny vines. A group of large iron concretion boulders marks the western edge of the site.

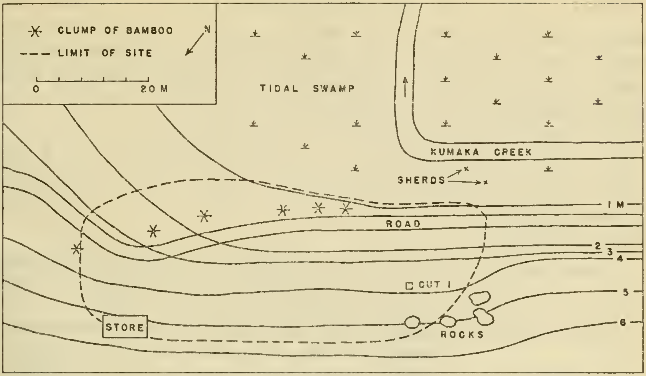


FIGURE 25.—Sketch map of N–19: Kumaka, a habitation site of the Mabaruma Phase.

Although sherds were found throughout the 70- by 17-meter site area, the major portion of the surface collection comes from the southwestern sector where there was no grass cover. A few scattered sherds were found in the flat between dry land and the creek bed, in the region traversed to reach the water source at low tide (fig. 25). A small strata cut, 1- by 1 meter, was excavated in 15 cm. levels about halfway between the road and the upper edge of the site, where recent disturbance seemed minimal. The following conditions were observed:

Level 0–15 cm.__ Soil medium gray with numerous lateritic concretions to a depth of 12 cm., changing to light reddish-brown loam with more abundant concretions at 12–15 cm. Sherds abundant in upper 10–12 cm., absent below.

Level 15–30 cm.__ Sterile, reddish-brown soil color continues to 25 cm., where soil changes to orange-red clay (the soil profile in this excavation is the same as that revealed in the road cut).

N–20: KOBERIMO HILL (KOBARIMA, KOBERINO, KOBARINO)

Koberimo Creek skirts the south edge of Koberimo Hill before flowing out into the swamp to empty into the Aruka River (figs. 4, 22). N–20 is on a nearly level shelf at the base of the hill next to the creek. The bank rises rather steeply to a height of 4 meters above the swamp level before leveling off, and the site begins about on the 4-meter contour. The refuse deposit extends 75 meters along the creek and 25 meters inward. The surface was free of undergrowth and the site limits were easily definable by the contrast between the black soil of the habitation refuse and the reddish-brown sterile soil of the surrounding area. In previous years the site had been under manioc cultivation, and an old resident recalled finding a number of pottery heads at that time. In 1953 it was occupied by an abandoned citrus orchard. Several large clumps of bamboo grew east of the site and another was between the site and the creek. Behind the site, to the northwest, Koberimo Hill rises to a high summit.

In addition to the collection of a surface sample, a 2- by 1-meter strata cut was excavated in the southeastern part of the site, the side nearest the creek. Controlled in 8-cm. levels, it had the following characteristics:

Level 0– 8 cm	Soil black with abundant small reddish iron concretions whose presence gives the soil a lighter hue. Sherds common; one piece of modern chinaware.
Level 8–16 cm	Conditions the same except soil more compacted with a high percentage of concretions.
Level 16–24 cm	Lateritic soil so hard it has to be loosened with a pick. Sherds still abundant.
Level 24–32 cm	Soil acquires a yellowish tinge at 30 cm., becoming yellow-brown clay with abundant iron concretions at 30–32 cm. No sherds below 30 cm.
Level 32–75 cm	At 35 cm. the clay becomes very compact, changes to a yellow-orange color and concretions become larger. These conditions represent the natural structure of the hill.

N–21: KOBERIMO HILLTOP SITE NO. 1

At the crest of Koberimo Hill (figs. 4, 22), two separate areas with sherds were located. N–21 is on the northwest side of the summit. Potsherds were scattered over an area 75 by 80 meters in a manioc garden. All surface sherds were fire marked from the burning of the field and badly eroded. A few were found to a depth of 5 cm. Large to small iron concretions were concentrated throughout the soil, almost like gravel paving, reminiscent of the badly eroded areas of the Rupununi savanna, and the reddish-brown soil was not discolored by habitation. A total of 512 Mabaruma Phase sherds was collected from the surface and tests.

N–22: KOBERIMO HILLTOP SITE NO. 2

On the southeast side of the summit of Koberimo Hill (figs. 4, 22) there is another shallow habitation site comparable in all respects to N–21. Sherds are scattered in a manioc garden from the surface to a depth of 2 to 3 cm. over a circular area 85 meters in diameter. The surface collection numbered 216 sherds of Mabaruma Phase types.

Verrill (1918 a, p. 14) mentions finding "a few earthenware heads and numerous pieces of highly decorated pottery" on the "highest and most barren portion" of Koberimo Hill, which may correspond to either N–21 or N–22.

N–23: BARAMBINA HILL

At the summit of Barambina Hill (figs. 4, 22) near the house of Jose Torres a few sherds were found in an area that was formerly a garden but had reverted to grass and brush. The surface was paved with small iron concretions, and only 25 sherds were collected in the limited time available at the site. Torres had found two modeled animal heads when digging a pond down the slope where a spring furnished his water supply. A similar source must have been used by the aboriginal occupants, for otherwise the nearest water is at the base of the hill near the headwaters of some of the small tributaries that drain into Kumaka Creek. Owing to the surface conditions the limits of the site could not be determined. The sherd sample includes typical Mabaruma Phase pottery types, but the collection is too small to include in the seriated sequence for the Phase.

When Osgood visited this area in 1944 and excavated Barambina shell midden, he mentions receiving from Jose Torres some decorated sherds that he had found near his house (Osgood, 1946, p. 50). Although no other details are given there is no doubt that these are Mabaruma Phase sherds from N–23.

DATA FROM OTHER INVESTIGATIONS

Although the Northwest District has been the object of greater archeological interest than any other part of British Guiana, the accounts suffer from vagueness and subjectivity. In some cases, sites can be identified with those we visited, and this documentation is given under the site descriptions. Although there is a slight danger of confusion with the Koriabo Phase, the rest of the sites that produced "pottery heads" can probably also be assigned to the Mabaruma Phase. Four of these have been recorded by Verrill:

Waunina (Wanaina) Hill.—This hill is the west end of the chain in which Hosororo Hill is located. It is separated by a strip of swamp from the left bank of the Koriabo River. The site produced "very fine" stone implements, pottery adornos, and highly decorated sherds (Verrill, 1918 a, p. 14; Osgood, 1946, Site No. 9, p. 61).

Hanaida Hill.—Hanaida Hill is an isolated rise in the swamp some distance inward from the right bank of the Aruka River (Osgood, 1946, fig. 7). The lateritic surface produced a few fragments of pottery heads, sherds and several stone implements (Verrill, 1918 a, p. 17; Osgood, 1946, Site No. 10, p. 61).

Anabisi Hills.—On the red, lateritic hills on the Anabisi River, a tributary of the Kaituma River, there is a site from which fragments of decorated pottery, modeled heads, and stone implements were recovered (Verrill, 1918 a, p. 17; Osgood, 1946, Site No. 21, p. 61).

Maruiwa Hill.—A site on red, lateritic hill about 6 miles below Mt. Everard on the Barima River produced incised and modeled pottery and stone artifacts. A site in this vicinity was similarly described to us in 1953, at which time the name was given as Drum Hill (Verrill, 1918 a, p. 17; Osgood, 1946, Site No. 15, p. 61).

Two other sites, said to have produced only plain sherds, probably also belong to the Mabaruma Phase, since certain of the shallow sites lack the elaborate types of decorated material. These are Simri Hill, the location of which is not given, and Hotahana Hill on the Kaituma River (Verrill, 1918 a, p. 17).

The rest of the published and manuscript data on the archeology of the Northwest District helps to confirm the definition of the archeological cultures but cannot be used for deriving it. The major contributor is Walter E. Roth, who describes Mabaruma Phase pottery in his publication on the arts and crafts of the British Guiana Indians (1924, pp. 134–5, pls. 23–26, 31–32, figs. 32–35) and in a manuscript filed in the archives of the Bureau of American Ethnology, Washington, D.C. (1930). The published work is based on specimens in the British Guiana Museum, the majority of which were brought in from time to time by the public without exact information on association or provenience. The manuscript is the result of fieldwork done in the early part of 1930 with "the sympathetic and generous assistance of the Smithsonian Institution" (W. E. Roth, MS., p. 4). Roth's method of investigation consisted of sinking pits 2 to 3 feet in depth and diameter into sites, sifting the dirt, and placing the sherds in labeled bags. Afterward the sherds were cleaned, and considerable time and effort was spent in trying to piece them together. After decorated fragments were separated from the plain sherds, the final step was: "when satisfied that they were not wanted to complete an article to discard the latter" (op. cit., p. 5). Out of almost 10,000 sherds, Roth was able to reconstruct only four vessels, positive proof that he was working in habitation refuse. Unfortunately, when the manuscript was written and the illustrations prepared, provenience data was omitted for the majority of the sherds. Consequently, although this was a significant contribution to archeology at the time the work was done, it is difficult to use for comparative purposes today.

ANALYSIS OF MATERIAL

The artifacts from Mabaruma Phase sites include only stone objects and pottery. These will be described according to types, rather than as individual objects, but exact provenience of each artifact is given in tables 2 and 3 in the Appendix. In these tables the stone artifacts are listed according to the rock material out of which they are made, as well as by type.

Stone Artifact Types

Forty-six stone artifacts and 69 flakes were collected from sites of the Mabaruma Phase.

Celts, polished (fig. 26).—Celts are rectanguloid and well polished with a sharp bit. The butt end is sometimes battered from use as a hammerstone. The majority of the fragments are small, but the larger ones suggest reconstruction of dimensions as 10.0 to 21.5 cm. in length, 5.0 to 6.5 cm. in width, and 2.0 to 3.5 cm. in thickness. The butt and the bit are slightly tapered so that they measure only 3.0 to 4.0 cm. in width. Rock material includes extremely fine-grained micaceous schist, quartzite, and andesite.

Choppers (fig. 27, *a–b*).—Blunt-edged tools that appear to have been used in pounding or chopping were roughly shaped from cobbles by percussion blows. They fit easily into the hand. Size appears to be controlled by the dimensions of the original cobble or fragments of rock. The tools measure 6 to 12 cm. long, 4 to 6 cm. wide, and 2 to 3 cm. thick. The large percussion flakes struck off to give the tool its rough shape measure from 2 to 3 cm. in diameter and have a clearly marked bulb of percussion. All the choppers were made from extremely fine-grained micaceous schist.

Flake blades or knives (fig. 28, *a–b*).—Flakes struck off by percussion from quartzite, fine-grained micaceous schist, quartz or felsite have had the thin edge opposite the bulb of percussion shaped for use as a blade or knife. In most cases, the thin cutting edge has been rubbed and abraded; occasionally the edge was slightly reworked by percussion chipping. The form is irregular. Although the tool size varies according to the size of the percussion-struck flake, the majority are 3.0 to 4.0 cm. by 4.0 to 6.5 cm., by 0.5 to 1.5 cm. thick.

Hammerstones (fig. 27, *c–d*).—Tools classified as hammerstones were made from either cobbles of quartzite or roughly shaped pieces of fine-grained micaceous schist. One or more places on the surface show heavy battering, which is easily distinguished from the natural waterworn surface or the freshly fractured, percussion-struck areas. The battered area ranges from a small circle 1 cm. in diameter on the end to a broad area 3 to 5 cm. long on the edge. The size of the hammerstones varies considerably, ranging from 2.5 by 5.0 by 3.0 cm. to 2.5 by 5.5 by 6.0 cm.

Hoes (fig. 28, *c*).—Five fine-grained micaceous-schist fragments have been classified as hoes because they have a polish on highly irregular surfaces that can be obtained only by extensive digging in the ground. These stone artifacts show less shaping than any of the other stone tools of the Mabaruma Phase. They consist simply of a large cobble with a few percussion flakes struck off the end or a piece of micaceous schist roughly shaped by percussion flaking into

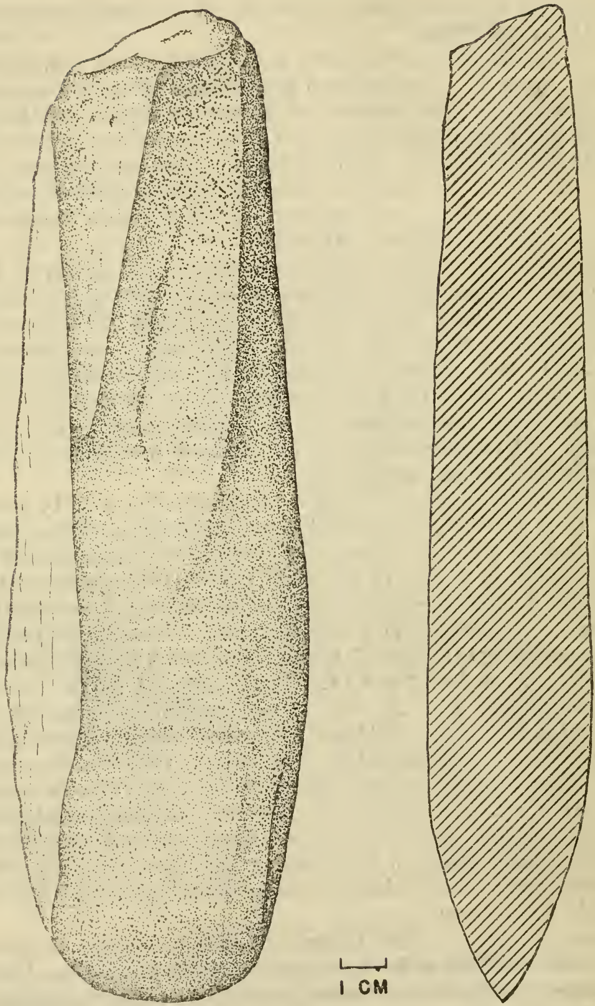


Figure 26.—Polished celt from the Mabaruma Phase.

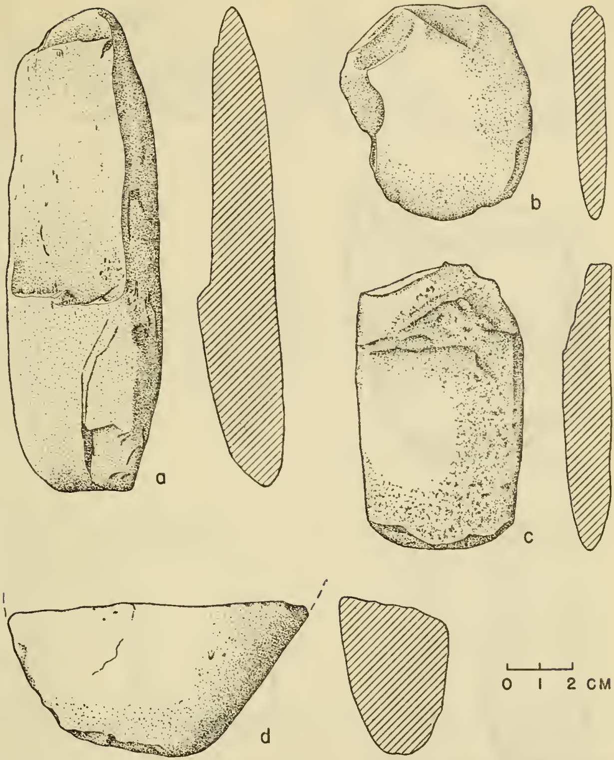


FIGURE 27.—Stone artifacts of the Mabaruma Phase. *a–b*, Choppers. *c–d*, Hammerstones.

a long rectangular form. The digging edge is irregular, ranging in width from 3.0 to 5.0 cm. The high polish from abrasion in the dirt extends along the shank of the hoe for as much as 2 to 3 cm. Dimensions are 10 to 15 cm. long, 4 to 6 cm. wide, and 1.3 to 3.5 cm. thick.

Knife, polished (fig. 28, *e*).—A large percussion-strike flake of fine-grained quartzite measuring 4.6 cm. long, 2.5 cm. wide, and 5 to 9 mm. thick has one of the narrow edges abraded on both surfaces to produce a straight cutting edge.

Mano (fig. 29, *c*).—A fragment of a rubbing stone of granite has one surface worn flat from backward and forward grinding motion. The other surfaces are broken so the form and dimensions of the original artifact cannot be determined. The existing grinding area is 6.0 by 3.5 cm.

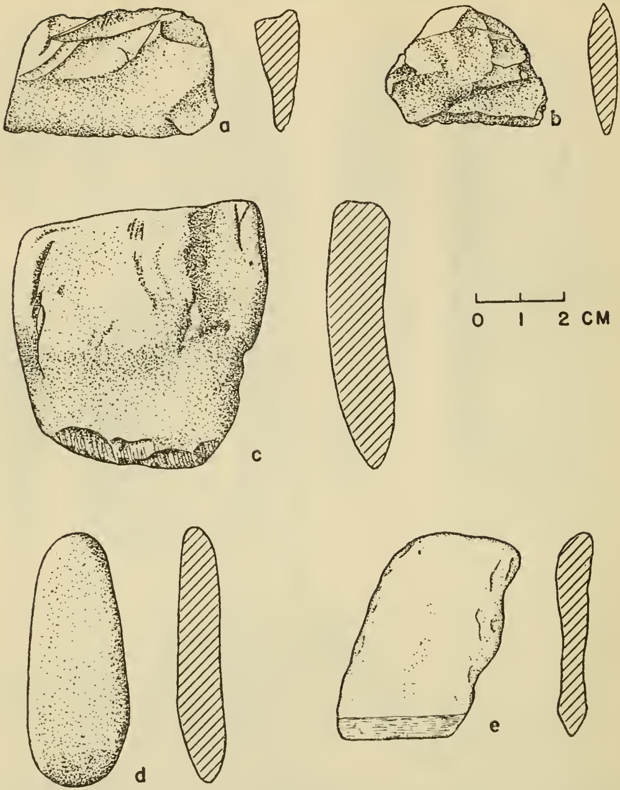


Figure 28.—Stone tools from the Mabaruma Phase. *a–b*, Flake blades or knives. *c*, Hoe. *d*, Polishing stone. *e*, Polished knife.

Metate (fig. 29, *a–b*).—Two fragments of granite with one surface well smoothed and slightly concave were probably used for grinding. They measure 7.5 by 7.5 by 2.0 to 3.0 cm. thick and 7.0 by 11.2 by 3.2 cm. The grinding surface in each case is slightly smaller than the surface of the fragment. The contours do not suggest that the complete artifact was very large.

Polishing stones (fig. 28, *d*).—Small, waterworn pebbles of quartz and fine-grained micaceous schist have been used for polishing stones. The particular type of wear suggests they probably were used as polishers in pottery making. The roughly oval pebbles measure 2.4 by 2.7 by 2.0 cm., 3.0 by 2.4 by 1.4 cm., and 5.8 by 2.4 by 0.8 cm. The

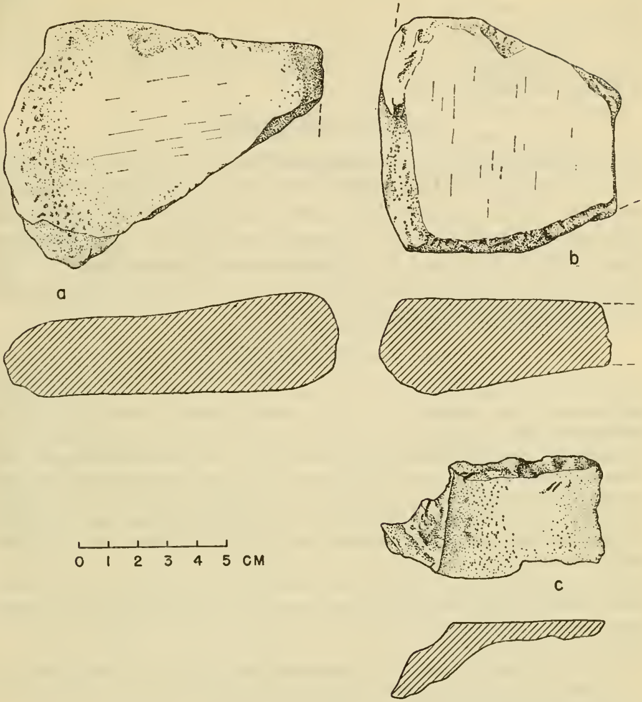


FIGURE 29.—Grinding tools from the Mabaruma Phase. *a–b*, Metates. *c*, Mano fragment.

high polish from use usually occurs only on the rounded edges in small areas not exceeding 0.5 by 1.5 cm. in diameter.

Flakes and natural rocks.—The percussion-struck flakes and fragments of unworked rocks from the various levels of each stratigraphic excavation and the surface collections were classified by rock material (Appendix, table 2). The most significant result of this analysis is the different popularity of certain rock materials in the Mabaruma Phase in contrast to the Alaka Phase (Appendix, table 1), although the two occupy the same geographical region. Whereas in the Alaka Phase the predominant material was andesite, this is rarely used in the Mabaruma Phase. Limonite and hematite concretions, broken in various ways and used as tools or as rubbing stones in the Alaka Phase, were also rarely used in the Mabaruma Phase. The most common rock material regardless of tool type in the Mabaruma Phase is a very fine-grained, micaceous schist. The other rocks, listed in their order of popularity, are fine-grained quartzite, granite (usually biotitic granite rather than muscovite granite), felsite, quartz, andesite, a few miscellaneous large fragments of mica of the muscovite variety, and feldspar.

Pottery Type Descriptions

The ceramic study of the Mabaruma Phase is based on the analysis of 9,610 sherds of local manufacture of which 1,323 or 13.8 percent are decorated. Only one complete vessel was found. The pottery was classified into four plain and four decorated types. The frequency of each type by level and site is given in the Appendix, table 3. Pottery types are described in alphabetical order, followed by description of unclassified and trade sherds.

AKAWABI INCISED AND MODELED

Paste: This decorated type was placed on all four of the plain wares of the Mabaruma Phase—Mabaruma Plain, Hosororo Plain, Hotokwai Plain, and Koberimo Plain. Apparently no preference occurred, and whatever plainwares were most popular at the time were used. At sites reflecting the early part of the sequence this decorated type is found more commonly on Mabaruma Plain, while in the late part of the sequence the decorated type appears typically on paste of Hosororo Plain and Koberimo Plain. See the abovementioned plain pottery type descriptions for details of temper, color, and firing.

Surfaces: Both in color and treatment, the surfaces are typical of the particular plain pottery type except that the surfaces of the decorated sherds are always better smoothed and more even.

Form:

Rim: Direct with rounded or slightly tapered lip; everted with rounded lip; rarely, everted to produce a wide flange with rounded lip.

Body wall thickness: 3–11 mm.; majority 5–6 mm.

Body diameters: Range 20–32 cm.

Base: No bases have decorations on the adjoining lower portion of the sidewalls, therefore it is not possible to associate definitely any particular base sherd with the type; however, bases must be of the forms found in the plainwares: flat, flat pedestal, and annular.

Major vessel shapes reconstructed from sherds:

1. Open bowl with outslanting to vertical sidewalls and a direct rim, usually with rounded lip but sometimes slightly tapered or flattened. Body wall thickness 3–9 mm., majority 5–6 mm.; mouth diameter 12–26 cm. Bowl depth reconstructed as shallow, from 8–15 cm., with a few possibly 5–6 cm. Decoration on exterior, occasionally on interior (fig. 30–1).
2. Bowl with incurving sidewalls, direct rim, rounded or flattened lip. Body wall thickness 5–6 mm.; mouth diameter 12–32 cm. Decoration on exterior (fig. 30–2).
3. Large open bowl with walls outslanting, then upcurving to a broad, sharply everted, flange rim with a rounded lip. Body wall thickness 8–10 mm.; rim up to 15 mm. thick and 2.3–3.5 cm. wide, with a flat or curved top. Inside mouth diameter 26–34 cm. Large

adornos on rim top, often connected to vertical or horizontal loop handle (fig. 30–3).

4. Jar with globular body, short collarlike neck with a convex profile, and short everted rim with a rounded, flattened, or tapered lip. Junction between neck and body is typically a sharp angle. A decorative rib frequently runs around the body at the maximum diameter. Neck height 4–5 cm.; mouth diameter 18–32 cm. Low relief and large adornos ornament exterior, incision on flat inner rim edge (fig. 30–4).

Appendages:

Vertical loop handle beginning at an adorno affixed to the rim and looping down to the body wall of a vessel of form 3. Cross section is generally round, measuring 1.3–1.5 cm. in diameter (fig. 30–3).

Two horizontal strap handles, oval in cross section, measuring 4.0 by 1.2 cm.; one has a plain nubbin 8 mm. high on the center of the loop, the other a Barrancoid adorno.

Decoration (figs. 31–37; pls. 16–20):

Techniques: Modeling employed in conjunction with incision, which is either superimposed or associated.

Incision: Incised lines typically rather broad (2–3 mm.), U-shaped groove; depth ranges from 0.5–3.0 mm. but is typically 1.0–1.5 mm. Incisions are often sloppy with dragged margins, and unequal in width and depth.

Modeling: Varies from a slight rib giving a sculptured effect to the surface and emphasizing parts of the design, to large adornos sculptured with the sureness and boldness characteristic of the Barrancoid styles from the mouth of the Orinoco in Venezuela. Adornos are typically solid. Some show clean breaks as a result of application to the vessel or rim surface after the clay had begun to dry, others appear to have been applied when wet and so well kneaded into the vessel surface that they break off with a jagged edge taking away part of the vessel wall. Features of the adorno modeling were first roughed out by finger manipulation and then accentuated with incised lines and sculpturing.

Motif: The attempt was made to separate the differing combinations of modeling and incision represented in Akawabi Modeled and Incised into several pottery types. If was found, however, that although a few adornos have no incision on them, others do, and the gradation in workmanship was such that no significant subdivision could be made. Five combinations of modeling and incision can be distinguished, some of which may occur together on the same vessel:

1. Low relief (pls. 16, 20, *a-f*).—Applique modeling in form of curved bands or irregularly shaped areas, 0.7–2.5 cm. wide, raised 2–4 mm. above the vessel surface. Some variation in degree of relief on a single sherd frequently occurs because of the presence of bosses, nubbins and other prominences on the bands. Raised areas are set off by incised lines, which are frequently slightly broader than the incisions composing the rest of the design. Incised decoration is typically applied to the surface of the applique, but also sometimes occurs in the intervening areas. This is the most abundant and characteristic form of Akawabi Modeled and Incised.

2. High relief (fig. 56, *a*, *b*; pls. 17, 20, *g*, *h*). Applique modeling in the form of ribs, bosses, or "masks," which rise 0.5–2.5 cm. above the vessel surface. The larger ones differ from adornos in being an integral part of the vessel wall rather than free standing. This

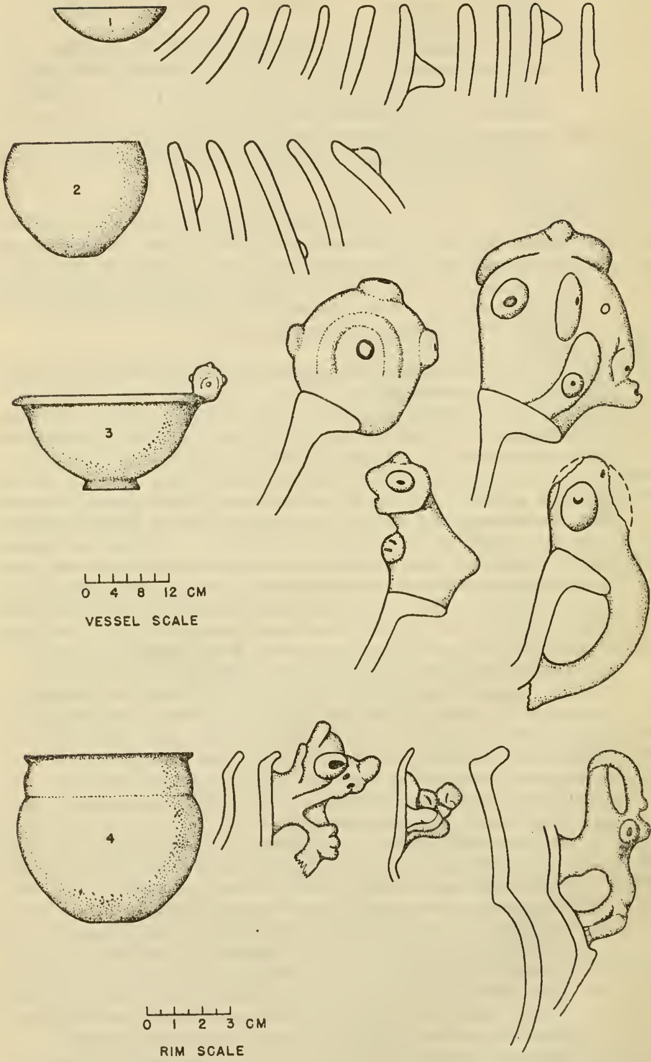


Figure 30.—Rim profiles and reconstructed vessel shapes of Akawabi Incised and Modeled, Mabaruma Phase (Appendix, table 4).

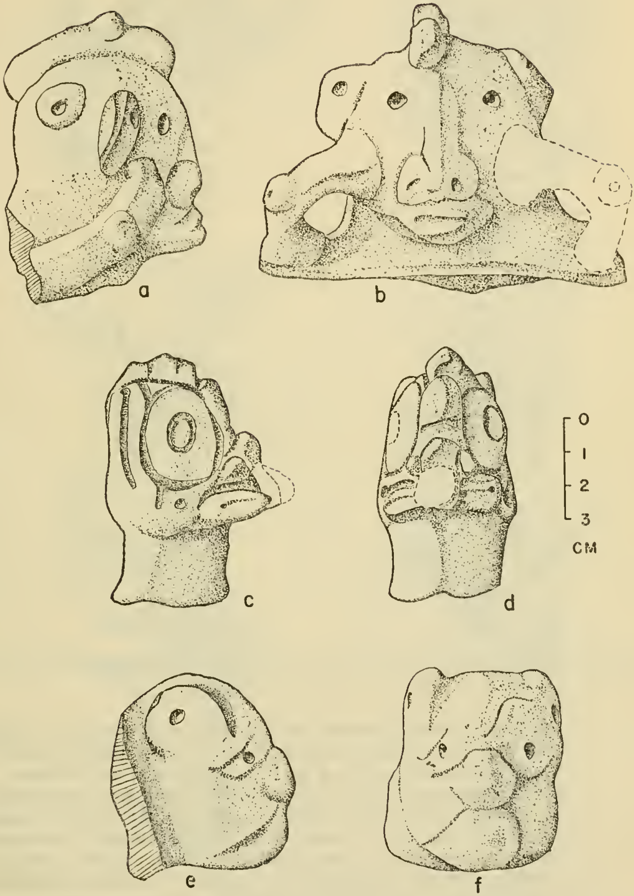


FIGURE 31.—Akawabi Incised and Modeled, Motif 3: Barrancoid adornos, Mabaruma Phase.

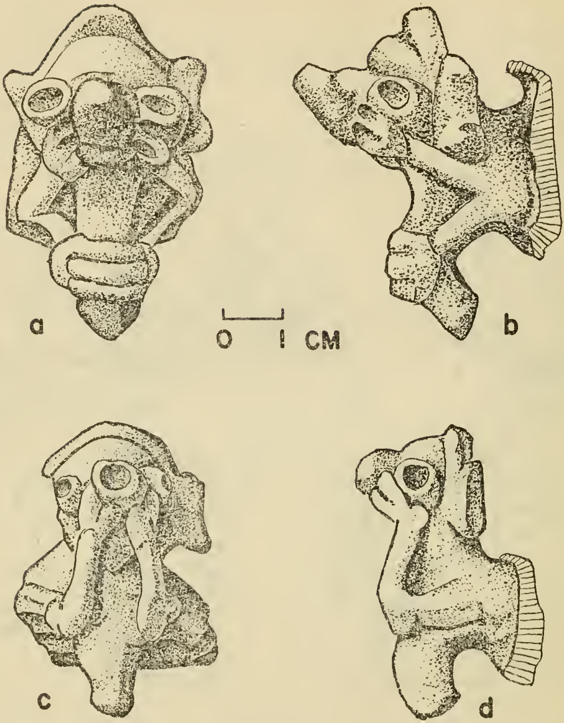


Figure 32.—Anthropomorphic adornos of Akawabi Incised and Modeled, Motif 4: non-Barrancoid, Mabaruma Phase.

type of modeling is typically treated in the same way as low relief, set off by and decorated with incised lines. The majority of high relief appears to occur at or near the maximum vessel diameter.

3. Barrancoid adornos (figs. 31, 56, *c*, *d*; pl. 18). Large anthropomorphic, zoomorphic, and geometric adornos modeled in the round for application to the rim or vessel wall. Workmanship is normally beautifully sculptured but occasionally crude. Incisions usually outline features or ornament the surface. The larger examples are hollow and one attached to a rim of vessel shape 3 has a rattle inside.
4. Non-Barrancoid adornos (figs. 32–47; pls. 19, 20, *i*, *j*). Anthropomorphic and zoömorphic adornos of smaller size and cruder workmanship than the Barrancoid style. Anthropomorphic examples have large bulbous noses and coffee-bean eyes with a narrow slit across the center, giving a myopic effect reminiscent of the movie

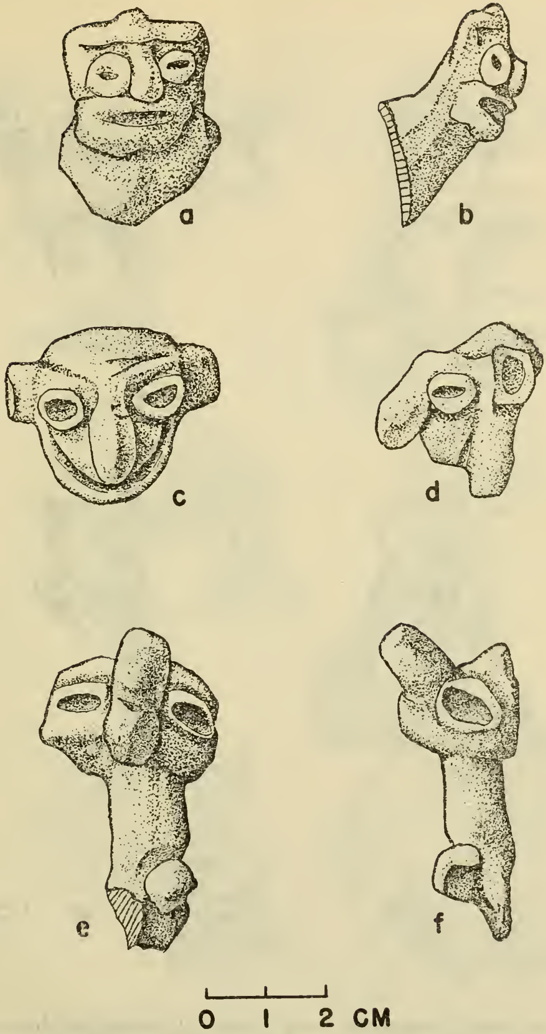


FIGURE 33.—Anthropomorphic adornos of Akawabi Incised and Modeled, Motif 4: non-Barrancoid, Mabaruma Phase.

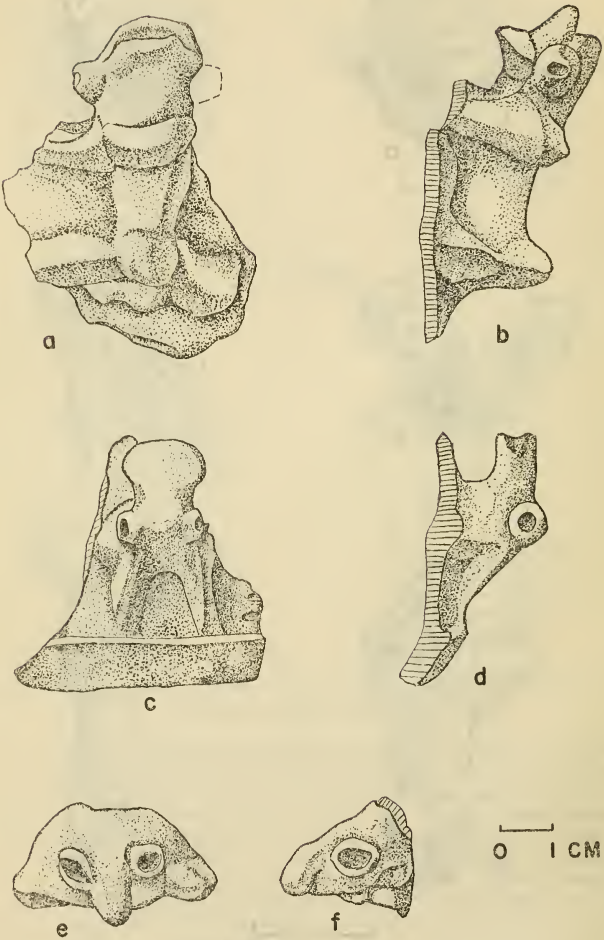


Figure 34.—Zoomorphic adornos of Akawabi Incised and Modeled, Motif 4: non-Barrancoid, Mabaruma Phase. *a–d*, Froglike. *e–f*, Unidentified creature.

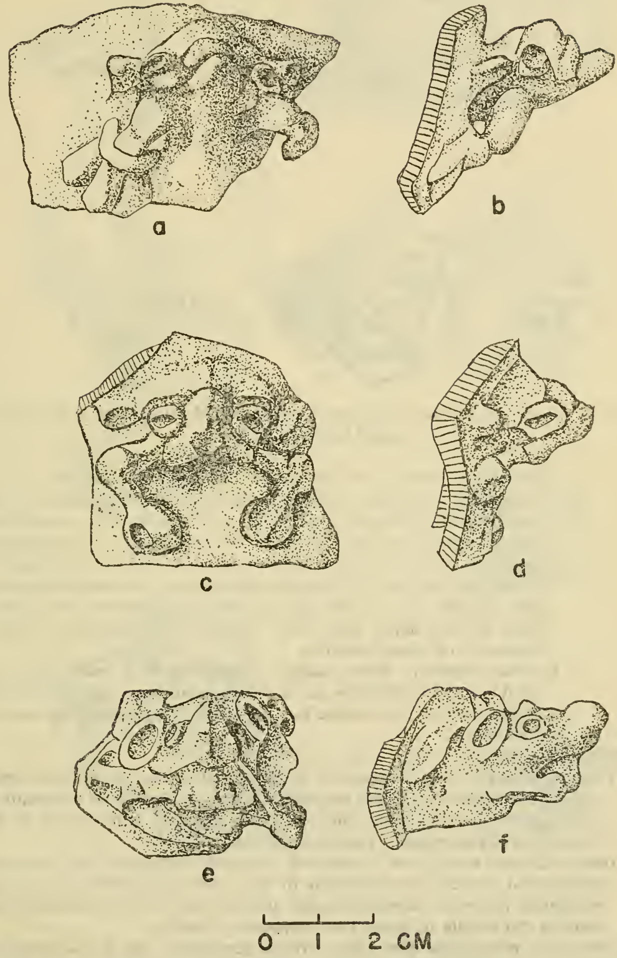


FIGURE 35.—Zoomorphic adornos of Akawabi Incised and Modeled, Motif 4: non-Barrancoid, Mabaruma Phase.

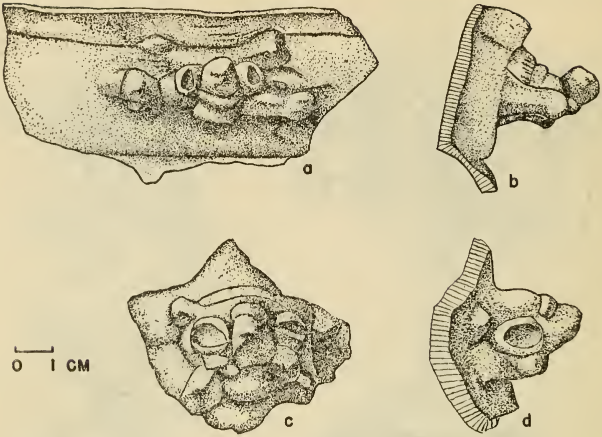


FIGURE 36.—Zoomorphic adornos of Akawabi Incised and Modeled, Motif 4: non-Barrancoid, Mabaruma Phase.

cartoon character, "Mr. Magoo." The head is typically large in proportion to the body, and arms are often shown raised with the hands on the cheeks or chin (pl. 19, *h, i;* figs. 32–33). Zoomorphic forms include froglike (fig. 34, *a, d*), reptilian, and unidentified creatures (figs. 34, *e, f*, 35–36; pl. 20, *i, j*) and various kinds of birds (fig. 37), some of which are modeled in a semisquatting position (fig. 37, *a, e*). This type of adorno appears to occur principally on the upper body wall, between the rim and maximum diameter, on vessel shape 4.

5. Conical nubbins. Plain nubbins measuring 6–12 mm. high and 10–15 mm. in diameter at the base, sometimes with a punctate in the middle. An incised line occasionally surrounds the base of the nubbin.

TEMPORAL DIFFERENCES WITHIN THE TYPE:

Vessel shapes 1, 2, and 4 appear to be restricted to the middle and upper part of the Mabaruma Phase sequence, although this may be the result of the small rim sample from the earlier levels. Form 3 is limited to the lower part of the sequence (Appendix, table 4).

Design motifs that show a distinct temporal difference are adornos: Barrancoid adornos are restricted to the lower and middle part of the sequence, while the non-Barrancoid adornos and conical nubbins occur only in the middle to upper part (Appendix, table 5).

CHRONOLOGICAL POSITION OF THE TYPE: Present throughout the Phase, reaching its maximum frequency in the upper part of the seriated sequence (fig. 48).

ARUKA INCISED

PASTE: The incised decoration is found on the paste of whatever plain pottery type is common in the Mabaruma Phase at the time of manufacture, with no apparent preference. Thus at sites belonging to the early part of the sequence

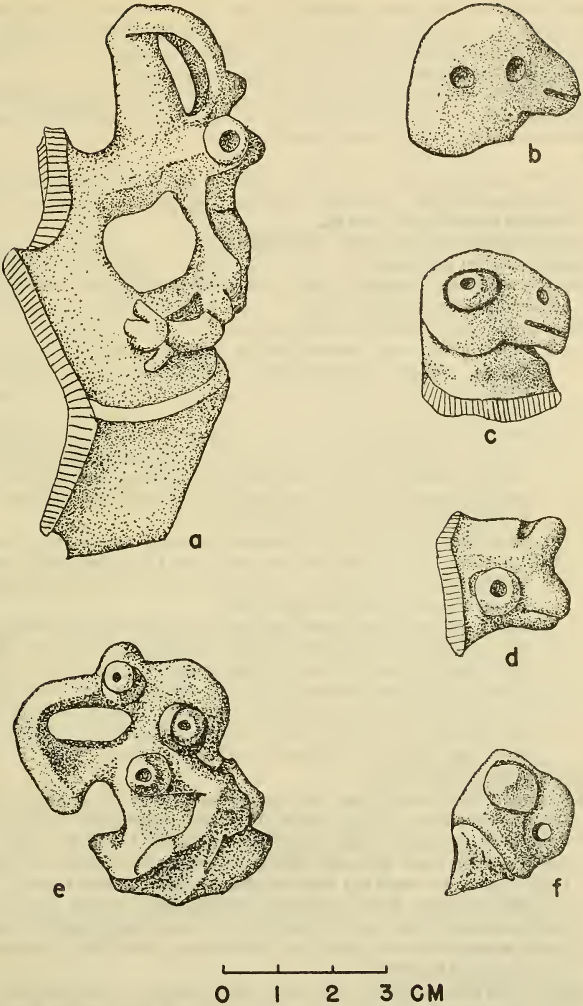


FIGURE 37.—Bird adornos of Akawabi Incised and Modeled, Motif 4: non-Barrancoid, Mabaruma Phase. *c*, Adorno found at a Koriabo Phase site.

when Mabaruma Plain is the most common, the majority of the Aruka Incised sherds has that paste; whereas in the upper part of the sequence the incision is most frequently found on the paste of Hosororo Plain and Koberimo Plain, the popular plainwares of the late Mabaruma Phase. See these pottery type descriptions for details of temper, texture, and color.

SURFACES: Both in color and treatment, the surfaces are typical of the respective plainwares; there is no better treatment or handling of the surface than that represented by the better finished plain sherds.

FORM:

Rim: Direct with rounded or slightly tapered lip; unthickened and everted with rounded lip; interiorly thickened, or exteriorly thickened, with rounded or slightly tapered lip.

Body wall thickness: 4–10 mm.; majority 5–6 mm.

Body diameter: 12–36 cm.

Base: Those forms typical of the plain pottery types: flat, flat pedestal, and annular; flat the most common.

Major vessel shapes reconstructed from sherds:

1. Open bowls with outslanting to vertical sidewalls, direct rim, usually rounded but sometimes slightly flattened or tapered lip. Mouth diameter 18–26 cm. Incision on exterior; rarely, on interior (fig. 38–1).
2. Bowls with sharply everted, unthickened rim and rounded lip. The sidewalls range from almost vertical to incurving, but the rim is always strongly everted producing an insloping band 1–2 cm. wide with an incised design on the inner face. Mouth diameter 16–26 cm. Incision on inner rim surface (fig. 38–2).
3. Open bowls with interiorly thickened rim and tapered lip. The rim is 1–3 mm. thicker than the body wall, and 1.3–2.0 cm. wide. Incised designs are restricted to the inner surface of this thickened rim area. Mouth diameter 12–26 cm. (fig. 38–3).
4. Bowls or jars with incurving sidewalls, constricted mouth, direct rim, typically rounded but sometimes slightly tapered lip. Mouth diameter 9–24 cm. Incision on upper exterior (fig. 38–4).
5. Bowls or jars with constricted mouth, incurving side walls and exteriorly thickened rim with either rounded or slightly tapered lip. Rim thickness 6–12 mm., rim width 1.0–2.2 cm.; mouth diameter 12–36 cm. Incision on upper exterior (fig. 38–5).

DECORATION (pls. 21, 22, 23, *h–k*).

Technique: The incised lines are smooth and well made, with a broad, U-shaped channel. Width varies from 1.5–3.0 mm., with the majority 2 mm.; depth ranges from 1.0–1.5 mm., with the majority 1 mm. The incisions were made when the clay was medium dry, neither too dry nor too wet, and as a result the lines are clean cut and unusually even. A few are less carefully done, suggesting individual variation and careless workmanship, which is not characteristic of the type. So-called "parallel lines" were made with individual strokes and hence these lines are not always exactly parallel.

Motif: Five distinct design motifs are characteristic. Since only one complete vessel and a few large sherds were found that showed the overall pattern of decoration, it is possible that two or more of these motifs are often combined on the same vessel.

1. Unzoned, rectilinear incisions, commonly in paired units or parallel lines (pl. 21, *a*, *b*).

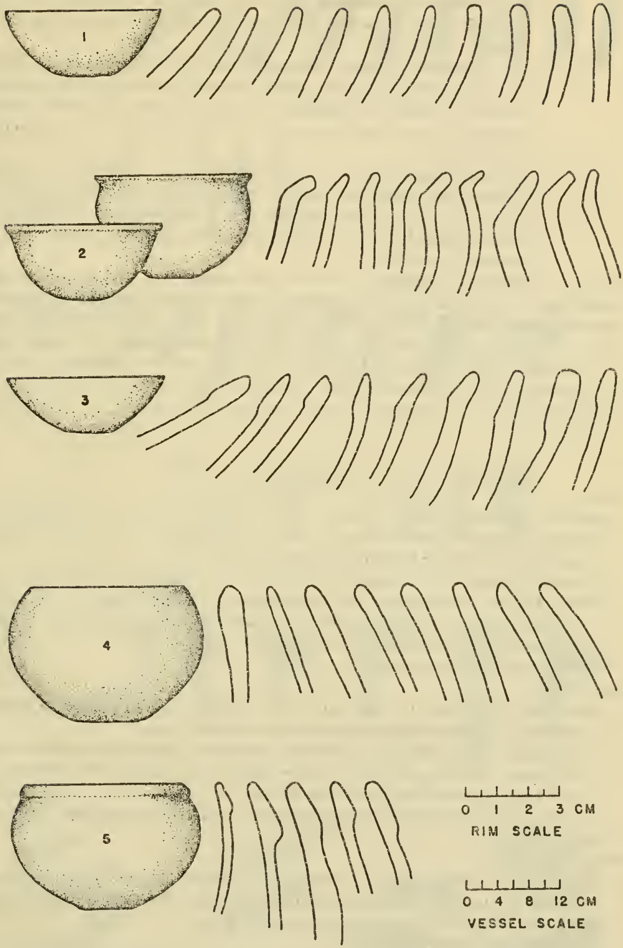


FIGURE 38.—Rim profiles and reconstructed vessel shapes of Aruka Incised, Mabaruma Phase (Appendix, table 6).

2. Unzoned, curvilinear incisions, commonly in paired units or parallel lines (pls. 21, *c–f*, 22).
3. Zoned incisions, consisting most commonly of rectilinear elements, parallel lines, or gashes typically in a triangular zone set off by incisions (pl. 21, *g–i*).
4. Band of incised lines on the sloping interior of everted rims. Either rectilinear or curvilinear, usually parallel lines broken into sections around the rim by diagonal or vertical gashes or short parallel incisions, so that the diameter is partitioned into 2, 3 or 4 sections (pl. 21, *j–l*).
5. Lines on the exterior of rims. Usually this consists of a single or double line running around the rim of the vessel about 1.0–2.5 cm. below the lip. Variations of this motif consist of vertical or diagonal parallel lines spaced at varying intervals around the rim exterior (pl. 21, *m–o*).

Temporal differences within the type: Rim forms 3, 4, and 5 appear to be restricted to the middle and upper part of the seriated sequence (Appendix, table 6), but this may be the result of the poor rim sample from the earlier levels. Design motifs 3 (zoned) and 4 (lines on the interior of everted rims) are restricted to the middle and upper part of the sequence (Appendix, table 7).

Chronological position of the type: Aruka Incised is found throughout the Mabaruma Phase, but shows a steady increase in popularity from the lower (earlier) part to the upper (late) part of the sequence (fig. 48).

HOSORORO PLAIN

Paste:

Method of manufacture: Coiling. Breaks along coil lines often distinct.

Temper: The clay has extremely fine sand particles as natural inclusions and does not appear to have any added temper.

Texture: Extremely compact; not friable, but weak and breaks easily.

Color: Ranges from orange tan to gray tan to gray through cross section. Some sherds have a black core with paper-thin to 3 mm. thick bands of orange along the interior and exterior.

Firing: Incompletely oxidized.

Surfaces:

Color: Majority light to dark tan, some orange tan. Interior and exterior usually the same color, but on a few the interior is gray.

Treatment: Both interior and exterior are scraped smooth and fairly regular and even. Faint crackle lines and a light film of clay on the surfaces suggest the clay was handled when fairly wet. Fine pits on both surfaces result from unevenness that was not erased in the smoothing.

Hardness: 3.5–4.

Form:

Rim: Direct with a rounded or slightly tapered lip; exteriorly thickened with a flat top; sharply everted with a flat insloping flange, rounded lip.

Body wall thickness: 4–10 mm.; majority 5–6 mm.

Body diameters: Range 20–34 cm.

Base: Three forms are of equal popularity; in the absence of complete vessels it is impossible to associate these with a particular rim shape.

A. Flat, unthickened or thickened to as much as 1.5 cm., joining the sidewall at an angle of 40 to 50 degrees; diameter 8–12 cm. (fig. 39, *A*).

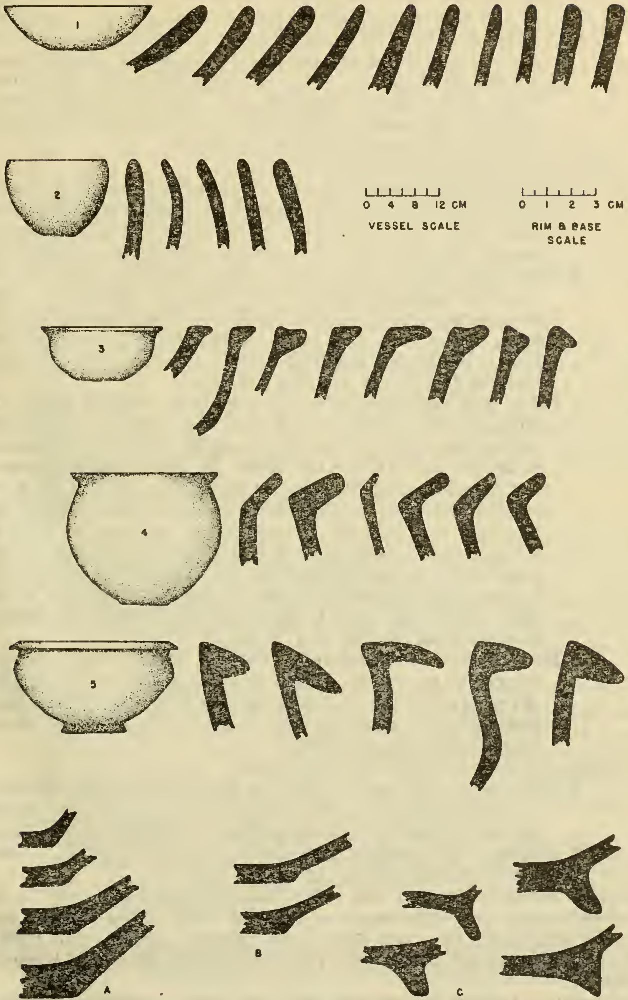


FIGURE 39.—Rim and base profiles and reconstructed vessel shapes of Hosororo Plain, Mabaruma Phase (Appendix, table 8).

B. Flat pedestal, thickened, usually 1.0–1.3 cm., joining the body wall at a 30- to 40-degree angle, diameter 6–10 cm. (fig. 39, *B*; pl. 24, *g*).

C. Annular, with the cross section of the annular foot ranging from triangular, to rounded, to rectanguloid with rounded edges, to tapering (fig. 39, *C*; pl. 24, *e*, *f*). Vertical height 1.5–2.0 cm.; central portion of the base either unthickened or slightly thickened with a convex or flat center ranging from 6 to 15 mm. thick. Diameter of the annular base 7–12 cm., majority 10 cm.

Major vessel shapes reconstructed from sherds:

1. Open bowls with outslanting sides, direct rim and typically a rounded lip, but sometimes slightly tapered or slightly thickened. Side walls vary from almost vertical to outslanting as much as 50 degrees from the vertical. Mouth diameter 18–30 cm. (fig. 39–1).
2. Bowls with vertical to incurving walls, usually a direct rim, but sometimes slightly tapered or thickened; rounded lip. On those bowls with vertical walls the mouth and body diameter are the same, ranging from 20 to 24 cm., while bowls with incurved walls have a constricted mouth opening of 14–20 cm. with the body diameter 20 to 26 cm. (fig. 39–2; pl. 24, *c*).
3. Bowls with outcurving sides and externally thickened rims. The thickened rim ranges from an extra coil added to the exterior making the rim 1.0–1.5 cm. in cross section to a slight pinching out of the side wall to form a thin ridge. Rim top typically horizontal and concave. Mouth diameter 12–26 cm. (fig. 39–3; pl. 24, *b*, *d*).
4. Jars with constricted mouth, sharply everted rim and rounded lip. The short rim joins the interior of the body wall at a 90- to 110-degree angle, from which it rises 1.0–2.5 cm. Usually the rim is no thicker in cross section than the body wall but occasionally it is slightly thickened to as much as 1.5 cm. Curvature of side walls suggests the body is either globular or carinated. Mouth diameter 20–28 cm. (fig. 39–4; pl. 24, *a*).
5. Jars or bowls with externally thickened, broad flanged rim and rounded or tapered lip. These rims are formed by the addition of a wide coil to the exterior of the body wall. Upper rim surface slopes outward and is typically convex, 2.2–3.5 cm. wide. Mouth diameter 22–32 cm. (fig. 39–5).

Rare vessel shapes reconstructed from sherds:

1. Small bowls with slightly incurving walls and exteriorly thickened rim, ranging from a small applique rib to a slight ridge making the rim 8–15 mm. thick in cross section. Mouth diameter 14–18 cm.
2. Griddles. Flat, circular, with direct rim and rounded lip. Diameter 28 cm.; thickness 1.5–1.8 cm.

Temporal differences within the type: Common Form 5 is popular in the middle to earlier part of the sequence but absent later. Among the three base shapes both Form 1 (flat) and Form 2 (flat pedestal) are late, while Form 3 (annular) occurs only in the lower (early) part of the sequence (Appendix, table 8).

Chronological position of the type: Hosororo Plain increases in frequency from the early part of the Mabaruma Phase sequence until it becomes one of the most popular types in the late part of the Phase (fig. 48).

Hotokwai Plain

Paste:

Method of manufacture: Coiling; breakage along coil lines quite distinct; coil with 1.0–1.8 cm.

Temper: Crushed steatite schist. Samples of steatite schist rock found in the refuse and the crushed material in the pottery were analyzed by E. P. Henderson, Division of Mineralogy, U.S. National Museum. The steatite schist crushes easily into irregular shaped fibrous particles ranging from fine, flourlike material to large 3–6 mm. hunks. There was no attempt to sift out the larger hunks from the fine particles so that irregularity of temper particle size is one of the characteristics of the pottery type. Paste includes a high percentage of temper; the fine silky particles permeate the clay.

Texture: Fine, silky, silvery particles of temper throughout the paste give a slick, silky, talclike feel. Good tensile strength; not friable. Cross section of sherd always has a fibrous appearance.

Color: Very irregular and spotty color patches throughout the paste, apparently caused by the size of the steatite temper particles and unequal heat transfer. Half the sherds are mainly a tan to brown to orange throughout the entire cross section; others have orange to tan to brown bands 0.5–1.0 mm. wide along the exterior and interior with a gray core. All sherds have a mottled appearance due to the contrast between the gray silky fibers of the steatite temper and the splotchy orange, tan and browns of the clay.

Firing: Oxidized, incomplete to complete; fire clouds common.

Surfaces:

Color: Interior and exterior are the same color on most sherds, but for the type there is a range from tile orange to orange to tan to brown to gray with a few black fire clouds. The silky gray sheen of the fibrous steatite schist temper stands out against the background color, giving a distinctive, unmistakable appearance to the sherd surfaces. Some of the sherds with an unusually high percentage of temper tend to have a light steel-gray hue.

Treatment: Both surfaces are smoothed and scraped, erasing the coil lines but leaving scraping lines visible. On the whole the surfaces are fairly smooth to the touch, but irregularity of body wall thickness on the same sherd is typical. The thinner walled sherds (4–7 mm.) usually have better smoothed and more even surfaces than thicker sherds. Occasionally a lump of steatite temper protrudes from the surface; small pits often occur where the clay was not smoothed over or scraped well.

Hardness: Majority 2.5; a few 2, and a few 3. Those sherds with the highest percentage of well pulverized steatite-schist temper tend to be 2.5–3 while those with unpulverized hunks of temper tend to be 2. Hardness of the steatite temper particles is 2–2.5.

Form:

Rim: Direct with rounded, flattened or tapered lip; exteriorly thickened with a flat top; sharply everted, tapering or expanding to rounded or flattened lip.

Body wall thickness: 4–15 mm.; majority 6–8 mm.

Body diameters: 24–40 cm.; majority 26–34 cm.

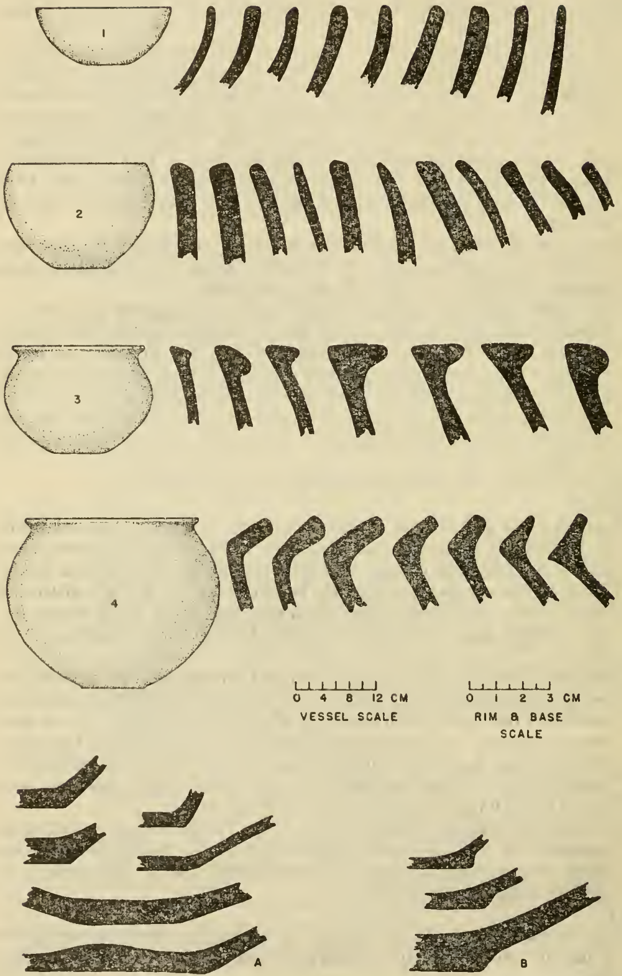


Figure 40.—Rim and base profiles and reconstructed vessel shapes of Hotokwai Plain, Mabaruma Phase (Appendix, table 9).

Base:

A. Flat, unthickened or slightly thickened, rarely with a convex interior, joining sidewalls at an angle ranging from 25 to 55 degrees; diameter 5–10 cm., maximum thickness 1.2 cm. (fig. 40, *A*).

B. Flat pedestal; thickness 2–10 mm. greater than the body wall; pedestal 8–15 mm. high; diameter 12–14 cm. (fig. 40, *B*).

Major vessel shapes reconstructed from sherds:

1. Open bowl with outslanting sidewalls, direct rim and usually rounded but sometimes slightly tapered or flattened lip. Body wall thickness 4–10 mm., majority 8 mm.; mouth diameter 10–28 cm., with the majority 18–22 cm. (fig. 40–1; pl. 25, *a*).
2. Bowl or jar with vertical to incurving walls, direct rim, usually rounded but sometimes flattened or tapered lip; body wall thickness 4–12 mm., majority 6–8 mm.; mouth diameter 15–34 cm. (fig. 40–2; pl. 25, *g*).
3. Globular jars with a constricted mouth and an exteriorly thickened, flat-topped rim. A coil, usually 1.0–1.5 cm. thick, is added to the exterior of the body wall at the rim to produce a broad flat and usually level rim top 1.0–2.3 cm. wide; mouth diameter 18–36 cm. (fig. 40–3; pl. 25, *b*, *f*).
4. Jars with constricted mouth, sharply everted rim and rounded or flattened lip. Rim forms an angular junction with body on interior and a rounded one on the exterior. It projects 1.5–2.6 cm. Mouth diameter 20–36 cm. Apparently a globular body is most common, but a few are carinated (fig. 40–4; pl. 25, *d–e*).

Less common vessel shapes reconstructed from sherds:

1. Small open bowls with a flat flange produced by interior thickening of the rim; the flange is 1.0–1.4 cm. wide; lip rounded; mouth diameter 12–22 cm.
2. Griddles. A large circular platter of pottery with the rim slightly upturned so that it rises 5 mm. to 2 cm. above the center of the griddle; lip rounded; rim diameter 30–45 cm.

TEMPORAL DIFFERENCES WITHIN THE TYPE:

Thicker body sherds with a higher percentage of large hunks of unpulverized steatite-schist temper, resulting in a coarser texture and rougher surface, tend to be more common in the earlier part of the Mabaruma Phase sequence. Later, the type tends to be more thin walled, with the steatite-schist temper more finely crushed and evenly distributed throughout the paste.

Common form 3 is restricted to the lower (early) to middle part of the sequence. Common form 4 continues slightly longer but this form is definitely not found in the late history of the type. Less common form 1 is found only at N–13, which belongs to the middle part of the sequence (Appendix, table 9).

CHRONOLOGICAL POSITION OF THE TYPE: Hotokwai Plain occurs throughout the Mabaruma Phase sequence, reaching the peak of popularity at the middle of the sequence, and thereafter declining in frequency (fig. 48).

KAITUMA INCISED AND PUNCTATE

PASTE AND SURFACE: This decorated type occurs principally on pastes of Hosororo Plain and Koberimo Plain. At that point in the sequence when Hotokwai Plain reaches its peak of popularity a considerable number of Kaituma Incised and Punctate sherds appear on this steatite-tempered paste. See these various type descriptions for details of color, temper, firing, and surface treatment.

FORM:

Rim: Direct with rounded or slightly tapered lip; unthickened or slightly thickened and everted with a tapered lip; interiorly or exteriorly thickened with rounded lip.

Body wall thickness: 4–10 mm.; majority 5–6 mm.

Body diameters: 16–30 cm.

Base: Those typical of the plain pottery types: flat, flat pedestal, and annular.

Majority vessel shapes reconstructed from sherds:

1. Open bowls with direct rim and usually rounded but sometimes slightly tapered lip. The sidewalls are outslanting to vertical. Rim diameter 14–32 cm., majority 26 cm. Decoration on interior or exterior (fig. 41–1).
2. Bowls or jars with incurving side walls, constricted mouth, direct rim, and rounded lip. Mouth diameter 18–30 cm. Decoration on exterior (fig. 41–2).
3. Open bowls with sharply everted rims. The rim is either unthickened or slightly thickened (1–2 mm.) on the interior. The everted part measures 1.0–2.5 cm. wide. Mouth diameter 16–24 cm. Decoration on exterior or rim top (fig. 41–3).
4. Open bowls with interiorly thickened rim (1–2 mm.) and tapered or rounded lip. Width of rim thickening 1.5–2.5 mm.; rim diameter 18–28 cm., majority 18–20 cm. Decoration on interior rim thickening (fig. 41–4).
5. A few miscellaneous sherds represent globular jars with a short neck and an externally thickened rim 1.0–2.5 cm. wide, or small globular jars with slightly thickened, everted rims with a mouth diameter of 10–16 cm.

DECORATION (pls. 23, *a–g*, 26, 27; figs. 42–43):

Technique: Incisions are smooth and well made, with a broad, U-shaped channel ranging in width from 1.5–2.0 mm. and in depth less than 1 mm. Lines are straight, uniform in width on a single sherd, and reasonably parallel. The ends are frequently tapered when not terminating in a punctate. Punctates are either circular, with a diameter of about 2 mm., or ovoid, measuring from 2 by 4 mm. to 3 by 5 mm. The hole is U-shaped or V-shaped, and typically about twice as deep as the incisions, although there is great variation in depth on a single sherd. Lines and punctates are combined in three different motifs, and two of these are rarely found on a single vessel.

Motif:

1. Incised lines ending in punctures, with the punctate either at the end of the line or a few millimeters away beside or beyond the terminus. This motif occurs in an all-over design on the exterior or interior. Execution may be continuous or zoned, with areas containing straight or curved, parallel lines alternating with blank areas. Sherds are too small to show much of the total decoration (pl. 26, *a–h;* fig. 42).
2. Incised lines alternating with punctates. Motif 2 occurs in narrow bands along the rim, usually on the interior or exterior thickening. There are two main variations, an undulating incised line winding between punctates (pl. 27, *b–f;* fig. 43, *a–c*), and groups of short,

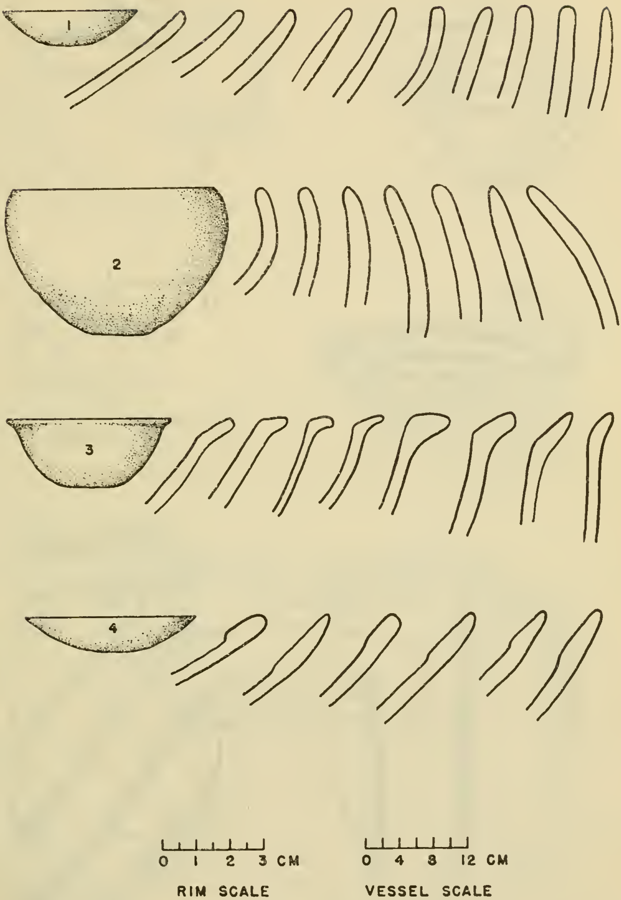


FIGURE 41.—Rim profiles and reconstructed vessel shapes of Kaituma Incised and Punctate, Mabaruma Phase. (Appendix, table 10).

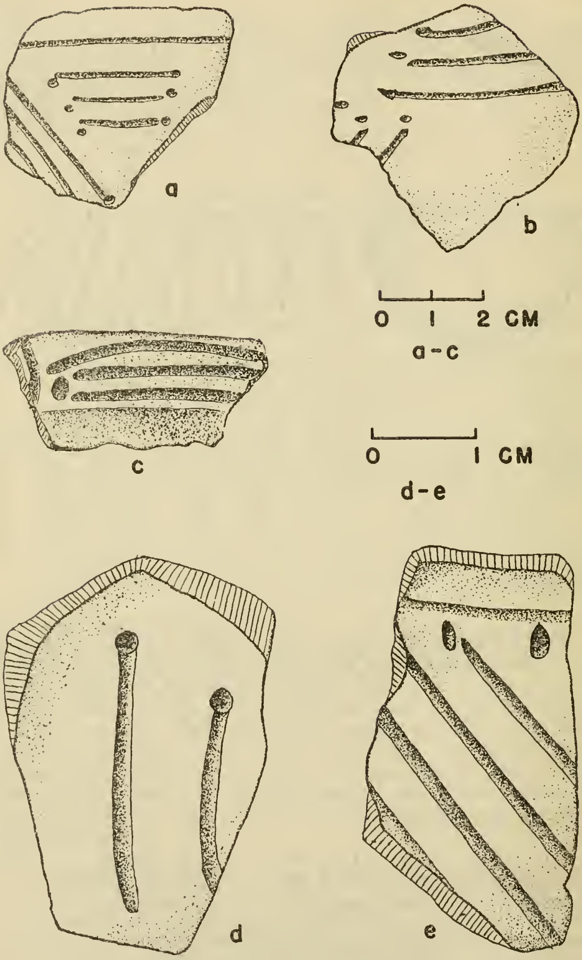


Figure 42.—Kaituma Incised and Punctate, Motif 1: incised lines ending in punctates, Mabaruma Phase.

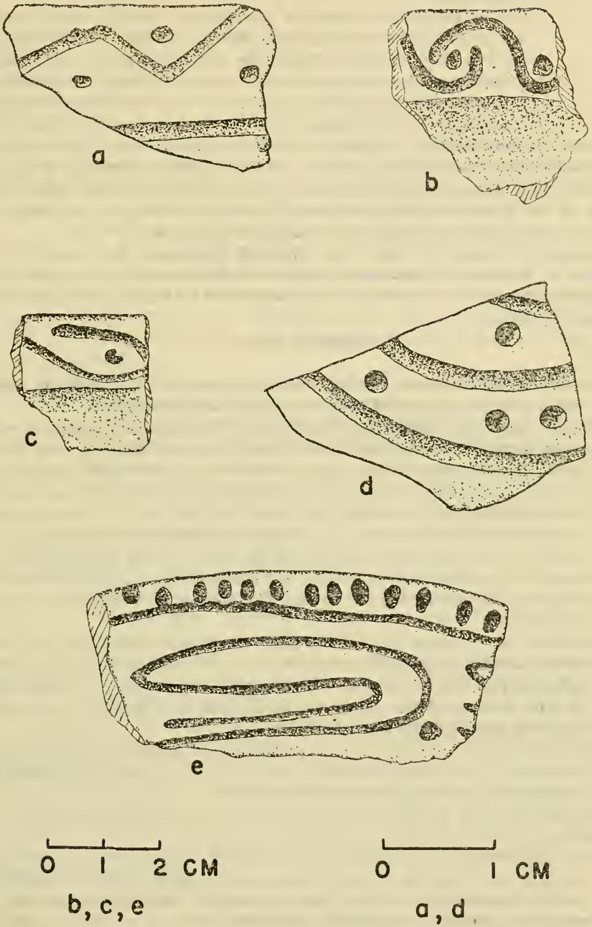


FIGURE 43.—Kaituma Incised and Punctate, Mabaruma Phase. *a–c*, Motif 2: incised lines alternating with punctates. *d–e*, Motif 3: areas of punctates divided or bounded by incised lines.

parallel, slanting lines of alternating direction with punctates in the triangular zone formed when the direction is changed (pl. 27, *a*).

3. Areas of punctates divided or bounded by incised lines. Motif 3 is characterized by trianguloid, ovoid or irregularly shaped areas filled with punctates, bounded by but not typically enclosed by incised lines (pl. 27, *g–j;* fig. 43, *d–e*). Like Motif 1, this decoration covers a large portion of the interior or exterior vessel surface.

Associated techniques: Occasional vessels have adornos of Akawabi Incised and Modeled, Motif 4 (pl. 26 *b*) or additional decoration of Aruka Incised.

Temporal differences within the type: Motifs 2 (lines alternating with punctates) and 3 (areas of punctates) appear to be restricted to the upper (late) part of the Mabaruma Phase sequence (Appendix, table 11). No trends are discernible in vessel shape popularity (Appendix, table 10).

Chronological position of the type: Although there are a few sporadic occurrences of Kaituma Incised and Punctate in the lower (early) part of the sequence, the type is characteristic of the middle to upper (late) part of the Phase (fig. 48).

KOBERIMO PLAIN

Paste:

Method of manufacture: Coiling; breakage along the coil lines not always distinct for the erasure of the coils in most cases is complete.

Temper: Muscovite mica mixed with medium to fine sand containing waterworn quartz, feldspar, and iron pyrites particles under 1 mm. in size. Mica particles range from pinpoint size to large laminated pieces 3 by 5 mm. in area, and are abundant so that on most sherds the surfaces are speckled with shiny mirrorlike particles (pl. 28, *b*, *g–i*). Koberimo Plain sherds were examined by E. P. Henderson, Division of Mineralogy, U.S. National Museum, who suggests that the mica was not added to the paste from a decomposing mica outcrop but instead comes from sand that contained a high percentage of mica. The mica and sand particles are all waterworn.

Texture: Fairly compact, fine to medium coarse paste depending on the size of the accompanying sand particles; very few sherds are coarse. Paste sandy to feel but not friable. Fairly good tensile strength. Larger pieces of mica bind the paste so that the mica tears upon breaking the sherd or pulls out, leaving flat platy holes.

Color: Fired tan to brown in a band along both surfaces from paper thinness to 1–2 mm. wide leaving a gray or black core. Sometimes fired orange to tan through the entire cross section.

Firing: Oxidized, incomplete in most cases; many fire clouds typical.

Surfaces:

Color: Exterior—tan to brown, occasionally bright orange. Interior—usually tan to brown but sometimes gray or gray black. Exposed mica temper particles give both surfaces a speckled, sparkling appearance.

Treatment: Scraped to erase the coil lines, generally smooth to the touch but with some unevenness making the body wall thickness variable on a single sherd. Thinner walled sherds are well smoothed on both surfaces, whereas thicker sherds are only irregularly scraped. The smoothing process has been done well enough so that pits do not occur; this surface treatment coupled with the paste characteristics makes a surface that is resistant to erosion.

Hardness: 2.5–3.

FORM:

Rim: Direct with rounded, flattened or tapered lip; strongly everted, tapering to rounded lip; rarely, exteriorly thickened with flat sloping upper edge.

Body wall thickness: 3.5–10.0 mm.; majority 4–6 mm.

Body diameter: 16–38 cm.; majority 26–32 cm.

Base: Three base forms occur, but in the absence of complete vessels it is impossible to correlate them with particular rim forms, except by stratigraphic association (Appendix, table 12).

A. Flat, unthickened or slightly thickened, joining the side walls at a sharp angle of 30 to 45 degrees; diameter 8–12 cm. (fig. 44, *A*).

B. Flat pedestal, 5–12 mm. high, thickened 2–8 mm. more than the body wall; diameter 10–12 cm. (fig. 44 *B*).

C. Rounded, either thickened or unthickened; basal area about 10–12 cm. in diameter (fig. 44, *C*).

Major vessel shapes reconstructed from sherds:

1. Open bowl with outslanting sides, and most commonly a direct rim with rounded lip. Sometimes the rim is slightly thickened or tapered. Rim diameter 16–34 cm., majority 24–26 cm. (fig. 44–1; pl. 28, *d*).
2. Bowls or jars with vertical to incurving sidewalls, direct rim and rounded lip; mouth diameter 16–24 cm. (fig. 44–2).
3. Jars with constricted mouth, sharply everted rim and rounded lip. Rim generally no thicker than the body wall, but sometimes slightly thickened on the exterior to form a more gentle curve reinforcing the junction with the body wall. Rim width 1.0–2.2 cm.; thickness 6–11 mm.; mouth diameter 20–26 cm. The jar body is generally globular but a few are carinated (fig. 44–3; pl. 28, *a–c*, *e*).

Less common vessel shapes reconstructed from sherds:

1. Griddles. Flat, circular, with the rim either direct or slightly upturned, lip always rounded. Exterior surface is rough; interior well smoothed. Thickness of central portion 1.1–1.5 cm., rim thickness 1.0–1.8 cm. Diameter 36–48 cm.
2. Globular jars with a constricted mouth, and exteriorly thickened, flat-topped to rounded rim with rounded lip. Rim width 1.3–1.5 cm.; mouth diameter 18–28 cm.
3. Small open bowls with unthickened, everted rim and rounded lip; mouth diameter 20–22 cm.

TEMPORAL DIFFERENCE WITHIN THE TYPE: None discernible. Some of the less common vessel shapes appear to have a restricted history but the samples are too small to be reliable.

CHRONOLOGICAL POSITION OF THE TYPE: Although there are sporadic early occurrences, this type is most characteristic of the latter part of the Mabaruma Phase sequence (fig. 48).

MABARUMA INCISED

PASTE AND SURFACE: The majority of the type is on the paste of Mabaruma Plain, which is the dominant plain ware during the period of manufacture of this decorated pottery; a few appear on the other plain wares typical of the Mabaruma Phase. Surfaces are typical of the better finished plain sherds. For details of color, temper, firing, surface treatment, etc., see these type descriptions.

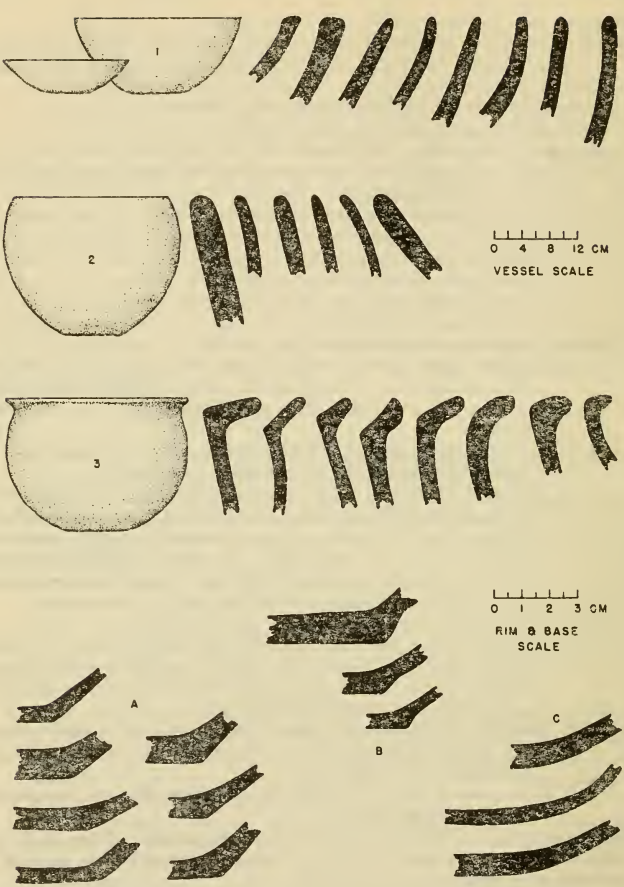


Figure 44.—Rim and base profiles and reconstructed vessel shapes of Koberimo Plain, Mabaruma Phase (Appendix, table 12).

Form:

Rim: Thickened by the addition of a coil to the exterior, producing a broad flat top with a rounded lip; unthickened and sharply everted producing a broad flange with either a rounded or tapered lip.

Body wall thickness: 4–9 mm.; majority 6–7 mm.

Body diameters: 20–36 cm.

Base: Flat, flat pedestal or annular (see Mabaruma Plain for description).

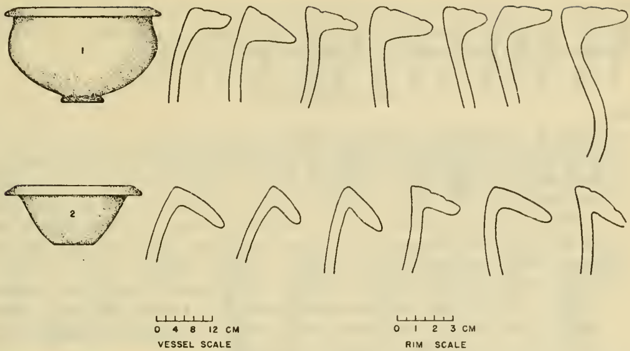


FIGURE 45.—Rim profiles and reconstructed vessel shapes of Mabaruma Incised, Mabaruma Phase (Appendix, table 13).

Major vessel shapes reconstructed from sherds:

1. Bowls with sidewalls varying from slightly incurving to outcurving, with the rim exteriorly thickened, creating a broad, flat top that slopes outward. The lip is tapered, producing a trianguloid cross section 1.2–1.9 cm. in maximum thickness and 2.0–3.9 cm. wide. Lobes are sometimes attached to the lip. Mouth diameter 26–32 cm. (fig. 45–1).
2. Bowls with unthickened, sharply everted flange rims with a convex top that slopes strongly downward, rounded or tapered lip. The rim always forms an acute angle with the body wall usually from 60–75 degrees. Width of flange rim ranges from 2.5–3.8 cm. with the majority around 3.0–3.5 cm. Mouth diameter 22–34 cm. (fig. 45–2).

DECORATION (pl. 29):

Technique: Incisions made most typically with a round-ended tool producing a broad, U-shaped groove 1.0–1.5 cm. in depth and 1.5–3.0 mm. in width, with the majority 2.0 mm. wide. A few were made with a flat-ended stick. Thhe majority were incised when the surface was medium dry so there are no dragged particles of clay. About half of the sherds are carefully incised; the remainder showing careless or sloppy workmanship, with lines poorly spaced and crooked.

Motif: Decoration is limited to the broad upper rim surface and consists of one to three incised lines parallel to the circumference. Two parallel lines are most typical. At intervals, small lobes break the continuity of one or more of the incisions. These lobes are 1.5–6.5 cm. long and affixed to the outer edge of the rim so that they protrude upward and outward from 2–5 mm. (pl. 29, *a–d*, *f–i*). They appear to be evenly spaced so they divide the rim into halves or quarters. Incised lines, punctates, spirals, or perhaps even stylized faces with eyes and mouths may be seen in these lobes, and they are also bounded by a curved line.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Although the rim sample per level in the seriated sequence is small, there is a suggestion that Form 2 is absent in the latter part of the Mabaruma Phase (Appendix, table 13).

Chronological position of the type: Although found throughout the entire sequence, the type is most popular in the earlier part of the Mabaruma Phase where it reaches a popularity of 4.5 percent (fig. 48).

MABARUMA PLAIN

Paste:

Method of manufacture: Coiling; breaks along coil lines very distinct.

Temper: Waterworn sand particles or quartz and feldspar particles from decomposed granite. Temper grains range in size from 0.5–4.0 mm., with the majority 1–2 mm. Abundant, unevenly distributed in the clay. Particles extremely prominent on both surfaces and in cross section due to the contrast between the gray-white rock color and the orange-brown to orange-gray paste (pl. 30, *f*).

Texture: Very granular, but not friable; poorly mixed, leaving air pockets, a sort of layered appearance and clumping of temper particles. Occasional pieces of black ash from leaves, stems, and other extraneous vegetable matter are scattered through the paste.

Color: Half of the sherds are brown to tan to orange through the cross section; others are brown or tan along the exterior and interior in band ranging from paper thinness to 3 mm. with a gray to black core.

Firing: Oxidized, complete to incomplete; fire clouds often present. Usually the interior and exterior are same shade of tan or brown suggesting the vessel was fired mouth up, but in a few cases the interior is dark gray with high carbon content indicating that the jar or bowl was fired mouth down so that smudging occurred on the interior.

Surfaces:

Color: Exterior—orange, tan, or brown with some black fire clouds. Interior—usually the same color as the exterior, but sometimes dark gray.

Treatment: The surfaces tend to erode easily because of their rough, uneven, granular texture and the protruding large hunks of temper. Both surfaces treated the same, ranging from fairly even, well scraped and smoothed to coarse with the coil lines barely erased by scraping, leaving holes, depressions, and irregularities so that the body wall thickness varies considerably on each sherd. Dragged temper particles often create grooves in the clay; crackle lines around the large temper particles are also common.

Hardness: 2.5–3.

Form:

Rim: Direct with flattened or rounded lip, rarely tapered or slightly thickened; exteriorly thickened producing a broad flat top with rounded lip; sharply everted, slightly thickened on the interior; with rounded lip.

Body wall thickness: 5–15 mm.; majority 6–8 mm.

Body diameters: 20–36 cm.

Bases: The four types of bases seem to be found on both jars and bowls but in the absence of complete vessels it is impossible to associate any specific base with a particular vessel shape.

A. Flat, slightly thickened sometimes with a convex center, joining the sidewalls at an angle of 25 to 45 degrees; diameter 6–12 cm.; base thickness 8–12 mm. (fig. 46, *A*).

B. Flat pedestal, slightly thickened, with the pedestal rising 8–10 mm. at a steeper angle than the body wall but not vertically; diameter 10–12 cm. (fig. 46, *B*).

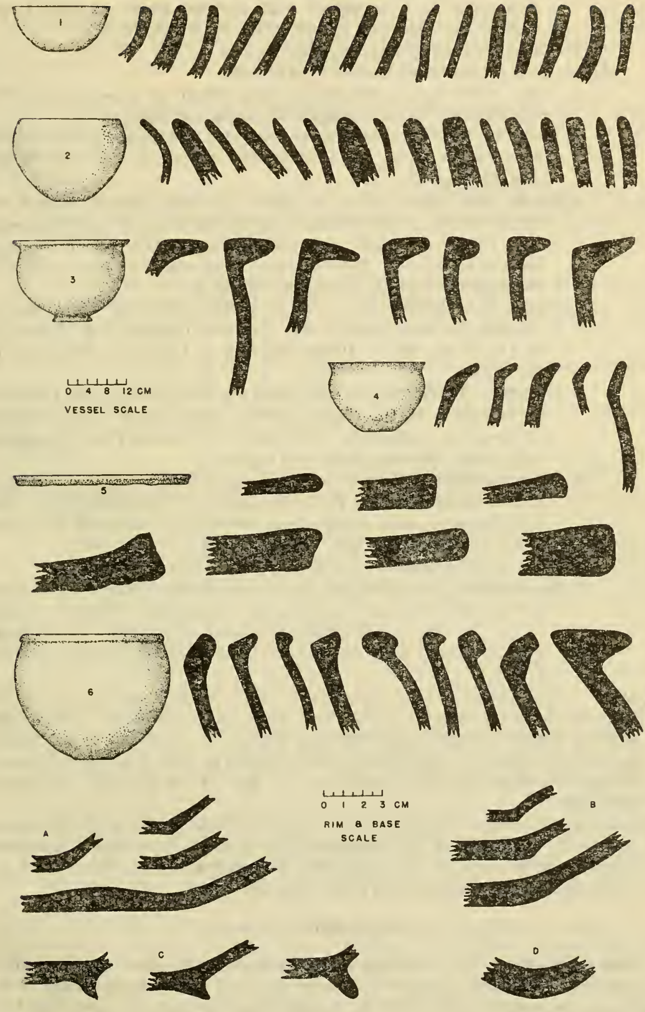


Figure 46.—Rim and base profiles and reconstructed vessel shapes of Mabaruma Plain, Mabaruma Phase (Appendix, table 14).

C. Annular, with the cross section of the annular foot ranging from triangular to rectanguloid with rounded edges; vertical height 1.0–1.5 cm.; diameter 7–8 cm. (fig. 46, *C;* pl. 30, *c*).

D. Rounded, slightly thickened (fig. 46, *D*).

Major vessel shapes reconstructed from sherds:

1. Open bowls with outslanting sides, direct or tapered rim with rounded lip. Mouth diameter 10–30 cm. (fig. 46–1).
2. Bowls or jars with vertical to incurving sidewalls, direct rim and rounded, flattened, or tapered lip. Mouth diameter 10–36 cm. (fig. 46–2; pl. 30, *a*, *d*).
3. Large open bowls with externally thickened, broad, flanged rim with rounded or tapered lip. The flattened top of the flange measures 1.8–3.3 cm. wide with the maximum thickness of the cross section 1.2–1.8 cm. Rim diameter 18–32 cm. The body is usually rounded, but a few are carinated (fig. 46–3).
4. Bowls with slightly outcurving to slightly incurving walls, sharply everted rim and rounded lip. The flat, insloping top of the rim is 1.2–2.0 cm. wide. Mouth diameter is 14–28 cm. (fig. 46–4; pl. 30, *b*, *e*).
5. Griddles. Large, flat, circular with the basal side poorly smoothed as compared to the upper surface. Rim either direct, slightly thickened or upturned, with concave or rounded lip. Thickness 1.2–2.5 cm., diameter 28–50 cm. (fig. 46–5).
6. Large globular jars with restricted mouth and exteriorly thickened rim, made by adding a thick, triangular, or rectangular coil. The rim varies in cross section from circular to triangular in outline and 1–4 cm. in thickness. Mouth 20–36 cm. (fig. 46–6).

Less common vessel shapes reconstructed from sherds:

1. Short-necked jars, probably with large globular bodies. The necks are vertical, slightly insloping or outsloping, ranging in length 3.5–6.0 cm.; the rim is slightly thickened or everted. Mouth diameter 20–32 cm.; body diameter at least 10–15 cm. greater than the mouth.

Temporal differences within the type: Vessel Form 3 occurs only in the early (lower) to middle part of the Mabaruma Phase sequence. Vessel Form 4 has a similar history. Less Common Form 1 is restricted to the middle part of the sequence. The most significant trend in form is the occurrence of the annular base only in the lower (early) part of the sequence (Appendix, table 14).

Chronological position of the type: Mabaruma Plain is the dominant pottery type in the early part of the Mabaruma Phase, where it reaches a maximum frequency of 65 percent. Its history is one of gradual decline, but it continues to be present until the end of the Phase (fig. 48).

UNCLASSIFIED PLAIN

Two sherds from N–13 and five sherds from N–21 all show the same characteristics. The paste is gray tan to dark gray and full of holes. Most of the surfaces are eroded away. At first it seemed possible that the paste had been shell tempered and the temper had leached out; however, closer examination did not verify this. The clay probably contained stray bits of organic matter, was not well kneaded and as a result an excess number of air pockets developed. Body wall thickness 6–13 mm.; body diameter 26 and 28 cm.

UNCLASSIFIED RED PAINTED

The sample is too small and occurrence too sporadic to warrant the establishment of a named pottery type, but for easy reference the characteristics of sherds with red painted surfaces are described below.

PASTE:

Although the various plain pottery types of the Mabaruma Phase are represented, the majority of the sherds with red painted decoration have the fine sand-tempered paste of Hosororo Plain.

SURFACES:

Treatment: The red painted surfaces were smoothed but apparently no special effort was made to finish this surface better than the rest of the vessel.

FORMS:

1. Open bowls with gently outcurving walls, direct rim, rounded or tapered lip. Flat base. Mouth diameter 18–24 cm.
2. Bowls with incurving sidewalls, constricted mouth and direct rim. Flat base.
3. Large bowls with exteriorly thickened, broad, flanged rim. Rim diameter 20–28 cm. Usually a flat base or a flat pedestal base.
4. Globular jars with externally thickened, everted rim, flat or flat pedestal base, and mouth diameter of 26 cm.

DECORATION:

Technique: Thick red paint applied to either the interior or exterior or to both surfaces in several ways, listed in the order of their frequency of occurrence:

1. Red ocher rubbed on the surfaces when the clay was leather hard, creating polishing striations that are redder than the rest of the surface. The red is rather uneven in its application. Color is a dark brick red. Where the red is unusually thick, crackle lines formed when the vessel was fired.
2. A few sherds have a thick red slip that may have been applied by dipping or by several coats with a brush; thickness ranges from that of onionskin to heavy No. 20 pound bond paper.
3. Red lines 3–4 mm. wide, applied by brush on the exterior. On two sherds, the surface has a crackle and sheen apparently caused by covering the red painted surface with a resin.

Motif: On both the rubbed and slipped surfaces, the red paint covered large sections of the interior and exterior. Some of the sherds suggest that the entire surface was rubbed or painted red. In other cases, the red paint was restricted to the externally thickened, wide, flanged rim. Red line designs are composed of large concentric circles or straight parallel units. On one sherd, red paint comes up to an incised line, but not over it.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Too few sherds to observe a trend.

CHRONOLOGICAL POSITION OF THE TYPE: Scattered throughout the Mabaruma Phase sequence but with no particular concentration at any one point (fig. 48).

UNCLASSIFIED WHITE SLIPPED

Fourteen sherds from various levels and sites of the Mabaruma Phase are white slipped; see Appendix, table 3 for tabulations. White-slipped sherds are also found in limited quantity in the Koriabo Phase, and it is possible that a few of these found in various Mabaruma Phase sites are trade; however, in others the paste is typical of the plain pottery types of Mabaruma Phase.

PASTE: On Mabaruma Plain and Hosororo Plain.

SURFACES: Except for the slip, the surfaces are typical of the plain pottery types.

Slip: White slip ranges in thickness from paper thin to 0.5 mm. On a few sherds the slipped surface is so thick that crackle lines developed during firing.

FORM: Bowls with incurving sidewalls and a slightly constricted mouth, or open bowls with outsloping sidewalls, direct rim, rounded lip. Mouth diameter 14–26 cm. A few body sherds with slipped exteriors suggest by their curvature that they are from globular-bodied jars with diameters 24–28 cm.

DECORATION: Two sherds have incised lines cut into the white slip; 1 sherd from Site N–13 has traces of red paint on the white slip as if a painted design once existed.

UNCLASSIFIED DECORATED

Occasional sherds from Mabaruma Phase sites exhibit unusual forms of decoration by brushing, incision, modeling, or punctation. These have the following characteristics:

Brushed: Five sherds from N–18 have the exterior surface brushed with a bundle of twigs. The paste has a gray core with coarse sand temper particles; surfaces brown. The only rim sherd is from a bowl with curving sidewalls, a nearly vertical, direct rim and a mouth diameter of 20 cm. The brushings overlap on a few sherds suggesting that the application was random rather than parallel, horizontal, or vertical.

Incised: One sherd from N–20 with fine sand temper, dark reddish brown surfaces, smooth and even exterior and interior, has deep, V-shaped incisions cut into the exterior in parallel diagonal lines just below the rim. Sherd is a rim of a globular jar with a short vertical neck and a constricted mouth 32 cm. in diameter.

Modeled: Four sherds from N–12 and one from N–13 have peculiar modeled applique that could not be classified as Akawabi Incised and Modeled. Several are small adornos, measuring 1 cm. wide and 8 mm. high, with eyes punched in them so that they suggest bird heads. These are placed along the rim of small bowls with everted lips. The other examples are nubbins applied to the exterior wall surface of small bowls apparently as a small face, or zigzag applique probably from parts of a zoomorphic or anthropomorphic figure. Three of the sherd fragments are on paste of Koberimo Plain and one on Mabaruma Plain.

Punctate: A large number of sherds from N–13, cut 1, levels 0–15 and 15–30 cm. are from the same vessel. The fragments were restored to form an open bowl with a direct rim and flattened lip. An irregular row of punctates and an occasional nubbin are placed 5–8 mm. on the average below the rim. Paste is orange with coarse sand temper; surfaces are fairly even. Mouth diameter 22 cm.

TRADE SHERDS OF KORIABO PHASE ORIGIN

Certain Mabaruma Phase sites produced sherds of Koriabo Phase pottery types from vessels acquired by trade. Since the Mabaruma Phase pottery is better made and more elaborately decorated, the major flow of trade was in the opposite direction (see pp. 121, 139–141). The detailed pottery type descriptions can be found under the Koriabo Phase (pp. 130–133). Twenty-eight trade sherds occur in eight sites and represent one plain and one decorated type (pl. 36, *a–e*):

Koriabo Phase pottery type:	Site
Barima Plain (?)	N–1, N–4, N–12, N–13, N–14, N–16, N–20, N–21
Koriabo Incised	N–12, N–13, N–16, N–20

Pottery Artifacts

Two classes of pottery artifacts are found infrequently in the Mabaruma Phase: objects of primary manufacture and worked potsherds.

Pot rests.—Thirty-five fragments of fired clay, with a very sandy, friable paste, appear to belong to pot rests. No fragment is large enough to show the original form, but a combination of features suggests a generally flat to slightly convex base, measuring 8–10 cm. in diameter, with the sides sloping inward to form a truncated cone 10–15 cm. high, with a diameter of 6–8 cm. at the upper end. The surfaces are all very irregular. The fragments were distributed as follows: 7 from N–4, level 0–8 cm.; 19 from N–13, level 45–60 cm., 8 from N–15, surface, and 1 from N–20, level 0–8 cm.

"*Spoon*" (fig. 47, *b*).—A small spoonlike object with a protruding stem in which a hole is drilled part of the way through came from the surface of N–16. The overall exterior measurements are: length 4.5 cm.; width 3.0 cm.; overall depth 1.8 cm.; bowl wall thickness 5–6 mm. The bowl is concave and ranges from 1.3–1.5 cm. at the deepest point. The stem tapers from the bowl and extends 1 cm. outward, tilting upward slightly. It is 8 mm. in diameter. The hole in the end is 3 mm. deep and 4 mm. in diameter. The surfaces are dark brown with a small black fire cloud on the bottom of the exterior; smoothed but not even, with a gritty feel due to the protrusion of coarse sand temper particles. No other complete or fragmentary examples were found. Probably it was nothing more than an experimental modeling of some potter's clay.

Stamp (fig. 47, *a*).—A fragment of a cylindrical stamp came from N–12, cut 1, level 24–32 cm. The paste is tempered with coarse sand, some of the granules up to 2 mm. in length. Fired light tan on the surface and irregularly inward up to 2 mm., leaving a medium-gray core. The surfaces are not well smoothed, and erosion causes temper grains to protrude. The fragment represents half of one end of the stamp, which was originally cylindrical, 4 cm. in exterior diameter. A hole 1.5 cm. in diameter runs through the center. The end is finished by reducing the diameter 5 mm. forming a smooth-surfaced "collar" 7–9 mm. long. Original length cannot be reconstructed. The surface of the cylinder is ornamented by broad (4–5 mm.), deep (4 mm.) grooves. The bottoms of the grooves are U-shaped or V-shaped and smooth, even and uneroded. The design area is divided into panels by straight lines running lengthwise, and these are filled with curved

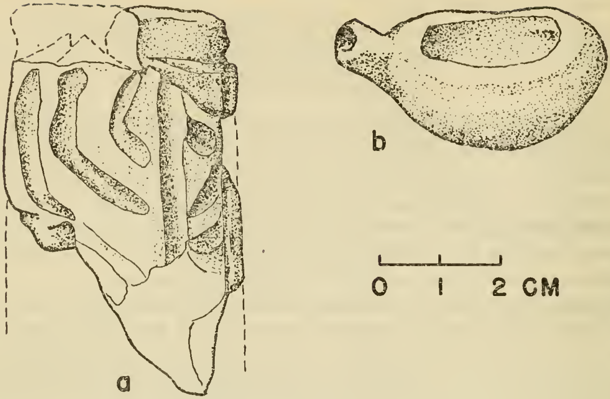


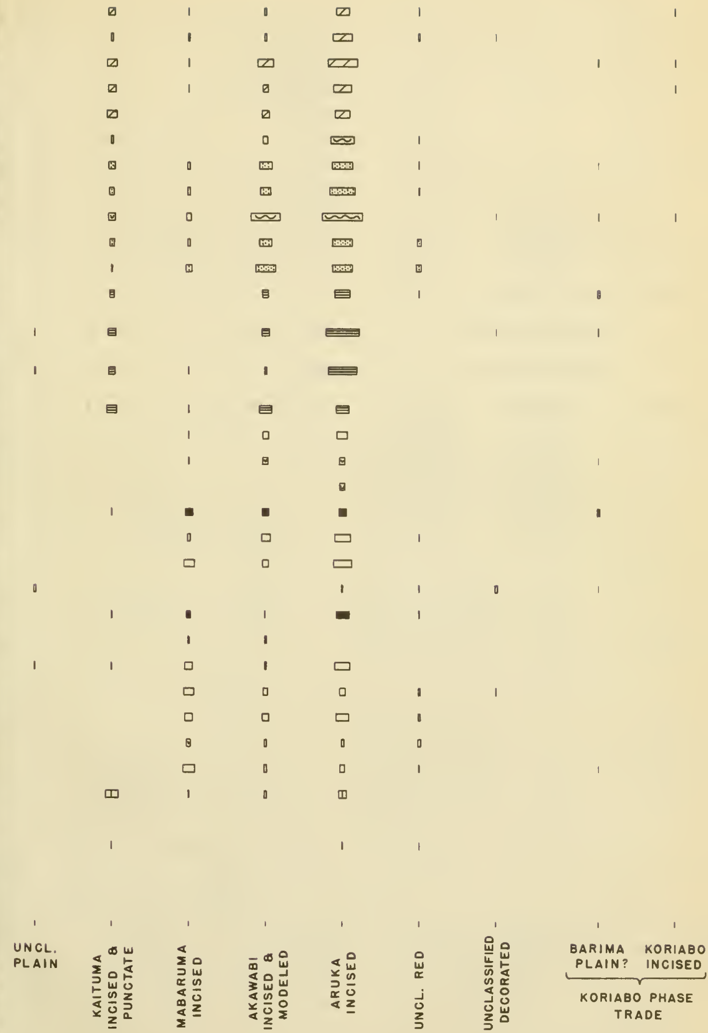
Figure 47.—Pottery artifacts of the Mabaruma Phase. *a*, Cylindrical stamp. *b*, "Spoon."

lines or short straight ones. The general features correspond to stamps used elsewhere in South America for body painting.

Worked sherd.—A Koberimo Plain sherd from the surface of N–19 has been worked into a rectanguloid outline 4.6 by 2.7 cm. and 7 mm. thick. One end is worked from both surfaces, producing a sharp edge; the other edges are rounded. The sherd is almost flat, from a vessel with a body curvature of 30 cm. It may have been used as a scraper in pottery making.

THE SITE SEQUENCE AND ITS IMPLICATIONS

The seriated sequence for the Mabaruma Phase is based on the analysis of five stratigraphic excavations of three to seven levels each. Although the presence of 4 plain pottery types complicates the picture, all the cuts show a similar pattern of ceramic change. Coarse-tempered Mabaruma Plain, the dominant early type, begins at N–1 with a frequency of 57.6 percent, increases rapidly to 65 percent, and then begins a gradual decline (fig. 48). Its late history is somewhat erratic and at the latest site it varies in frequency between 10 and 20 percent. The decrease in Mabaruma Plain is accompanied by an increase in fine-sand-tempered Hosororo Plain from 27 percent to 56.9 percent. Steatite-tempered Hotokwai Plain starts at 6.4 percent, reaches a climax of 59.5 percent near the middle of the sequence, and then declines rapidly. Koberimo Plain, tempered with sand containing an abundance of mica, is characteristic of the late part of the Phase. It occurs only sporadically until about the middle of the sequence, after which it increases to a maximum of 27.8



pendix, table 3).

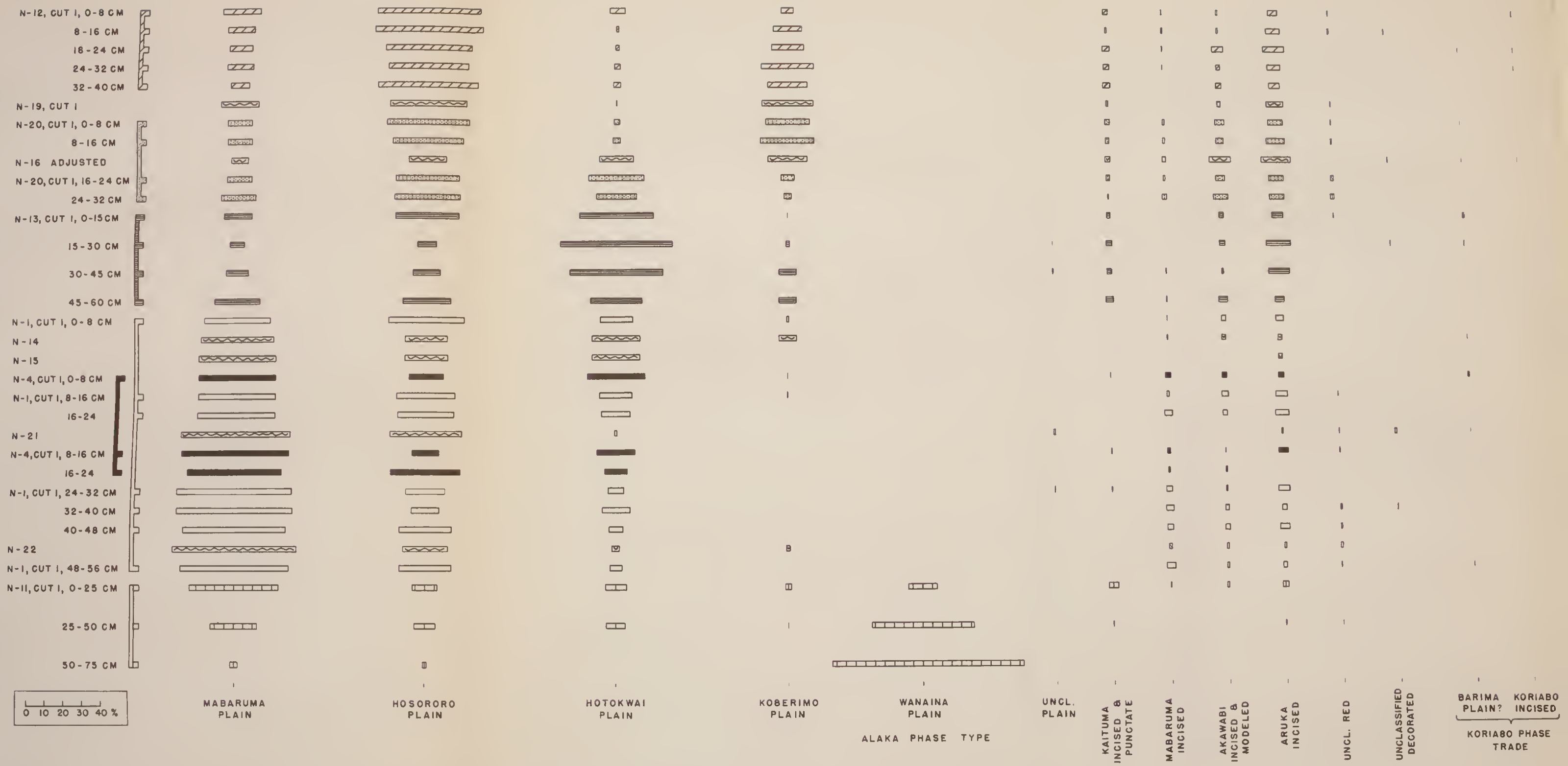


FIGURE 48.—Seriation of Mabaruma Phase sites on the basis of changes in pottery type frequency (Appendix, table 3).

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percent. The pattern of change shown by these plain wares makes it possible to divide the Mabaruma Phase sequence into three distinct parts: an early period with Mabaruma Plain dominant, a middle period with Hotokwai Plain very abundant, and a late period with Koberimo Plain and Hosororo Plain in the majority. This situation makes it easy to identify the general chronological position of any unselected surface collection.

Decorated sherds comprise 13.8 percent of the total pottery from Mabaruma Phase sites. These were classified into four decorated types, three of which occur throughout the Phase. Mabaruma Incised, with one to three broad incisions along the top of strongly everted rims, is most popular in the early part of the sequence, where it reaches a maximum of 4.5 percent. It declines in popularity to 0.1 percent at the latest site. Aruka Incised shows a steady trend of increase from 1.9 percent at the lowest level of N–1 to between 11.7 and 15 percent in the latter part of the Phase. Two of the design motifs are restricted to the middle and upper part of the sequence: Motif 3—Zoned, and Motif 4—Lines on the interior of everted rims (fig. 48). Akawabi Incised and Modeled, in which modeling is combined with incised designs, shows a similar increase from 1.2 percent to a maximum of 11.7 percent, but declines slightly toward the end of the Phase. Three of the motifs of this type are time markers: Motif 3—Barrancoid adornos, characteristic of the early and middle part of the sequence, is replaced by Motif 4—Non-Barrancoid adornos and Motif 5—Conical nubbins in the later sites. The fourth decorated type, Kaituma Incised and Punctate, is restricted with the exception of three sherds to the latter half of the sequence, where it fluctuates between 0.7 and 4.9 percent without showing any directional trend. The various unclassified decorated sherds are too few and too sporadic in occurrence to be of value as time markers.

Trends in vessel shape popularity are difficult to detect because of the small rim sample per level. Furthermore, any apparent temporal difference in vessel shapes between pottery types is more likely to reflect the differential frequency of the types than a real difference in the popularity of the vessel form. Koberimo Plain, for example, produces only late shapes because it is a late pottery type. To eliminate such extraneous factors, similar forms in the various pottery types were combined and the totals tabulated by levels in seriated order. The results indicated that most of the plain ware vessel shapes were made throughout the Phase, a popular form being transferred to a new ware as an earlier one died out.

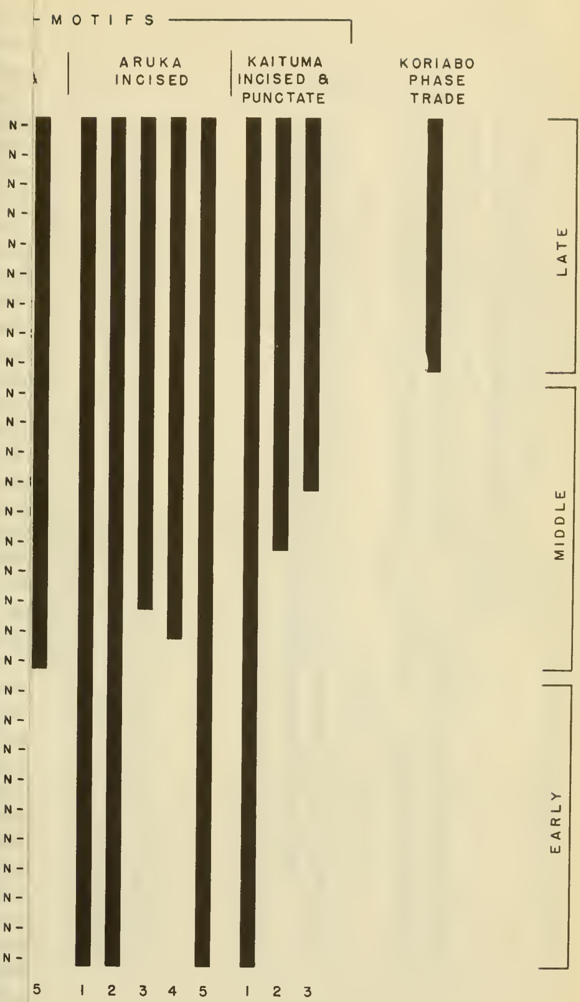
Since all of the decorated types occur throughout the Phase with very minor changes in frequency, with the exception of Kaituma Incised and Punctate, the vessel shapes were analyzed by presence or absence in each pottery type. Except for Mabaruma Incised, where the same two forms are found throughout the sequence (fig. 49), the appearances and disappearances form a pattern that divides the Mabaruma Phase into approximately equal thirds. Characteristic of the early period are: Akawabi Incised and Modeled Form 3 and Aruka Incised Form 4. The middle period introduces Akawabi Incised and Modeled Form 1, Aruka Incised Forms 1, 2, 3, and 5, and Kaituma Incised and Punctate Form 1, all of which appear almost simultaneously. About half-way through the middle period, 4 more vessel forms appear: Akawabi Incised and Modeled Forms 2 and 4, and Kaituma Incised and Punctate Forms 3 and 4. The late period begins with the appearance of Kaituma Incised and Punctate Form 2.

Stone artifacts are too infrequent to be reliable indicators of culture change. Their scattered distribution suggests that most of the types occur throughout the sequence. One possible exception is the hoes, all of which came from three sites in the middle of the Phase (Apdendix, table 2). The most commonly used rock material is fine-grained, micaceous schist.

Since habitation sites of the Phase vary considerably in size, the area of habitation was calculated and the results arranged in the order of seriation in the hope that this might reveal some change in the settlement pattern. However, of the five largest sites with an area of 5,674 to 17,570 square meters (N–1, N–12, N–16, N–21, N–22), three are in the early part of the sequence and two are late. The remaining sites range from 875 to 3,850 square meters in area. These differences reflect localized factors unrelated to a change in settlement pattern or community size during the Mabaruma Phase. Elevation of the terrain was of no significance as long as it was above flood level. Many of the sites are on the summit of very high hills, some of which seem to have no water supply for domestic use except at the base (e.g., N–1). Others are on river banks or the flank of a hill. Apparently a high and well-drained location was preferred for the village. This would explain the clustering of Mabaruma Phase sites in the Aruka River drainage, which contains most of the high land near the coast in the Northwest District. Only two sites (N–4 and Verrill's Maruiwa Hill) were found somewhat removed from this nucleus on the Barima River.

The house type utilized by the Mabaruma Phase is problematical because of the absence of any direct evidence in the form of postholes, which are not detectable under tropical conditions. The rather steep slope of several of the sites, particularly N–19, suggests that raised floors may have been used.

The subsistence base of the Mabaruma Phase is suggested by several characteristics of the sites and artifacts. No shellfish remains occur,



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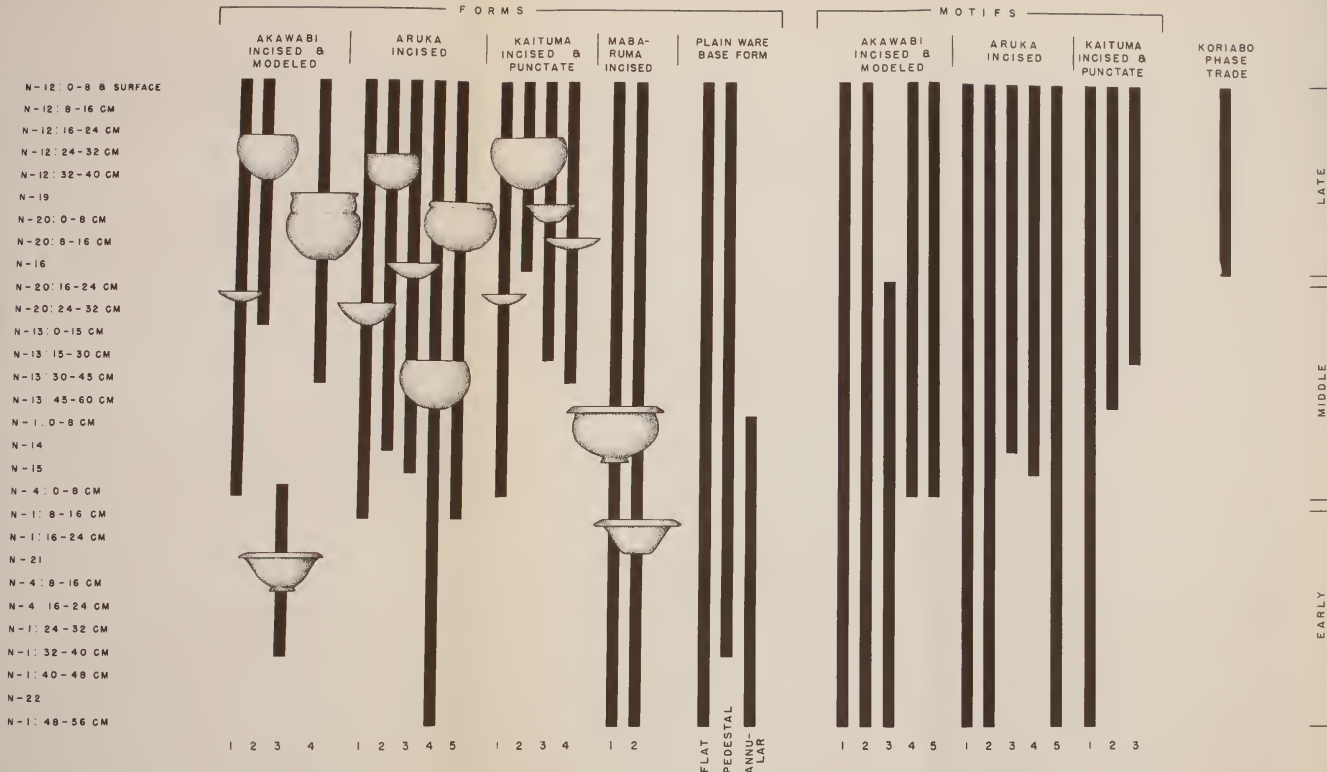

Figure 49.—Temporal distribution of vessel shapes and decorative motifs of Mabaruma Phase decorated pottery types, and base forms of Mabaruma Phase pottery types. Sites and levels are arranged in seriated order shown in fig. 48, and the bars connect the earliest and latest appearances of each trait. The tendency of changes to cluster at two principal points in the sequence forms the basis for subdivision of the Phase into early, middle and late periods.

except at site N–4, indicating that this food resource so thoroughly exploited by the Alaka Phase was not utilized by the Mabaruma Phase. Although no direct evidence exists, it can be concluded that the major food supply was derived from agriculture. Indirect evidence in the form of pottery griddles suggests that the staple crop was manioc. One mano fragment and two metate fragments may reflect a supplementary use of maize, although the reconstructed size of the metates is smaller than that usually associated with maize grinding.

There is little evidence of burial pattern. The only skeletal remains identified with the Phase are three found by Verrill (1918 a, p. 15) at N–16. These were lying side by side, with the legs flexed and the faces toward the east. The central one, identified as a male, had a pottery bowl over the occiput. Since no burials have been found in other habitation sites, it is possible that this is an exceptional rather than a typical example of burial practice.

Sites in the latter third of the Mabaruma Phase sequence produced trade sherds of Koriabo Incised (fig. 48). Both the paste and the characteristics of the decoration identify these as of Koriabo Phase origin. These sherds are significant because they reflect a commerce between the two Phases that is better documented in the other direction by a considerable amount of Mabaruma Phase trade pottery in Koriabo Phase sites (see pp. 139–141). The unequal balance of trade is readily explainable by the superiority of the Mabaruma Phase ceramics both technically and artistically to those of the Koriabo Phase. Trade sherds of cariapé-tempered Barima Plain occur at sites throughout the Mabaruma Phase in a small frequency (fig. 48). This type has been tentatively identified with the Koriabo Phase, but it is possible that both Phases received it from an unidentified third source (see pp. 151–152).

Site N–11 of the Alaka Phase has been placed at the bottom of the Mabaruma Phase seriation chart (fig. 48) because it shows the gradual replacement of the Alaka Phase shell-tempered Wanaina Plain with Mabaruma Phase pottery types. Although N–11 is in drained mangrove swamp and the lower levels are below the water line so that migration of specimens could have occurred, it is difficult to believe that the trend of change would have remained so consistent if there had been much of this kind of disturbance. The decline in popularity of Wanaina Plain from 94.3 percent to 53.0 percent to 14.8 percent is correlated with the increasing frequency in the same levels of the three early Mabaruma Phase plain wares, Mabaruma Plain, Hosororo Plain, and Hotokwai Plain. This does not represent the origin of the Mabaruma Phase, but rather trade or contact between it and the Alaka Phase. The presence of a small percentage of sherds of Koberimo Plain and Kaituma Incised and

Punctate, both of which are typical of the middle to late part of the Mabaruma Phase, suggests that this contact may span a rather long period of time after the arrival of the Mabaruma Phase in the Northwest District. If the upper level of N–11 is taken as indicative of the proportions of the pottery types in the contemporary Mabaruma Phase site, it would correlate approximately with the upper two levels of N–1 (fig. 48). Perhaps the contact between the two Phases spans the occupation of N–1. It seems to have been characterized by gradually increasing intensity culminating in the disappearance of the Alaka Phase (cf. pp. 59–63).

It should be noted that the distinction made by Osgood (1946, pp. 48–49, 58) between the pottery at Mabaruma and Kumaka has not been followed with the same emphasis here. Seriation of the stratigraphic excavations shows that these two sites are connected by a continuous pattern of ceramic evolution, so that they represent different portions of a continuum rather than distinct complexes. Our interpretation supports Osgood's conclusion that the two sites are chronologically separated and further documents the similarities that he recognized between them.

DIAGNOSTIC FEATURES OF THE MABARUMA PHASE

The 14 habitation sites representing the Mabaruma Phase exhibit wide variation in size and depth of refuse deposit. The area ranges from 875 to 17,570 square meters, with sites of all sizes found throughout the sequence. Village permanency is extremely variable, judging from the fact that four sites have refuse deposits of 5 cm. or less in depth, and six of 30 cm. or more, with a maximum of 65 cm. All the sites are on land that is above flood level, but the location may be anywhere from a riverbank 1 to 2 meters above high water to the summit of a hill some 90 meters in elevation. Rapid decay of organic materials that were used in house construction makes it difficult to reconstruct the type of dwelling. The existence of sites on a sloping hillside like N–19 suggests that houses may have had raised floors. No cemeteries have been discovered, and the only evidence of burial pattern comes from a few skeletons found by Verrill (1918 a, p. 15) at N–16. These were lying with the legs flexed and the faces toward the east. One had a pottery bowl covering the back of the head.

The seriation of the Mabaruma Phase sites is based on changes in the relative popularity of four plain and four decorated pottery types. Coarse-tempered Mabaruma Plain, dominant in the early part of the sequence, gives way to fine-sand-tempered Hosororo Plain. Steatite-tempered Hotokwai Plain reaches a climax about the middle of the Phase, and mica-tempered Koberimo Plain is a diagnostic late type. Kaituma Incised and Punctate, in which incisions are combined with punctates to produce the decoration, is characteristic of the latter half of the sequence. The other three decorated types show slight changes in popularity but are present throughout the Phase. They are Mabaruma Incised, with incised lines along the top of broad, everted rims; Akawabi Incised and Modeled, which combines incisions with low to high relief modeling; and Aruka Incised, in which the rim or vessel surface is ornamented with incised designs. Vessel shapes are typically bowls with a variety of thickened, unthickened, and everted rim forms, and rounded jars with constricted mouths. Base forms include annular, flat, and flat pedestal, with the annular base characteristic of the early part of the Phase. With the possible exception of pot rests, both pottery artifacts and stone implements are rare. The latter include choppers, flake blades, hammerstones, possible hoes, fragments of manos and metates, and polished celts.

The inception of the Mabaruma Phase is estimated at about A.D. 500 (p. 147). It is intrusive into the Northwest District and appears to have originated in a migration from the delta of the Orinoco. Changes in the popularity of pottery types, vessel shapes, and decorative motifs make it possible to subdivide the Phase into three periods (figs. 48, 49). The early period is characterized by a predominance of Barrancoid characteristics, the middle period by the introduction of a different style of modeling and several other innovations in vessel shape and decorative motifs, and the final period by contact with the Koriabo Phase. Since no archeological complex was found in the survey that follows it in time, the Mabaruma Phase presumably lasted until European contact. However, no objects of European origin were found in any of the late sites.

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THE KORIABO PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

The Koriabo Phase is represented by 4 sites, 3 in the Barima River drainage and 1 on a tributary of the Waini River. All are habitations and all had sufficient depth of refuse for stratigraphic excavation.

N-2: KORIABO

A high bank on the right side of the Barima River, just below the mouth of Koriabo Creek, has been occupied for several decades by a Government Rest House, used by officials and travelers on government business. Probably because of this, the archeological site on the same spot has come to the attention of a number of visitors. The first report appears to be that of Elias Toro, a Venezuelan anthropologist who was a member of the 1905 British Guiana-Venezuela boundary commission. He describes the site as containing an abundance of "utensils of quartz, clay adornos . . . and the remains of pots and burial urns of baked clay" (in Osgood, 1946, p. 32). Verrill (1918 a, p. 17) describes Koriabo as "a lateritic hill of decided red colour," which produced "no shells but numerous pieces of decorated pottery, heads and many finely finished stone implements." He illustrates several decorated sherds from the site (op. cit., fig. 18), all of which are Mabaruma Phase trade material. A 1920 visitor was J. A. Bullbrook, a geologist who undertook considerable investigation of the shell middens in Trinidad. He noticed that sherds from Koriabo contained flecks of gold as natural inclusions in the clay from which the pottery was made (Osgood, 1946, p. 36).

The bank on which the site is located is bounded on the upriver or west side by Koriabo Creek, which flows into the Barima River almost at right angles (fig. 4). The land rises rapidly to 4 meters above the February water level, and then gradually for 2 meters more (fig. 50). Near the riverbank, in the area of highest elevation, there was in 1953 a small frame building used intermittently by traveling Government employees and another similar structure fallen into disuse. The surface surrounding these buildings and extending to the bank of the creek was covered with thick grass. The rest of the summit was overgrown with small trees and brush, but had formerly been cleared for gardening. Clumps of large cane were scattered along the summit of the creek bank. Testing showed the site to extend for 78 meters along the creek and 33 meters inward, with its northern and western

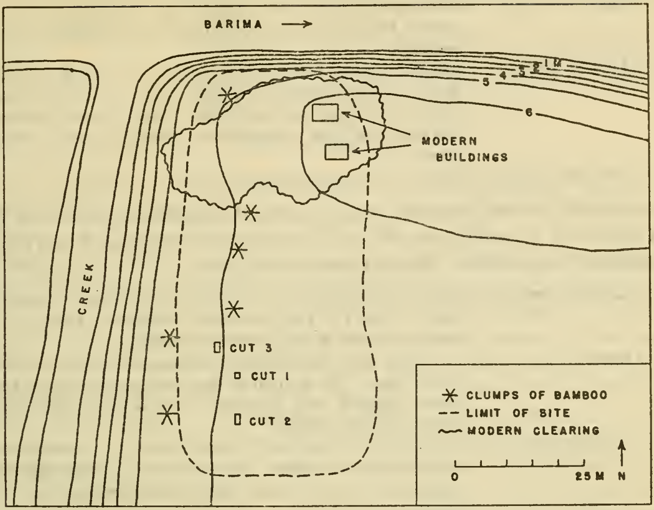

FIGURE 50.—Sketch map of N–2: Koriabo, a habitation site of the Koriabo Phase.

limits approximately on the 5-meter contour. Sherds were exposed on the eroded creek bank and in paths. The vicinity of the modern buildings also produced fragments of painted chinaware, ginger beer bottles, and green glass.

Three strata cuts were dug in the south part of the site in areas where the concentration appeared to be deepest and least distributed. Strata Cut 1, a 1-meter square controlled in 8-cm. levels, produced the following results:

Level 0–8 cm.... Black loam with quartz chips and fragments of broken gneiss and granite; abundant sherds from the surface downward; no sterile humus zone.

Level 8–16 cm... Conditions the same.

Level 16–24 cm.. Fragments of green glass from this level suggest disturbance by recent gardening activity. Sudden transition at 25–27 cm. to more compact, sterile, light-orange clay mixed with occasional streaks of light gray. The compactness of the sterile deposit very distinct when troweling.

Level 24–65 cm.. At 40 cm., the gray gradually fades out and soil becomes a compact, bright-orange, sterile clay with large quantities of iron concretions.

Strata Cut 2, dug 7 meters south of Cut 1, measures 1 meter in an east-west direction by 2 meters north-south. Also controlled in 8-cm. levels, it had the following characteristics:

Level 0–8 cm____ Medium-gray, sandy loam containing sherds intermixed with a few small pieces of broken quartz and iron concretions.

Level 8–16 cm___ Light-gray loam containing streaks of reddish orange clay. A hard compact mixture of clay and sandy loam appeared at the bottom of the level. Sherds sparse; the majority from a black earth deposit in south corner of cut.

Level 16–75 cm__ Sterile, bright-orange, sandy clay.

Strata Cut 3 was placed 3 meters west and 7 meters north of Cut 1. It measured 1 meter east-west by 2 meters north-south, and was controlled in 8-cm. levels. Results were as follows:

Level 0–8 cm____ Soil a black loam; root mass thick because a bamboo clump is only 3 meters away. Fire-burnt stones and natural quartz spalls; sherds abundant.

Level 8–16 cm___ Soil lighter gray black with occasional streaks of orange, sandy clay. The bottom of the level peels off from the more compact clay beneath. Sherds less abundant; some fire-burnt stones.

Level 16–50 cm__ From 16–28 cm., the soil is light gray with orange clay intermixed; no sherds. From 28 cm. downward the soil is a sandy, orange clay, which continues to be sterile.

N–3: MRS. ROBERT'S LANDING

A knoll on the right bank of the Barima River, about 1.5 km. downstream from N–2 (fig. 4), was occupied in 1953 by several Carib and Negro families. Mrs. Robert was the leading citizen, and the settlement was named after her, "Mrs. Robert's Landing." The land rises rather steeply to 3 meters above the February water level and then more gradually for 2 meters more. The elevation is elongated, with the narrow end coming to the riverbank, and the east and west margins bounded by a swampy inlet and a small creek. The surface was denuded of vegetation and badly eroded, making sherds readily visible and the limits of the site easy to detect. It was found to extend 185 meters inward from the river by 40 meters from side to side, with the limits corresponding approximately to the 4-meter contour line. We were informed by the inhabitants that the river rises about 3.5 meters at the height of the rainy season.

In addition to the surface collection, a small strata cut, 1 by 2 meters, was dug west of the center of the site in the area of highest elevation, 75 meters in from the south edge. Excavation in 8-cm. levels produced the following results:

Level 0–8 cm____ Medium-gray, sandy soil with a thin humus layer; roots numerous. Sherds sparse, mostly from the eastern part of the cut.

Level 8–16 cm___ Soil conditions the same; sherds more abundant.

Level 16–24 cm.. Sandy soil still light gray; quartz spalls common, sherds sparse.
Level 24–32 cm.. Small lunks of orange clay scattered on the sandy soil; a few sherds still present in the south part of the cut.
Level 32–60 cm.. Sterile. Clay mixed with sand up to 40 cm.; then bright-orange clay containing iron concretions.

N–5: BAMBOO HILL

N–5 occupies a knoll on the right bank of the headwaters of Koriabo Creek, which flows into the right bank of Barima River just above the Koriabo Government Rest House (fig. 4). The area is overgrown with clumps of tall, large cane and locally known as Bamboo Hill. The headwaters of Koriabo Creek are more accurately described as a swamp, with the land rising on the east side to as much as 5 meters above the water level. Heavy forest surrounds the site area. Sherds occur from the water's edge to the 4-meter contour line and there is some evidence that the front edge of the site has been washed away. The habitation area is approximately oval, 36 meters in an east-west direction inward from the creek bank by 50 meters along the bank in a north-south direction. Sherds were overlain in most places by the root mass of the cane. In addition to various tests, a strata cut 2 by 1 meters, controlled in 8-cm. levels, was placed in the approximate center of the sherd area. The following conditions were observed:

Level 0–8 cm.... Dense root mass.
Level 8–16 cm... Medium-gray sandy loam with many roots, a few cracked quartz fragments and sherds.
Level 16–24 cm.. Soil lighter colored than in previous levels, containing decomposing fragments of granite; sherds fairly abundant.
Level 24–32 cm.. Sandy loam streaked with dark gray from ash, with occasional red globs of burnt sandy clay; sherds.
Level 32–60 cm.. Sterile light-gray loam with occasional pockets of fire-burnt bright-orange, sandy clay down to 42 cm. Below this level, the sandy clay becomes bright orange.

N–7: WARAPOCO MISSION SITE

Warapoco Creek drains into the left bank of the Waini River just upriver from the government post of Baramanni (fig. 4). Near the upper reaches of the creek, but not quite to the headwaters, is a high right bank that contains many large granite outcrops. The steep slope rises in three distinct terraces from the water's edge to the top of the hill at the 8-meter contour line (pl. 31, *a*). Warapoco school, church, and teacher's house are on the uppermost level, with houses scattered down the slope. Large granite outcrops are abundant all over the area, in between the houses and along the path. Some of the boulders along the water's edge have grooves worn in them from sharpening stone axes or use as metates (pl. 31, *b*). The custom of clearing off all the grass in the village area has resulted in considerable erosion, and only a few patches of the original dark soil are left in between the rocks and by the school. The exposed sherds are not only badly eroded, but the villagers walking on them have reduced most of them to buckshot. The distribution suggests that the site extended up the hillside 62 meters by 40 meters wide. The site area is surrounded by large clumps of cane that the present villagers say were planted by the "old-time people."

The only relatively undisturbed area was on the southwest side near the school, where a strata cut 2 by 2 meters was dug in 8-cm. levels. It produced the following results:

Level 0–8 cm____	Black loam, sherds small and sparse, a few small hunks of granite; modern rusty nail and fragment of school slate in grass roots.
Level 8–16 cm___	Soil brownish color; small stones including iron concretions more abundant. Sherds sparse.
Level 16–50 cm__	Below 16 cm. soil is sterile, light-brown clay streaked with pockets of bright-orange clay. Below 30 cm. bright orange clay appears, containing many iron concretions.

DATA FROM OTHER INVESTIGATIONS

It is impossible to assign with certainty any previously investigated sites to the Koriabo Phase.

ANALYSIS OF MATERIALS

The artifacts from the Koriabo Phase consist of objects made from various rock materials and pottery. Provenience and frequency are given in the Appendix, tables 15 and 16.

Stone Artifact Types

Twelve stone artifacts and eleven flakes were collected from sites of the Koriabo Phase.

Adz (fig. 51, *a*).—A piece of fine-grained quartzite was well polished on all surfaces to form an adz, which in cross section is generally triangular. The bit is well sharpened. The butt is broken off, making the existing fragment 7.5 cm. long and 4.7 cm. wide. The bit is 4.5 cm. wide and 2.3 cm. thick at the center, tapering to 1.0 cm. on the rounded edges.

Celt.—Only fragments were found; these were of highly polished felsite and andesite, apparently rectanguloid in shape with a very sharp bit. All details resemble celts of the Mabaruma Phase.

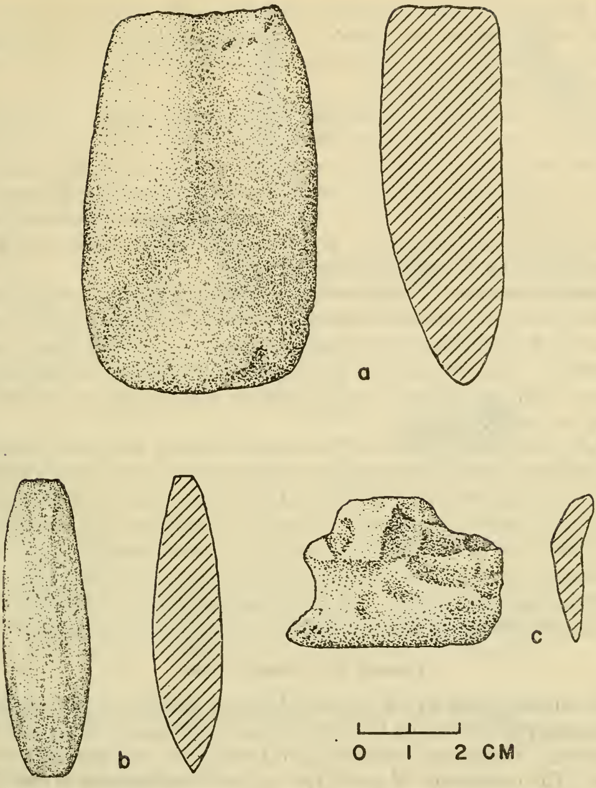

FIGURE 51.—Koriabo Phase stone tools. *a*, Adz. *b*, Chisel. *c*, Flake blade.

Chisel (fig. 51, *b*).—A well polished chisel of gray-green quartzite measures 5.8 cm. long, 1.7 cm. wide at the center, tapering to bit and butt ends only 0.9 cm. wide.

Choppers.—Crudely shaped choppers made by percussion blows on a quartzite cobble are represented by fragments too small for reconstruction of original dimensions.

Flake blades and knives (fig. 51, *c*).—Percussion flakes struck from quartzite and quartz have one side abraded to form a cutting edge. The flakes are small and irregular in form, measuring 3.8 cm. in diameter and 4 by 3 cm.

Mano.—A fragment of extremely fine-grained micaceous schist was used for grinding. It shows no intentional shaping, but the edges are well abraded and one face shows striation lines produced by a forward and backward movement. The fragment measures 7 cm. long, 4.0 cm. wide at one end and 3.2 cm. wide at the other, with the thickness varying from 1.0–1.8 cm.

Mortar.—A mortar was roughly shaped from a piece of syenite by pecking to create a circular, bowl-shaped object with a depression 4.0 cm. deep and decreasing from 12 cm. in diameter at the mouth to 2 cm. in diameter at the bottom. The largest exterior diameter is 15.0 cm. and the height 8.5 cm. The base is irregularly flattened over an area 8–9 cm. in diameter. The bottom of the depression has been worn smooth by pounding and grinding.

Polishing stones.—The three rocks showing abrasion scratches are all fragments of hematite concretions, which have been broken and then used for polishing or painting so that one or more surfaces is well smoothed. One fragment is rectanguloid, measuring 2.0 by 2.2 by 3.5 cm. with the widest face the polished one; another measures 3.0 by 2.0 by 1.5 cm.

Flakes and natural rocks.—The most commonly used rock material for artifacts in the Koriabo Phase is quartzite, a situation which is reflected in the abundance of flakes. In the Appendix, table 15, listing the rock materials, it should be noted that hematite or limonite iron concretions are tabulated only when they showed some use. It is of no interest to record the number of these concretions occurring naturally in the lateritic soil. All the flakes show distinct bulbs of percussion; they range in size from 2.0 by 1.5 by 0.8 cm. to 6 by 4 by 2 cm.

Pottery Type Descriptions

The ceramic study of the Koriabo Phase is based upon the analysis of 4,378 sherds of Koriabo Phase types, of which 217 or 4.9 percent are decorated. These were classified into three plain and two decorated types. The occurrence of each type by level is tabulated in the Appendix, table 16. The binomial system was used in naming and the types are described in alphabetical order.

BARIMA PLAIN

Paste:

Method of manufacture: Coiling; clean breaks along the coil lines common. Coil width 1.0–1.5 cm.

Temper: Cariapé. Particles range from large hunks, 2–3 mm. long, visible to the naked eye (pl. 32, *d–g*), to small fragments so fine they are difficult to detect except with a magnification of at least 20×. All the sherds with cariapé temper are considerably lighter in weight than sherds of other pottery types.

Texture: Porous, soft and fine; like pumice in both feel and appearance.

Color: Majority the same tan orange in cross section as on the surface, but some sherds have a light-gray core with a thin orange-tan surface layer.

Firing: Oxidized, usually complete but a few incompletely oxidized.

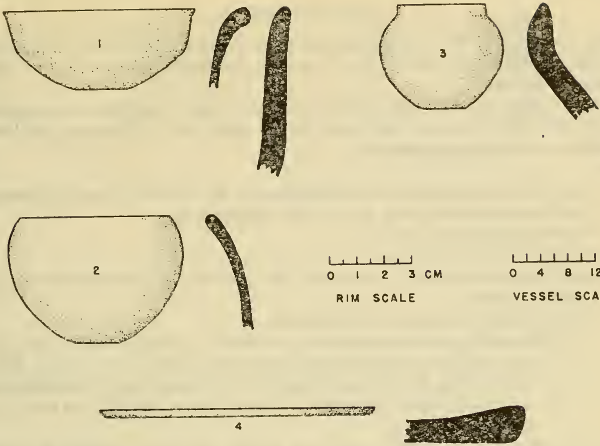

FIGURE 52.—Rim profiles and reconstructed vessel shapes of Barima Plain, Koriabo Phase (Appendix, table 17).

SURFACE:

Color: Tan to tan orange to light orange on both surfaces. A few gray on interior only.

Treatment: Due to softness of paste, all sherds are so badly eroded that surface treatment is difficult to determine. A few are smoothed and fairly even on the exterior, having been scraped with a gourd or potsherd scraper. They are generally slightly less well smoothed on the interior.

Hardness: 2–2.5

FORM:

Rim: Direct or slightly thickened and everted with rounded lip.

Body wall thickness: 5–11 mm.; majority 5–6 mm. One griddle fragment 15 mm. thick.

Body diameters: 26–36 cm.

Base: Flat; too fragmentary for accurate diameter measurement.

Common vessel shapes reconstructed from sherds:

1. Open bowl with vertical upper walls, direct or slightly everted and thickened rim with rounded lip. Mouth diameter 20–38 cm. (fig. 52–1; pl. 32, *c*).
2. Small bowl or jar with constricted mouth, direct rim, and rounded lip. Mouth diameter 22 cm. (fig. 52–2).
3. Globular jar with thickened upturned rim. Mouth diameter 12 cm. (fig. 52–3; pl. 32, *b*).
4. Griddle with a thickened rim and rounded lip. Diameter 40 cm.; thickness 1.3–1.5 cm. (fig. 52–4).

TEMPORAL DIFFERENCES WITHIN THE TYPE: None evident in the small sample (Appendix, table 17).

CHRONOLOGICAL POSITION OF THE TYPE: Although never very common, the type increases in popularity from 1.2 percent at the bottom of the Koriabo Phase sequence to 6.8 percent in the middle of the sequence; thereafter it declines again to 1.1 percent (fig. 57).

KORIABO INCISED

Paste: Majority of this decorated type is on the paste of Koriabo Plain, with a few on Warapoco Plain. See those type descriptions for details of paste, temper, color, etc.

Surfaces: Like the plain pottery types mentioned above with the exception that all the decorated sherds tend to be in the upper end of the range of better smoothed and more even surfaces.

Form:

Rims: Slightly thickened and everted with a flat or beveled top and rounded lip; exteriorly thickened, tapering to a rounded lip.

Body wall thickness: 6–8 mm.

Body diameters: 18–24 cm.

Bases: None detected; probably flat, flat pedestal, or rounded like those of Koriabo Plain.

Vessel shapes reconstructed from sherds:

1. Globular jars with rounded or slightly carinated body, medium to long insloping neck, slightly thickened, everted rim with a flat or beveled top, 1.0–1.5 cm. wide, with a rounded lip. Mouth diameter 14–31 cm.; body diameter 17–36 cm.; neck height 1.5–4.0 cm. (fig. 53–1, *top*).
2. Globular jar with constricted mouth, exteriorly thickened beveled rim with a tapered lip; mouth diameter 20 cm.; body diameter 24 cm. (fig. 53–2, *top*).

Decoration (pls. 33, 36, *a–e*, *i*):

Technique:

Incised decoration occasionally in association with low relief, applique modeling. Incised lines 0.5–1.0 mm. wide, V-shaped, and less than 1 mm. deep, drawn into the clay when the surface was dry enough to leave a distinct, sharp line. Execution very consistent, carefully applied, corners or joining lines do not overlap; parallel lines fairly evenly spaced.

Modeling is in the form of low applique ridges, nubbins or small faces, rising 2–4 mm. above the surface. Low ridges are 3–6 mm. wide; the faces range in diameter from 1.0–1.5 mm., with a few oval in shape measuring 1.3 by 1.7 cm. The small nubbins are usually 3–4 mm. in diameter.

Motif:

The designs must be reconstructed entirely from sherds, therefore there is some possibility that all of the incisions are in one way or another associated with low relief applique. Some of the larger sherds suggest the incised designs were put on the surfaces between the low applique to fill in the blank areas.

The incised lines consist of a variety of parallel lines both curvilinear and rectilinear, stepped designs, zigzag, diagonals, wavy lines; less commonly spirals are used in the overall design. Incisions are usually spaced 5–10 mm. apart; rarely 15 mm.

Temporal differences within the type: None discernible in the small sample (Appendix, table 17).

Chronological position of the type: Koriabo Incised is most common at N–2, in the middle of the sequence, where it reaches a popularity of 9 percent; it appears to be absent from the earliest and latest levels represented in the seriated sequence (fig. 57).

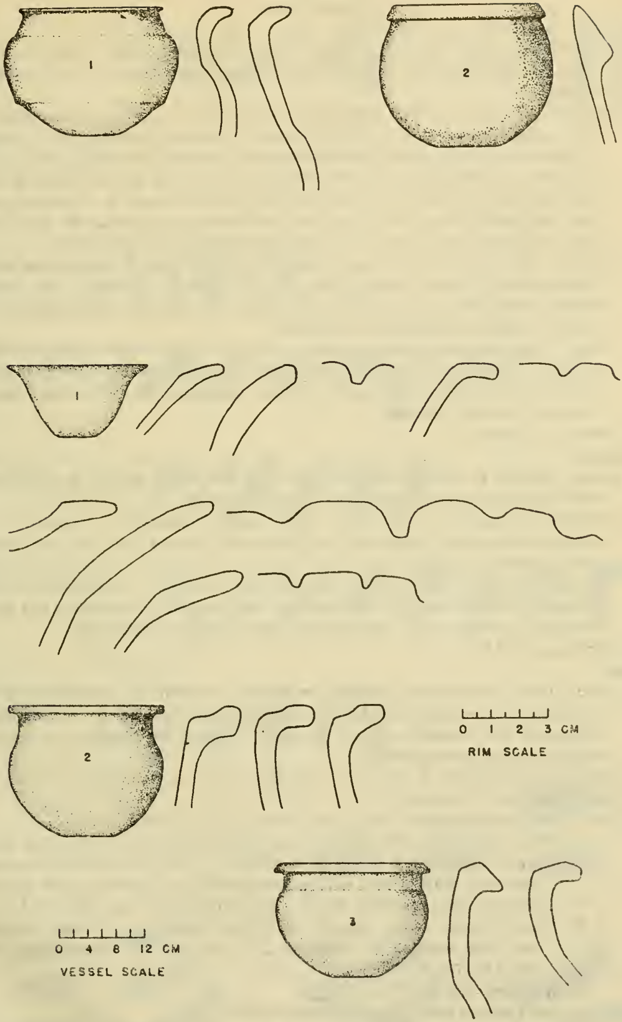

FIGURE 53.—Rim profiles and reconstructed vessel shapes of Koriabo Phase decorated pottery types. *Top:* Koriabo Incised (Appendix, table 17). *Bottom:* Koriabo Scraped (Appendix, table 19).

KORIABO PLAIN

PASTE:

Method of manufacture: Coiling, occasionally sherds break along the coil lines (pl. 34, *k*), but usually the coils are well erased, and kneaded together.

Temper: Coarse sand with particles occasionally 1 cm. in maximum dimension; majority 1–2 mm. Wide variation in amount, ranging from slight to abundant; some sherds are packed with temper particles so that they comprise over 50 percent of the mixture with quartz grains standing out prominently (pl. 34, *c*). In most of the sherds, temper is abundant and not well distributed, with clumping of the temper particles so that one area will have too much and the adjoining one no temper at all.

Texture: Poorly kneaded giving banded or twisted layered appearance with air pockets common, ranging from pinpoint size to crevices 7 mm. long. Sherds break with a jagged edge that tends to be friable due to the abundance of poorly mixed temper particles.

Color: Light orange, medium orange or bright orange in cross section with the color uniform throughout the paste in most cases. Rarely, bright orange from a quarter to one half of the way from the exterior and light orange the rest of the way.

Firing: Oxidized.

SURFACES:

Color: Brown to orange to light tan, with the white quartz temper particles standing out in contrast to the orange paste.

Treatment: Majority of surfaces badly eroded. Those with original surfaces are smoothed to remove and obliterate the coil lines, but not sufficiently even to eliminate irregular surfaces and varying body-wall thicknesses. Fine crackle on both interior and exterior. Bowls tend to be slightly better finished on the interior, and jars on the exterior, but pits and minor flaws remain even on the best smoothed surfaces.

Hardness: 3–3.5.

FORM:

Rim: Direct with either rounded or slightly tapered lip, sometimes with hemispherical or rectanguloid lobes (pl. 34, *e*, *g*, *h*, *j*; fig. 54–1); slightly thickened and everted, with a flattened, tapered, or rounded lip and a flat or angular upper surface.

Body wall thickness: 5–13 mm.; majority 7–8 mm.; griddles 1.5–1.9 cm.

Body diameters: 12–30 cm.

Base: Both jar and bowl forms have three types of base:

A. Flat, sometimes with the exterior slightly concave, joining the side walls at an angle of 25 to 50 degrees. Thickness is the same as the body wall, a few millimeters thicker, or in rare cases 2 mm. thinner than the body walls. Diameter is 8–12 cm. (fig. 54, A).

B. Flat pedestal rising nearly vertically 1.0–1.8 cm. before joining the body wall at an angle of 25 to 30 degrees. Diameter 7–11 cm. (fig. 54, *B*).

C. Rounded (fig. 54, *C*).

Major vessel shapes reconstructed from sherds:

1. Open bowls with walls rising at an angle ranging from 30 degrees to nearly vertical to a direct rim with a rounded, flattened, or tapering lip. Rim diameter 16–30 cm. (fig. 54–1). Some examples of this form have lobes at various places along the rim dividing it into thirds or quarters. The lobes measure 3–7 cm.

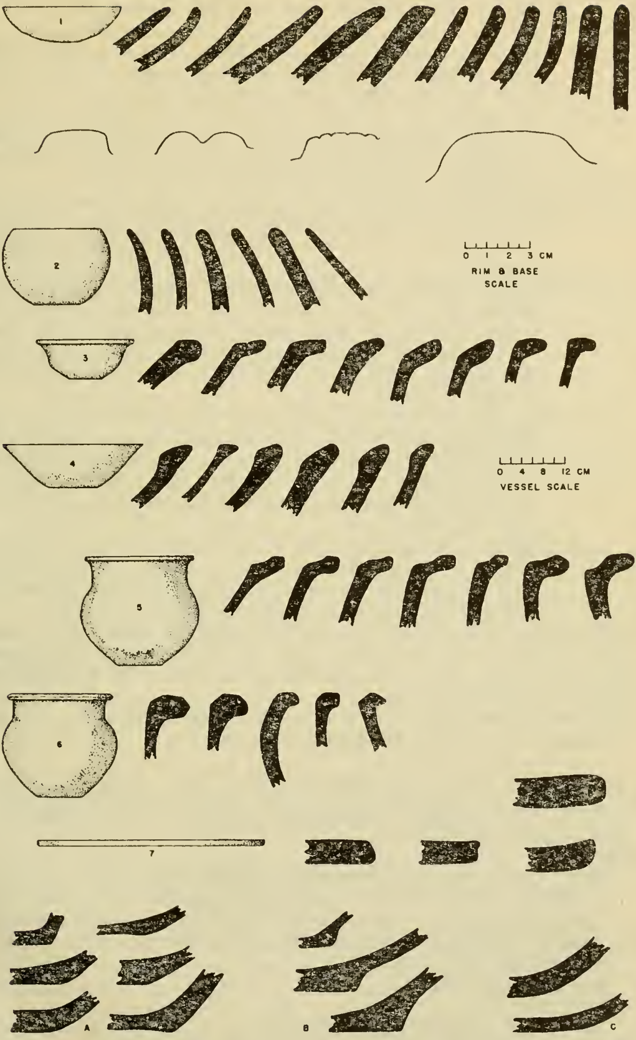

Figure 54.—Rim and base profiles and reconstructed vessel shapes of Koriabo Plain, Koriabo Phase (Appendix, table 18).

long and extend 1.0–2.4 cm. out beyond the normal rim edge. They are either plain or ornamented with a nicked edge (pl. 34, *e, g, h, j*).

2. Small bowls or jars with incurving side walls, a constricted mouth and a direct rim with a rounded or tapered lip. Mouth diameter 10–20 cm.; body diameter estimated 15–28 cm. (fig. 54–2).
3. Large open bowls with everted rims. Usually the rim is slightly thickened where it bends outward, forming a flat to slightly concave surface 1.2–2.0 cm. wide and ending in a rounded or slightly tapered lip. Mouth diameter 14–24 cm. (fig. 54–3).
4. Large open bowls with interiorly thickened rims forming a rounded, beveled band along the rim 1.0–1.8 cm. wide with a rounded lip. Rim thickness ranges from 7–12 mm.; rim diameter 18–32 cm. (fig. 54–4).
5. Large open bowls with slightly thickened everted rims with a broad channel or groove on the inner surface. The total width of the everted rim ranges from 1.5–2.5 cm., with the width of the channel usually 1.0 cm. but occasionally 1.4 cm. The lip is flattened. Rim diameter typically 18–24 cm., with one specimen 38 cm. (fig. 54–5; pl. 34, *a-b, d*).
6. Jars with walls vertical or insloping to an exteriorly thickened rim. The rim is usually thickened by the addition of a coil, producing a horizontal extension ranging from 1.0 cm. wide to 2.5 cm. wide with the edges beveled so that the cross section is angular. Mouth diameter typically 14–22 cm., with one as large as 32 cm. (fig. 54–6; pl. 34, *f, i*).
7. Griddles. Large, circular, flat slabs of pottery with the body wall ranging in thickness from 1.0–1.9 cm. The rim is usually unthickened and rounded, but occasionally it is slightly thickened and upturned; lip is rounded. Diameter 40–46 cm. (fig. 54–7).

Temporal differences within the type: Although the number of rim sherds in some forms is not large enough to be conclusive, Forms 5 and 6 appear to be restricted to the middle and upper (late) part of the Koriabo Phase sequence (Appendix, table 18).

Chronological position of the type: Present throughout the Phase, increasing in popularity from 33.2 percent to 54.7 percent (fig. 57).

KORIABO SCRAPED

Paste and surfaces: All on Koriabo Plain; see the description of that plain pottery type for details.

Form:

Rims: Wide everted and flaring rims with large lobes and a rounded lip; exteriorly thickened with a channel on inner edge and a rounded lip; thickened with a coil around the edge, ranging in cross section from triangular with rounded edges to squared or angular and many faceted.

Body wall thickness: 5–8 mm.

Body diameters: 16–24 cm.

Bases: Flat.

Vessel shapes reconstructed from sherds:

1. Large open bowls with wide, flaring, everted rim forming an angular junction with the body wall. The rim is ornamented with some type of lobe. The lobes vary from 1.5–3.0 cm. in width along the

rim and project 8–15 mm. outward. They may be single or in a series separated by notches 4–7 mm. wide. The lip is rounded. Rim diameter 14–26 cm. (fig. 53–1, *bottom*).

2. Large globular jars with vertical neck and slightly thickened, everted rim with a wide channel on the inner surface where the body wall and the rim join. The total width of the everted rim ranges from 1.8–2.2 cm. with the channel usually 1.0–1.3 cm. wide. Lip is flattened. Rim diameter 18–26 cm. (fig. 53–2, *bottom*).
3. Jars with a short to medium neck and exteriorly thickened rim. The rim profile varies from triangular with rounded corners to many-sided with a rounded lip. Rim thickness 1.0–1.6 cm.; mouth diameter 15–24 cm. (fig. 53–3, *bottom*).

Decoration (pls. 35, 36, *f–h*):

Technique: Wide incised grooves sometimes in combination with low relief applique modeling. Grooves are broad (3.5–5.0 mm.) shallow (less than 1 mm.) and vary from clear and distinct to barely visible. Width is generally uniform on a single sherd. They were executed with a tool that had a slightly serrated end leaving faint parallel lines in the base of the groove. Lines were drawn when the surface of the clay was wetter than in Koriabo Incised, resulting in less sharp definition of the grooves. Sometimes the grooves are so closely spaced that the separation between them is about the same width as the groove, giving the effect of strips of low applique. Modeling consists of small, low applique nubbins, ribs, eyes, and faces, 1–3 mm. high and 5–15 mm. in diameter. Occasionally the applique is ornamented with fine lines or parallel nicks.

Motif: Parallel lines arranged vertically on the body exterior or on the interior surface of wide everted rims; spirals with a small applique eye at the center; parallel curvilinear elements; sinuous lines winding back and forth across the wide-flanged rim. The applique nubbins, eyes, and faces are usually on the upper edge of the wide rims or on the lip.

Temporal differences within the type: None discernible in the small sample (Appendix, table 19).

Chronological position of the type: A minor type restricted to the middle of the Koriabo Phase sequence (fig. 57).

UNCLASSIFIED DECORATED

Brushed: One sherd from N–2, Cut 3, level 0–8 cm. is ornamented with many deep, parallel lines as if the surface had been brushed with a bunch of stiff twigs. Paste and color are typical of Warapoco Plain.

Imitation of Mabaruma Incised: A typical channeled rim sherd of Koriabo Plain Form 5, from the surface of N–2, has a lobe in the form of an "eye" with grooved incisions around that is typical of Mabaruma Incised in both technique and motif. Rim diameter 26 cm.

Modeled: Four sherds from the surface of N–2 have low applique nubbins, ribs, and eyes. The paste characteristics suggest the plain pottery of the Koriabo Phase rather than trade from the Mabaruma Phase, but the modeling is not typical of either Phase. All the sherds are too small to show overall design.

Punctate: One sherd from N–2, Cut 3, level 0–8 cm., has a small applique nubbin 4 mm. high and 6 mm. in diameter surrounded with a row of punctates 2 mm. in diameter and 1 mm. deep and spaced 6–8 mm. from the nubbin. This decoration is on the exterior just below the rim so that the circle of punctates reaches the lip. The vessel is a small bowl with slightly incurving side walls, a direct rim and rounded lip, with a mouth diameter of 16 cm.

UNCLASSIFIED PLAIN

Fifty-six sherds from N–3, level 8–16 cm. and level 16–24 cm., appear to be from one or two vessels and have a series of characteristics that are slightly different from the other plain pottery types. The reason for not including these sherds in Koriabo Plain is that in among the coarse sand temper poorly mixed throughout the paste, there is a large amount of black ash from vegetal material visible in the cross section of each sherd as specks or streaks. The fact that these sherds have less coarse sand temper than is typical of Koriabo Plain suggests that there may have been an addition of vegetable material in the clay in place of a portion of the sand normally included. All other features of surface treatment, color of surfaces, and paste resemble Koriabo Plain. With the more clayey and less sandy texture of the paste, it is softer than Koriabo Plain, with a hardness of 2.5.

The vessel forms are open bowls, one with direct rim, rounded lip, and mouth diameter of 32 cm.; the other with slightly thickened raised rib on the rim interior and a mouth diameter 18 cm.

UNCLASSIFIED WHITE SLIPPED

Twenty-two sherds with a white slip come from various levels and sites of the Koriabo Phase; see Appendix, table 16, for the tabulation.

PASTE: On the coarse, orange paste of Koriabo Plain.

SURFACES: Except for the slip, the surfaces are typical of Koriabo Plain.

Slip: Exterior surface slipped with a creamy-white slip ranging in thickness from paper thin to 0.5 mm. Slip in a few cases has crackled. Only one example of slipping on both exterior and interior.

FORM: Slipped surfaces were found only on body sherds with one exception. These body sherds varied in thickness from 5–10 mm., with body diameters up to 30 cm. The rim is from a small open bowl with curved sides, ending in an almost vertical, direct rim with a flattened lip. The lip is painted red, both interior and exterior surfaces are white.

WARAPOCO PLAIN

PASTE:

Method of manufacturing: Coiling, although in most cases the coils were worked wet enough and so well kneaded together that distinct cleavage along the coil line is not typical (pl. 34, *k*).

Temper: Predominantly coarse sand containing clear to white quartz and feldspar particles up to 5 mm. in diameter (pl. 34, *c*). All the edges well waterworn. Large quantity of temper, in some cases constituting almost one-half the volume of the paste mixture.

Texture: Generally coarse and sandy, with the fractured edges very irregular. Except where an unusually large temper particle occurs and weakens the paste, the tensile strength is generally good and sherds do not break easily. Temper poorly mixed so there is bunching of the particles; air pockets also common.

Color: A gray to black core is the main feature differentiating this type from Koriabo Plain. Fired light tan to brown on the exterior and interior, producing a band varying from paper thinness to 3 mm. thick, with the interior core gray.

Firing: Incompletely oxidized; fire clouds common. Sometimes the interior of the bowl or the jar is grayish or black suggesting firing with the mouth upside down, creating a smudging effect.

SURFACE:

Color: Exterior and interior generally tan to brown; a few sherds are a tile orange. On a few the interior is dark gray.

Treatment: Both surfaces scraped during the process of erasing the coils, but left fairly uneven and irregular. Large particles of temper protrude with crackle lines around them.

Hardness: 3–3.5.

FORM:

Rim: Direct with rounded, flattened, or slightly tapered lip, sometimes with lobes added to the edge (pl. 34, *e*, *g*, *h*, *j;* fig. 55–1); everted, interiorly thickened with a rounded lip.

Body wall thickness: Range 3–13 mm.; majority 6–8 mm.

Body diameters: 12–42 cm.

Bases: Both jar and bowl forms have three base forms:

A. Flat, sometimes slightly thickened, joining the side wall at an angle of 40 to 50 degrees. Diameter 7–16 cm. (fig. 55, *A*).

B. Flat pedestal, 5–10 mm. high, joining the body wall at an angle of 20 to 35 degrees. Diameter 9–10 cm. (fig. 55, *B*).

C. Rounded, sometimes slightly thickened at the center (fig. 55, *C*).

Major vessel shapes reconstructed from sherds:

1. Open bowls with vertical to slightly outsloping side walls, direct rim, and rounded or slightly tapered lip. Mouth diameter 16–34 cm. (fig. 55–1). Some have lobes dividing the rim into thirds or quarters. They are either plain, scalloped, or bilobed, measuring 3–7 cm. long and extending 1.0–2.4 cm. beyond the normal lip (fig. 55–1; pl. 34, *e*, *g*, *h*, *j*).
2. Bowls or jars with incurving side walls, constricted mouth, direct rim and rounded, tapered or flattened lip. Mouth diameter 16–29 cm. (fig. 55–2).
3. Jars with vertical or insloping upper walls and interiorly thickened, everted rim with a flat rim surface usually sloping at a 45-degree angle to the mouth opening. Rim 1.0–3.2 cm. wide, 5–17 mm. thick, with rounded or flattened lip; mouth diameter 18–34 cm. (fig. 55–3).

TEMPORAL DIFFERENCES WITHIN THE TYPE: The time represented by the Koriabo Phase is too short and rim sherds are too few to reveal any reliable trends of change. However, it is possible that Base Form B, the flat pedestal, is restricted to the upper (late) part of the sequence (Appendix, table 20).

CHRONOLOGICAL POSITION OF THE TYPE: Warapoco Plain declines in popularity from 58.8 percent at the earliest level in the seriation to 29.8 percent at the top of the sequence (fig. 57).

TRADE SHERDS OF MABARUMA PHASE ORIGIN

All of the Koriabo Phase sites produced sherds from vessels representing three plain and four decorated types of Mabaruma Phase origin. Taken together, these constitute 678 sherds, or 13.4 percent, of a total of 5,056 sherds from Koriabo Phase sites. It is probable that Mabaruma Plain is also present, but its paste characteristics are so similar to those of Koriabo Plain and Warapoco Plain that the sherds could not be separated with confidence. The trade materials (pl. 23; fig. 56) are in all respects typical of the Mabaruma Phase pottery types to which they belong (pls. 21, 26, 27) and detailed descriptions can be found under the Mabaruma Phase (pp. 86–113). Appendix table 16 shows the exact provenience

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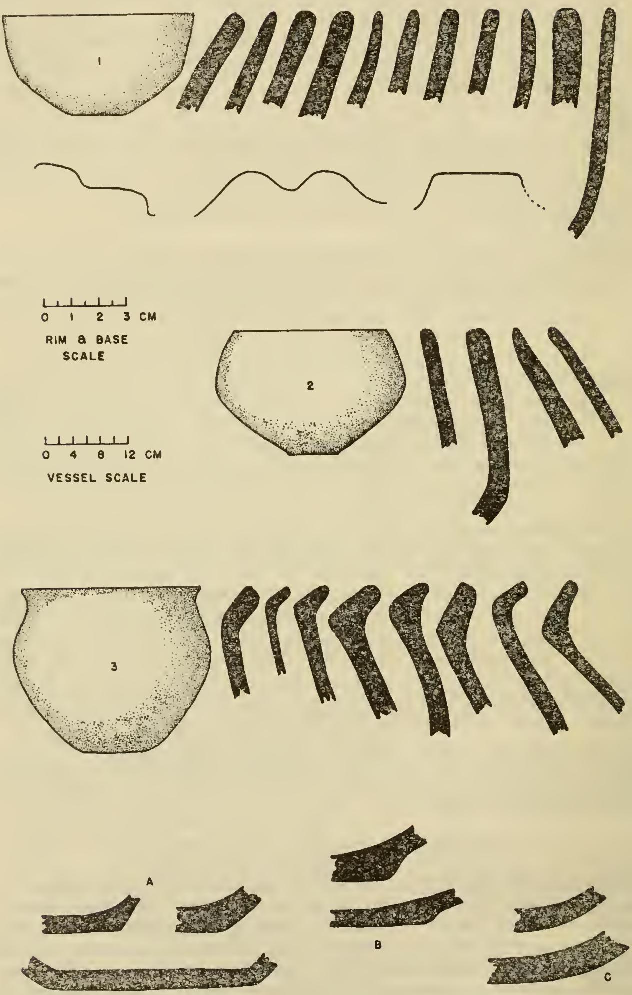


FIGURE 55.—Rim and base profiles and reconstructed vessel shapes of Warapoco Plain Koriabo Phase (Appendix, table 20).

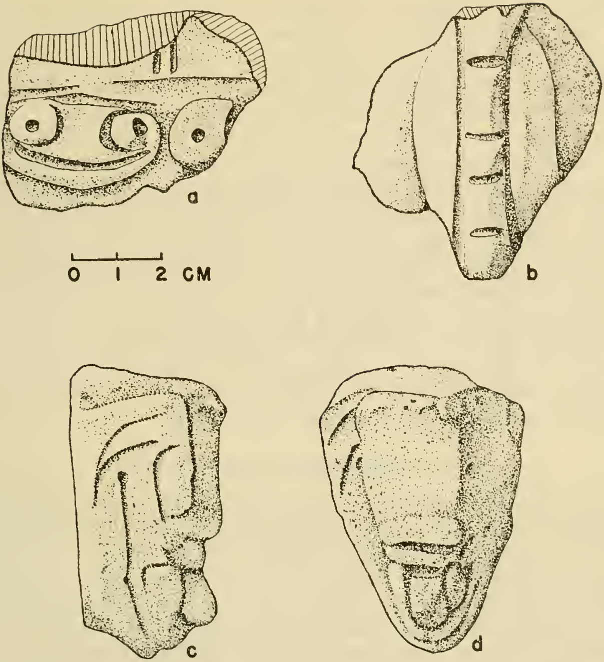


Figure 56.—Sherds of Akawabi Incised and Modeled of the Mabaruma Phase recovered from sites of the Koriabo Phase. *a–b*, Motif 2: high relief. *c–d*, Motif 3: Barrancoid adornos.

and frequency of all sherds, and Appendix tables 21–23 give the frequency of decorative motifs. A summary of types and their occurrence by site is provided in table D.

Table D.—*Occurrence of Mabaruma Phase trade sherds in Koriabo Phase sites*

Mabaruma Phase pottery type	Site	Mabaruma Phase pottery type	Site
Hosororo Plain	N-2, N-3, N-5, N-7	Aruka Incised	N-2, N-3, N-5, N-7
Hotokwai Plain	N-2, N-3, N-5	Kaituma Incised and Punctate.	N-2, N-3, N-5
Koberimo Plain	N-2, N-3, N-5, N-7	Mabaruma Incised	N-2, N-3, N-7
Akawabi Incised and Modeled.	N-2, N-3, N-5, N-7		

Pottery Artifacts

The only artifacts made of pottery are pot rests and a worked sherd.

Pot rests.—Fragments of pot rests are easy to distinguish because of their irregular shape, a thickness greater than a vessel wall, and the position of the finished surface. The paste is bright orange and very sandy with abundant coarse temper. There is so much sand in the clay that the paste crumbles away under light rubbing. On the larger fragments, one surface is usually curved. Features of a number of fragments suggest the form was a truncated cone with a flat base, straight but insloping sides, and a top that is either flat, slightly convex, or sometimes punched with the fingers to a depth of 2–3 cm. in the center and around the edge. Diameter of the upper end is about 8 cm., that of base 11–12 cm. Height ranges from 10–15 cm. Pot rest fragments came from all the sites of the Koriabo Phase.

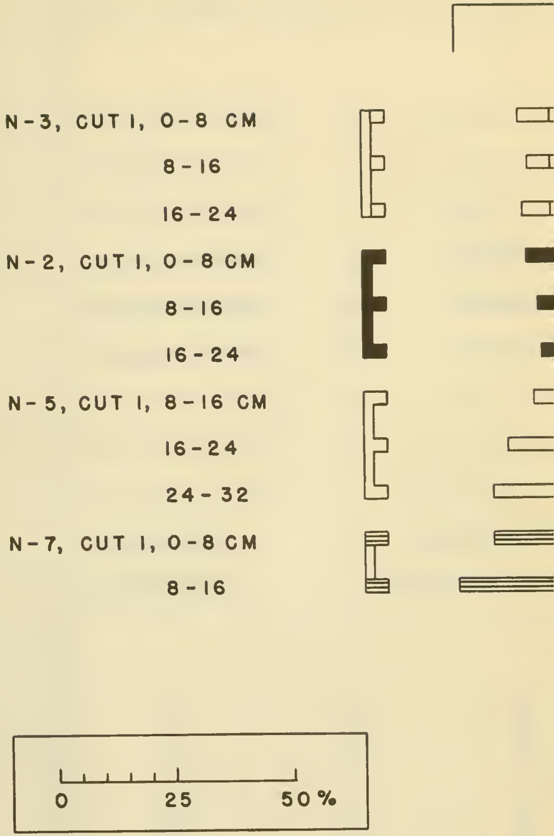
Worked sherd.—One sherd of Koriabo Plain from the surface of N–2 is shaped into a six-sided artifact with the edges rounded. It may have been used as a pottery scraper to remove the uneven clay particles from the vessel during construction. The narrowest sides measure 1.6 cm., the others range from 2.8–3.4 cm.

THE SITE SEQUENCE AND ITS IMPLICATIONS

The seriated sequence of the Koriabo Phase is based on six stratigraphic excavations in four habitation sites. All showed the same general trend in the two major plain wares, an increase in Koriabo Plain and a decrease in Warapoco Plain. An attempt was made to interdigitate the levels from the various cuts, but since this procedure did not produce a notably smoother pattern of change, it did not seem justifiable to give it preference over the successive position of the sites. Since Cut 1 contained the most levels, it was selected to represent N–2.

The clearest trends exhibited by the seriated sequence are in the plain wares (fig. 57). Warapoco Plain, with a gray core, is most abundant at the beginning of the Phase, constituting 58.8 percent of the total sherds in the earliest level. From this climax, it declines to 29.8 percent at the end of the Phase. During the same period of time, Koriabo Plain, which has an orange core, increases from 33.2 percent to 54.7 percent. Cariapé-tempered Barima Plain occurs in minor amounts at all sites, but is not present in all levels. It begins with a frequency of 1.2 percent, increases to 6.8 percent in the middle of the sequence, and then declines again to 1.1 percent. Although this type has been described as one of the pottery types of the Koriabo Phase, the fact that it occurs in a smaller frequency than Koberimo Plain, which is known to be acquired by trade, suggests that it may also be a trade ware (see pp. 151–152 for further discussion).

Koriabo Phase decorated types comprise only 4.3 percent of the total sherds recovered from all the sites, and 4.9 percent of the total



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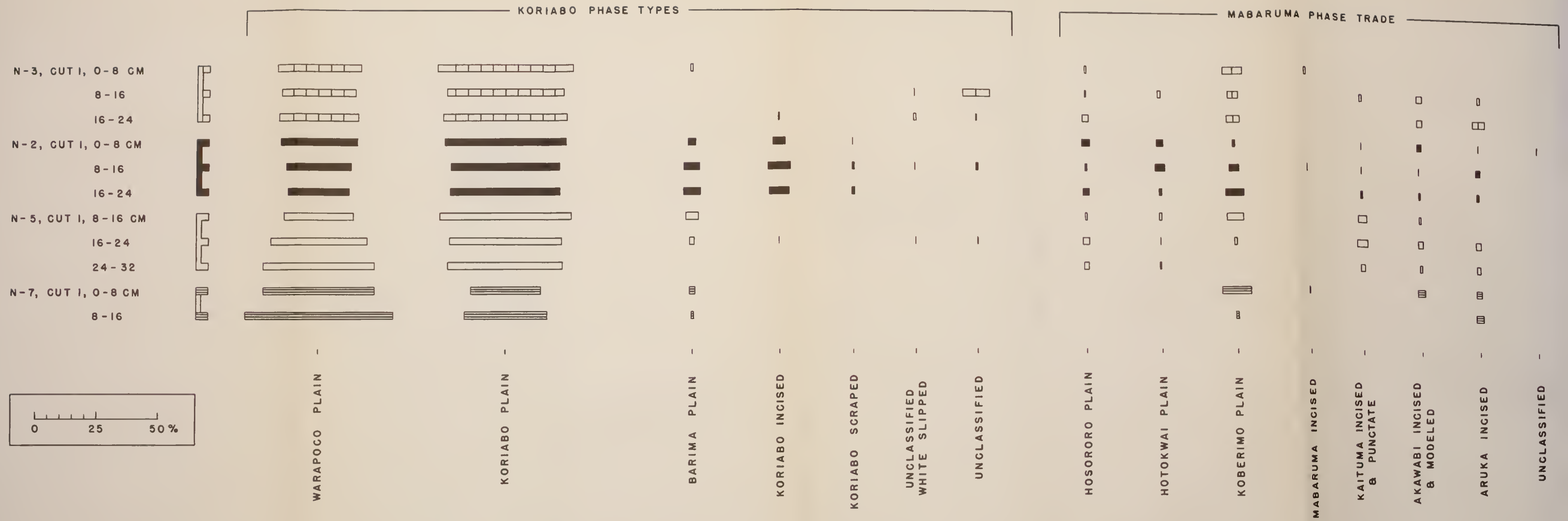

FIGURE 57.—Seriation of Koriabo Phase sites on the basis of changes in pottery type frequency (Appendix, table 16).

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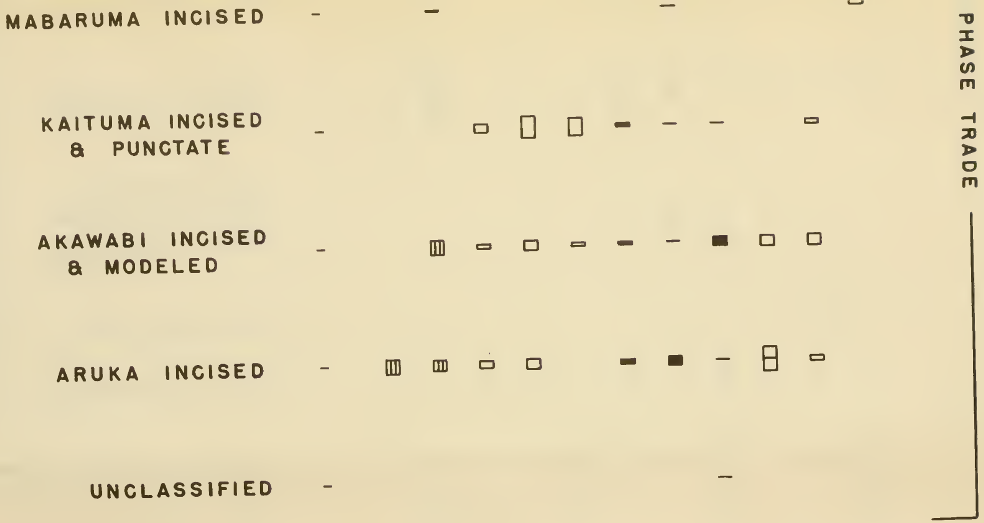

MABARUMA INCISED
KAITUMA INCISED & PUNCTATE
AKAWABI INCISED & MODELED
ARUKA INCISED
UNCLASSIFIED
PHASE TRADE

Koriabo Phase sherds. The majority belong to Koriabo Incised, which is characterized by fine, sharp, generally parallel lines arranged to produce simple overall designs. This type reaches a maximum of 9 percent at N–2, in the middle of the sequence, but is represented only by a trace in earlier and later sites (fig. 57). Koriabo Scraped, in which the decoration is produced by broad, troughlike lines, is found only at N–2, where it occurs with a frequency of less than 2 percent. In both of these types, the incisions are associated with small applique or relief elements of distinctive style (pls. 35, 36, *f–i*).

The limited number of rim sherds per level makes trends in vessel shape popularity difficult to discern. Since the upper two levels of the three excavations at N–2 show similar percentages of Koriabo Plain and Warapoco Plain, they were presumed to be contemporary and the number of rims was combined for the analysis of vessel shape (Appendix, tables 18 and 20). Most of the forms have a distribution throughout the Phase or occur in such small numbers that absences probably reflect the small size of the sample rather than absence of the form. However, the fact that the flat pedestal base (Form B) is found only in the latter half of the sequence in both of the plain wares probably can be taken as evidence that this is a late form. Koriabo Plain Vessel Shape 6, a jar with an exteriorly thickened rim with a beveled top, appears also to be restricted to the latter half of the Phase.

The stone artifacts are too few in number and lacking in distinctive features to be of any value as horizon markers. Except for a few flake knives, the tools are polished or at least ground and pecked. In shape, workmanship, and rock material, they closely resemble similar objects from the Mabaruma Phase, and it is possible that some of them may have been acquired by trade.

Koriabo Phase habitation sites show more consistency of settlement pattern than do those of the Mabaruma Phase. All are on elevations above high water level, but the maximum elevation is only 8 meters. Three sites (N–5, N–7, and N–2) have areas of 1,800, 2,480 and 2,574 square meters, respectively; only one (N–3) is considerably larger, with 7,400 square meters. All have refuse deposits between 16 and 32 cm. in depth. The latest site, N–3, has both the largest area and the greatest depth of refuse, but whether this fact has any interpretative significance cannot be determined at present.

None of the Koriabo Phase sites contains any remains of shellfish, although N–7 is in the middle of a group of Alaka Phase sites (fig. 4), suggesting that this food source was readily accessible. Agriculture was apparently the subsistence base, but the only cultural evidence of this is the presence of sherds from pottery griddles that are generally associated with the preparation of manioc.

All of the Koriabo Phase sites produced a considerable number of sherds of Mabaruma Phase origin. Of the total sherds from the Phase, 8.6 percent represent Mabaruma Phase plain wares and 4.8 percent represent Mabaruma Phase decorated types. In addition to Hosororo Plain, Hotokwai Plain, and Koberimo Plain, there are probably some sherds of Mabaruma Plain that were missed in classification. Mabaruma Plain is so similar in paste characteristics to the wares of the Koriabo Phase that it was impossible to separate the eroded sherds with certainty. All of these types have a somewhat erratic frequency, as might be expected from their origin. Trade on an individual basis would result in unequal distribution of the vessels among members of the village through time, which the small size of the strata cuts tends to bring out. Nevertheless, it is evident that Koberimo Plain is the most abundant plain ware, followed by Hosororo Plain, with Hotokwai Plain the least common.

All four of the Mabaruma Phase decorated types occur in Koriabo Phase sites. Mabaruma Incised is by far the least common. Kaituma Incised and Punctate is most abundant in the first half of the sequence, thereafter being represented by only scattered sherds. Aruka Incised and Akawabi Incised and Modeled appear to have been popular throughout the Koriabo Phase (fig. 57). Analysis by design motifs shows that all five motifs of Aruka Incised are present; Motifs 1, 2, and 4 of Akawabi Incised and Modeled; and all motifs of Kaituma Incised and Punctate.

DIAGNOSTIC FEATURES OF THE KORIABO PHASE

The description of the Koriabo Phase is based on pottery changes in six strata cuts placed in four different habitation sites. The villages range in size from 1,800 to 7,400 square meters with the refuse deposit never exceeding 32 cm. in depth and usually considerably less. They are located on riverbanks above the flood level, near regions where there is sufficient land for slash and burn agriculture, although old clearings could not be correlated with the archeological sites.

Koriabo Phase pottery was classified into three plain wares and two decorated types. The two major plain pottery types, both sand tempered, are an orange-cored Koriabo Plain, which increases in popularity throughout the sequence, and gray-cored Warapoco Plain, which declines in frequency. A minority plain type, Barima Plain, tempered with cariapé, grows in popularity from 1.2 percent to a maximum of 6.8 percent in the middle of the Phase, and then declines again to 1.1 percent. The two decorated types are distinctive. Koriabo Incised is characterized by sharp, carefully executed, V-shaped incisions, sometimes combined with low applique ridges, nubbins, and small faces. Koriabo Scraped consists of wide, shallow, incised grooves usually made with a slightly serrated, flat-edged stick, which scraped away the clay particles when the design was made. These scraped grooves are combined with low applique nubbins, eyes, and faces, usually placed on the edge of wide rims with the grooves spaced in between. Both these types are found only in the middle of the Koriabo Phase sequence and are most abundant at Site N–2. Distinctive Koriabo Phase rim forms are everted and slightly thickened on the interior, with a broad channel on the upper surface or an angular faceted upper edge. Griddle sherds suggest the use of manioc. The only common pottery artifacts are pot rests. Stone tools are few. They include polished celts and chisels, but the forms are not distinctive.

All the Koriabo Phase sites produced trade sherds of Mabaruma Phase plain and decorated types. These comprise 13.4 percent of the total sherd sample, indicating that the commerce was rather extensive and demonstrating the contemporaneity of the Koriabo Phase with part of the Mabaruma Phase occupation of the Northwest District.

COMPARATIVE DATA, CONCLUSIONS, AND INTERPRETATIONS

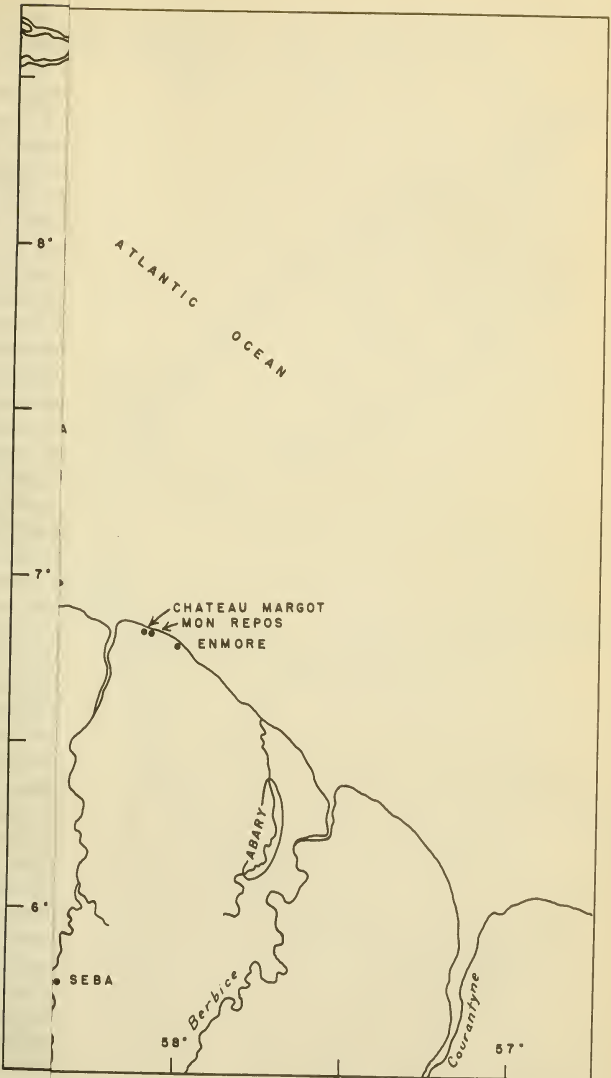
The archeological sequence in the Northwest District is the longest in British Guiana, and also the most varied. This region is part of the area of most intensive European settlement, with the result that collections have been made from some of the sites for over 100 years. The general sequence, from a preceramic shellfish gathering horizon to pottery making and presumably agricultural groups, has been known for a long time and our main contribution has been to suggest a more detailed chronology and to expand the distribution of the cultures involved.

Barring the possible existence of a paleo-Indian horizon, the earliest occupation of the Northwest District is represented by the remains of the Alaka Phase. Sites consist of small shell midden deposits surrounded by, or at the edge of, the mangrove swamp. Scattered in the refuse, along with shells, bones, crab carapaces and ash, were crude stone choppers, picks, scrapers, and similar unshaped, rudimentary, percussion-flaked tools. Objects of other materials were very rare. Distribution of shell middens extends beyond the Northwest District into the Pomeroon District and possibly as far east as the mouth of the Essequibo River (fig. 58). Further work may make it possible to distinguish at least one other shellfish gathering Phase, since large middens existing in the Pomeroon District appear to have a slightly different artifact complex than that associated with the Alaka Phase. However, since there is an equally good possibility that the cruder implements have not been recognized as artifacts and consequently only the better finished ones were saved, it was considered preferable not to attempt to subdivide the preceramic horizon at the present time.

The origin of the Alaka Phase should be readily identifiable, in view of the widespread occurrence of shell middens along the coasts of Central and South America. However, artifact complexes of equal crudity have rarely been described. The closest sites geographically are on the east coast of Venezuela. Here, the best known complex is the Maniquaroid series (Cruxent and Rouse, 1959, pp. 240–241), the diagnostic artifacts of which are said to be shell gouges and bone projectile points. Neither of these artifact types was encountered in the Alaka Phase excavations, but this may be a function of the relatively small amount of digging here as compared to that at the Maniquaroid sites, where rocks and chips that might be crude artifacts of the type associated with the Alaka Phase were apparently not brought into the laboratory for more detailed examination. Cruxent and Rouse (op. cit., p. 243) equate the Alaka Phase with the sites of El Peñon and El Conchero, on the east-central coast of Venezuela, but these sites are represented only by small surface collections of chips and flakes so that the resemblance is difficult to evaluate. The carbon 14 dating that the authors accept for these sites is between 2,760±130 and 2,450±90 years ago, which may be slightly early for the equivalent horizon in British Guiana, if it represents an intrusion from the Venezuelan coast.

A complex of stone artifacts resembling those of the Alaka Phase in crudity and also in form has been reported from the site of Araujo II on the coast of Paraná, Brazil (Orssich and Orssich, 1956, figs. 111–112, 114). The picks, choppers, hammerstones, knives, scrapers, and other percussion-chipped artifacts characteristic of this deposit are very similar to those of the Alaka Phase, but in view of the great distance between the two areas and the absence of shell middens on large stretches of the intervening east coast of South America, it is a question whether this resemblance implies cultural connections or simply comparable adaptation to a similar subsistence pattern.

During its latter part, the Alaka Phase shows unmistakable indications of contact with pottery making and presumably agricultural groups. Alterations in subsistence and in techniques of stone tool manufacture, together with the appearance of pottery, combine to support this inference. The first pottery was apparently acquired by trade, since it is very rare and too well made to represent a first attempt at a new craft. Later, a crude, shell-tempered ware occurs in increasing abundance, and this has been interpreted as of late Alaka Phase manufacture. About the same time, the appearance of trade sherds of Mabaruma Phase decorated types implies the arrival of the Mabaruma



recorded by other investigators.

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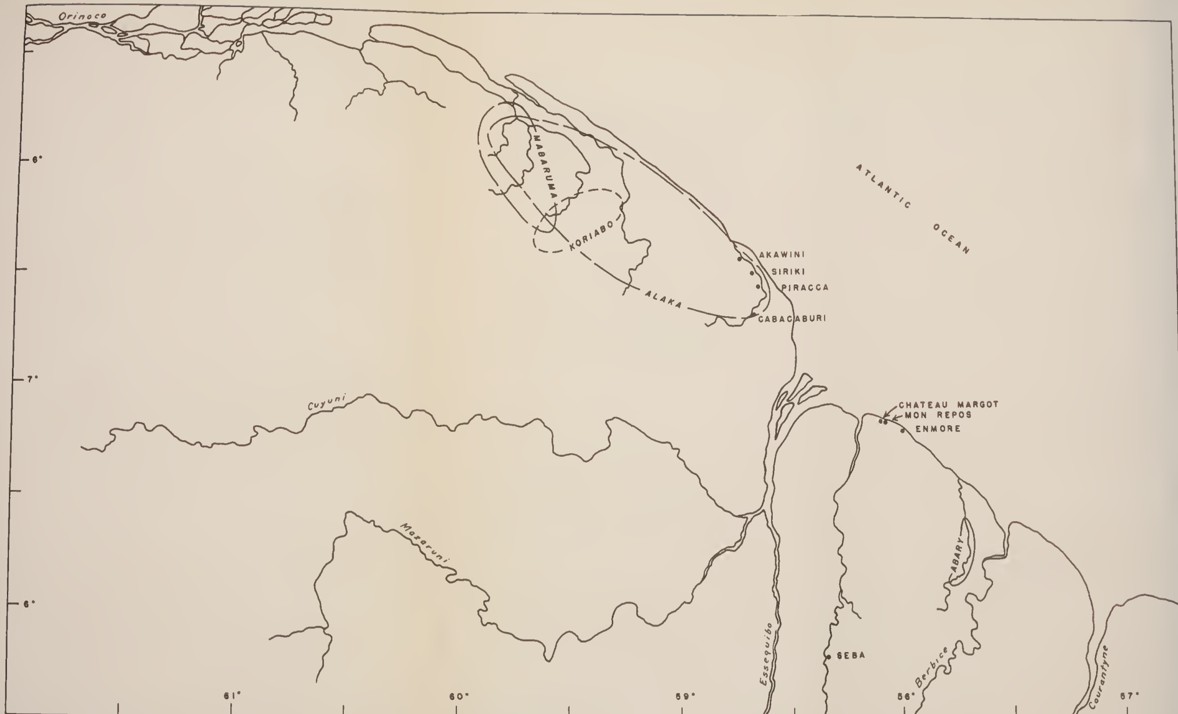

FIGURE 58.—Coast of British Guiana, showing the areal distribution of the archeological Phases and the location of sites recorded by other investigators. Site locations are from Osgood (1946, fig. 1) and Carter (1943, fig. 13).

Phase, which soon dominated the Aruka River area, displacing or absorbing the already semiacculturated, earlier inhabitants (fig. 58).

The origin of the Mabaruma Phase can be determined with unusual precision, thanks to the work of Cruxent and Rouse at the mouth of the Orinoco River. The sequence of pottery-making cultures in that area begins with Saladero and continues through Barrancas, Los Barrancos, Guarguapo, and Apostadero styles (Cruxent and Rouse, 1959, pp. 211–237). The characteristic features of the early Mabaruma Phase equate most closely with those of Los Barrancos, where incision predominates over modeled-incised decoration (rather than the reverse which was typical of the earlier Barrancas style). The fact that Los Barrancos style is one of the most widespread at the mouth of the Orinoco suggests that this time was one of expansion of the culture, of which the movement into British Guiana is an expression. The carbon 14 date for Los Barrancos style at the mouth of the Orinoco is 1,370±90 years ago or ca. A.D. 575 (op. cit., p. 230), which seems reasonable in terms of the British Guiana sequence and is acceptable as an approximate beginning date for the Mabaruma Phase in British Guiana (fig. 126).

There is quite a bit of change in Mabaruma Phase pottery during the estimated thousand years or so that the Phase appears to have endured in British Guiana. This change tends to be gradual, although there are several points at which a number of new vessel shapes and decorative motifs appear almost simultaneously, suggesting that an outside influence may be involved. This clustering was the basis for subdividing the Mabaruma Phase sequence into early, middle, and late segments (fig. 49). The existence of an initial date of around A.D. 500 (by correlation with the lower Orinoco date for Los Barrancos) and a terminal date of about A.D. 1600, when European settlement began in the area, makes it possible to establish a tentative estimated time scale. Assuming that the changes of pottery frequencies are generally equal throughout, the sequence can be arbitrarily divided into 100-year intervals. This subdivision gives guess dates of A.D. 500–850 for the early period, A.D. 850–1250 for the middle period, and A.D. 1250–1600 for the late period.

The early period is characterized by such typical Barrancoid traits as modeled-incised adornos, broadline incision on a broad flange rim, annular bases, and sand temper. The middle period is marked by the introduction of a number of simple rounded bowl and jar forms and several new decorative motifs, including a cruder form of adorno and new combinations of punctate and incision. The large number of innovations that appear almost simultaneously at this time suggest some kind of outside influence, but the origin of this is difficult to trace. The only really unique element to appear is the small, caricaturelike adorno, with large coffee-bean eyes, exaggerated nose, and applique construction. Adornos of similar style are known from the Corobal Phase on the Ventuari River, a tributary of the Upper Orinoco in the interior of Venezuela (Evans, Meggers, and Cruxent, 1960, pp. 359–369). Contact between this area and that occupied by the Mabaruma Phase would have been easy via land and the inland waterways of southeastern Venezuela. The fact that no similar modeling is reported from coastal Venezuela, the other Guianas, or the Amazon suggests that the style is not widespread in northern South America and tends to strengthen the importance of the Corobal Phase resemblances. If this is the correct explanation, it follows that connections between the two groups were less close or intense than those between the Mabaruma Phase and its neighbors in British Guiana. This would explain the absence of trade sherds between the Corobal and Mabaruma Phases and the failure of either to adopt the most typical forms of decoration used by the other.

The Mabaruma Phase is unusual in the strength of the influence that it exerted on its coastal neighbors. The most striking example is the Abary Phase, the pottery of which shows considerable evidence of acculturation in both vessel shape and decoration. The abundance of trade sherds of Mabaruma Phase origin in the earliest Abary Phase site can be used to arrive at an approximate date for the beginning of this contact, which is estimated to have started between A.D. 1000 and 1200. Since no comparable Abary Phase influence on the Mabaruma Phase can be detected, evidence of the relations between the two Phases has been discussed in detail in the analysis of the Abary Phase (see pp. 182, 185–186). Mabaruma Phase trade sherds also occur in sites of the Koriabo Phase, a late arrival in the Northwest District. In this case, there is evidence of trade in both directions because Koriabo Phase decorated sherds have been recovered from late sites of the Mabaruma Phase. The late portion of the Mabaruma Phase sequence is, in fact, characterized by this evidence of Koriabo Phase contact as well as by the loss of virtually all the diagnostic early Barrancoid features (fig. 48).

At a time not precisely identifiable, but probably during the middle period, the Mabaruma Phase expanded its territory eastward (fig. 58). Several sites have been reported from East Coast Demerara, all of which are characterized by the typical late Mabaruma Phase vessel shapes and forms of decoration (this bulletin, fig. 59, pp. 186–187; Osgood, 1946, figs. 12–13; Im Thurn, 1884, pp. 126–137 and pls. 15–17). The descriptions do not specify details of temper and paste, but the implied abundance of decoration is far greater than that in the Abary Phase so that it does not seem likely that the sherds are of trade

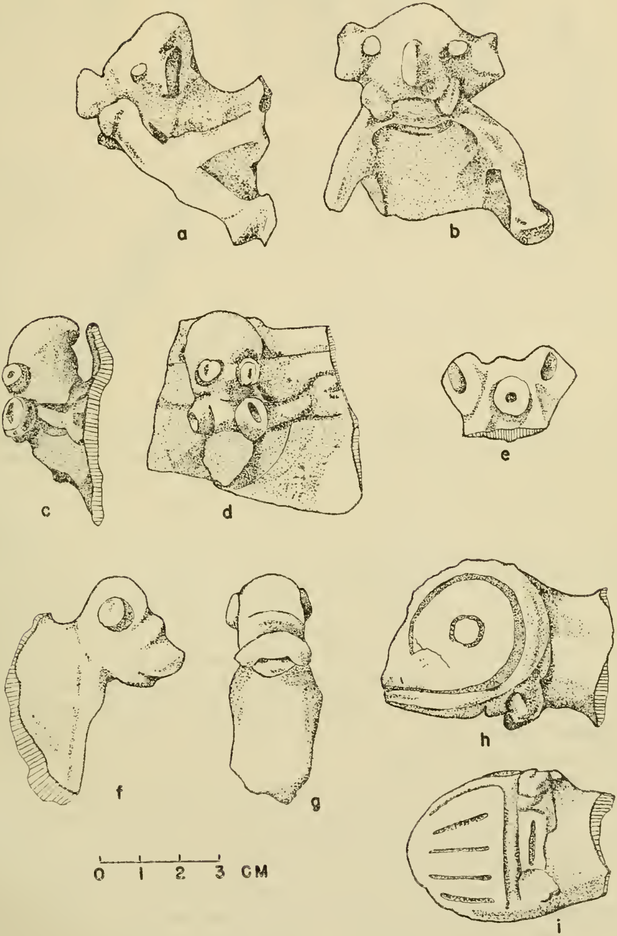

Figure 59.—Sherds of Akawabi Incised and Modeled from sites between the Northwest District and the Abary River. *a–d*, Chateau Margot. *e–g*, Mon Repos. *h–i*, Moruka River. All after Walter E. Roth (MS.).

origin. Nothing is known of the coast between the Mahaica and Abary Rivers so that the exact limit of the late Mabaruma Phase expansion cannot be specified at present. Survey of the Abary River produced sites of a different culture, designated as the Abary Phase (fig. 58), which shows clear indications of contact with late Mabaruma Phase sites, possibly those of the adjacent East Coast Demerara (see pp. 186–187 for details).

A somewhat comparable expansion into the Orinoco delta has been postulated by Cruxent and Rouse (1959, pp. 237, 262) to account for the appearance of their Apostadero style, which closely resembles the late Mabaruma Phase pottery in decorative technique and motif (op. cit., pls. 102–104). Since Apostadero is separated from the earlier Los Barrancos style by an intrusive culture using sponge spicule tempered pottery and designated as the Guarguapo style, these authors do not recognize the Apostadero style as a continuation of the Barrancoid tradition. The situation in British Guiana, however, makes it quite clear that the Apostadero style is a variant of the late Mabaruma Phase. Cruxent and Rouse (op. cit. pp. 233, 237) date its appearance in Venezuela as post-European because of the presence of European trade sherds. In terms of the British Guiana sequence, this dating is within the realm of possibility.

The last group to settle in the Northwest District was the Koriabo Phase, whose area of occupation centers on the Barima River (fig. 58). In paste, vessel shape, and decoration, the pottery of this Phase is distinct from that of the Mabaruma Phase, with the result that trade sherds are easily recognized. While all Koriabo Phase sites contain a considerable quantity of Mabaruma Phase trade sherds, Koriabo Phase trade sherds are limited to sites in the late part of the Mabaruma Phase sequence, making it possible to estimate the time of arrival of the Koriabo Phase in the Northwest District of British Guiana as somewhere around A.D. 1200 by correlation with the estimated Mabaruma Phase time scale.

In searching for the derivation of the Koriabo Phase, the distinctive nature of the ceramic complex is helpful. Vessel shapes include flaring rim bowls (e.g., Koriabo Scraped Form 1) and angular rimmed jars (e.g., Koriabo Scraped Forms 2 and 3). Bowls frequently have lip ornamentation in the form of lobes (pls. 34, 35). Incised and scraped decoration consists of simple patterns, sometimes embellished with low relief (pls. 33, 35, 36). Sherds with features very similar to these have been recovered from the Charlesburg site near Paramaribo on the coast of Dutch Guiana by Peter Goethals (MS.), who kindly allowed us to examine his material and manuscript in detail. The same complex associated with the Koriabo Phase occurs here, including rim lobes, incised and scraped decoration accompanied by

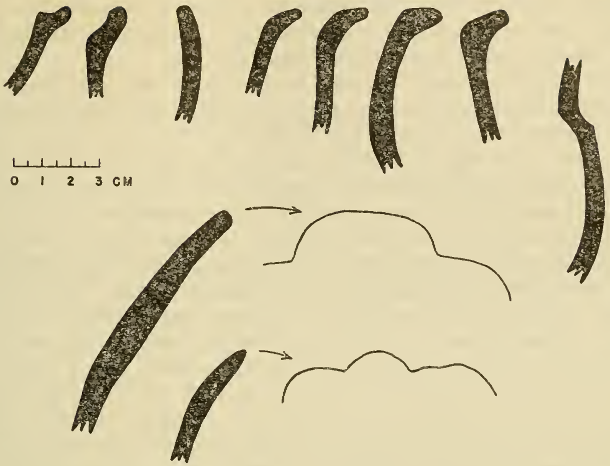

FIGURE 60.—Rim profiles of sand-tempered (*top*) and cariapé-tempered (*bottom*) sherds from the Charlesburg site near Paramaribo, Dutch Guiana, collected by Peter Goethals and deposited in the Peabody Museum, Yale University.

occasional relief (pl. 37), outflaring bowls and angular rimmed jars (fig. 60). The only major difference between this pottery and that of the Koriabo Phase is in temper. Classification shows the sample of 332 shreds to be almost equally divided between those with sand (44.5 percent) and those with cariapé (41.8 percent), with the remaining few containing particles of black ash. In the Koriabo Phase, cariapé-tempered sherds never exceed 6.8 percent of the total, and this maximum is near the middle of the seriated sequence rather than at the beginning (fig. 57). Nevertheless, in view of the other close similarities between these two complexes, and in the absence of any evidence of affiliations to the west in Venezuela or to the south, derivation of the Koriabo Phase from Dutch Guiana seems the most logical conclusion. Although the chronological position of the Charlesburg site is unknown, this inference is strengthened by the extension of the distribution of outflaring lobed rims and similar styles of incised and scraped decoration along the Guiana coast as far as the Aristé Phase in the northern part of the Territory of Amapá. On the basis of the chronological position of these traits in the Territory of Amapá, it has been concluded that their geographical distribution corresponds to a northwestward path of diffusion in relatively late times (Meggers and Evans, 1957, fig. 206). The movement of the Koriabo Phase into the Northwest District is in keeping with this interpretation and represents the western limit of the penetration. Interestingly, there have been no sites with similar ceramic traits reported in the region between Paramaribo and the Northwest District.

Both the Mabaruma Phase and the Koriabo Phase include in their ceramic complexes a small percentage of sherds with cariapé temper. The highest frequency occurs in the Koriabo Phase, and in view of the postulated origin of this Phase, its presence here can be interpreted as the residue of what was once a major ware. However, the case of the Mabaruma Phase is more complex. The sherds here are too rare to suggest anything but a trade origin, and this conclusion is strengthened by the fact that cariapé tempering does not exist in the Barrancoid style from which the Mabaruma Phase is derived. It would be easy to conclude that the Mabaruma Phase cariapé-tempered sherds were acquired from the Koriabo Phase by trade except for two factors: (1) Barima Plain is not a major Koriabo Phase ware at the sites identified in the Northwest District, and (2) decorated sherds known to have originated in the Koriabo Phase are limited to late Mabaruma Phase sites, whereas cariapé-tempered plain sherds occur throughout the sequence (fig. 48). Since pottery complexes in which cariapé temper is characteristic are not reported from the lower Orinoco, coastal Venezuela, or the coast of the Guianas during the period represented by the early part of the Mabaruma Phase sequence, the only apparent conclusion is that these sherds reflect contact with an unidentified interior group. Cariapé is the dominant form of temper used in the Nericagua Phase of the middle Orinoco, and carbon 14 dating gives this Phase an antiquity comparable to that of the Mabaruma Phase. In view of the probable later influence on Mabaruma Phase modeling stemming from this area, this interpretation seems possible.

The termination of the aboriginal occupation of the Northwest District is assumed to correlate with the initiation of European settlement around the beginning of the 17th century. The survival of either the Mabaruma Phase or the Koriabo Phase into the post-European period cannot be proved since no trade items were encountered. However, the fact that many of the Rupununi Phase sites lacked such objects in spite of their 19th or even 20th century date suggests that the absence of this kind of evidence cannot be taken as reliable indication of pre-European dating. European china is reported by Cruxent and Rouse (1959, pp. 236–237) in association with the Apostadero style at the mouth of the Orinoco. This site also produced a Koriabo Phase trade sherd, implying the survival of both Mabaruma and Koriabo Phases into the post-European period in that region. Whether these Phases continued to exist as long in the Northwest District of British Guiana cannot be determined on the basis of present evidence. The possibility that the Koriabo Phase may have retreated toward the interior is raised by the presence of sherds of Koriabo Scraped (pl. 36, *f–h*) and Koriabo Incised (pl. 36, *i*) at Site R–40 of the Rupununi Phase. However, the fact that this site dates from the middle of the 19th century (table N), more than 200 years after the presumed termination of the aboriginal period in the Northwest District, suggests that the Koriabo Phase sherds may not be associated with the Rupununi Phase occupation.

Historical accounts and archives relating to the Northwest District frequently mention Indians, but the descriptions are too general to be tied in with the archeological remains. Although Warrau and Carib groups still constitute a large component of the local population, there is no way of determining whether they are deculturated descendants of the prehistoric inhabitants or later immigrants into the area.

THE ABARY RIVER

THE ABARY PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

Three sites were excavated along the course of the Abary River (fig. 61). All are habitations with sufficient depth of refuse for stratigraphic excavation, and all belong to the same culture, the Abary Phase.

B-1: TIGER ISLAND

The majority of the land along the lower Abary River is low and subject to flooding in the rainy season. About 43 km. above the mouth, there is a low rise on the left bank known as Tiger Island (fig. 62; pl. 38, *a*). Its nearly flat surface is 1.5 meters above high water level. During the rainy season the surrounding area is flooded except for a stretch of about 100 meters along the riverbank just south of Tiger Island, which remains exposed but somewhat soggy. Tiger Island is rectanguloid, with sloping edges. Its eastern side is 25 meters from the river channel. The summit, which corresponds to the area of the site, is 60 by 180 meters, with the longer dimension paralleling the shore. The island was occupied in 1953 by a house and a rice barn. The northern half had been used for gardening, and the southern part was in grass closely cropped from grazing cattle. Sherds were abundant on the eroded slopes and on the surface where the grass was short and worn away.

Two small stratigraphic excavations were made in the south half of the site, where the disturbance appeared to be minimal. Cut 1, 3 by 1 meters, was placed on the highest part of the southern half of the site, in the quarter nearest the riverbank. It was excavated in 8-cm. levels. The following features were observed:

Level 0–8 cm..	Black, loamy clay, packed hard from trampling of cattle; a few quartz chips and hunks of fire-burnt clay; sherds small and abundant.
Level 8–16 cm..	Soil looser black loam; sherds larger.
Level 16–24 cm..	Conditions same.
Level 24–32 cm..	Conditions same.
Level 32–40 cm..	Soil still black; sherds sparser; clear quartz chip.
Level 40–48 cm..	Black soil streaked with tan to yellowish particles, more compact and damper; sterile at 40–45 cm.; sterile soil below 45 cm. is light tan to grayish tan.

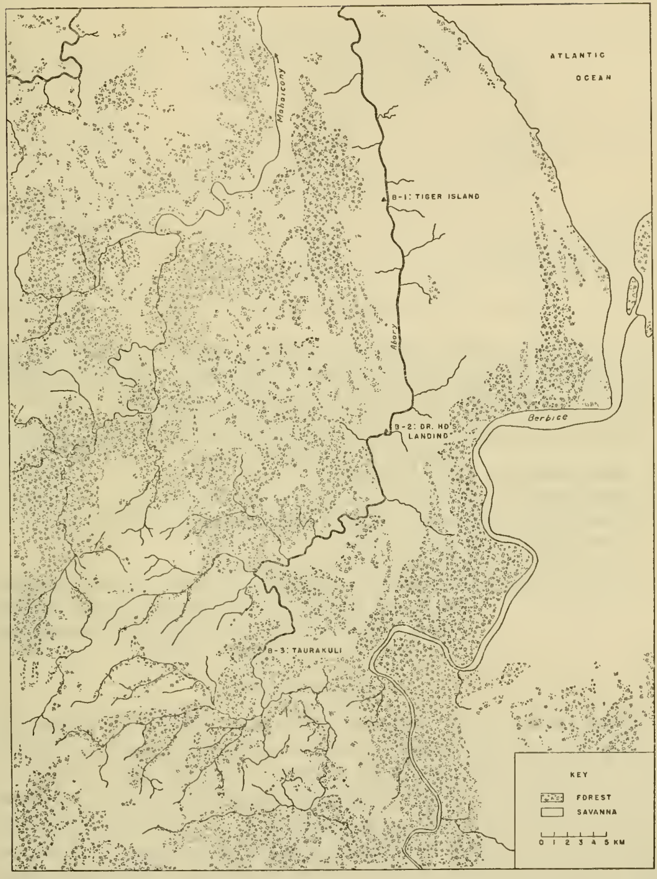

Figure 61.—Map of the Abary River region, showing the vegetation pattern and the location of the archeological sites of the Abary Phase.

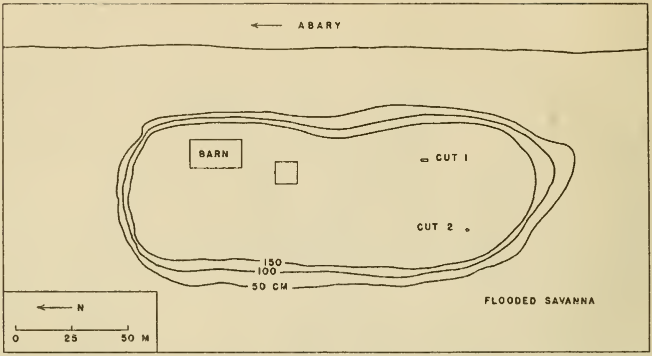

FIGURE 62.—Sketch map of B–1: Tiger Island, a habitation site of the Abary Phase.

Cut 2, 1 by 1 meter, was placed in the southwestern quarter of the site. The surface here was covered with grass. This excavation showed the following characteristics of the refuse deposit:

Level 0– 8 cm__	Soil very hard; light gray at the surface, becoming darker below 4 cm.; sherds small.
Level 8–16 cm__	Soil medium gray.
Level 16–24 cm__	Conditions same.
Level 24–32 cm__	Conditions same; traces of charcoal and bone.
Level 32–40 cm__	Conditions same.
Level 40–48 cm__	Sherds larger and more numerous.
Level 48–56 cm__	Soil lighter gray flecked with orange; majority of sherds from west half of cut; very compact, sticky, light-tan sterile clay below 54 cm., except for small area on west side where sherds continue to 57 cm.

B–2: DR. HO'S LANDING

About 72 km. above the mouth of the Abary River, the land begins to rise slightly, and forest replaces the swamp vegetation. On the left bank at this point is a small, irregularly shaped, natural elevation in the flood plain. It was originally covered with trees, which were cut when a vacation cottage was erected by Dr. Ho (fig. 61). The elevation is somewhat hourglass shaped, with a length of 69 meters generally paralleling the river. Two wide parts, 30 and 26 meters in width, are separated by a narrow neck. Two small knolls reach an elevation of 1 meter above flood level. Sherds visible on eroded parts of the surface and in drainage ditches indicate that the site occupied all but the low, northeast end of the elevation.

A 1- by 2-meter strata cut, controlled in 8-cm. levels, was placed on the southwest knoll with the following results:

Level 0– 8 cm.... Grass roots heavy. Sandy, light-tan to gray soil streaked with orange concretions. Sherds scattered and badly eroded. One fragment of clear glass from recent mixture.

Level 8–16 cm.... Soil darker gray in northeastern third of the cut; traces of charcoal and streaks of orange; soil in remainder of cut a light-brown, sandy loam.

Level 16–24 cm.... Continuation of darker soil in northeast part of cut; majority of sherds come from the other end, where sandy loam continues.

Level 24–32 cm.... Conditions same as previous level except for appearance of hunks of bright orange clay; sherds sparse.

Level 32–40 cm.... Conditions same.

Level 40–48 cm.... Conditions same.

Level 48–56 cm.... Sterile at 50 cm. in northeast part; at 55 cm. elsewhere. Sterile soil light-gray, sandy clay with large bright red-orange iron stains and occasional small iron concretions.

B–3: TAURAKULI

About 95 km. above the mouth of the Abary River, a relatively high hill extends to the margin of the left bank (figs. 61, 63). The opposite shore is low and floods in the rainy season. The whole region is forest except a clearing for some distance in from the left bank for pasture and gardening. The site is on the highest part of the bank, a knoll that rises 5 meters above flood level (pl. 38, *b*). It extends for 62 meters along the summit of the hill and 40 to 42 meters inward beginning at the 1-meter contour line above high water level. The area

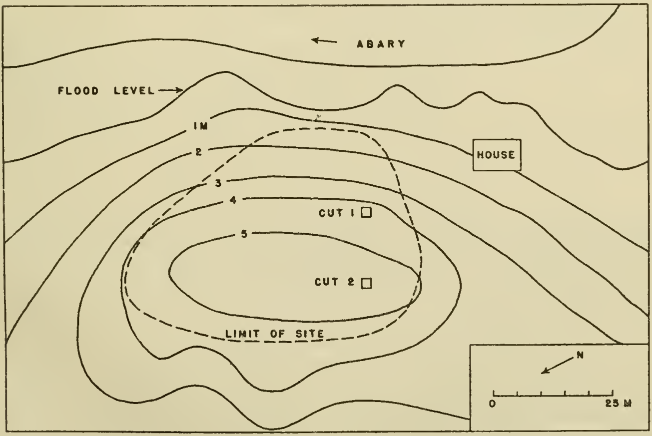

Figure 63.—Sketch map of B–3: Taurakuli, a habitation site of the Abary Phase.

has been exploited for a number of years by Alfred Read for small-scale cattle raising and agriculture. In digging fence posts for building the house (which is south of the site), the owner found sherds, a stone ax, a mano, and a hammerstone.

Two stratigraphic excavations were made in the refuse deposit. Cut 1, 2 by 2 meters, was dug near the southwest edge of the site near the top of the sloping river bank. Excavation in 8 cm. levels produced the following results:

Level 0–8 cm..	Black loam with frequent small hard clay lumps of irregular shape; many grass roots; sherds sparse.
Level 8–16 cm..	Black loam with lumps of clay continues; 2 quartz chips; sherds more abundant.
Level 16–24 cm..	Conditions same as preceding level.
Level 24–32 cm..	Conditions same.
Level 32–40 cm..	Soil more compact at 32 cm., with more abundant clay lumps. A few sherds to 40 cm.; sterile below. Sterile whitish sand appears at 75 cm.

Cut 2, also 2 by 2 meters, was placed on the summit, 12 meters from the west edge of the site. The surface here was covered with tall grass. Excavation in 8 cm. levels revealed the following characteristics:

Level 0–8 cm..	Dark gray, sandy loam, not as black as in Cut 1; scattered clay lumps. Sherds sparse.
Level 8–16 cm..	Soil color slightly darker than in preceding level, sherds more abundant; tiny quartz flakes.
Level 16–24 cm..	Soil black and sandy; clay lumps less frequent than in Cut 1. Sherds small but very abundant.
Level 24–32 cm..	Soil black, sherds abundant.
Level 32–40 cm..	Conditions same as preceding level.
Level 40–48 cm..	Conditions same.
Level 48–56 cm..	Conditions same to 50 cm.; between 50 to 70 cm., the soil is slightly lighter in color and more compact; between 70 to 85 cm., scattered flecks of white sand appear and clay lumps are abundant. Below 85 cm., the amount of white sand increases steadily. Sterile below 50 cm.

DATA FROM OTHER INVESTIGATIONS

The only other previous investigations on the Abary were undertaken by Verrill (1918 b). Unfortunately, the exact locations of the two sites he visited are not specified, and the map (op. cit., fig. 5) shows too little of the area for orientation. The first site is on "some fairly dry verdured land further up the river [than his previous searching], which formed a sort of cape or peninsula extending for several miles across the savannah and bordering upon the river" (op. cit., pp. 21–22). It produced potsherds, stone implements, rounded and polished quartz pebbles, and a bead made by perforating an amethyst pebble (loc. cit.). The stone implements illustrated (op. cit., fig. 1) include a parallel-sided, side-notched ax with a flat butt, two petalloid celts, three almost parallel-sided axes with both blade and butt slightly convex, a long slender pestle and two objects unidentifiable in the photograph.

The second site was a cemetery. It was located on a knoll "several hundred feet from the river and . . . surrounded on all sides by a deep swamp and almost impenetrable high grass. It rose about 10 or 12 feet above the river [and savannah] level and formed a spur or promontory to a low ridge [about 6 feet in height] extending parallel with the river for about one thousand feet. . . . Close to the first knoll the ridge was broken by swampy spots or sloughs, thus isolating the knoll . . ." (op. cit., p. 22 and figs. 2, 3). Excavation revealed a series of burial urns just below the surface. Their situation is described as follows:

> In each and every case a thin layer, about 6 inches, of loam, covered a heavy roughly fashioned piece of baked clay,—evidently the cover to a large vessel, and directly under this were the remains of an immense pot; collapsed and broken to be sure, but easily traced, with the bottom resting on a bed of charcoal, black mud and lumps of burnt clay. This same material also surrounded each pot and there could be no question that the pots had been placed in the midst of a fire, the whole had been surrounded by a wall of earth and that in the process of burning the fire had baked the irregular lumps of clay in the earth to semibrick. In many cases two, or even three, layers of these pots and fires were found, and in every case deeper excavations revealed the undisturbed bed of clay and sand of the savannah. . . . No traces of bones, stone implements or other utensils were found within the pots, but each was filled with a fine, pasty, black material which might well have been the remains of incinerated bones or flesh. [Op. cit. pp. 22–23 and fig. 4.]

The area occupied by the cemetery is described as very large. Urns are said to extend for nearly 600 feet along the ridge over a width of 150 feet. Tests showed them to be so close together that the sides touched (loc. cit.). Although Verrill estimates the total number of urns as approximately 30,000, experience with other urn burial cemeteries suggests that this figure is entirely too high. Unfortunately no description is given of the burial urns, except that they are "immense." One shown in a sketch (op. cit., fig. 4) has an annular base, a rounded body, and an everted rim.

Walter E. Roth (MS., p. 46 and pl. 33–1) speaks of a "chest ornament" from the Abary. The illustration (fig. 64) shows a flat disk with a sprawled figure incised on the surface. Its provenience is unknown, its material is not stated, and it resembles nothing else from the area.

ANALYSIS OF MATERIAL

All Abary Phase artifacts are of pottery or stone. Pottery is by far the most abundant, although fragments of stone implements came from all three sites. This material will be discussed by types; details of quantity and provenience are given in the Appendix, tables 24 and 25.

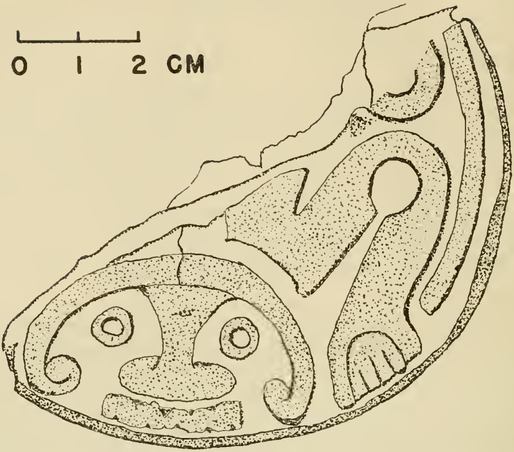

Figure 64.—Decorated disk said to come from a burial site on the Abary River (after W. E. Roth, MS., pl. 33–1).

Stone Artifact Types

Only 46 stones showing working were found, and only 21 are artifacts, the others are cores or chips (Appendix, table 24). All the tools are ground or polished. Rock materials include andesite, granite, fine-grained schist, quartzite, and gabbro. Limonite and hematite were used for rubbing stones.

Adz (fig. 65, *b*).—The only example of an adz is well polished with the sides slightly convex, tapering from the greatest width at the blade end toward the butt, which is battered from hammering. The faces are parallel, the butt flat and the blade off center. The corners of the blade have been broken off. Length is 6.5 cm., width at the blade 5 cm., width at the butt 3.3 cm., thickness 1.8 cm.

Axes or celts (fig. 65, *a*, *c*).—Seven ax fragments were identified, the majority too small to reconstruct the size of the original object. One complete specimen has parallel sides and a convex blade and butt. Both ends are battered from chopping and hammering. The surfaces taper from a maximum thickness of 3.2 cm. at the center toward both ends. Length is 9.2 cm., width 5.5 cm. One fragment of a butt tapers to a small end. Surfaces are polished on all the examples.

Several complete axes from the Abary are illustrated by Verrill (1918 b, fig. 1). The excavated fragments suggest that the majority have a parallel-sided or petalloid form. One is aberrant, having deep, side notches a short distance from the butt end; this form is typical of the Rupununi Phase (cf. fig. 119; pl. 61).

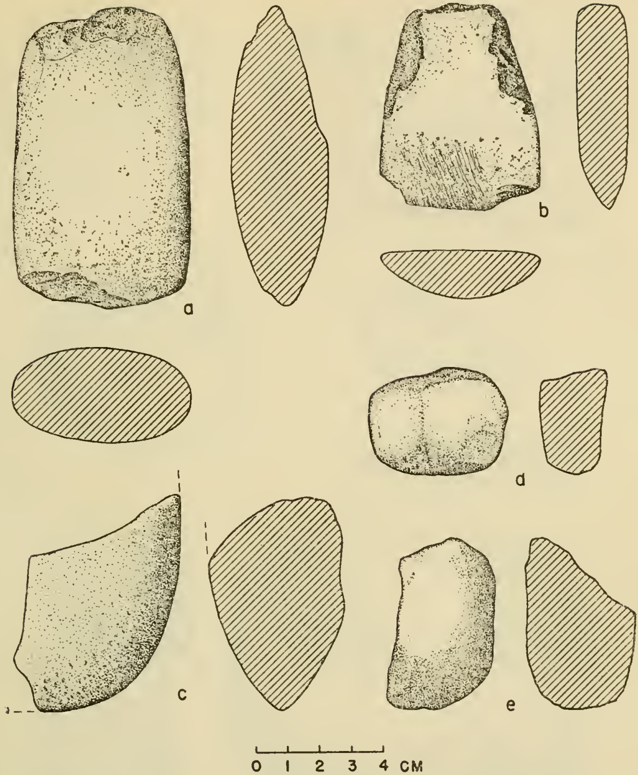

Figure 65.—Stone artifacts of the Abary Phase. *a*, *c*, Axes. *b*, Adz. *d–e*, Hammerstones.

Bead (fig. 67, *d*).—A single example of a polished, cylindrical bead is made of feldspar with traces of serpentine impurities. The sides are parallel and the outline is circular. The ends are flat but cut at a slight angle so that length varies from 7–9 mm. Diameter is 1.15 cm. The hole is biconically drilled and tapers from a diameter of 3 mm. at the surface to 2.5 mm. on the interior.

Hammerstones (fig. 65, *d–e*).—Five hammerstone fragments are made from rounded natural pebbles or portions thereof, which show battering on the edges. One is andesite, the rest granite. The battered ends are ovoid and measure from 5.8 by 3.5 cm. to 2.2 by 1.5 cm.

Manos (fig. 66, *a–c*).—The four stones showing use as manos are made from three different kinds of stone: granite, andesite, and

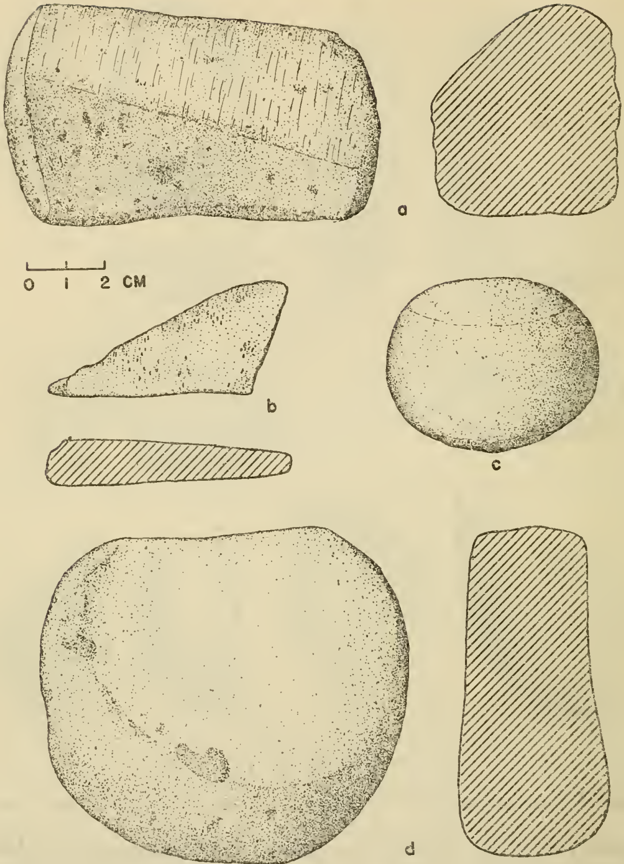

FIGURE 66.—Stone artifacts of the Abary Phase. *a–c*, Manos or mano fragments. *d*, Metate.

gabbro. One has two flat faces on an otherwise rounded surface. All parts show some wear, including the flattened ends. The original stone was apparently a rounded pebble. Length is 9.2 cm., maximum width tapers from 6.5 cm. at one end to 6.0 cm. at the other. Another is rounded with slightly flattened ends and is of the proper size and contours to have been used with the metate fragment described below. It is 5.2 cm. in maximum diameter and 4.0 cm. thick. Most of the wear is on the rounded ends.

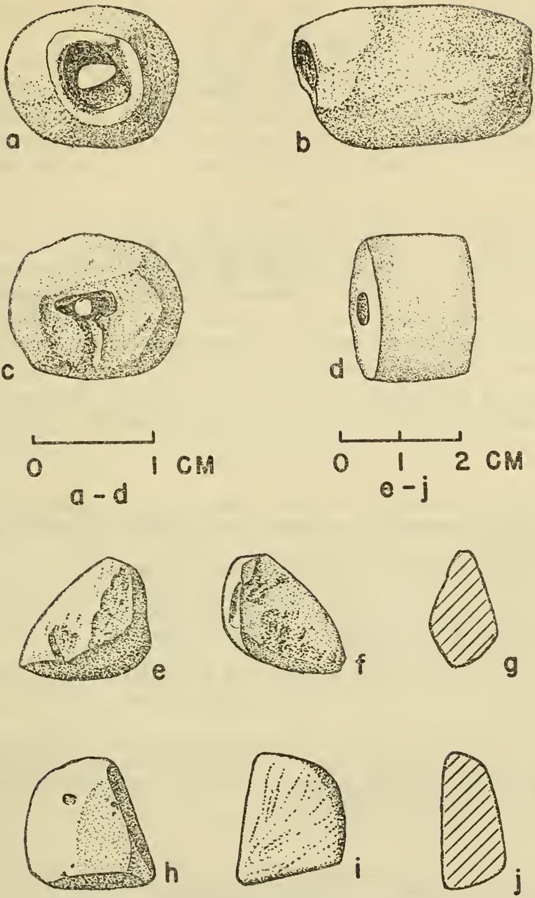

FIGURE 67.—Stone and pottery artifacts of the Abary Phase. *a–c*, Pottery bead. *d*, Stone bead. *e–g*, Hematite rubbing stone. *h–j*, Limonite rubbing stone.

Metate (fig. 66, *d*).—A disk-shaped piece of granite is worn on both surfaces as though it had been used for grinding, perhaps as the metate for the mano mentioned in the previous paragraph. The edges are worn, suggesting that the same tool may have also been used as a pestle. It is 9.5 to 8.2 cm. in diameter and 2.0 to 3.5 cm. thick.

Rubbing stones (fig. 67, *e–j*).—Small pieces of limonite or hematite were used as rubbing stones. They are irregular in shape and all surfaces are scratched or worn. The two examples are 2.3 by 2.0 by 1.0 cm. and 2.5 by 1.5 by 1.3 cm.

Chips and cores.—Fragments of andesite, felsite, quartzite, granite, and quartz occur in the habitation refuse. Some show a bulb of percussion, a few may have been used as scrapers, but the majority are apparently discards. It is of interest that the majority are of quartz, a rock that was not used for any of the artifacts (Appendix, table 24).

Pottery Type Descriptions

A total of 15,039 sherds of unquestioned manufacture by the Abary Phase provide the basis for the classification and description of the pottery types. Less than 1 percent of these were decorated. No complete or restorable vessels were found, hence all the vessel shapes have been reconstructed from the characteristics of the rim, base, and body sherds. The pottery types were named according to the binomial system, and are described in alphabetical order. The provenience and quantity of the sherds are given in the Appendix, table 25.

ABARY PLAIN

Paste:

Method of manufacture: Coiling; sherds frequently break on coil line. Coils are typically 1 cm. thick. Broken edges are concavo-convex or beveled.

Temper: Quartz sand, with most particles 1 mm. or less in maximum dimension; rare grains are 2–5 mm. Size of temper particles tends to vary only slightly in a single sherd, i.e., if one grain is large the majority will be above 1 mm. Temper is sufficiently abundant to give a sandpaper texture to eroded surfaces.

Texture: Sandy; temper generally well distributed but occasionally clustered. Breaks with irregular, angular cleavage. Tiny air pockets common.

Color: Complete range from bright-orange throughout cross section to dark-gray core fired orange only on the immediate surface. The majority of the sherds are orange for 2 mm. inward from both surfaces with a gray core in an even, well defined, band.

Firing: Incomplete to complete oxidation.

Surface:

Color: Typically light cream to orange on both surfaces, whether the core is gray or orange. A few sherds have gray surfaces, possibly from fire clouding. Although the small size of the sherds (typically under 3 by 4 cm.) limits the accuracy of observation, fire clouds do not appear to be frequent.

Treatment: Unfortunately, sherds with uneroded surfaces are not common. They are smoothed sufficiently to obliterate coil junctions and to depress the temper grains, giving a smooth texture similar to that of Taurakuli Plain. The surface is characteristically uneven, varying from minor undulation to considerable irregularity with scars, lumps, and other small defects, more easily seen than felt. There seems to be a slight tendency for one surface to be better smoothed than the other, suggesting that

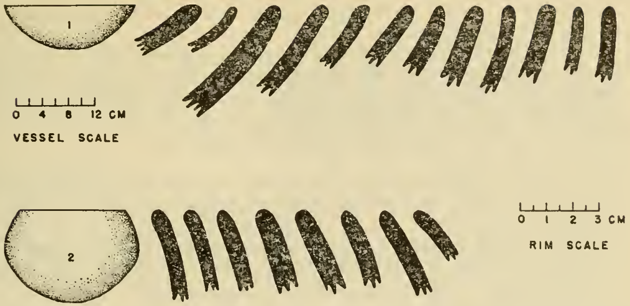

Figure 68.—Rim profiles and reconstructed vessel shapes of the Abary Plain, Abary Phase (Appendix, table 26).

bowls were better finished on the interior and jars on the exterior. One sherd shows smoothing tracks on the exterior, a feature that may have been relatively common but is now obliterated by erosion.

Hardness: 2.5–3.5.

Form:

Rim: Direct, with rounded lip.

Body wall thickness: 5–11 mm., with bases occasionally 1.5 cm. thick.

Base: A—Flattened (rare); B—rounded and slightly thickened on the interior, so that it is flatter than the exterior.

Vessel shapes reconstructed from sherds:

1. Shallow to deep bowls with outsloping to nearly vertical side walls, direct rim and rounded lip. Rim diameter 12–28 cm.; majority 16–24 cm. (fig. 68–1).
2. Rounded jars with walls insloping to slightly constricted mouth with direct rim and rounded lip. Mouth diameter 12–22 cm. (fig. 68–2).

Temporal differences within the type:

There is a tendency for the size of the temper grains to decrease, so that sherds of Abary Plain from B–3, the latest site, contain finer sand than those from the two earlier sites.

There are no temporal differences discernible in vessel shape (Appendix, table 26).

Chronological position of the type: Abary Plain occurs throughout the Abary Phase in an increasing frequency, growing from rare and sporadic appearances in the early levels to a maximum of 38.5 percent at the last site (fig. 77).

TAURAKULI PLAIN

Paste:

Method of manufacture: Coiling; frequent breaks along coil lines show coils 1.0–1.5 cm. wide, with the majority 1.2–1.3 cm. wide.

Temper: Fragments of crushed potsherds, from minute grains up to 6 mm. in diameter. A few show the flat surface of the original sherd. Orange, angular sherd particles are very distinct in gray-cored sherds, giving a splotched appearance. Reddish-orange particles appear to be natural iron impurities of the clay.

Texture: Soft, clayey, fine texture; porous because of poor admixture of temper; cleavage irregular.

Color: Core varies from orange to tan through the cross section to a gray core fired orange along the exterior and interior for a depth ranging from paper thin to 2 mm. A splotched appearance is typical, resulting from color contrast of temper with matrix.

Firing: Oxidizing, varying from complete to incomplete.

SURFACE:

Color: Tan to orange to light, tile orange; some eroded sherds have a grayish hue from the exposure of the unoxidized core. Fire clouds are rare.

Treatment: Both interior and exterior typically uneven and irregular as a result of hand smoothing. Surfaces tend to be higher around hard temper grains. No indication of the use of scraping tool.

Hardness: Very soft: 2–2.5.

FORM:

Rim: Direct with flattened or rounded lip; exteriorly thickened to produce a flat or rounded ridge, terminating in a flattened or rounded lip; rarely, everted and interiorly thickened to produce an angular bend; very rarely, exteriorly thickened producing a broad, sloping flange.

Body wall thickness: 5–10 mm.; majority 6–8 mm. Bases occasionally thickened to 1.7 cm.

Base:

A. Flat, joining the side wall with a typically rounded junction, but occasionally with a low pedestal formed by a more vertical slope before joining the side wall. Diameter 5–16 cm. (fig. 69, *A*).

B. Rounded, often slightly thickened at the center (fig. 69, *B*).

C. Annular, height 1.6–2.5 cm., diameter 8–12 cm. (fig. 69, *C*).

Common vessel shapes reconstructed from sherds:

1. Bowls with outsloping to nearly vertical side walls, direct rim, and flattened or rounded lip. Walls sometimes expand or taper slightly to the rim, apparently the accidental result of poor workmanship. Rim diameter 14–28 cm. (fig. 69–1).
2. Bowls with nearly vertical walls, exteriorly thickened rim tapering slightly to flattened or rounded lip. Rim diameter 24–26 cm. (fig. 69–2).
3. Rounded jars with walls incurving to constricted mouth, direct rim and rounded or flattened lip. Mouth diameter 16–34 cm. (fig. 69–3).
4. Jars with upper walls insloping to constricted mouth with exteriorly thickened rim and flattened or rounded lip. Mouth diameter 14–36 cm.; majority 24–36 cm. (fig. 69–4).

Rare vessel shapes reconstructed from sherds:

1. Griddles with tapered or slightly upturned rim and rounded lip. Diameter 28–38 cm. (fig. 69—Rare Form 1).
2. Bowls with everted rims, slightly thickened at the bend on the interior. Exterior rim diameter 16–26 cm. (fig. 69—Rare Form 2).
3. Bowls with broad, everted, flange rims. Mouth diameter 24–28 cm. (fig. 69—Rare Form 3).

Appendages:

1. Handles. Three fragments of vertical, loop handles show considerable variation in form and size. One has a circular cross section, 1 cm. in diameter. The other two are ovoid, one 3.3 cm. wide by

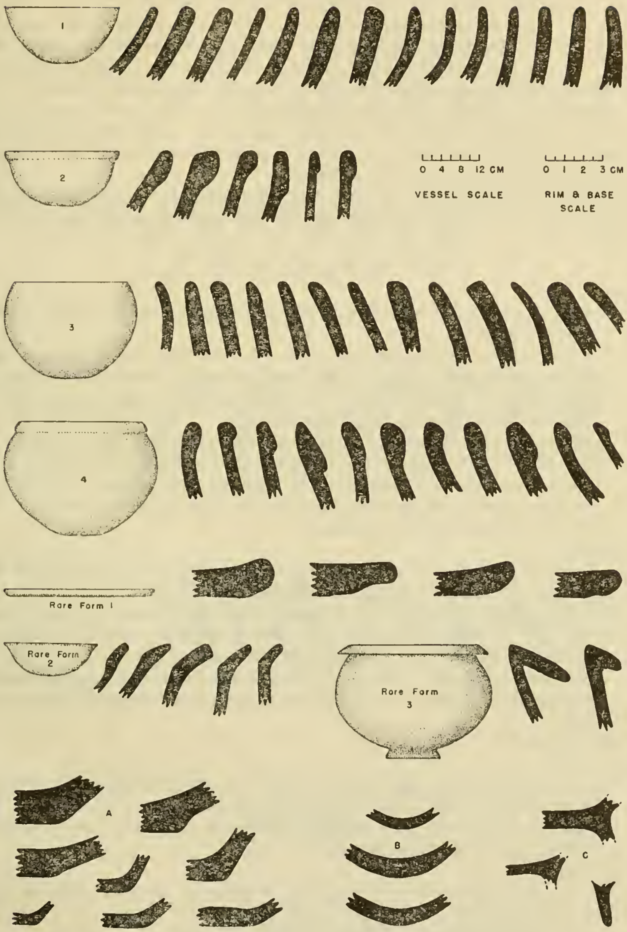

FIGURE 69.—Rim and base profiles and reconstructed vessel shapes of Taurakuli Plain, Abary Phase (Appendix, table 27).

2.1 cm. thick and the other 1.8 cm. wide by 7 mm. thick. One example attached to the body wall is expanded at the junction.

2. Lugs. Three sherds have a horizontal ornamental lug attached at the maximum body diameter. Horizontal width is 4.5 cm., projection from the body wall 8–11 mm. Thickness decreases from a maximum of 10 mm. at the body wall to 3 or 4 mm. at the edge.

Temporal differences within the type: Common vessel shapes 2 and 4 are restricted to the first half of the seriated sequence. The same appears to be true of Rare Forms 1 and 3 (Appendix, table 27). Although the sample is small, it suggests that flat bases decline in popularity and round ones increase during the time span of the Abary Phase.

Chronological position of the type: Taurakuli Plain is the dominant pottery type of the Abary Phase, except at the earliest levels of the earliest site (fig. 77).

TIGER ISLAND PLAIN

Paste:

Method of manufacture: Coiling, breakage frequent along coil lines. Width of coils 1.0–1.5 cm.

Temper: Cariapé, with some particles 1–2 mm. wide and 5–10 mm. long. Color is white or black. Temper is very abundant and readily visible to the naked eye. Particles lie at all angles in the cross section, but larger ones tend to be parallel to the surface.

Texture: Soft and nonabrasive; compact with air pockets rarely visible.

Color: Light tan to light orange to orange gray to light gray to dark gray. Color gradations are gradual. The majority have a gray core with a broader band of orange along the exterior than along the interior.

Firing: Oxidizing, usually incomplete.

Surface:

Color: Both exterior and interior are typically orange tan, occasionally tile orange or reddish orange. Uneroded surfaces are rarely gray, but eroded ones sometimes have that appearance because of exposure of the gray core.

Treatment: Both interior and exterior are very uneven and irregular suggesting smoothing with the hand to obliterate coil junctions, but little if any use of a scraper. Temper particles exposed on the surface erode away leaving pits. Because of the softness of the paste, uneroded surfaces are rare.

Hardness: 2.5.

Form:

Rim: Direct with rounded or flattened lip; interiorly thickened and slightly everted with rounded lip; strongly everted producing a broad flange.

Body wall thickness: 5–20 mm.; majority 6–8 mm. The upper extreme represents flat, thickened bases.

Base:

A. Flat, thickened or unthickened, rounded or angular junction with sidewalls. Diameter 8–14 cm. (fig. 70, *A*).

B. Rounded and slightly thickened (fig. 70, *B*).

C. Annular, height 1 cm., diameter 12 cm. (fig. 70, *C*).

Common vessel shapes reconstructed from sherds:

1. Bowls with outsloping to nearly vertical side walls, direct rim and flattened or rounded lip. Rim diameter 12–32 cm.; majority 20–32 cm. (fig. 70–1).
2. Bowls with interiorly thickened rim, typically also everted, with a rounded lip. Rim diameter 20–38 cm. (fig. 70–2).

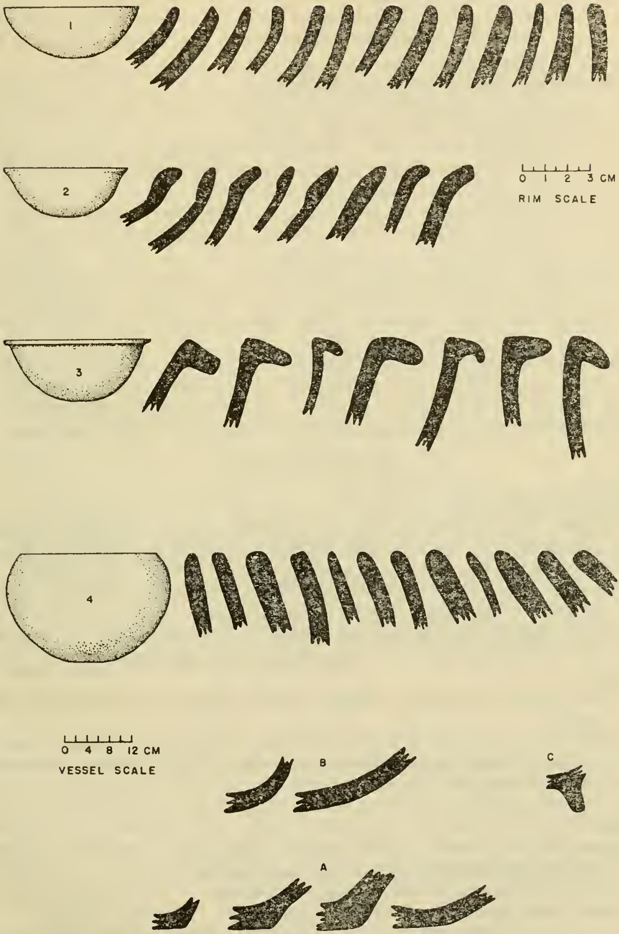

FIGURE 70.—Rim and base profiles and reconstructed vessel shapes of Tiger Island Plain, Abary Phase (Appendix, table 28).

3. Bowls with broad flange rim formed by the addition of a coil to the upper body wall. The rim top is flat or convex, nearly level or sloping, with a rounded lip. Mouth diameter 18–34 cm.; majority 24–34 cm. (fig. 70–3).
4. Rounded jars with upper walls insloping to constricted mouth with direct rim and rounded or flattened lip. Mouth diameter 20–38 cm. (fig. 70–4).

Rare vessel shapes reconstructed from sherds:

1. Bowls with nearly vertical walls and exteriorly thickened rim (Taurakuli Plain, Common Form 2).
2. Jars with upper walls insloping, then upturned or slightly everted producing a slight neck, ending in a direct rim with a rounded or flattened lip. Mouth diameter 22–32 cm.
3. Jars with upper walls insloping to a constricted mouth with an exteriorly thickened rim, flattened lip (Taurakuli Plain, Common Form 4).

Appendages: Handles. Rarely, vertical loop handles with flattened or ovoid cross section, expanding slightly at the point of attachment from the dimensions at the center. Size varies from 2.1 cm. wide by 0.9 cm. thick to 4 cm. wide by 2 cm. thick.

Temporal differences within the type: None observable (Appendix, table 28).

Chronological position of the type: Tiger Island Plain is diagnostic of the first half of the Abary Phase sequence. It shows a steady decline in frequency, becoming a minor ware in the latter part of the Phase (fig. 77).

UNCLASSIFIED PLAIN

Paste:

Method of manufacture: Coiling.

Temper: The characteristic feature of these sherds is the presence of black ash or charcoal, with particles ranging from flecks to hunks up to 3 mm. Some sherds also have small amounts of finely crushed sherd temper.

Texture: Fine-grained paste with pinhole air pockets; temper shows a slight tendency to cluster, but mixture is generally good.

Color: Light- to medium-gray core typical; rare sherds have an orange core. Gray-cored sherds are fired orange in a band along both surfaces.

Surface:

Color: Light tan, cream or orange on both surfaces; occasional gray fire clouds.

Treatment: The majority are eroded, however those with surfaces remaining show large pits and other irregularities. A few sherds have surfaces well smoothed and even.

Hardness: 2.5–3.

Form:

Rim: Majority direct with flattened or rounded lip; very rarely, everted and thickened with a broad convex upper surface.

Body wall thickness: 3–15 mm.; majority 5–8 mm.

Major vessel shapes reconstructed from sherds:

1. Bowls with outsloping to nearly vertical walls, direct rim and flattened or rounded lip. Rim diameter 16–24 cm.
2. Rounded jars with upper walls incurving to constricted mouth, direct rim and rounded lip. Mouth diameter 8–26 cm.

Temporal differences within the type: None observed in small sample available.

CHRONOLOGICAL POSITION OF THE TYPE: Black ash temper appears toward the middle of the Abary Phase sequence, and is most common at B-2. Its seriated position (fig. 77) suggests that it may represent an effort to find a substitution for cariapé that was unsuccessful since it dies out toward the end of the sequence.

UNCLASSIFIED DECORATED

Decorated sherds of the Abary Phase constitute only 1 percent of the total sherds. Techniques include incision and modeling, but there are no well defined combinations or motifs that warranted the establishment of named pottery types. A few sherds are red painted. The frequency of the various techniques by levels is given in the Appendix, table 25.

Red Painted: Rich red applied over the exterior surface, or in a band on the top or interior thickening of the rim. All but one example are on cariapé-tempered ware. The painted surface is slightly better smoothed than the remainder of the vessel. Eleven sherds. It is possible that this type of decoration is the result of Mabaruma Phase influence, although it persists longer than other decorative techniques of Mabaruma Phase origin.

Unclassified incised (fig. 71): Incised sherds occur at all sites, but there is no consistency of technique or motif. Sherds are typically small, with one or two incisions. Lines vary from thin scratches to broad, deep cuts. They are on the interior, exterior, or rim edge. Straight or curved, parallel lines are the most frequent motif. Intersecting lines also appear. Masses of criss-crossed scratches occur at the latest site. Three sherds from B-3 have unsmoothed coils on the exterior, with the junctions emphasized by incisions producing a series of horizontal parallel lines. The coils are 8-10 mm. wide. Incision occurs on all the plain wares of the Abary Phase.

Unclassified modeled (figs. 72-73: pl. 39, *a-b*, *g*): Relief nubbins on the rim top or projecting from the lip comprise most of the modeled sherds. The nubbins are circular (1.0-1.5 cm. diameter) or ovoid (2.5 by 1.0 cm.; 2.0 by 1.3 cm.) and have a punctate or a gash in the center. Occasional nubbins are treated as stylized faces with gashes representing the eyes. Crudely modeled zoomorphic heads are rare. There are two examples of handles, one (B-1, cut 2, level 40-48 cm.) rising from the rim surmounted with a crudely modeled head, the other (B-1, cut 1, level 0-8 cm.) apparently horizontal and decorated on one surface with circular nubbins.

MABARUMA PHASE DECORATED TYPES

Fifty-two sherds, the majority from B-1 (table F; Appendix, table 25), have decoration that is similar in technique and motif to decorated types of the Mabaruma Phase in the Northwest District. Some of the sherds are tempered with fine sand or steatite, indicating that they are probably of trade origin (figs. 75, *b*, *d*, *f-h;* 76, *a-c*). Others, however, are tempered with cariapé or crushed sherds, and must consequently be of Abary Phase manufacture (figs. 74, 75, *a*, *c*, *e*, 76, *d-e*; pl. 39, *c-f*). The types represented, and the decorative motifs are as follows:

Mabaruma Incised.
Aruka Incised, motifs 1, 2, 4, and 5.
Akawabi Incised and Modeled, motifs 1, 2, and 3.
Kaituma Incised and Punctate, motifs 1 and 2.
White slipped.

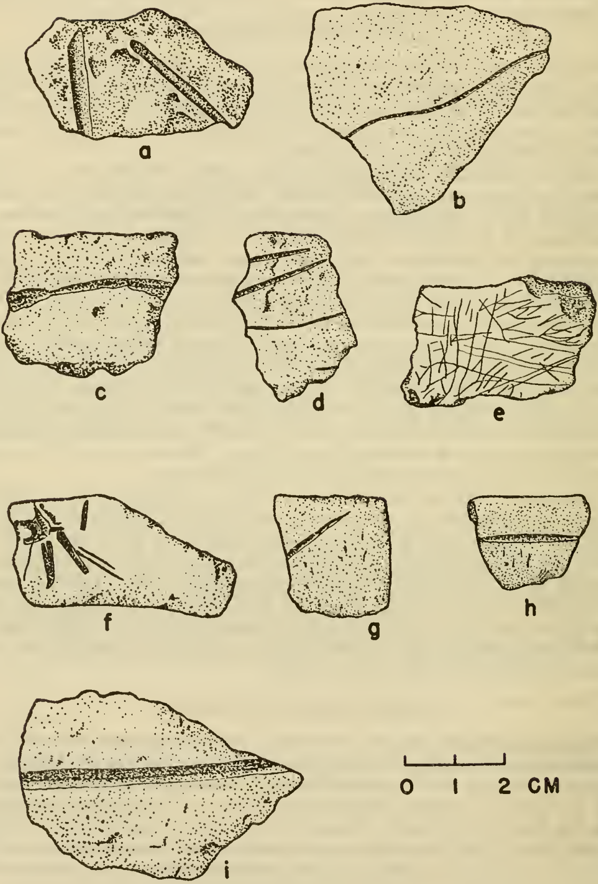

FIGURE 71.—Sherds of Unclassified Incised from the Abary Phase.

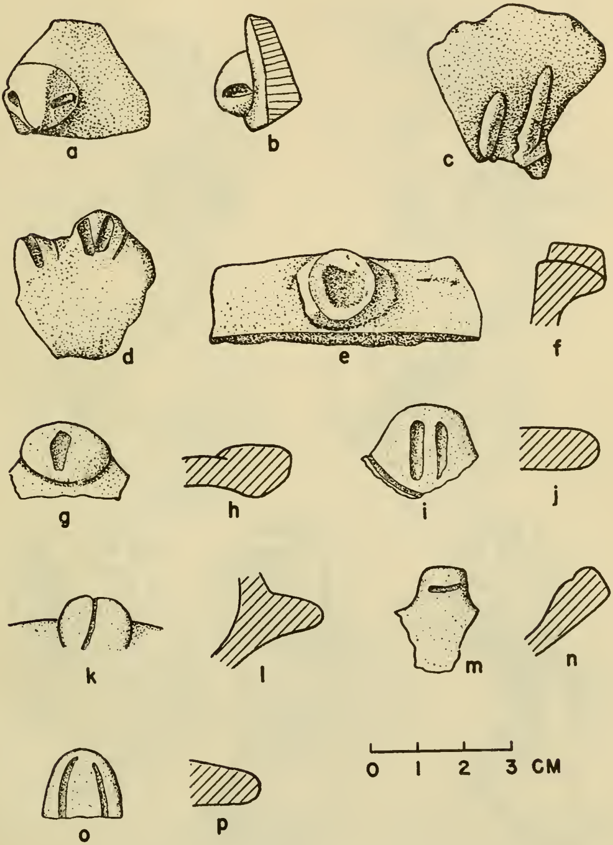

Figure 72.—Sherds of Unclassified Modeled from sites of the Abary Phase.

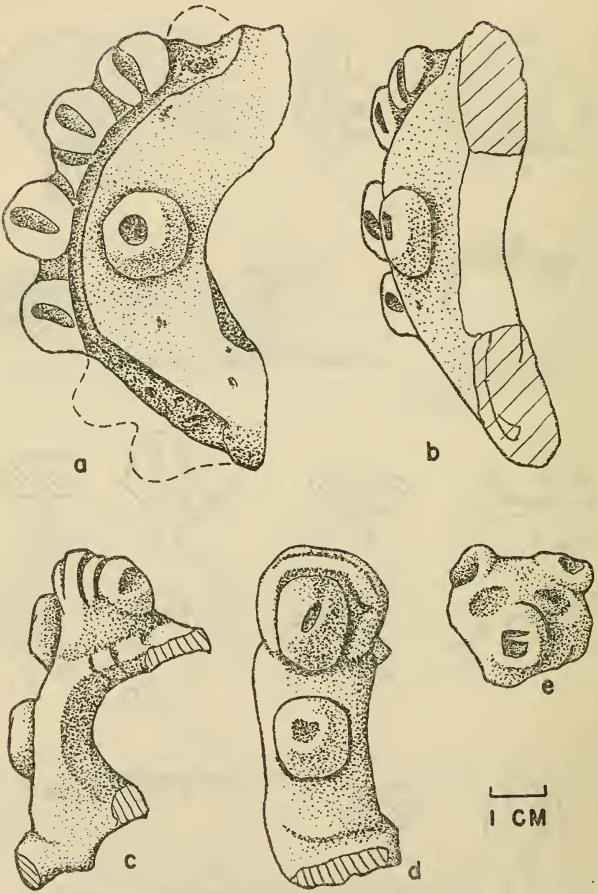

Figure 73.—Sherds with Unclassified Modeled decoration from sites of the Abary Phase. *a–d*, Handles. *e*, Adorno.

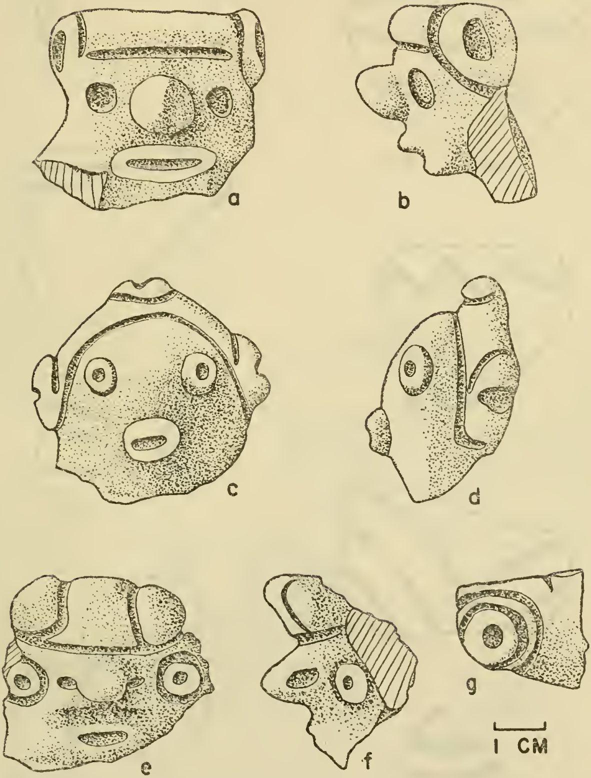

FIGURE 74.—Adornos of Abary Phase manufacture showing influence of Akawabi Incised and Modeled decorative style of the Mabaruma Phase.

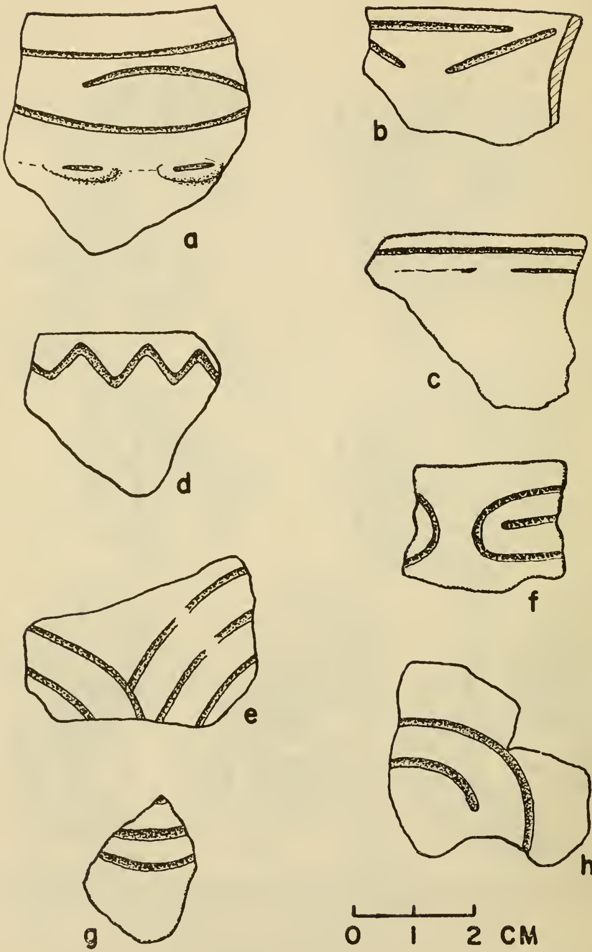

Figure 75.—Sherds with Aruka Incised decoration from sites of the Abary Phase. *a, c, e,* Abary Phase manufacture. *b, d, f–h,* Trade sherds of Mabaruma Phase origin.

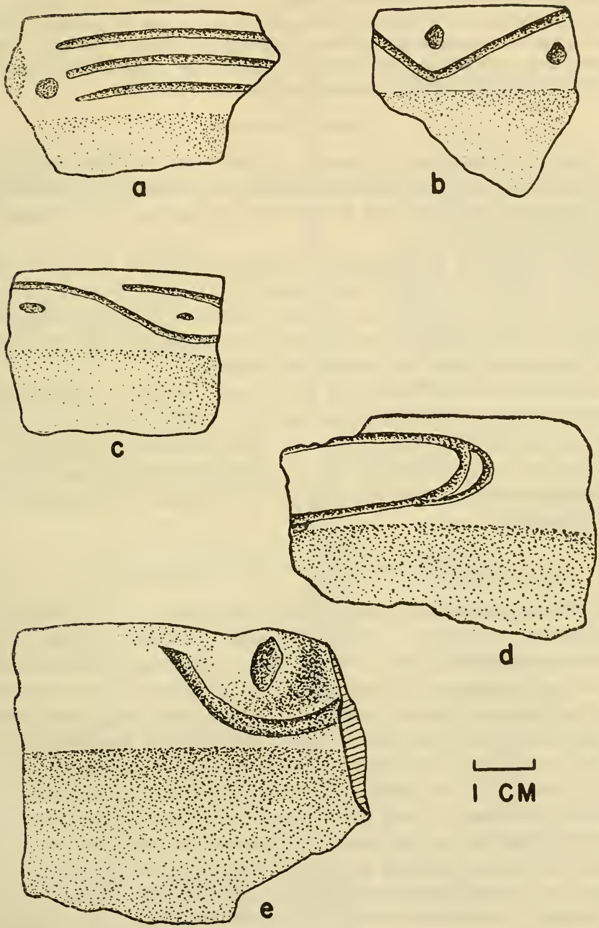

FIGURE 76.—Sherds with Mabaruma Phase types of decoration from sites of the Abary Phase. *a–c*, Trade sherds of Kaituma Incised and Punctate. *d–e*, Sherds of Abary Phase manufacture resembling Mabaruma Incised.

MABARUMA PHASE PLAIN TYPES

The only plain ware of Mabaruma Phase origin identified in the Abary Phase sites is Hotokwai Plain, tempered with pulverized steatite (Appendix, table 25). The sherds are typical of the late form of Hotokwai Plain, in which the steatite is very finely ground and well mixed throughout the paste. The pottery type description is given under the Mabaruma Phase (pp. 101–103).

POTTERY ARTIFACTS

Pottery artifacts are very rare. A few hunks of fired reddish-tan to orange clay have one finished surface, or a rounded junction of two walls, suggesting they may be parts of pot rests. Base diameter is estimated as 8–12 cm.

Three sherds of Taurakuli Plain from level 8–16 cm., Cut 1, B–1, may be worked. Two are rectanguloid, 4.5 by 3.0 cm. and 3.3 by 2.1 cm., and one is irregularly ovoid, 4.5 by 3.3 cm. Although the eroded condition makes observation difficult, there appears to be wear at the ends, suggesting use as a polisher or abrader.

One crude bead of Taurakuli Plain from B–1, Cut 1, level 0–8 cm. is approximately circular in cross section, 1.2 cm. in maximum diameter by 1.8 cm. long (fig. 67, *a–c*). The ends taper slightly. The perforation is 4 by 5 mm. at one end, but on the other the edges are folded over making a narrow slit 1.5 by 4.0 mm. The surface is not well smoothed.

THE SITE SEQUENCE AND ITS IMPLICATIONS

The Abary Phase is represented by three sites, all of them excavated stratigraphically. All of the cuts were used in the seriated sequence except B–3, Cut 1, which shows a distorted picture because of the small number of sherds per level. The four other excavations show a similar pattern of change. The dominant early plain ware is cariapé-tempered Tiger Island Plain, which has a frequency of 79.1 and 88 percent in the earliest levels of B–1 (fig. 77). It declines rapidly to 14 percent by the middle of the sequence and in the latter part fluctuates between 1.4 and 7.3 percent of the total sherds per level. Corresponding to this decline is an increase in sherd-tempered Taurakuli Plain from between 10 and 19 percent at the beginning to 93.4 percent at the middle of the sequence. Thereafter it declines to about 65 percent (the latest level with 74.3 percent contains only 70 sherds). Abary Plain, tempered with coarse sand, has a sporadic history at the two earliest sites, where it fluctuates between 0 and 8.5 percent. Toward the end of the sequence, it shows a more consistent trend of increase, reaching a maximum of 29.9 percent. An unclassified plain ware tempered with black ash appears when Tiger Island Plain has undergone considerable decline. It reaches a maximum frequency of

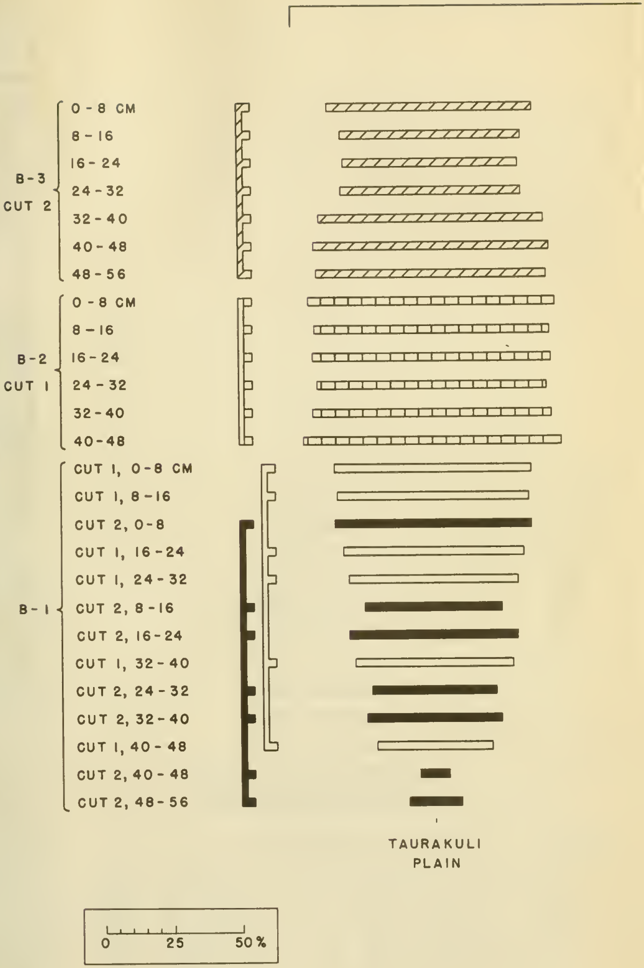

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FIGURE 77.—Seriation of

12.3 percent and then fades out. Its seriated position suggests that it may represent an experimental effort to find a vegetable substitute for cariapé, a search that was not deemed successful.

The decorated sherds of the Abary Phase constitute less than 1 percent of the total ceramic remains. The majority have incised lines or small modeled nubbins; a few have red paint allover or in bands and one has a thick white slip. The modeled sherds show the greatest consistency of execution and are most abundant during the first half of the seriated sequence (fig. 77). Incision occurs throughout in small amounts fluctuating from 0 to 2.5 percent, but little can be said about it except that it is very crude in technique and simple in motif (fig. 71).

The most typical vessel shapes in all the plain wares are open bowls and constricted-mouth jars with direct rims. These are the only forms present in Abary Plain, which is characteristic of the late part of the Phase (fig. 77). Bowls and jars with exteriorly thickened rims occur in Taurakuli Plain and in Tiger Island Plain, but are almost exclusively confined to the earliest site. Broad, flange rims are rare, but their appearance is also typically early. One form, interesting because of its rarity, is the large, flat griddle. Only a few sherds of griddles (Taurakuli Plain, Rare Form 1) were found, and these are all from the earliest site. Of the three base forms (flat, rounded, and annular), annular bases are rare and, with one exception, early; flat bases occur throughout the sequence, and rounded bases appear to be increasingly frequent in the late sites.

Stone tools associated with the Abary Phase include polished celts and axes, adzes, hammerstones, manos, metates, and rubbing stones. None is abundant, and several are represented by a single fragment, making it impossible to detect any trends even in terms of presence or absence. A single cylindrical stone bead and one crude pottery bead are the only ornaments found.

The characteristics of the habitation sites and their seriated sequence suggest a few interpretations about settlement pattern. Since the survey was limited to the riverbank, nothing is known of possible sites farther inland. All three sites are on land high enough to escape flooding in the rainy season. Two have an area of less than 2,500 square meters, and one (B–1) has more than 10,000 square meters. If the largest site had been B–3, which is located on the edge of a ridge, it might be concluded that the small size of the available land limited the village size. However, the largest site is the earliest one, which occupies a small elevation that becomes an island in the flooded savanna for several months of the year. The only suggestion of house construction comes from a few fragments of clay in the refuse that show twig and cane impressions (fig. 78), suggestive of wattle and daub. The

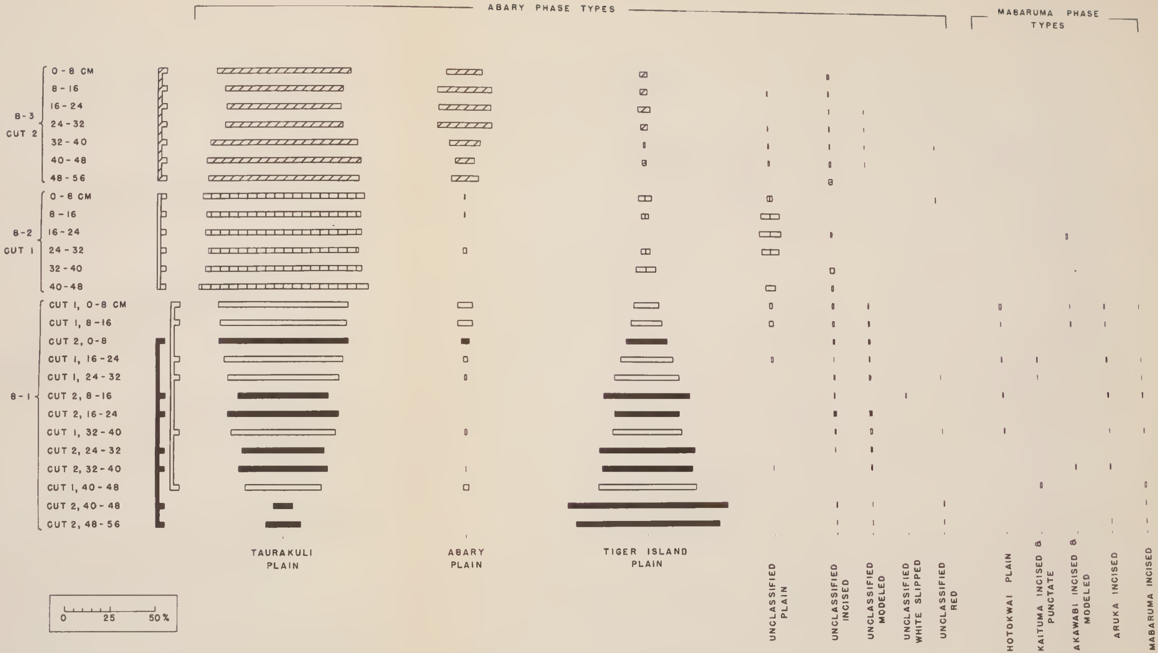

Figure 77.—Seriation of Abary Phase sites on the basis of changes in pottery type frequency (Appendix, table 25).

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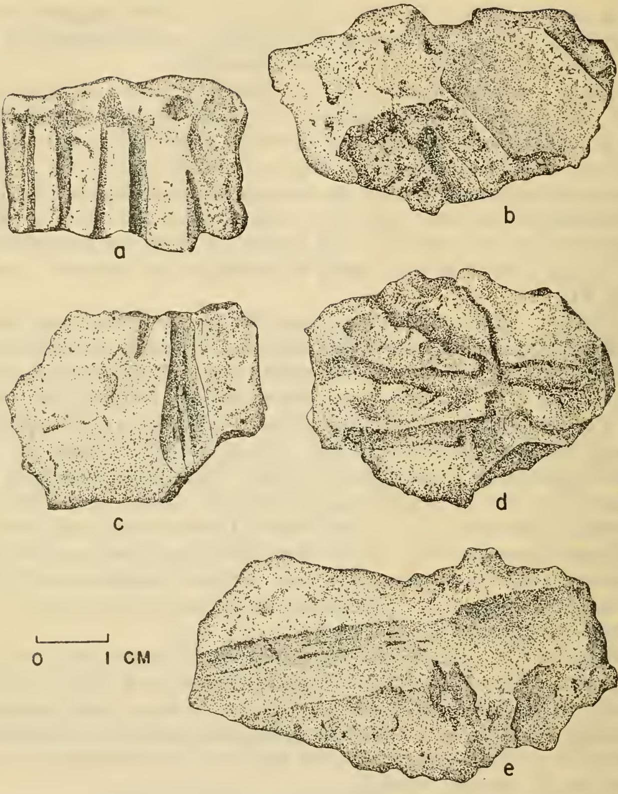

Figure 78.—Wattle and daub fragments from sites of the Abary Phase.

seriated sequence places the sites in consecutive position. B–1, the farthest downriver, is the earliest, while B–3, the farthest upriver, is the latest. If these sites are representative, they suggest an upriver movement of the population.

All three of the sites have refuse deposits of 48–56 cm., suggesting a relatively high degree of village permanency. In order to compare village duration with that in other Phases both in British Guiana and at the mouth of the Amazon, the rate of refuse accumulation was computed from a formula based on density of sherds per standard area (Meggers and Evans, 1957, pp. 250–257), except that for greater convenience the values were changed to apply to a 1- by 1-meter cut rather than one measuring 1.5 by 1.5 meters. The formula as modified reads: 1,156 sherds per 1 by 1 meter equals 100 years. The values obtained for the Abary Phase sites are given in table E.

TABLE E.—*Duration of Abary Phase village sites estimated from rate of refuse accumulation*

Site and cut	Site area in square meters	Size of cut in meters	Total sherds per cut	Adjusted total per 1 by 1 m.	Duration in years
B:1	10,800				
Cut 1		3 by 1	3,276	1,092	94.5
Cut 2		1 by 1	2,463	2,463	213.5
B:2	1,794				
Cut 1		2 by 1	1,159	579	50.1
B:3	2,480				
Cut 1		2 by 2	669	167	14.4
Cut 2		2 by 2	7,108	1,777	153.7

The durations derived from density of sherds in the refuse raise several interesting points. One is the contrast between the almost equal depth of the refuse deposits at the three sites and the great difference in the number of sherds contained in this depth, which leads to estimated durations varying from 14.4 to 213.5 years. Even within a single site, for example B–1, the variation in sherd density may exceed 100 percent, indicating a considerable difference in the amount of dirt that may be deposited with the sherds. The even greater discrepancy between the two values for B–3 can be explained by the fact that the conditions involved in the deposition of the refuse in the area represented by Cut 1 were untypical. The small sherd sample showed a pottery type distribution that could not be seriated into the Abary Phase sequence, implying nonrandom deposition of refuse. Since the cut is unreliable in this respect, it cannot be considered reliable for other purposes. With the elimination of this figure, the estimated durations range from 50.1 to 213.5 years. All of these are unusually long in comparison to the village durations typical of ethnographically recorded Tropical Forest tribes, but such long durations are in keeping with the pottery type seriation. This shows a very great amount of ceramic change, with an almost complete alteration in the plain wares, and must have required a relatively long period of time for its realization.

The total duration for the Abary Phase can be calculated by adding the durations of the individual sites, since the pottery type seriation shows them to have been occupied sequentially (fig. 77). For this purpose, only one duration for each site can be used. In the case of B–3, the choice of Cut 2 is dictated by the reasons mentioned above. Determination of the best value for B–1 is more difficult. The seriation shows that the two cuts cover the same time span, and there is no evidence to indicate that the difference between the durations reflects differential length of occupation of the two parts of the site. Since there is no way of deciding which duration is more representative, two totals have to be given, one using each of the figures for B–1. Adding the longest durations for B–1 and B–3 and the single duration for B–2 gives a total of 417 years for the Abary Phase. If the shorter duration for B–1 is used, the result is reduced to 298 years.

There are very few data on the Abary Phase other than those provided by the habitation refuse. The only evidence of burial pattern comes from Verrill's (1918 b) report on the excavation of an urn cemetery on the Abary River. The description is difficult to evaluate, but some of the vessels were apparently buried and others exposed. All appear to have been plain. One illustrated is reconstructed as having an everted rim, a globular body, and an annular base. Everted rims are extremely rare in the ceramics of the habitation sites, and if the reconstruction is accurate it suggests a special shape may have been used for burial. Verrill estimates that the cemetery contained some 30,000 urns, which is undoubtedly a gross exaggeration. It apparently contained a sufficiently large number of burials, however, to indicate that it was used by a number of villages or for a considerable period of time.

One of the most interesting aspects of the Abary Phase sequence is the chronological position of pottery types of Mabaruma Phase origin or showing Mabaruma Phase influence (fig. 77). These occur only at the earliest site, except for one sherd of Akawabi Incised and Modeled style on a plain ware of Abary Phase manufacture that was found at B–2. The frequency of the trade sherds and the degree of influence exerted on Abary Phase pottery, manifested in the copying of vessel shapes and decorative styles, implies rather close and continuing contact between the two Phases. The possibility of using this evidence for estimating the time of arrival of the Abary Phase will be discussed elsewhere (see pp. 185–186).

DIAGNOSTIC FEATURES OF THE ABARY PHASE

The Abary Phase is represented by three habitation sites along the left bank of the Abary River between 43 and 95 km. above the mouth. The site area is typically small, but the refuse deposit of 50 cm. suggests a relatively high degree of village permanency. Fragments of stick-impressed clay may indicate wattle and daub house construction. The only evidence of burial pattern comes from Verrill's (1918 b) report of excavation in an urn cemetery on a knoll near the riverbank.

The pottery of the Abary Phase was classified into three plain wares, comprising 99 percent of the total sherds. Tiger Island Plain, tempered with cariapé, is the dominant early type. It gives way to Taurakuli Plain, tempered with crushed potsherds, and this type is the majority ware during the remainder of the Phase sequence. In the late period, sand-tempered Abary Plain begins to increase, but it never reaches the maximum frequency of the other two types. Decorated sherds of Abary Phase manufacture utilize incision and applique modeling. Incised sherds are crude in execution and simple in motif, while applique is confined to nubbins with punctate or gashed centers. Neither type is abundant and both occur throughout the Phase sequence.

Polished stone tools are characteristic, and include adzes, axes, and hammerstones. A few manos, metates, and rubbing stones also occur. One stone and one pottery bead are the only evidence of personal ornament.

The presence of plain and decorated sherds at the earliest site showing Mabaruma Phase influence or derived by trade from the Mabaruma Phase can be used to suggest the time of arrival of the Abary Phase. No European trade materials were encountered at any of the sites, so that the survival of the Phase until European contact cannot be proved although it is probable.

COMPARATIVE DATA, CONCLUSIONS, AND INTERPRETATIONS

Our brief survey of the Abary River produced evidence of a single archeological complex, designated as the Abary Phase (fig. 58). No shell middens have been reported from this region, nor is there any other indication of an earlier nonceramic cultural occupation. The relatively inhospitable nature of this part of the coast, with its seasonal inundation, probably explains its failure to be more intensively inhabited in aboriginal times.

The Abary Phase makes its appearance at the earliest site in a fully developed state, and a number of features of the pottery suggest that it is intrusive not only into the Abary River area, but also into British Guiana. For one thing, the major plain wares are characterized by kinds of temper that are rare or absent in the other archeological Phases established in the colony. The sherd temper of Taurakuli Plain was encountered nowhere else, and the cariapé temper of Tiger Island Plain is paralleled only in occasional sherds of the other Phases. In the Northwest District, on the Rupununi savanna and on the upper Essequibo, the principal tempering material is sand. A second clue to the origin of the Abary Phase lies in the occurrence of features suggesting influence from the Mabaruma Phase of the Northwest District. These consist of certain kinds of decoration and distinctive vessel shapes reproduced in the paste of the plain pottery types characteristic of the Abary Phase, as well as of sherds from trade vessels of Mabaruma Phase manufacture. Detailed examination of this evidence will help to reconstruct the origin of the Abary Phase.

To facilitate interpretation of the significance of sherds with Mabaruma Phase styles of decoration, table F was prepared, listing the number of sherds of each kind and their chronological position. All but one of the sherds are from the earliest site, and the levels have been arranged in the order indicated by the Abary Phase pottery type seriation (fig. 77). This tabulation shows several interesting features. Only one of the Mabaruma Phase plain pottery types could be identified, the distinctive steatite-tempered Hotokwai Plain. All four Mabaruma Phase types of decoration are represented, but subdivision into trade sherds (on Mabaruma Phase varieties of paste) and locally made copies (on Abary Phase varieties of paste) shows that the proportion of the two is different for each type. The chronological distribution of the sherds, whether plain or decorated, is too sporadic to allow any inference about changes in popularity during the time period represented.

TABLE F.—*Occurrence of trade sherds or sherds showing Mabaruma Phase characteristics at Abary Phase sites*

Levels in seriated order	Hotokwai Plain, trade	Akawabi Incised and Modeled		Aruka Incised		Kaituma Incised and Punctated		Mabaruma Incised		Total decorated sherds showing Mabaruma Phase influence	Total sherds per levels
		Trade	Local manufacture	Trade	Local manufacture	Trade	Local manufacture	Trade	Local manufacture		
B-2: Dr. Ho's Landing:											
Cut 1, level 16–24 cm			1							1	130
B-1: Tiger Island:											
Cut 1, level 0–8 cm	16	1?	1	4	2				2	10	1,001
Cut 1, level 8–16 cm	2		3	2						5	840
Cut 2, level 0–8 cm											263
Cut 1, level 16–24 cm	2			3	1	2			1	7	658
Cut 1, level 24–32 cm						1			1	2	367
Cut 2, level 8–16 cm	1			1?	1				1	3	242
Cut 2, level 16–24 cm											231
Cut 1, level 32–40 cm	1				1				1	2	293
Cut 2, level 24–32 cm											251
Cut 2, level 32–40 cm			1		1					2	387
Cut 1, level 40–48 cm						1			1	2	117
Cut 2, level 40–48 cm									1	1	618
Cut 2, level 48–56 cm					1				1	2	471
Total trade sherds	22	1		10		4		0		15	
Total sherds of local manufacture showing Mabaruma Phase characteristics			6		7		0		9	22	
Grand total	22	7		17		4		9		37	5,869

Use of these data for determining the time at which contact between the two Phases occurred involves several assumptions. Of primary importance is the question of whether the relative frequency of trade sherds can be considered representative of the relative frequency of pottery types manufactured by the donor culture at the time the trade took place. In our own culture and in archeological cultures where evidence of trade is most familiar, such an assumption would not be valid because occupational specialization and systems of marketing, with associated attitudes of commercial competition between sellers and of securing the best product at the lowest price among buyers, provoke various kinds of selection on the part of both the makers and the customers. Ethnographic data on the Tropical Forest cultures suggest, however, that on a lower level of cultural development selection is of quite a different kind, if it occurs at all. Reports on British Guiana emphasize tribal specialization in which certain tribes are reputed to excel in the manufacture of certain kinds of objects, such as pottery, graters, or bows (Im Thurn, 1883, pp. 271–2; Farabee, 1924, pp. 21, 52, 57). Selection is on a tribal basis and range of choice is limited to what the members of the tribe have to offer. There is nothing to suggest that the donor tribe makes any modification in the objects to be traded that would differentiate them in quality or style from those for home consumption. Since all evidence indicates that the Abary Phase is a culture of the Tropical Forest level of development, we have made the assumption that the relative frequency of the trade sherds reflects those proportions existing in the Mabaruma Phase at the time of contact, and that a correlation between the two cultures can be made on the basis of the pottery type represented and their relative frequency.[6]

For the purpose of establishing such a correlation, only the trade sherds can be used. The existence of locally made imitations is important in assessing the strength of the influence exerted by the Mabaruma Phase ceramics on Abary Phase potters, but the relative frequency of the types copied is more likely to reflect Abary Phase cultural preferences or the technical and artistic limitations of the Abary Phase potters, than are the trade sherds. Any individual preference that may have influenced the selection of pottery vessels received by trade can be minimized by using the total trade sherds of each type rather than the level to level occurrence in the comparison. These totals show Aruka Incised to be the dominant decorated type, with Kaituma Incised and Punctate second, Akawabi Incised and

[6] The validity of this assumption can be tested in the case of the Koriabo Phase, whose correlation with the Mabaruma Phase sequence can be checked by the presence of trade sherds in Mabaruma Phase sites. In this case, the sherds of Mabaruma Phase origin traded to the Koriabo Phase reflect reasonably well what was being made at that time (cf. fig. 56 with fig. 31; pl. 20 with pls. 16, 17, 19; pl. 23 with pls. 21, 22, 26).

Modeled third, and Mabaruma Incised absent. Hotokwai Plain is the only plain type represented, and by inference must have been a major type in the Mabaruma Phase at the time of contact. Comparison of this distribution of relative frequencies with the Mabaruma Phase pottery type seriation (fig. 48) makes it possible to rule out at once the early part of the sequence as the time of contact. During this time, Mabaruma Incised is popular and Hotokwai Plain is present only in a low percentage frequency, the reverse of the situation implied by the trade sherds. The latter quarter of the Mabaruma Phase sequence can also be eliminated because at this time Hotokwai Plain is very rare and Koberimo Plain, tempered with mica, is common. Although Koberimo Plain is distinctive and readily recognized, not a single example was identified among the trade sherds from the Abary Phase. The proportions of the trade sherds correspond rather well to those existing in the remaining portion of the Mabaruma Phase sequence, represented by the levels of N–13. During this time Hotokwai Plain is the dominant plain type, and among the decorated types Aruka Incised is most common, Kaituma Incised and Punctate second, with Akawabi Incised and Modeled next, and Mabaruma Incised rare to absent. Various inferences put the estimated dating of this portion of the Mabaruma Phase sequence at between approximately A.D. 1000 and 1300 (see p. 147 for details).

The presence of sherds of Mabaruma Phase origin throughout the period represented by the occupation of B–1 suggests that contact was of considerable duration. If trade sherds had been limited to the early levels, it might have been concluded that contact took place when the Abary Phase entered British Guiana and was lost when the group moved farther to the east and settled on the Abary River. Examination of the archeological situation on the portion of the coast between the Abary River and the Northwest District shows that communication between the two Phases could easily have been maintained. In addition to sherds of undocumented provenience, information is available on three sites between the Demerara and Mahaica Rivers, in the region known as East Coast Demerara (fig. 58). Mon Repos and Chateau Margot were visited by Osgood, who made sherd collections. These were unfortunately lost in the Georgetown fire of 1945, but notes and illustrations indicate that typical Mabaruma Phase forms of decoration were present (Osgood, 1946, pp. 52–54). At Mon Repos, they included Aruka Incised, Kaituma Incised and Punctate (op. cit., fig. 12), and Akawabi Incised and Modeled. The adornos are said to be "of a simple modeled type, not ornate with patterned incising as in the Barrancos style" (op. cit., p. 53), which would correlate best with the latter half of the Mabaruma Phase, when the adornos have lost their Barrancoid characteristics. The apparent frequency of Kaituma Incised and Punctate also favors such a correlation. The site at Chateau Margot, slightly to the west, appears to have produced a similar pottery complex, although Osgood mentions that there was more of the "Barrancos style of incising and more sherds appliqued with wavy strips" (op. cit., p. 54). Pottery collected from the same two sites earlier by W. E. Roth (MS.) also includes adornos of the late Mabaruma Phase style (fig. 59, *a–g*).

Another site was reported in the late 19th century by Im Thurn (1884, pp. 126–137) at Enmore, some 24 km. east of Mon Repos. Decorated sherds are said to be very common, and the illustrations (op. cit., pls. 15–17) indicate that Aruka Incised and Akawabi Incised and Modeled were represented. One sherd is from a vessel of Akawabi Incised and Modeled Form 4, which is restricted to the latter half of the Mabaruma Phase sequence (fig. 49). Unfortunately, there is no information on the temper of the pottery from any of these East Coast Demerara sites. The apparent frequency of decorated sherds is comparable to that in the Mabaruma Phase, however, so these sites probably can be interpreted as representing extensions of that culture eastward rather than as examples of trade. Since they appear to be of the same general time period as that in which the Abary Phase-Mabaruma Phase contact is deduced to have taken place, they could have a source more accessible than the Northwest District for trade.

The attempt to reconstruct the history of the Abary Phase prior to this period of Mabaruma Phase contact is hampered by the general absence of detailed archeological information from the surrounding area. The pottery shows no similarity to that of the Taruma Phase on the upper Essequibo or the Rupununi Phase on the Rupununi savanna. The situation to the east is not much better. Peter Goethals, who did fieldwork in Dutch Guiana in 1951 under the auspices of Yale University, kindly allowed us to make a preliminary classification of his sherds. Three sites in the vicinity of Paramaribo produced a complex of pottery in which sherd tempering was predominant. Associated were a few sherds with cariapé or sand temper, and even more rarely with shell temper. These frequencies are most similar to those prevailing at the end of the Abary Phase sequence and consequently if any relationship exists it must be with the terminal rather than the initial portion of the Phase.

The only remaining direction to look for affiliations is northwest. The presence of trade sherds of Mabaruma Phase origin at the earliest Abary Phase site has already been used to demonstrate communication between the two groups. The question now arising is how this was initiated. The conclusion that it happened during the passage of the Abary Phase through the Northwest District is supported not only by the absence of any evidence that the Abary Phase came from any other direction, but also by the strength of the Mabaruma Phase influence on the pottery of the Abary Phase. In addition to the copying of Mabaruma Phase types of decoration already mentioned, there is evidence of acculturation in vessel shape. The most striking example is the diagnostic Mabaruma Phase bowl with a broad horizontal to downsloping flange rim (figs. 45–2, 46–3) which appears as Form 3 of the Abary Phase Tiger Island Plain (fig. 70–3). Although influence is detectable in both decoration and vessel shape, there is no indication of any borrowing of Mabaruma Phase varieties of temper, suggesting that this may be more resistant to acculturation than other aspects of pottery making.

When the attempt is made to retrace the course of the Abary Phase beyond the Northwest District, the connections become more tenuous. Projection of the trends in pottery type frequency (fig. 77) backward in time indicates that a complex ancestral to the Abary Phase should be characterized by a predominance of cariapé tempering combined with a less than 10 percent frequency of sherd-tempered pottery. If Mabaruma Phase influence is discounted, Abary Phase vessel shapes are reduced to simple bowls and globular jars with direct or exteriorly thickened rims. Only about 1 percent of the sherds are decorated and decoration is limited to incision, varying from broad lines to crudely applied scratches, and modeling in the form of small nubbins, usually located on the rim exterior and often embellished with gashes.

An assemblage of traits almost identical to what would be expected in an ancestor of the Abary Phase occurs at the site of Mayo on Trinidad. Rouse and Goggin, who did the excavation, generously permitted us to examine the sherds and to make a preliminary analysis. Five samples, representing several squares and levels, contained more than 90 sherds, and classification showed these to be composed of 97.6–100 percent cariapé-tempered sherds, 0–1 percent sherd-tempered sherds, and 0–1.5 percent decorated sherds. Bowl shapes are similar to those of the Abary Phase, with direct or exteriorly thickened rims, but jars have short necks instead of insloping rims. Decoration is typically small nubbins embellished with a series of nicks. The Mayo and early Abary Phase ceramic complexes are so similar that it is difficult to avoid the conclusion that they are related. The question of relative chronology, however, presents a problem. Although we do not have any means of absolute dating, it can be safely concluded that the arrival of the Abary Phase in British Guiana took place in pre-European times, and probably at least as early as A.D. 1000 to 1200. If the Mayo complex is ancestral, it should have a comparable antiquity. Unfortunately for our theory, the Mayo site has been tentatively identified by Rouse with the historic mission of Monserrate, which existed between A.D. 1687 and 1789 (Rouse, personal correspondence, 1956). There is a possibility that this identification is incorrect, or that the sherds represent an earlier occupation not associated with the historic community. In any case, the derivation of the Abary Phase from this direction is the most logical conclusion on the basis of the distributional evidence as it is at present known.

Assuming for the moment that this identification of the origin of the Abary Phase is correct, it is of interest to try to connect its emigration from Trinidad with historical events there. In late prehistoric times, the most important event in the Antilles was the invasion of the Carib from the mainland. Unfortunately, their arrival is poorly dated, partly because of the difficulty of correlating archeological remains with linguistic differences, and partly because little work has been done in the Lesser Antilles, where Carib settlement was most concentrated. On the basis of Carib traditions that place their arrival in the West Indies as recent, Rouse has tentatively dated their occupation of the Lesser Antilles during his Period IV, between A.D. 1200 and 1500 (Rouse, Cruxent, and Goggin, 1958, figs. 1 and 3; Rouse, personal correspondence, 1959). Whether or not they passed through Trinidad is not archeologically demonstrable at present. However, the fact that the estimated date for the departure of the Abary Phase corresponds rather closely to that estimated for the arrival of the Carib in the Lesser Antilles makes it seem possible that the two movements are related. The coincidence that Carib tradition gives as the motivation for their invasion the conquest of the Arawak (Rouse, 1948, p. 564), and the suggestion that the Abary Phase may be identified with Arawakan speakers (see below) also fits such an inference. The difficulties inherent in finding archeological evidence on Trinidad are such, however, that this interpretation may never be capable of more direct proof.

The duration of the Abary Phase cannot be fixed by absolute dates, but estimates can be made from two different kinds of evidence. One is by correlation with the Mabaruma Phase in the Northwest District. Contact between the two Phases took place shortly after the middle of the Mabaruma Phase seriated sequence, which is estimated to date between A.D. 1000 and 1300 (see pp. 147–148 for details). A second estimate is derived from rate of refuse accumulation computed on the basis of the density of sherds in the deposit. This gives the Phase a duration of between 298 and 417 years on the Abary River (see pp. 181–182). If it is assumed that B–3 was abandoned around A.D. 1600, or shortly before European contact in the area, this would place the arrival of the Abary Phase at between A.D. 1200 and 1300.

European settlement of the Berbice River, adjacent to the Abary on the east, began around the middle of the 17th century. Two Arawak villages near the headwaters of the Abary were visited in

1671 by Van Berkel (1948, frontispiece map), who made several overland trips between the Berbice and the Demerara. Abary Village was about 13 km. due south of B–3 but somewhat farther away by river. Ouden-amen Village was about 17 km. west of B–3 on Andabo Creek, a tributary of the Abary. Such close proximity to the last reported site of the Abary Phase makes it likely that the Indians seen by Van Berkel may have been descendants of those responsible for the archeological remains. The ethnographic data are unfortunately very general, but what is reported on house type, dress and ornament, food and drink, dances, marriage and other aspects of the culture fits readily into the Tropical Forest pattern (op. cit., pp. 20–28, 70). At this time, European influence was still limited to the introduction of a few glass beads, iron arrowpoints, and knives. A little farther to the west, however, in the vicinity of the Demerara River, white settlement was already dense enough to cause more basic alterations in the Indian way of life (Van Berkel, 1948, p. 34).

THE UPPER ESSEQUIBO RAIN FOREST

THE TARUMA PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

Habitation sites of the Taruma Phase were encountered throughout the part of the upper Essequibo River included in the survey, that is from Black Water Creek northward to a point between the mouths of the Kassikaityu and Kuyuwini Rivers (fig. 79). This area has not been accurately mapped, and contains no permanent points of reference to which the site locations could be related. Consequently, figure 79 is derived from small-scale maps plus our own observations. Distances between sites in the descriptions are given in paddling time. Translated to the map, this gives a general idea of the site distribution. Since the landscape is uniform and the height of the bank often is not evident from the river (pl. 40), it is impossible to describe any of the sites well enough to permit their relocation without the aid of a local guide.

Twenty-four habitation sites of the Taruma Phase were visited and the majority were excavated stratigraphically. Additional evidence on the Phase comes from 11 former field clearings. No cemeteries or other clues to burial pattern were encountered.

Habitation Sites

E-1: KANASHEN

A small creek flows into the left bank of the Essequibo at the west edge of Kanashen, the 1952–53 headquarters of the Unevangelized Fields Mission (fig. 79). On the opposite side of the creek from the mission buildings is a higher rise, which had been cleared for a field. Digging holes for planting cassava and bananas revealed sherds, a large sample of which was collected by the Hawkinses prior to our visit. The site is on an elevation 5 meters above the December water level, a sufficient altitude to prevent it from flooding in the rainy season. From the edge of the site, the land slopes downward slightly toward an inlet 250 meters away along the river's edge. The hilltop, which parallels the river and is coterminous with the site, is an elongated ovoid area 90 meters long by 50 meters wide. The surface collection was made over the major portion of this area, where the sherds had been exposed by cultivation.

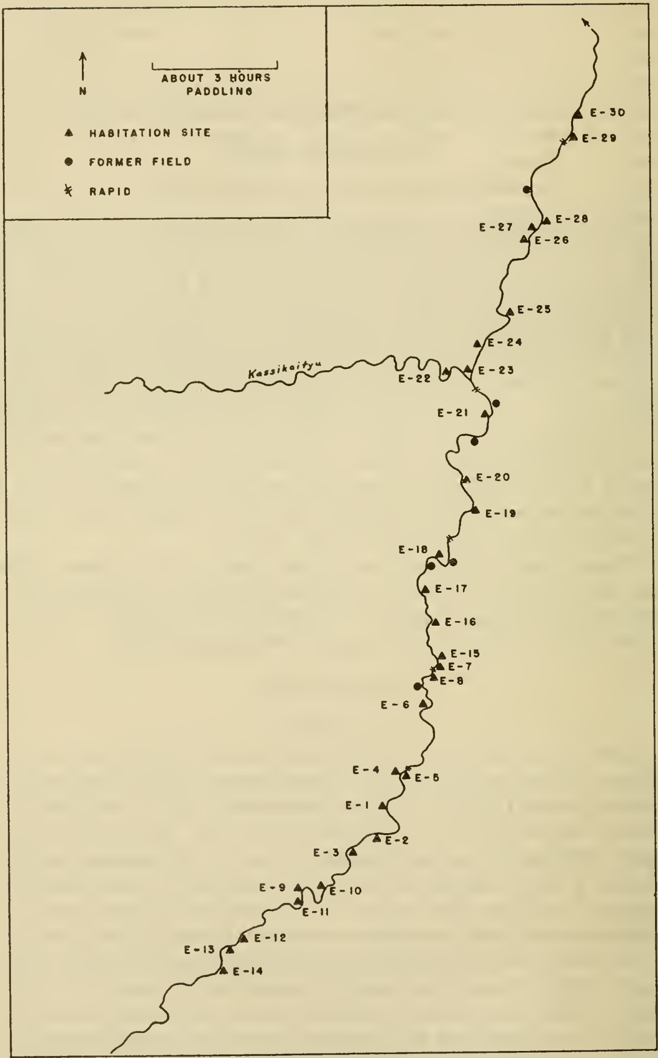

Figure 79.—Map of the upper Essequibo River showing the approximate location of archeological sites included in the survey.

Cut 1 was placed 2 meters from the southwest edge of the garden clearing, where the brush remained and the soil was undisturbed. It was 1 by 1 meter, excavated in 8-cm. levels. The first level was sterile, medium-gray, loose, granular soil containing small roots and fragments of charcoal from the recent burning of the field. Soil conditions remained the same throughout the habitation layer. Sherds first appeared at 8 cm. Level 16–24 cm. produced in addition small lumps of unfired clay and tiny stone chips that may relate to the manufacture of manioc graters. In level 32–40 cm., the soil became hard, compact clay, was still gray in color, and contained a few sherds and scattered flecks of charcoal. At 40 cm., the color changed suddenly to light orange, and then to white sandy clay, the color and texture of the sterile soil of the area. No sherds were encountered below this depth.

Cut 2, also 1 by 1 meter dug in 8-cm. levels, was placed 10 meters east of Cut 1, in an area previously cleared but now overgrown. As in Cut 1, the first 8-cm. level was sterile. Level 8–16 cm. had loose, dark-gray loam with abundant sherds. In level 16–24 cm., sherds were increasingly numerous, and often bunched together. Level 24–32 cm. was less productive, and sherds were more irregularly distributed. Two pockets with clustered sherds may correspond to depressions in the former house floor. Black, compact, sterile soil was encountered at 30 cm., and tests showed it to continue to 50 cm., where it was replaced by light orange to white, sandy clay, the natural soil formation of the area.

E–3: YOCHÓ

E–3 is located on a hill on the right bank of the Essequibo River, 1½ hours' paddling upstream from E–1 (fig. 79). Dense foliage completely conceals the elevation of the bank, which rises rather steeply to its maximum elevation, an elongated knoll 70 by 20 meters that parallels the river (fig. 80). Sherds occur over this high area, with a slight concentration over the center third. The hilltop drops off about 1 meter at the sides and back of the knoll over an area some 200 meters in diameter, then sloping downward. Most of this area is covered with secondary growth consisting of trees less than 25 cm. in diameter and quantities of spiny palm, suggesting a former field clearing. The surface of the ground is very rough and irregular.

Cut 1, 1 by 1 meter, was placed in the southeast part of the site, outside the area of greatest sherd concentration. The soil was loose, granular, gray loam, sterile except for small fragments of charcoal for the first 8 cm. Level 8–16 cm. produced so few sherds that it was decided to enlarge the excavation area to 1 by 2 meters. Conditions continued uniform to 25 cm. where the soil became more compact,

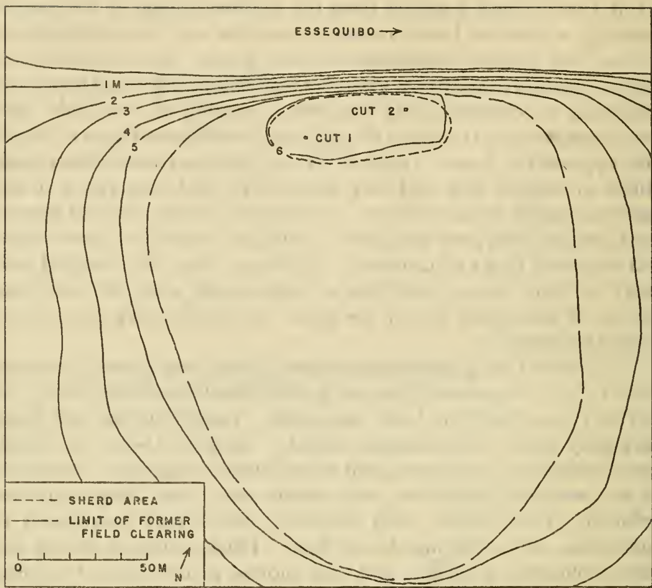

FIGURE 80.—Sketch map of E–3: Yochó, showing the Taruma Phase habitation area and limit of the former field clearing.

slightly darker gray, and ceased to contain sherds. At 57 cm. there was a transition to very hard, whitish sandy clay, the natural soil of the area.

Cut 2 was excavated northeast of the center of the site, 5 meters in from the riverbank, within the area of maximum sherd concentration. Dimensions were 1 by 1 meter. As in Cut 1, the first 8-cm. level was sterile. Soil conditions duplicated Cut 1, in both refuse and sterile zones. The major difference was that the sherds were larger and more abundant in Cut 2.

E–4 : YAKA YAKA

On the left bank of the Essequibo, half an hour's paddling downstream from E–1 is the Wai Wai village of Yaka Yaka (fig. 79). The house, which is on the 3-meter contour above the December water level rather than on the summit of the knoll, is at the front of a large garden clearing, which extends over the hill and down the other side. Exploration revealed sherds over an area about 16 meters in diameter on the eastern part of the highest elevation, 4 meters above the December water level (fig. 107). During the previous rainy season, water had come part way into the Wai Wai house, but did not reach the older site. The soil was gray brown, containing iron concretions, and no difference could be detected in coloration between the site and the adjacent area. A 1- by 1-meter test was made toward the east edge of the site, where the sherd concretion seemed greatest. Even here, however, the sherds were sparse and badly eroded. A sterile layer of lateritic iron concretion gravel was encountered at an irregular depth of 8 to 15 cm.

E–5 : ONORO FALLS

On the right bank of the Essequibo, just below and opposite the mouth of Onoro Creek (fig. 79), the land rises to an elevation of 5 meters and remains nearly level over a considerable area. According to Wai Wai informants, the summit had been inhabited by the Taruma, and the existence of a former clearing was attested by secondary growth of small trees and many spiny palms. The ground was littered with moss-encrusted dead trees, branches, and leaves so that no sherds were visible on the surface. Tests showed the soil to be brownish gray, loose loam, sterile for the first 8 cm. Sherds were intermixed in level 8 to 16 cm., below which the soil was more compact and sterile. The diameter of the old clearing was roughly 100 meters, but all parts did not produce sherds suggesting that the habitation area was associated with a field clearing.

E–6 : MASAKUKINYERE

This site is 2½ hours' paddling downstream from E–5, with no others reported in the intervening area (fig. 79). It occupies a high steep bank on the left side of the river, some 6 meters above the December water level. The habitation area, 35 by 20 meters, occupies the major portion of the relatively level summit, which was covered by secondary growth, all the trees under 35 cm. in diameter. A 1- by 1-meter cut was placed one-third of the distance from the southwest end of the site and excavated in 8-cm. levels. The first 8 cm. were sterile and mostly composed of thick root mat. Level 8–16 cm. was brownish-gray loam with abundant sherds and a few iron concretions. In level 16–24 cm., conditions continued the same except that the sherds were more concentrated. At 24 cm. pockets of iron concretion gravel were encountered. Below these the soil changed to a lighter-colored, sandier clay, the natural formation of the area.

E–7 : MANAKAKASHIN

On the right bank of the Essequibo, just below Manakakashin Falls, is a steep-sided, 10-meter-high hill (fig. 79). A small creek runs along the north edge. The dense vegetation contains a few trees 75

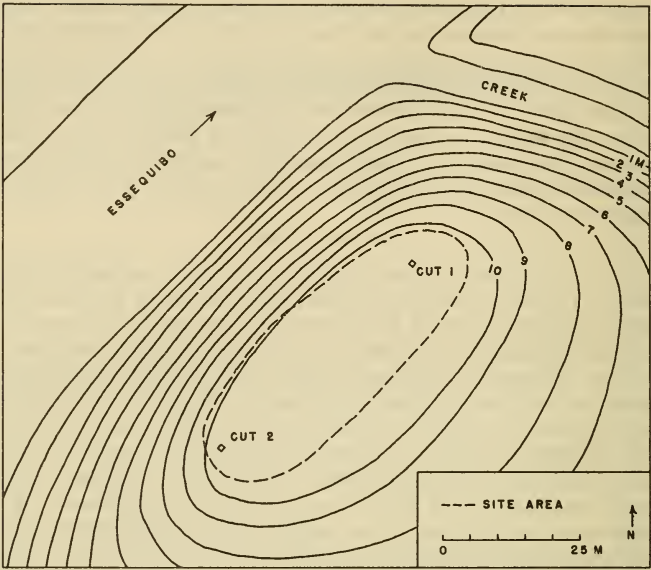

FIGURE 81.—Sketch map of E–7: Manakakashin, a habitation site of the Taruma Phase.

cm. in diameter. The ground was thickly covered with leaves, but a few sherds were visible scattered on the surface. The site area is 60 by 20 meters, slightly narrower than the hilltop (fig. 81).

Cut 1, 1 by 1 meter, was excavated in the northeast end of the site in 8-cm. levels with the following characteristics:

Level 0– 8 cm.__ Soil dark, brownish-gray, loose loam, containing flecks of charcoal and small sherds.

Level 8–16 cm.__ Soil conditions similar; sherds fairly abundant, a few small stones and irregularly shaped concretions.

Level 16–24 cm.__ Soil same, roots still frequent, sherds sparse. Compact, sterile soil, slightly lighter in color than the occupation horizon occurred from 24 to 35 cm. Below this was hard clay containing abundant, fine, iron-concretion gravel.

Cut 2, also 1 by 1 meter, was dug near the opposite end of the site at the edge of the slope. It was also excavated in 8-cm. levels:

Level 0– 8 cm.__ Soil dark, grayish brown with a few small iron concretions; roots abundant. Sherds in good condition.

Level 8–16 cm.__ Soil conditions same; sherds more abundant.

Level 16–24 cm.__ Sherds still abundant, soil slightly darker gray. Below 24 cm. was sterile, compact, hard clay containing iron concretion gravel.

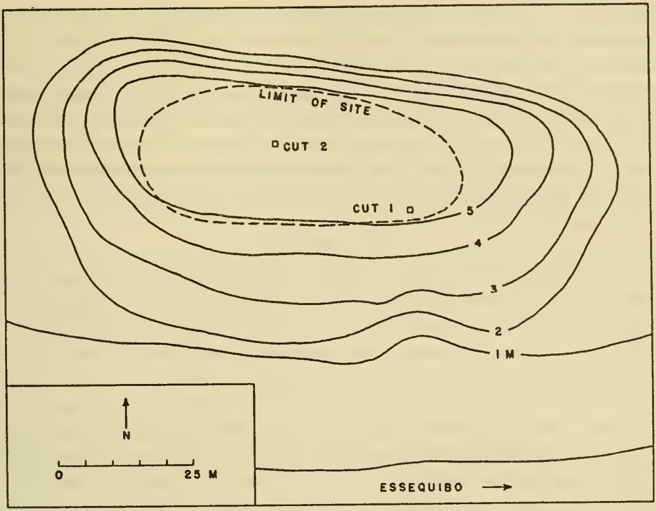

FIGURE 82.—Sketch map of E-9: Kalunye, a habitation site of the Taruma Phase.

E-9: KALUNYE

This site is half an hour's paddling upstream from the Wai Wai village of Mawiká, on the left bank of the Essequibo River (fig. 79). The hill rises gradually so that the summit is 40 meters from the edge of the bank, but falls off more steeply to the rear. Sherds are distributed over an area 60 by 25 meters, corresponding approximately to the extent of the elevation above the 5-meter contour (fig. 82). This hill had been cleared by the Wai Wai chief for a garden some years previously, and had since grown up with dense small brush and small trees 4 to 15 cm. in diameter. A few trees, apparently faster growing species, were 30 cm. in diameter.

Cut 1, 1 by 1 meter, was dug in 8-cm. levels toward the southeast edge of the site, near the beginning of the slope. The soil was black loam, containing numerous small iron concretions and sherds in a good state of preservation. This condition continued uniform through 4 levels. Between 28 and 32 cm. iron concretions became very abundant but sherds were present to 34 cm. Below this the gravel was compact and sterile to a depth of 50 cm., where the cut was abandoned. A large core of felsite, the kind of rock used for the manufacture of manioc grater teeth, came from level 16–24 cm. It was trianguloid, 9 cm. long, 8 cm. wide at the base and 3.5 cm. thick.

Cut 2, 1 by 1 meter, was placed on the highest part of the hill, near the center of the site and about 20 meters northwest of Cut 1. The soil color was slightly lighter than that in the vicinity of Cut 1, but otherwise characteristics were similar. Sherds were present in the first level, which also yielded an iron nail (probably dating from the Wai Wai field) and a quartz crystal. In level 8–16 cm. sherds were much sparser than in Cut 1 and small concretions were very abundant. Below 16 cm. the gravel became more compact and sterile.

E–10: MAWIKA-TÓ

The Wai Wai village of Mawiká, on the left bank of the Essequibo, occupies the site of a former Taruma village (fig. 79). Sherds were visible on the bare surface of the clearing around the Wai Wai house, where the absence of vegetation encouraged erosion. The limits of the former clearing were not ascertainable because of the dense secondary growth resulting from more recent Wai Wai clearing of the same area. However, tests produced sherds from an area considerably larger than that used by the Wai Wai village, corresponding to the western half of a knoll 5 meters above the December level of the river. Dimensions of the site are 35 by 45 meters, with the major sherd concentration near the center of the area or just east of the Wai Wai house. The bank rises gradually so that the site is 30 meters from the river's edge at low water.

A 1- by 1-meter strata cut was placed at the northeast edge of the modern clearing, near the center of the Taruma Phase site. Excavation was in 8-cm. levels. The soil was brownish-gray, sandy clay. In addition to sherds, level 0–8 cm. contained charred palm nuts and fragments of charcoal, which probably relate to the Wai Wai occupation. In level 8–16 cm., soil conditions continued the same and sherds were large and abundant. In level 16–24 cm., the soil became more compact and contained scattered lateritic concretions, which had been absent from the upper levels. Sherds were less numerous. Sterile, compact clay appeared at 24 cm., but was not distinguishable in color from the occupation layer. The quantity of sherds from this excavation in the Wai Wai side yard caused considerable amazement among the Indians, who exclaimed, "Look at what we have been walking over all this time and didn't know it!"

E–11: KUKWA MUTUTÓ

On the left bank, 40 minutes' paddling upstream from E–10 (fig. 79), the land rises sharply to a height of 6 meters above the December waterline. The level surface was covered with short grass and scattered bushes over a strip 25 meters wide that came down to the edge of the bank. Fallen rafter poles and posts marked the former location of a house at the water's edge, and a few other posts were scattered farther back. *Urucú*, cotton, and cannalike bushes were still growing in the clearing. In the forest outside the grass area, stumps of large trees provided evidence of former clearing now in secondary growth. This site had been reported to us as a Wai Wai village occupied for 3 to 4 years and abandoned in 1948, and the condition of the clearing seemed to verify this claim. However, testing produced no sherds in the major portion of the area and it was only toward the rear of the clearing, far from the remnants of the recent house, that any concentration was found. On analysis, these sherds proved to be Taruma Phase rather than Wai Wai pottery. The Taruma Phase occupation was brief, judging from the fact that a 1- by 1-meter test produced only 35 sherds, all in the upper 2.5 cm. of the soil. Below that was sterile, hard, compact, tan clay.

E-12: MANARI TULU

On the right bank of the Essequibo, 1 hour and 20 minutes' paddling upstream from E-11 (fig. 79), a large area of secondary forest occupies an elevation about 100 meters in diameter and 5 meters above the December water level. Undergrowth was unusually dense and most of the vegetation consisted of small trees and spiny palm. Occasional trees measured 60 cm. in diameter. Extensive testing produced sherds only in two places, 8 meters apart, near the center of the former clearing and one-third of the distance inward from the front edge, on the highest part of the site. One of these spots produced only three sherds. A 1- by 1-meter cut in the other was sterile for the upper 10 cm. Sherds were encountered in the brownish-gray soil from 10 to 24 cm. with most of them in the southwest corner of the excavation. Small iron concretions became abundant at the bottom of level 16 to 24 cm., below which the deposit was sterile. The sparsity of the sherds suggests a small village of short duration or possibly a temporary shelter in a field.

E-13: TARI TARI TULU

This site, a few minutes' paddling upstream from E-12 (fig. 79), occupies a hilltop set back from the river's edge, so that its existence is not apparent from the water. The maximum elevation of 17 meters is attained at a distance of 85 meters from the bank, so that the incline is not steep in spite of the height of the hill (fig. 83). The summit, 150 meters long by 50 meters wide, is covered with a dense growth of vines, small brush, and spiny palm intermixed with fallen moss-covered tree trunks. Standing trees were 30 cm. or less in diameter. The surface of the ground was covered with rotting leaves, and the sherds in the surface collection came mainly from soil uncovered by an uprooted

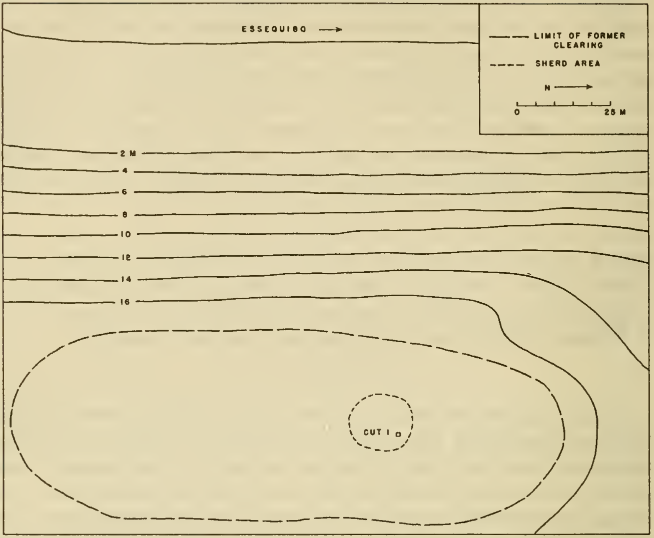

FIGURE 83.—Sketch map of E–13: Tari Tari Tulu, showing the Taruma Phase habitation area and the limit of the former field clearing.

tree. Most of the sherds were concentrated in an area 15 meters in diameter in the north half of the site, where the soil color was darkest.

Cut 1, 1 by 1 meter, was excavated in the north half of the area of greatest refuse concentration. Level 0–8 cm. produced abundant sherds and roots in dark-gray soil containing scattered lateritic concretions. Level 8 to 16 cm. continued the same conditions. In level 16–24 cm., sherds were fewer and concretions more numerous. The soil became lighter in color and sterile at 26 cm., changing to light-tan sandy clay at 40 cm.

E–15: MASHUKROTHO

A short distance below E–7 (fig. 79), the right bank of the Essequibo River rises steeply for 6 meters forming a large nearly level area not subject to flooding. Although trees reached 75 cm. in diameter, the Indians recognized the vegetation as secondary growth over an area some 200 meters long by 150 meters deep. Sherds were encountered in only one place, which was slightly higher than the rest of the area and 30 meters from the shore. A 1- by 1-meter excavation produced sherds only between 8 and 16 cm. below the surface. The soil was light gray and sandy in the occupation layer, becoming a little lighter in color below.

A considerable number of large sherds was found at and just below water level on the riverbank a little upstream. The source of these sherds could not be located, but it was evident that they had been washed down from the bank, which retreats into a small inlet at this point. This inlet is probably of recent origin and the sherds apparently came from the bank now washed away.

E–16: WATAWATARITÓ

E–16 is about 45 minutes' paddling downstream from E–15, just below the junction of Watawataritó Creek with the right bank of the Essequibo (fig. 79). The bank rises steeply for 6 meters above the January water level, then levels off. An area about 350 meters long by 200 meters in from the edge of bank is covered with secondary growth marking the existence of a former clearing. Sherds were found in two places toward the front of this clearing, and an excavation was made in each (fig. 84).

Cut 1, 1 by 1 meter, was placed in the center of an area of sherd concentration 10 meters in diameter, the edge of which was about 10 meters from the bank. The soil was medium-gray loam, sterile and full of roots for the first 8 cm. level. Level 8 to 16 cm. produced sparse sherds. Below this, sterile, compact, light gray, sandy clay appeared.

Cut 2, also 1 by 1 meter, was placed in the center of the second habitation area, some 35 meters northeast of the first. The soil was slightly darker than in Cut 1 and sherds were more numerous. Sterile, compact, light gray, sandy clay appeared at 30 cm. and continued to 60 cm. Below this was light, whitish-gray sand.

E–17: TUTKO MUTUTÓ

Low land separates E–16 from E–17, 50 minutes' paddling downstream on the right bank (fig. 79). Here several large rocks jut out from the shore and a narrow gulley bounds the hill on the upstream side. The bank rises steeply to 6 meters above the January water level and maintains this elevation over a large level area, the major portion of which is occupied by secondary forest growth with a large proportion of palms. Although the former clearing measured 150 meters long by 75 meters deep, sherds occurred only on the western edge, in an area 10 meters in diameter and 15 meters in from the river bank, opposite the rock outcrop. A 1- by 1-meter cut here showed the dirt to be sterile, medium-gray loam for the first 8 cm. Sherds were present between 8 and 16 cm. Below 16 cm., the soil became compact, whitish clay, also sterile.

E–18: YERKA MUTUTÓ

E–18 is a considerable distance downstream from E–17, on the left bank (fig. 79). Here the land rises gently to a small summit 5 meters

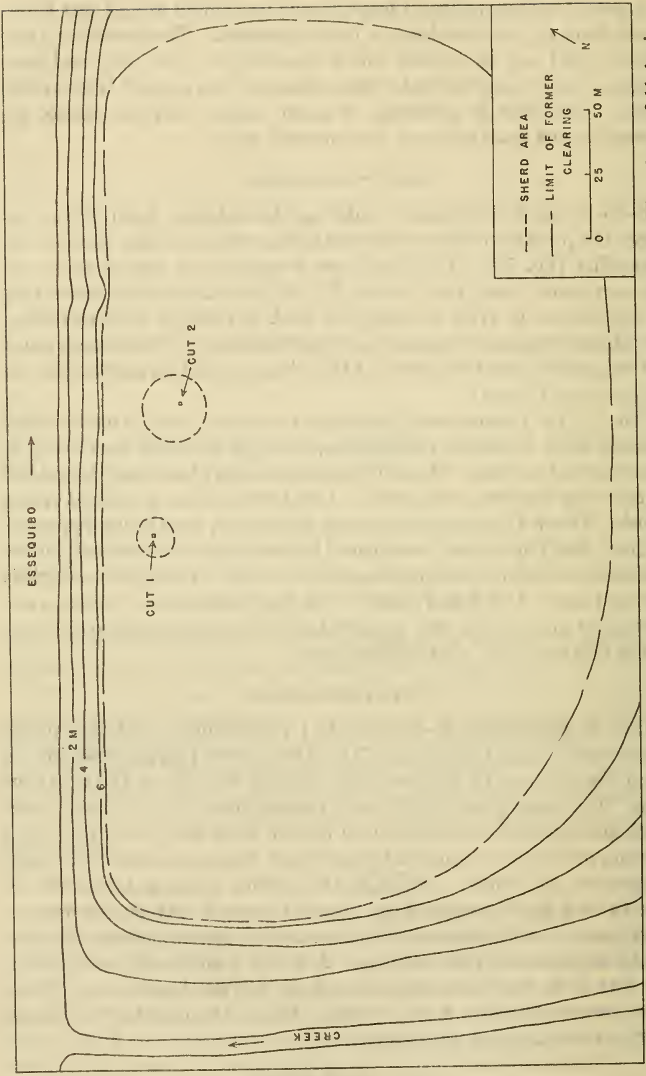

Figure 84.—Sketch map of E–16: Watawataritó, showing the two Taruma Phase habitation sites and the limit of the former field clearing.

above the January water level. Secondary growth of dense small brush, especially palm, and trees under 25 cm. in diameter covers the area roughly 150 meters long by 75 meters wide above the 4-meter contour. Sherds were found in only one place, at the edge of the highest spot. The refuse accumulation was not more than 4 meters in diameter and lay immediately below the surface under the light root mat. The soil was sandy and light gray. Fragments of glass and iron, and two hearthstones with burnt soil underneath, were encountered in the testing.

E–19: CHOLYOLYOLIWATÓ

The high bank occupied by E–19 is on the right side of the Essequibo, where it makes a 180° bend just below Baboon Falls (fig. 79). The slope is steep along the river and more gradual to the south and east, where a creek flows through a small ravine. The summit, 18 meters above the January water level, is covered with small secondary growth with the majority of the trees under 10 cm. in diameter. An unusual feature of the vegetation was tall, large-diameter bamboolike cane, which the Wai Wai believed to have been planted by the Taruma. The former clearing was estimated to extend for about 500 meters along the bank and 200 meters inward. Sherds were found toward the eastern edge in a zone extending for 120 meters in from the bank by 80 meters wide, encompassing the area of highest elevation (fig. 85). Several large rocks jut out from this part of the shore. Two stratigraphic excavations were made, one at the highest part of the site and the other closer to the riverbank.

Cut 1, 1 by 1 meter, was 16 meters from the riverbank. The soil was dark gray and small lateritic concretions were very abundant. Sherds occurred from the surface to 18 cm., where the gravel became more compact and sterile. The soil continued dark gray until 24 cm., when it changed to light-brown loam. Bright-orange clay with large quantities of iron concretion gravel began at 40 cm.

Cut 2 was 35 meters south of Cut 1, on the highest part of the site. It was also 1 by 1 meter, excavated in 8-cm. levels. The first three levels contained black soil with few lateritic concretions. Concretions became abundant below 20 cm. In level 32 to 40 cm., the soil was still blackish loam with abundant gravel, but contained no sherds. From 40 to 60 cm. the color was light brown and below 60 cm. it became bright-orange clay as in Cut 1. All the sterile soils had large amounts of concretion gravel.

E–21: WEELYA-TÓ

A large sloping rock jutting into the Essequibo from the left bank marks the location of E–21 (fig. 79). The river is about 70 meters

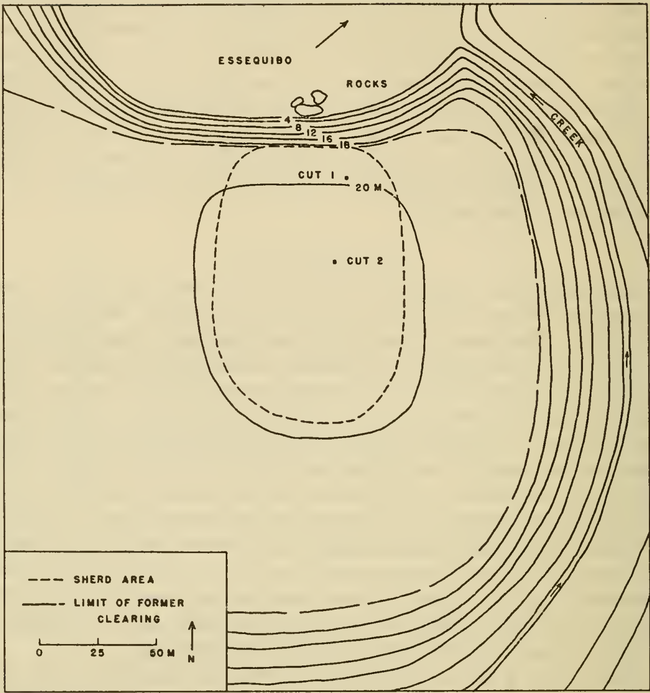

Figure 85.—Sketch map of E–19: Cholyolyoliwató, showing the Taruma Phase habitation site and the limit of the former field clearing.

wide here, not far above the mouth of the Kassikaityu. The rock was used as a landing for the Wai Wai village of Weelya, far back in the forest where the elevation of the ground was higher. The Taruma Phase site was along the bank, which rose 5 meters above the January water level. The area had been partly cleared for a house and garden, and was overgrown with dense, high, tangled grass. Further difficulties in exploration were created by the presence of rotten logs and other vegetation debris. However, several tests indicated that the site was approximately 30 meters in diameter. A sherd collection was derived from two 1- by 1-meter tests, 10 meters apart. Sterile soil in the form of compact lateritic gravel was found at a depth of 40 cm. Above this the soil was medium-gray loam, disturbed by Wai Wai cultivation so that no effort was made to retain the sherd material stratigraphically.

E–22: TOTOYOGUYAOTONTÓ

This site is on the left bank of the Kassikaityu River, about 500 meters above its junction with the Essequibo (fig. 79). The bank here rises steeply to 10 meters above the January water level to form a summit 200 meters long by 150 meters inward. Secondary growth occupies this area, with the majority of the trees under 15 cm. in diameter. Tests showed that sherds were limited to a small area 10 meters in diameter near the center of the former clearing. The soil was light-brown sand, sterile for the first 8 cm. Sherds were scattered in level 8–16 cm., below which the soil became more compact and sterile.

E–23: KASSIKAITYU MOUTH

On the north side of the junction of the Kassikaityu with the Essequibo (fig. 79), the land forms a high point 12 meters above the January water level. The summit shows evidence of a former clearing some 200 meters long by 100 meters wide. A slight depression about 75 meters wide separates this site from E–22. Sherds were found in an area 10 meters in diameter toward the south end of the site, opposite an outcrop of large rocks in the Kassikaityu. A 1- by 1-meter test showed the soil to be sterile, light-brown sand for the first 18 cm., becoming slightly darker in the sherd zone between 18 and 31 cm., with sterile sandy soil below.

E–24: FAHNATALUTÓ

Half a kilometer below the mouth of the Kassikaityu, on the left bank of the Essequibo (fig. 79), several very large rocks stretch half way across the channel and form a little bay 20 meters wide (the river here is 75 meters wide). Sherds that had been washed out of the bank lay on the sandy beach where the rocks met the shore. The land rises in a series of shelves to an elevation of 7 meters above the January water level, reaching the summit about 100 meters inward from the shore. Secondary growth was more advanced than at many of the other sites, with many trees 30 to 50 cm. in diameter and a few larger. Undergrowth was minimal. The former clearing was about 250 meters in diameter, with its front edge at the 6-meter contour. Sherds came from an area 30 by 60 meters at the front of the highest summit.

Cut 1, 1 by 1 meters, was excavated in 8-cm. levels toward the eastern edge of the habitation area. Under the thin root mat, the soil was dark-gray loam. Sherds were present from the first level. No changes were visible until 32 cm., where the soil became light-gray sand. At 46 cm. this changed to very compact, light yellowish-orange, sandy clay with orange streaks of precipitated iron.

E–25: CHAFARIWAYUN

Thirty-five minutes paddling below the Kassikaityu mouth, the Essequibo makes a 180 degree bend. On the north side of the bend, the bank rises to 16 meters above the January water level at a distance of 75 meters from the shore (fig. 79). A dense growth of palm, cane, vines, and small trees covers the summit. The surface of the former field, 200 meters long by 100 meters deep, was very irregular and littered with dead, rotting trunks. Abundant charcoal on the surface and to a depth of 2.5 cm. was further evidence of former slash-and-burn clearing. The front edge of the field corresponded to the 14-meter contour, while the back and sides were on or above the 16-meter contour. The sherds came from an area 8 meters in diameter east of the center, at a depth of 24 to 38 cm. The soil was medium gray, becoming browner from 45 to 75 cm. at all spots tested.

E-28: YUKUMNALULUM

On the right bank of the Essequibo River, 6 minutes' paddling below E–27, is a narrow inlet at right angles to the shore (fig. 79). The bank rises steeply to 5 meters above the January water level and forms a triangular plateau 60 meters in maximum width, bounded on the two arms by the inlet and river and on the hypotenuse by the hillside, which gradually slopes upward for 3 more meters to an elevation of 8 meters. Dense secondary growth covers the area above the 6-meter contour, and several old stumps 1 meter in diameter still remain from the former clearing. Cultural refuse, found only in one spot near the center of the summit, includes sherds, tiny glass beads, glass and bottle fragments, and manioc grater chips. The distribution suggests a habitation area about 9 meters in diameter. All objects were in or just below the root mat, at a depth of 1 to 5 cm. The soil was light-gray sand.

E–29: WANA WANA

A small creek flows into the right bank of the Essequibo just below Wana Wana Falls, where the river is 70 meters wide and full of rocks (fig. 79). Below the creek, the land rises to a conical hill with a small summit 19 meters above the January water level and 20 by 30 meters in diameter. Secondary growth of brush, tall joint grass, and spiny palms interspersed with small open patches occupied an area about 100 meters in diameter above the 12-meter contour. The soil was light orange-brown clay and concretion gravel. Sherds and grater chips were present on part of the summit nearest the creek over an area of about 8 by 10 meters. Two sherds were on the surface, the rest between 8 and 16 cm. in depth. This site was identified by our guide as one visited by a "Father," for whom the Taruma built a church.

E–30: EREFOIMO

This site, 20 minutes' paddling below E–29 (fig. 79), was the last one visited on the Essequibo survey. The river channel contains many rocks and the banks rise steeply to 5 meters on each side. At E–30, the hillside slopes gradually, attaining a height of 16 meters at a distance of 80 meters from the shore. The summit is small and the slope is steeper at the back. Vegetation includes large cane planted by the Taruma, joint grass, spiny palm, and thick brush. Trees were typically under 30 cm. in diameter. The limits of the former clearing correspond approximately to the 10-meter contour line, giving dimensions of 200 meters long by 100 meters in from the bank. Sherds were found on the summit over an area about 15 meters in diameter.

Cut 1, 1 by 1 meters, was excavated in the eastern half of the refuse area. The soil was medium-gray sand, sterile for the first 8 cm. Sherds were sparse in level 8 to 16 cm., becoming more abundant in level 16 to 24 cm. There was no change until level 32 to 40 cm., where the soil suddenly became dark gray. At level 48 to 52 cm. sterile, compact, orange-brown clay appeared, which is the natural soil formation of the area.

Slash-and-Burn Field Clearings

Eleven of the places identified by the Wai Wai as having been used by the Taruma produced very little or no pottery in spite of extensive testing. It is highly probable that these are former slash-and-burn garden clearings, in some of which a small, temporary shelter was erected, and a pot or two was broken. This pattern is followed by the present occupants of the area, the Wai Wai, and is characteristic of Tropical Forest tribes in general. The fields producing sherds were given site numbers, but in most cases the sample is too small for use in the seriated sequence of the Taruma Phase.

E–8: KULUPAL YEWKU

Just upstream from E–7, above the Manakakashin Falls, the right bank of the Essequibo rises to an elevation of 7 meters (fig. 79). Secondary growth that includes a few large trees covers the summit, and the surface of the ground is extremely uneven. Tests over the general area of the former clearing, measuring 100 by 40 meters, revealed only two sherds, both in the same spot.

E–14: YEWARA-TÓ

Upstream from E–13 and about 100 meters below the Wai Wai village of Yewará is a large area on the right bank of the Essequibo that shows evidence of former clearing (fig. 79). The land rises to an elevation of 6 meters above the December water level, and secondary growth covers an area about 200 by 100 meters above the 5.5-meter contour. Widespread testing revealed sherds in one place only.

E–20: CHIKARIMÁ TULU

Twenty-five minutes' paddling below E–19 (fig. 79), the right bank of the Essequibo maintains an elevation of 4 meters along a considerable distance. One section, opposite an outcrop of large rocks that rise 1 to 2 meters above the January water level, bears secondary growth indicative of a former clearing over an area about 100 meters along the bank by 150 meters inward, beginning 8 meters back from the edge of the bank. A few sherds were found in only one spot, 60 meters from the bank at the edge of a slight rise, 20 meters in diameter and 4.50 meters in elevation.

E–26: KECHEKRAI MUTUTÓ

This site is on the left bank of the Essequibo (fig. 79), on an 18-meter high hill bounded on the north by a steep-sided ravine and inlet. The river here is 60 meters wide. Undergrowth was dense on the slopes, becoming sparse on the summit, which was dominated by small palms and trees up to 40 cm. in diameter. The general boundary of the former clearing corresponded roughly to the 18-meter contour and measured 175 meters wide by 100 meters deep. Near the center was a small rise, the front edge of which produced the only sherds that could be found in extensive testing. Only 8 were recovered, at a depth of 10 to 14 cm. below the surface.

E–27: WOROKYM-TULU

Seven minutes' paddling below E–26, on the same (left) side of the river is another high hill showing indications of former clearing (fig. 79). The bank rises steeply to a height of 5 meters and continues at this level for 15 to 20 meters inland, after which it rises rather steeply to 20 meters above the January water level. The trees on the summit were comparatively large, many of them over 50 cm. in diameter. The surface of the ground was very irregular, a condition typical of former field clearings. The soil was orange brown and sherds were found in only one spot in spite of extensive testing. This was at the highest part of the site, on the slope facing the river. Only three sherds were recovered and these were at a depth of 16 cm. The former clearing, measuring approximately 150 meters in diameter, begins about the 11-meter contour and extends to the 16-meter contour at the sides and the 18-meter contour at the back.

ADDITIONAL FIELD CLEARINGS

Six of the places identified by our Indian guides as former slash-and-burn clearings produced no sherds in spite of extensive testing. However, the vegetation was comparable to that on sherd-producing sites, and the soil typically contained flecks of charcoal in the first few centimeters below the surface, making it seem probable that these are additional slash-and-burn field clearings exploited by nearby villages. They are indicated on the map (fig. 79) by the symbol (F). Locations and approximate areas are given on table G.

TABLE G.—*Additional Taruma Phase slash-and-burn field clearings*

Name	Location on Essequibo River	Approximate size
Wanshiwayun	Left bank, below E-28	100 meters in diameter.
Amaji Tulu	Right bank, below E-21	Large, no dimensions recorded.
Weniemó Mututó	Right bank, below E-17	100 meters in diameter.
Wanhakuku	Left bank, below E-6	50×70 meters.
Shifiritulu	Right bank, below E-18	200×150 meters.
No name	Right bank, below E-20	No dimensions recorded.

PETROGLYPHS

No petroglyphs were detected on any of the rock outcrops in the surveyed section of the Essequibo River, although suitable places were frequent particularly below the mouth of the Kassikaityu. Several were observed, however, during 2 days' travel up the Kassikaityu. When questioned about others in the region, the Indian guide asserted that there were none on the Essequibo but that some are to be found on the Kuyuwini, the next tributary to the north.

The first group was half a day's paddling up the Kassikaityu, on a rock jutting out from the left bank. The rapid here is called "Crab Falls" after one of the petroglyphs. The figures were on the nearly vertical face of a boulder just about the January water level, which means they are inundated during the rainy season. The marks were about 2 cm. wide and 2 mm. deep, eroded and almost invisible except when the sun cast a slight shadow. This group consisted of a crab (fig. 86, *a*), a stylized, rectanguloid face (fig. 86, *b*) in close proximity, and a bird (fig. 86, *c*) 2.5 meters to the left of the crab. Additional faint lines between the bird and the crab could not be identified. A short distance upstream was another rock in midstream bearing a petroglyph, and a little farther on near the right bank were two more figures, only one of which showed clearly. This was a face with upstanding hair (fig. 86, *d*).

On the right bank of the Kassikaityu, half an hour below the junction with the trail leading to the savanna, was a rock bearing another face with stylized, upstanding hair, along with two parallel lines and

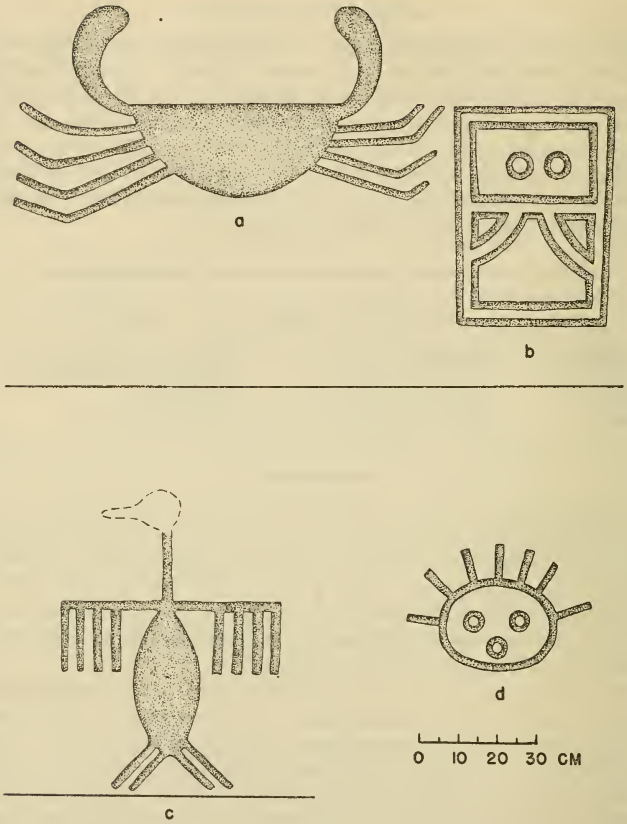

Figure 86.—Petroglyphs on the Kassikaityu River. *a–c*, Three figures in the same group representing a crab, a stylized rectanguloid face, and a bird. *d*, Face found upstream from group *a–c*. The line below the petroglyphs represents the water level in January 1953.

an angular meandering line. These were also close to the January water level. An additional indistinct petroglyph was observed a little farther upstream.

It is not possible to relate any of these petroglyphs to specific art motifs of the Taruma or Wai Wai Phases. When questioned, our Wai Wai guide Minguere contended that they had been made by Jesus.

DATA FROM OTHER INVESTIGATIONS

With the exception of a few petroglyphs (see Osgood, 1946, figs. 3, 6), no archeological remains have been reported by previous visitors to the upper Essequibo.

ANALYSIS OF MATERIAL

The bulk of the material from the Taruma Phase is pottery. There are, however, a few stone objects that are either objectively or inferentially of cultural significance. Provenience of both stone and ceramic materials is given in the Appendix, tables 29 and 30.

Stone Objects

The Taruma Phase did not make any important use of stone for the manufacture of tools. Only two objects show any intentional shaping. The majority of the items are raw materials used in the manufacture of manioc graters or pottery, or stones whose cultural significance is inferred by analogy with the beliefs of the successors of the Taruma, the Wai Wai.

Ax (fig. 87, *b*).—A single polished ax of fine-grained sandstone was collected by the Hawkins from E–1. It is stubby, almost square, with a flat butt and sharp, convex blade. The form is comparable to axes from the Rupununi Phase, but this specimen lacks the lateral notches typical of Rupununi Phase examples. Length is 6.2 to 6.7 cm., width at the bit 5.4 cm., thickness at the butt 1.1 cm.

Chopper (fig. 87, *a*).—A flat, rectanguloid stone with battering along one edge indicative of use as a chopper came from E–1. The material is fine-grained sandstone. Percussion shaping is limited to the blade edge along one of the long sides. Length is 10 cm., width 4.5 to 5.5 cm., thickness at the back 9 to 18 mm., thickness at the blade 5 mm.

Griddle or metate fragments (*?*).—Several fragments of flat granite spalls show slight smoothing and polish on one surface and rough shaping along the edge. Thickness is 1.5, 2.0, and 3.0 cm. Although the griddles for baking cassava bread were typically made of pottery, it is possible that a granite slab of suitable size was occasionally substituted. The smoothed or polished surface suggests the alternative explanation that these are fragments of metates. Unfortunately all are too small to make a definite identification.

Rubbing stones (fig. 87, *c–e*).—Hematite concretion fragments and small waterworn quartz pebbles show traces of abrasion on one or more surfaces. Those of hematite typically have the surface worn flat and smooth. The maximum dimensions of a rubbing surface are 3.5 by 3.7 cm. The quartz pebbles are ovoid, 2.5 to 5.0 cm. long and usually polished on one rounded end.

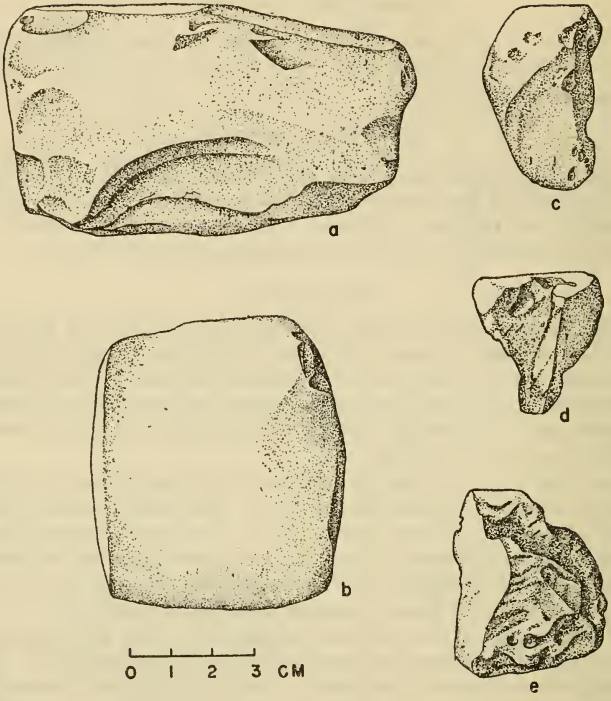

FIGURE 87.—Stone artifacts of the Taruma Phase. *a*, Chopper. *b*, Ax. *c–e*, Rubbing stones.

Quartz crystal.—A single quartz crystal, broken at one end and waterworn on the edges, was found in excavation. Since such objects are not natural inclusions in the soil, it presumably was brought to the site. Length is 4.2 cm., cross section 1.4 by 2.2 cm. One end comes to a natural pyramidal apex.

Quartz pebbles.—Two small, waterworn, quartz pebbles, 2 cm. long by 1.2 and 1.5 cm. thick respectively, were found in excavation at two different sites (see Appendix, table 29). They show no evidence of use, but are similar to the pebble the Wai Wai shaman receives when he is notified by the spirits that he has been chosen. In view of this, and since such pebbles are not natural inclusions in the local soil, it seems possible that they may have had a similar supernatural significance to the Taruma also.

Resin.—Two irregularly shaped hunks of hard resin, 3 by 4 by 3 cm. and 3 by 3 by 2 cm., are the same material used by the modern Wai Wai to aid in starting fires in wet weather. The substance probably had the same use among the Taruma.

Raw materials.—Manioc grater chips, and stones from which chips had been struck, are the most abundant type of stone raw material found in Taruma Phase sites. Both chips and cores show evidence of percussion flaking. All are felsite. Represented among the fragments are large pieces of primary raw material, and the intermediate stage, large percussion flakes. The latter are further worked by percussion to produce tiny triangular chips that are set into the grater board.

Large hunks of decomposed granite, which is the tempering material of Yochó Plain, were found in considerable quantity at a number of sites (see Appendix, table 29). The irregularly shaped hunks, the majority of them badly weathered and very "rotten," vary from crude percussion-struck flakes 1 by 1 cm. to rocks 10.0 by 7.0 by 1.5 cm.

Chips and occasional cores of chert, quartz, and sandstone appear to be the by-products of the manufacture of flake-scrapers, hammerstones, axes, and perhaps other tools. Some may be the accidental results of hammering, since intentionally shaped tools appear to be rare.

Pottery Type Descriptions

Taruma Phase sites produced 14,364 potsherds, which were classified into three plain and five decorated types. The latter constitute 7.7 percent of the total pottery, or 1,115 sherds. No complete or restorable vessels were found, hence the vessel shapes are reconstructed from sherds. Frequency and provenience of the sherds are given in the Appendix, table 30. The types are designated by the binomial system, and are arranged in alphabetical order.

KALUNYE PLAIN

Paste:

Method of manufacture: Numerous sherds are broken on the coil line, indicating construction by coiling. Coils are 1 to 2 cm. wide.

Temper: Fine, quartz-sand granules less than 1 mm. in diameter, moderate in amount and well distributed. Occasionally, larger particles of sand or flecks of black ash occur.

Texture: Compact and fine-grained appearance to naked eye. Under 14× magnification, numerous minute holes can be seen. Good tensile strength. Rings when dropped on pile of sherds. Eroded surfaces, exposing the paste, have a hard, sandpapery texture.

Color: The majority of sherds are orange throughout the cross section. However, the full range from orange to gray is represented, including sherds orange half-way through from either surface and gray for the remainder, and gray with orange bands along both surfaces. The orange varies from bright orange to light orange to brownish orange; the gray ranges from light to dark.

Firing: Incomplete to complete oxidation.

Surface (pl. 44, *a–d*):

Color: Typically light tan to orange. Rare exceptions are sherds with solid-gray core or gray band along one surface, in which case the adjacent surface is also gray.

Treatment: Uneroded surfaces are smoothed and typically even, with faint, fine smoothing marks occasionally visible. Thinner-walled sherds are better smoothed than thicker ones; bowls are better smoothed on the interior and jars on the exterior. Finishing was sufficiently well done when the clay was still fairly damp to float fine particles to the surface, which conceals the sandy texture of the paste. Pits and other irregularities often remain.

Hardness: 2.5 to 3.5. The variation may partially reflect poor conditions of preservation resulting from excessive exposure to moisture and acid soil.

Form:

Rim: Direct or slightly everted; thickening of any sort is very rare and possibly accidental. Rounded, tapered, pointed or flattened lip.

Body wall thickness: 4 to 20 mm.; majority 6 to 7 mm.

Body diameter: 16 to 34 cm. at the carination.

Base: Four base types can be distinguished. In the absence of any complete vessels, the association of these with particular vessel shapes can be determined only by inference:

A. Flat, with curved or angular junction to the body wall, which rises at one of two angles: 30–35 degrees and 60–70 degrees. The thickness of the base is typically equal to or less than that of the body wall, but in rare instances is greater. Slight thickening at the point of junction is optional. Diameters range from 6–12 cm. (fig. 88, *A*).

B. Slight pedestal, formed by a vertical to outslanting rise, the angle of which is distinct from that of the body wall. Height of pedestal 5–12 mm.; diameter 8–20 cm. (fig. 88, *B*).

C. Rounded and unthickened. Diameters not determinable.

D. Annular. Only one example; too fragmentary for measurement of height. Diameter at junction with body wall, about 9 cm.

Major vessel shapes reconstructed from sherds: In the absence of any complete vessels or large fragments, the forms of Kalunye Plain have been reconstructed from rims and diagnostic body sherds. The most frequent types of rim profiles suggest 4 major vessel shapes:

1. Shallow to moderately deep bowls with outslanting or upcurving walls, direct rim and a variety of lip forms, including rounded, pointed, flattened and beveled. Rim diameter is 6–30 cm.; majority 16–24 cm. (fig. 88–1).
2. Carinated bowls, the lower wall joining the upper at a distinct but usually rounded angle. Rim is everted, sometimes narrowing slightly toward the lip, which is usually rounded. Rim diameter is 14–32 cm.; majority 16–22 cm. (fig. 88–2).
3. Globular jars, walls incurving to constricted mouth and direct rim with rounded lip. Mouth diameter 6–28 cm.; majority 12–20 cm. (fig. 88–3).
4. Globular jars with everted rim and rounded or pointed lip. Rim diameter 8–28 cm.; majority 16–22 cm. (fig. 88–4).

Occasional decoration: A few rims of shapes 1 and 3 have a row of ornamental nicks along the edge of the lip.

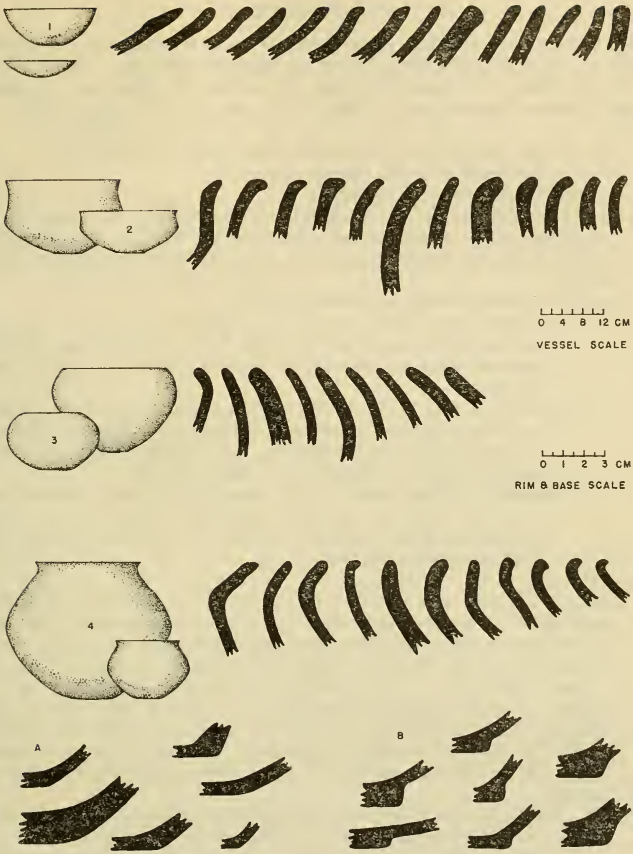

FIGURE 88.—Rim and base profiles and reconstructed vessel shapes of Kalunye Plain, Taruma Phase (Appendix, table 31).

TEMPORAL DIFFERENCE WITHIN THE TYPE: The number of rims per level is too small to be used for percentage analysis and the determination of changes in shape frequency through time. However, the absence of Vessel Form 4 except in the upper third of the seriated sequence probably reflects an increase in popularity of this form rather than inadequacy of the sample. The single annular base (Form D) comes from an early level, suggesting that this form also has temporal significance (Appendix, table 31).

CHRONOLOGICAL POSITION OF THE TYPE: Kalunye Plain is the major plain ware in the latter part of the Taruma Phase sequence, increasing from 3.3 percent at the earliest site to 75.1 percent at the latest (fig. 101).

KANASHEN INCISED

Paste and surface: This type of decoration is found predominantly on sherds with a paste of Yochó Plain, rarely on Kalunye Plain and only once on Mawiká Plain. All features of paste and surface are like those of these plain types and details may be found under their type descriptions.

Form:

Rim: Direct, everted or exteriorly thickened with flat or rounded lip.

Body wall thickness: 3–17 mm.; majority 6–9 mm.

Body diameter: 14–16 cm. at carination.

Base: Since the decoration is confined to the upper part of the vessel wall, no bases can be identified; however, since the ware is predominantly Yochó Plain, the bases probably are the same forms associated with that type.

Major vessel forms reconstructed from sherds:

1. Jars with upper walls incurving to everted and direct, or everted and exteriorly thickened rim with flat or rounded lip. Mouth diameter 12–34 cm. Decoration occurs in a band around the neck (fig. 89–1).
2. Deep bowls with walls curving up to rounded shoulder, then more vertically before flaring outward to direct or exteriorly thickened rim with flattened or rounded lip. Rim diameter 12–46 cm. Decoration confined to area above shoulder (fig. 89–2).
3. Relatively shallow bowls, walls outsloping to direct, everted or exteriorly thickened rim with rounded or flattened lip. Rim diameter 20–50 cm.; majority 20–30 cm. Decoration on exterior; rarely, on interior (fig. 89–3).

Decoration (pls. 41, 42):

Technique: Incised lines of widely varying width and depth but consistent on a single vessel, indicating that the variation is associated with the dimensions of the stick used as an incising tool. The shape of the cut ranges from a deep (1 mm.) and narrow (0.5 mm.) V to a broad (4 mm.) trough. The majority of the incisions are 1–2 mm. wide and V- or U-shaped. Lines are typically straight, made with a single stroke, not equally spaced or perfectly parallel, but approximately so. Spacing is regular in crosshatch, producing equal-sized diamonds. Lines were drawn when the surface was sufficiently dry to leave a distinct, well-defined mark.

Motif: All designs are composed of straight lines, which are arranged into three standardized patterns and a fourth more variable type of design:

1. Zoned, parallel lines (pl. 41, *a–e*). A broad band around the upper exterior (rarely covering the interior instead) is filled with parallel lines in zones, those in one zone running approximately perpendicular to those in the adjacent zone. The direction is usually diagonal less often vertical and horizontal. The zones are sometimes equal in size, other times irregular. Intersecting lines may overlap or fall short of meeting. The design area is sometimes bounded by incised lines running horizontally.
2. Crosshatch (pl. 41, *f–k*). A series of lines is drawn diagonally and parallel below the rim and crossed with another series of lines drawn diagonally in the opposite direction. Either set may be done first. The spacing is controlled so that the result is a pattern of symmetrical diamonds. Differential spacing of the lines on specimens of the type results in considerable size variation in the

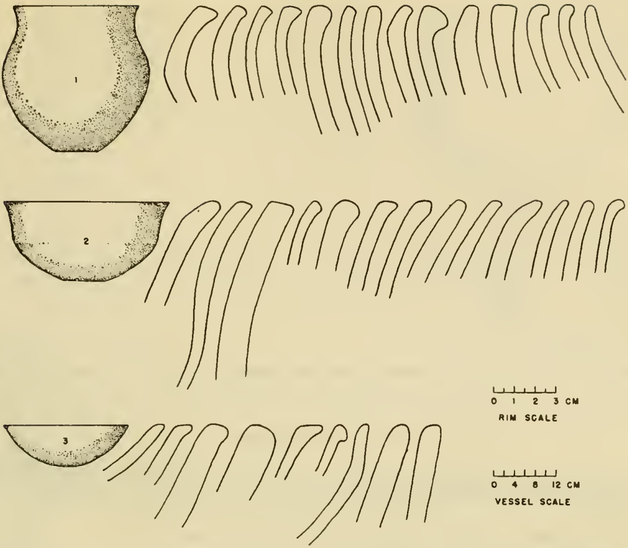

FIGURE 89.—Rim profiles and reconstructed vessel shapes of Kanashen Incised, Taruma Phase (Appendix, table 32).

hachure, but the dimensions are consistent on a single vessel. Incisions producing this motif tend to be slightly broader than the average for the pottery type as a whole. The design area is occasionally bounded by single, horizontal incised lines.

3. Zigzag (pl. 42, *a–f*). Short diagonal strokes are drawn alternately right and left to produce a vertically oriented pattern. The variation in care of execution is greater than in the preceding motifs, and sloppily executed examples are relatively frequent. The zig and zag lines may meet, overlap or fail to join. Adjacent lines may be markedly nonparallel. Lines vary greatly in width but are consistent on a single vessel. Occasional additional ornamentation above or below the incised area consists of rows of fingernail impressions and fingertip punctates.
4. Broad incisions or scrapings (pl. 42, *g–j*). Flat-bottomed incisions over 2 mm. wide are used to draw designs composed of squares, parallel or intersecting lines of variable spacing. The majority of the sherds are too small to reveal the overall arrangement in detail, but the standardized execution of the 3 previous motifs is not characteristic.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None. Both vessel shapes and design motifs show great consistency in their distribution through time (Appendix, table 32).

CHRONOLOGICAL POSITION OF THE TYPE: Kanashen Incised occurs throughout the Taruma Phase, except at the very earliest sites, in frequencies that fluctuate between 0.5 and 7.3 percent. It exhibits no clear-cut trend of increasing or decreasing popularity (fig. 101).

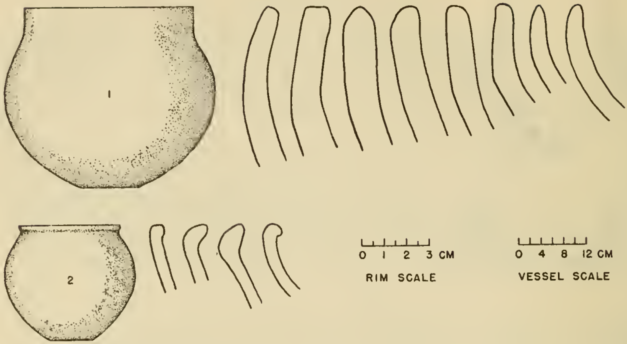

Figure 90.—Rim profiles and reconstructed vessel shapes of Kassikaityu Punctate, Taruma Phase (Appendix, table 33).

KASSIKAITYU PUNCTATE

Paste and surface: Predominantly on Yochó Plain paste, but occasionally on Kalunye Plain or Mawiká Plain; see those type descriptions for details.

Form:

Rim: Direct or slightly everted, with rounded or flattened lip.

Body wall thickness: 5–15 mm.

Base: The decoration is confined to the upper wall, so that in the absence of restorable vessels the associated bases cannot be identified. Since the majority of the decoration is on Yochó Plain, the bases are probably the common ones of that type.

Major vessel forms reconstructed from sherds:

1. Large, thick-walled jars, with rounded body, short collarlike neck, direct rim and rounded or flattened lip. Mouth diameter 22–38 cm. (fig. 90–1).
2. Rounded jars with upper walls insloping to slightly everted rim with rounded lip. Rim diameter 14–22 cm. (fig. 90–2).

Decoration (pl. 43):

Technique: The sherds included in this type have in common the fact that the decoration is produced by punching, poking or jabbing the surface repeatedly, producing a series of marks. However, the technique of their production is highly variable. Tools include the fingertip, fingernail, a pointed, square or triangular-ended stick and a split hollow cane, the latter giving a semicircular imprint. These were manipulated in a variety of ways. Fingertip marks may be depressions made by pressing with the finger approximately perpendicular to the vessel surface, or by pressing at an angle so that the clay is displaced into a low ridge beside the depression. The depth of such depressions is approximately 2 mm., and the height of the intervening ridges, when present, about the same. In rare instances, adjacent punctations have been made from opposite angles, so that the intervening ridge is alternately prominent and absent. Fingernail marks are thin, curved lines made by applying the nail perpendicularly to the surface. They occasionally occur simultaneously with fingertip punctates. Stick punctates are of two sorts: jabs 1–4 mm. deep (relatively constant on a single vessel) produced by application of the tool approximately perpendicularly to the surface; and gashes 1–2 mm. deep and 0.5–1.5 mm. long, made by applying the tool in short strokes. The latter might have been classified as a variety of incision, but the pattern of application is comparable to that of the true punctates and it is therefore considered as a variant of this general class of decoration.

Motif: Punctates of all the different types are typically applied in horizontal rows on the vessel neck, either immediately below the rim, or where the collar joins the body wall. Rarely, they are placed on a slightly raised rib. Occasionally only a single row appears; most frequently there are several rows forming a band 2–4 cm. wide. Thinner-walled body sherds, probably associated with vessel Form 2, have decoration extending down as far as the region of maximum diameter. Distance separating both individual punctates and successive rows is variable for the pottery type, but relatively consistent on a single vessel.

Temporal differences within the type: Temporal analysis of the punctate techniques indicates that nearly all occur simultaneously throughout the seriated sequence, confirming the impression that they are variants of a single type. The only technique absent from the lower third of the sequence is fingernail punctate, suggesting that it may be somewhat later than the others (Appendix, table 34). No vessel shape changes are evident in the small rim sherd sample (Appendix, table 33).

Chronological position of the type: Kassikaityu Punctate occurs in a frequency of less than 5 percent throughout the Taruma Phase sequence (fig. 101).

MANAKAKASHIN RED

Paste and surface: Predominantly on Yochó Plain paste, less frequently on Kalunye Plain and rarely on Mawiká Plain; see those type descriptions for details.

Form:

Rim: Direct, slightly incurved or slightly everted, with rounded lip.

Body wall thickness: 3–7 mm.

Base: None identified.

Major vessel forms reconstructed from sherds:

1. Relatively deep bowls, with steeply upcurving upper walls terminating in a direct rim, or less commonly changing direction 1–2 cm. below the rim and curving either inward or outward. Rim diameter 10–32 cm.; majority 16–24 cm. (fig. 91–1, *top*).
2. Rounded jars with walls incurving to direct rim with rounded lip. Mouth diameter 20–24 cm. (fig. 91–2, *top*).

Decoration (pl. 44, *e–j*):

Technique: A dark, rich-red paint was applied to the vessel surface. Sherds exhibit variation from a trace of color to a film concealing the orange-tan undersurface completely, but this appears to be largely the result of differential erosion. No smoothing or brushing marks are visible.

Motif:

Application of the paint to cover one surface is typical; usually on the interior of bowls and the exterior of jars. The color may stop at the edge of the lip, or continue over the rim top to the opposite margin. On bowls it sometimes continues 1–2 cm. down the exterior wall. One bowl rim sherd is red on both exterior and interior. Bowls

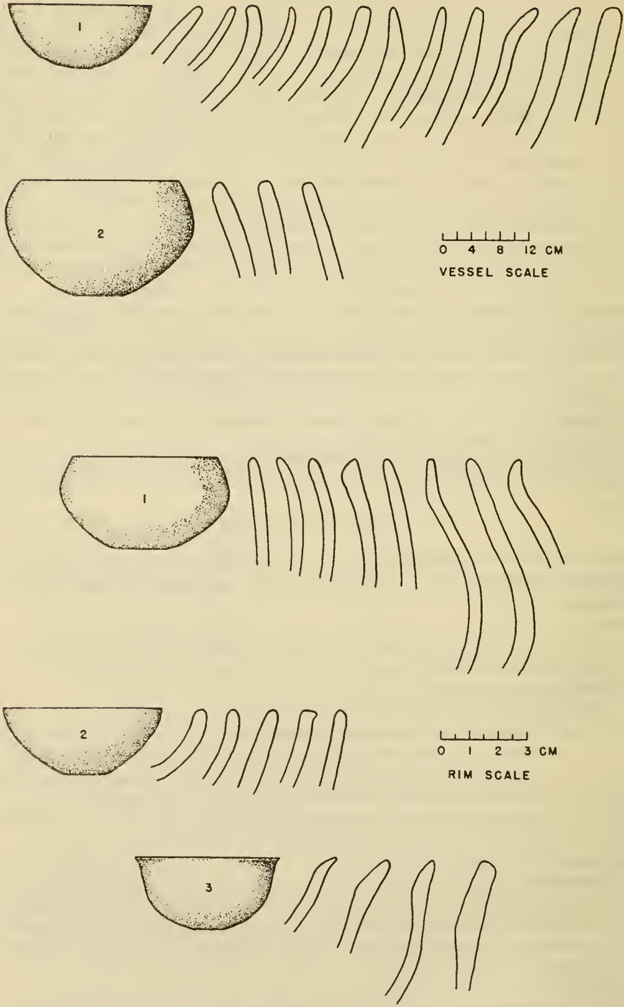

Figure 91.—Rim profiles and reconstructed vessel shapes of Taruma Phase decorated pottery types. *Top:* Manakakashin Red (Appendix, table 33). *Bottom:* Manakakashin Red-on-White (Appendix, table 33).

being the most frequent form, the majority of the body sherds are red on the interior. In the absence of complete jars or even large fragments, it is impossible to say whether the red covers the entire exterior or only the upper portion on this form. No bases were included in the small sample.

A rare form of Manakakashin Red has the color applied in bands or stripes rather than over the whole surface. A small sherd of Vessel Form 2 has the lip painted red, and two bands 7–8 mm. wide running horizontally on the upper exterior about 8 mm. apart. They begin to curve downward at one edge, suggesting that the motif was not simple parallel stripes. Two sherds from Vessel Form 1 have paired stripes, 3–5 mm. wide, running vertically on the interior.

Occasional sherds have additional decoration in the form of a row of diagonal gashes along the lip or on the exterior just below the margin of the red painted area (pl. 44, *g–i*).

TEMPORAL DIFFERENCES WITHIN THE TYPE: Decoration in the form of bands occurs only in the early third of the Taruma Phase. No trends are discernible in vessel shape (Appendix, table 33).

CHRONOLOGICAL POSITION OF THE TYPE: Manakakashin Red occurs sporadically throughout the Taruma Phase, but exhibits a marked increase in popularity in the latter third of the sequence (fig. 101).

MANAKAKASHIN RED-ON-WHITE

PASTE: All paste features are typical of Yochó Plain, Kalunye Plain, and Mawiká Plain, all of which were used for this type of decoration; see those type descriptions for details.

SURFACE: Unslipped surfaces are representative of the range in the plain wares and do not show any unusually careful treatment.

Slip:

Color: White to cream.

Treatment: Applied in sufficient thickness (maximum 0.5 mm.) to be readily distinguished and to form a distinct layer on the surface. Adhesion to the underlying sandy surface is generally good and there is hardly any tendency to slough off. No smoothing marks evident. Surface is relatively smooth and even. A few sherds have a waxy coating over the painted surface, perhaps resulting from the application of a resin to the surface after firing, as the Wai Wai do today.

Hardness: 2.5–3.

FORM:

Rim: Typically direct, occasionally thickened on exterior or interior.

Body wall thickness: 4–6 mm.

Base: Flat.

Major vessel forms reconstructed from sherds:

1. Rounded jars with flattened bottom, walls curving outward to rounded slightly angular shoulder, then inward to direct or slightly upturned rim with rounded lip. Mouth diameter 16–26 cm. (fig. 91–1, *bottom*).
2. Bowls with flattened bottom, upcurving or upslanting walls, direct rim and rounded lip. Rim diameter 20–26 cm. (fig. 91–2, *bottom*).
3. Bowls with flattened bottom, upcurving walls interiorly thickened 1.5–2.5 cm. below the rim and then tapering to the rounded, pointed, or slightly flattened lip. Rim diameter 18–22 cm. (fig. 91–3, *bottom*).

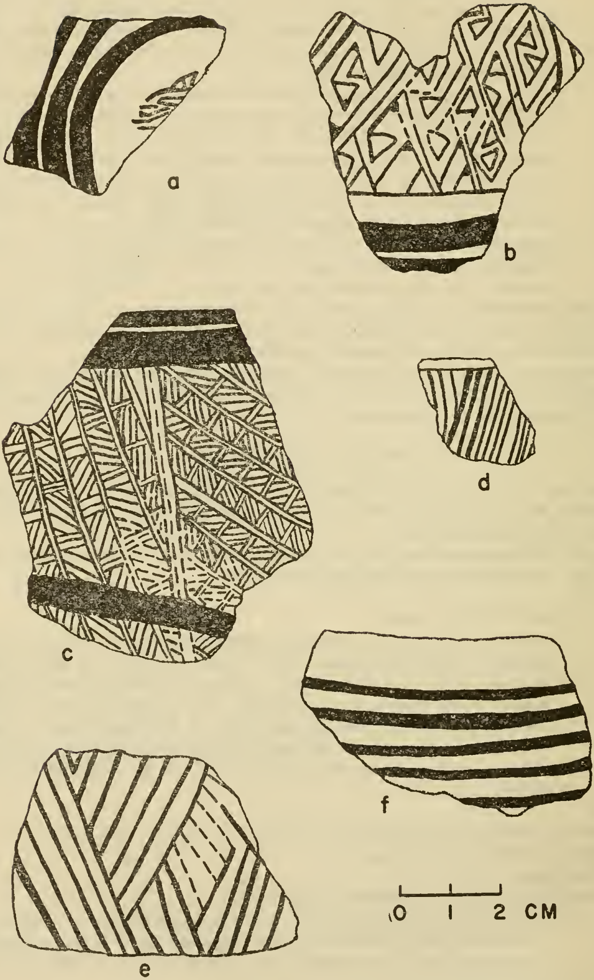

Figure 92.—Manakakashin Red-on-White, Taruma Phase. *a–c*, Motif 1: intricate overall patterns. *d–f*, Motif 2: zoned, parallel lines.

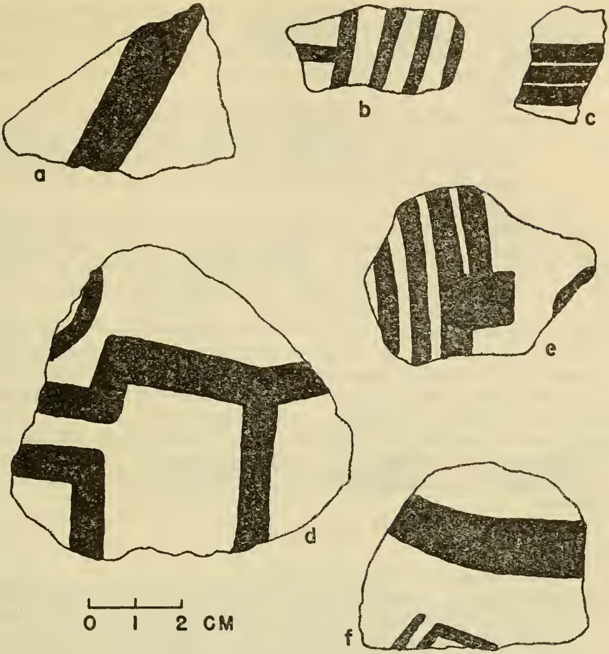

FIGURE 93.—Manakakashin Red-on-White, Taruma Phase. *a–f*, Motif 3: broad lines.

DECORATION (figs. 92, 93; pl. 45).

Technique: Thick, dark-red paint applied to white-slipped surfaces in lines. On some sherds, all or parts of the painted lines are black; however, close examination of the underlying pigment indicates that this discoloration is an accidental alteration of the normally red paint, either as a result of firing or of chemical action in the ground. Width of the lines varies from 0.5–10.0 mm., with the extremes not normally present on the same sherd. Execution is typically careful, without overshot junctions of the lines. Parallel lines approach true parallelism and inequalities in spacing are not pronounced. Although broader-lined designs have suffered more from erosion, it appears that they were originally less carefully executed than the fine-line designs.

Motif: Red-on-white designs are normally placed on the exterior, although a few sherds have this decoration on the interior surface in addition to or instead of on the exterior. In the remainder the interior is plain or covered with a red wash. Three major types of motif occur with approximately equal frequency:

1. Intricate, delicate, all-over patterns of small, concentric diamonds, triangles and intervening parallel lines (fig. 92, *a–c;* pl. 45, *a*, *c*, *d*). In one case squares and triangles are filled with parallel lines. The

painted lines are 0.5–1.0 mm. in width, 0.5–2.0 mm. apart, carefully and precisely drawn. On a single sherd, width and spacing of lines show little variation. On one sherd, the lower edge of the motif is bordered by two parallel, broad (5 mm.), red-painted bands.

2. Zoned, parallel lines, arranged in a manner comparable to this motif in Kanashen Incised (see p. 216; pl. 41, *a–e*). Red-painted lines are 0.5–2.0 mm. wide and 0.5–3.0 mm. apart; with the finer lines correlated with the narrower spacing (fig. 92, *d–f;* pl. 45, *b, e, g–h*).
3. Designs composed of broad lines, 3–12 mm. wide (fig. 93, *a–f;* pl. 45, *f, i*). Parallel bands and large squares occupy large areas with no additional painting evident. Most of the sherds are too small to show more than a few lines, giving little indication of the characteristics of the total design.

Temporal differences within the type: Although a number of sherds were too eroded for classification by design motif, the distribution of the remainder through time (Appendix, table 34) suggests that Motif 1 is later than the other two types of design, both of which are somewhat cruder and simpler. No trends are evident in vessel shape (Appendix, table 33).

Chronological position of the type: Manakakashin Red-on-White occurs throughout the Taruma Phase in a highly erratic frequency, but shows a slight tendency toward increasing in popularity in the latter half of the sequence (fig. 101).

MAWIKÁ PLAIN

Paste:

Method of manufacture: Probably coiling.

Temper: Cariapé; fragments of siliceous cellular structure readily visible to the naked eye especially on eroded surfaces, although there is a gradation to small particles identifiable only under magnification. Quantity varies considerably, some sherds showing only one or two particles, others having large amounts. Fine sand is also present, but it could not be determined whether this was intentionally added as temper or the result of use of a naturally sandy clay.

Texture: Sandy but not friable. Compact, with small to medium air pockets due to poorly kneaded clay.

Color: Majority tile orange to red orange, but occasional sherds have brownish-gray to gray core.

Firing: Oxidized, typically completely.

Surface:

Color: Tan to orange tan to tile orange.

Treatment: Smoothed but not even. Majority badly eroded, so that details are obscured.

Hardness: 3–3.5.

Form:

Rim: Direct, with rounded or flattened lip.

Body wall thickness: Cont ιiners, 5–12 mm.; griddles, 1.1–2.5 cm.

Base:

A. Flat, unthickened or slightly thickened, joining sidewalls at an angle of 30–40 degrees or 70 degrees. Diameter 8–10 cm. (fig. 94, *A*).

B. Pedestal, rising vertically 1.0–1.2 cm. before joining outflaring sidewall. Interior surface slopes gradually from base to wall. Diameter 14 cm. Exterior very uneven (fig. 94, *B*).

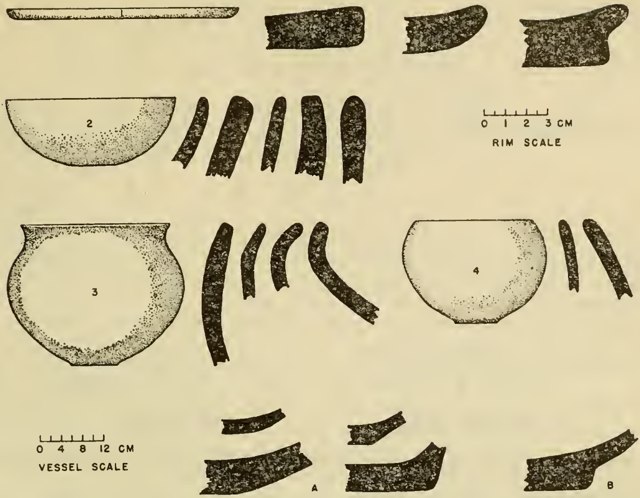

FIGURE 94.—Rim and base profiles and reconstructed vessel shapes of Mawiká Plain, Taruma Phase.

Major vessel shapes reconstructed from sherds:

1. Griddles with irregular bottom, smooth upper surface, and upturned or slightly thickened rim. Diameter 30–60 cm. (fig. 94–1).
2. Deep bowls with upslanting to nearly vertical walls, direct rim, rounded to flattened lip. Rim diameter 12–38 cm.; majority 28–38 cm. (fig. 94–2).
3. Rounded jars with constricted neck and slightly everted rim with rounded to flattened lip. Rim diameter 20–36 cm. (fig. 94–3).
4. Rounded jars, walls incurving to direct rim and rounded lip. Rim diameter 20–26 cm. (fig. 94–4).

TEMPORAL DIFFERENCES WITHIN THE TYPE: Sample too small for determination.

CHRONOLOGICAL POSITION OF THE TYPE: Present evidence suggests that Mawiká Plain is absent from the earliest part of the Taruma Phase. Thereafter, it appears in small frequencies at scattered sites, reaching a popularity of more than 10 percent only at E–10, near the middle of the sequence (fig. 101).

ONORO STAMPED

PASTE AND SURFACE: Predominantly on Yochó Plain paste, with a few on Kalunye Plain; see those types for details. All features are typical, except that this decoration is not found on the extreme form of coarse-tempered paste found in Yochó Plain.

FORM:

Rim: Everted with pointed lip; rarely, direct or thickened with flattened or rounded lip.

Body wall thickness: 3.5–7.0 mm.; increasing to 5.0–7.5 mm. at the decorated band.

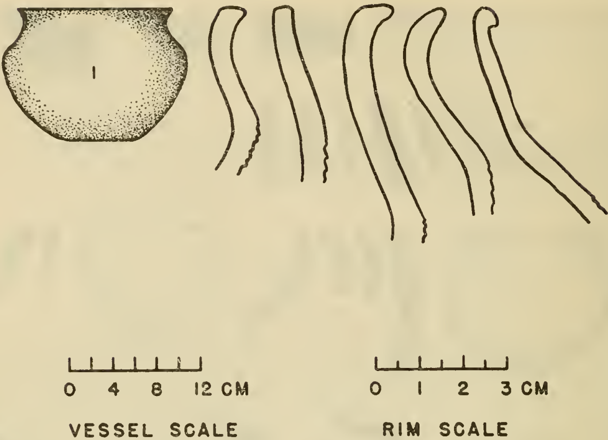

FIGURE 95.—Rim profiles and reconstructed vessel shapes of Onoro Stamped, Taruma Phase.

Base: Flat.

Major vessel forms reconstructed from sherds: All rims are a variant of the same form, a small jar with a rounded or angular shoulder, nearly vertical to insloping neck, and everted or direct rim with pointed, rounded or flattened lip (fig. 95–1). Rim diameter 11.5–18.0 cm.; diameter at shoulder, 14–32 cm.; base diameter (1 sherd), 18 cm. The decoration is applied in a band at the maximum diameter when the shoulder is rounded, or just above the band when it is angular. The base fragment has a narrow band of decoration at the junction with the wall.

DECORATION (pl. 46):

Technique:

After smoothing of the entire vessel surface, a thin (1–2 mm. thick) band of clay was added at or just above the point of greatest body diameter. Because of the dryness and smoothness of the underlying surface, the adhesion is not always good. This band, which varies between 1 and 3 cm. in width in the type, but is uniform on a single specimen, was decorated while the clay was still fairly wet by rolling the surface with a nut of Murity or Moriche palm (*Mauritia flexuosa*). This produces a pattern of diamond-shaped depressions separated by thin, low ridges, representing the negative impression of the nut, the surface of which has diamond-shaped raised areas separated by fine grooves. The clarity of the pattern suggests that the nut was rolled continuously around the vessel in the manner of a roller stamp. Variations in the size of the nut give variations in the dimension of the impressions on different sherds. Typical measurements of the diamonds are 3 by 5 mm., 5 by 6 mm., 4 by 5 mm. Depth averages 1 mm.

A rare variant of Onoro Stamped is produced by using a stick with a flat end 2.0–3.5 mm. wide. This was dragged diagonally across the applique strip and jabbed every 3–5 mm. The general effect is comparable to the stamping, but the details are distinct (pl. 46, *f*, *i*).

Motif: The decoration was typically applied in a continuous band around or just above the waist of the vessel. The details reflect the characteristics of the surface of the palm nut used as a roller stamp. One base has a narrow row of stamping around the exterior at the junction with the body wall.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE: Onoro Stamped occurs in minor amounts throughout the Taruma Phase (fig. 101).

YOCHÓ PLAIN

PASTE:

Method of manufacture: Coiling; a number of sherds show coil line cleavage.

Temper: Abundant, large particles of decomposed granite containing quartz and mica, not always well distributed. Particles are typically larger than 1 mm., frequently reaching 6 mm. (pl. 47, *i*). No correlation between temper size and sherd thickness; temper is as gross in sherds 7 mm. thick as in those 20 mm. thick. Hunks of decomposed granite from which this temper was derived were found at a number of Taruma Phase sites (Appendix, table 29).

Texture: Poor kneading of the clay has resulted in a striated appearance of the cross section and occasional crevicelike air pockets 2–7 mm. long. Smaller temper particles give sandy texture.

Color: Typically bright orange through cross section; rarely, light gray, medium gray, dark gray, or creamy white. Thinner sherds sometimes banded, with medium-gray core fired orange on both surfaces, or with a gray band along one surface and orange in the rest of the cross section.

Firing: Incomplete to complete oxidation.

SURFACE:

Color: Cream, light orange, orange brown or brown, the color varying little on a single sherd; occasional black fire clouding.

Treatment: Variable. Well smoothed and even surfaces, especially on thin-walled vessels and griddle interiors. Griddle exteriors may be smoothed like interior or left rough and uneven. Pits, scars, and other small defects remain on surfaces of larger vessels. Occasional coarse smoothing tracks on interior parallel to rim.

Hardness: 2.5–3.

FORM:

Rim: Direct, everted, exteriorly thickened or interiorly thickened, with rounded, flattened, beveled, or pointed lip. Typically uneven and irregular, with the angle of the wall varying considerably on opposite edges of the same sherd.

Body wall thickness: 4–20 mm.; majority 6–8 mm.

Body diameter: 18–52 cm. at carination; majority 22–34 cm.

Base: Generally poorly finished on exterior, consequently uneven and in Forms A and B not well flattened.

A. Flat, joining sidewalls at angle of 35–40 degrees or 60–65 degrees. Thickness may be equal to, greater, or less than body wall. Point of junction may be thickened on interior. Diameter 6–20 cm.; majority 8–16 cm. (fig. 96, *A*).

B. Slight pedestal, formed by a short upslope before the junction with the body wall. Height of rise is 3–12 mm. Body wall joins the pedestal at an angle of 25–35 degrees or 50 degrees. Diameter is 6–16 cm. (fig. 96, *B;* pl. 47, *g*).

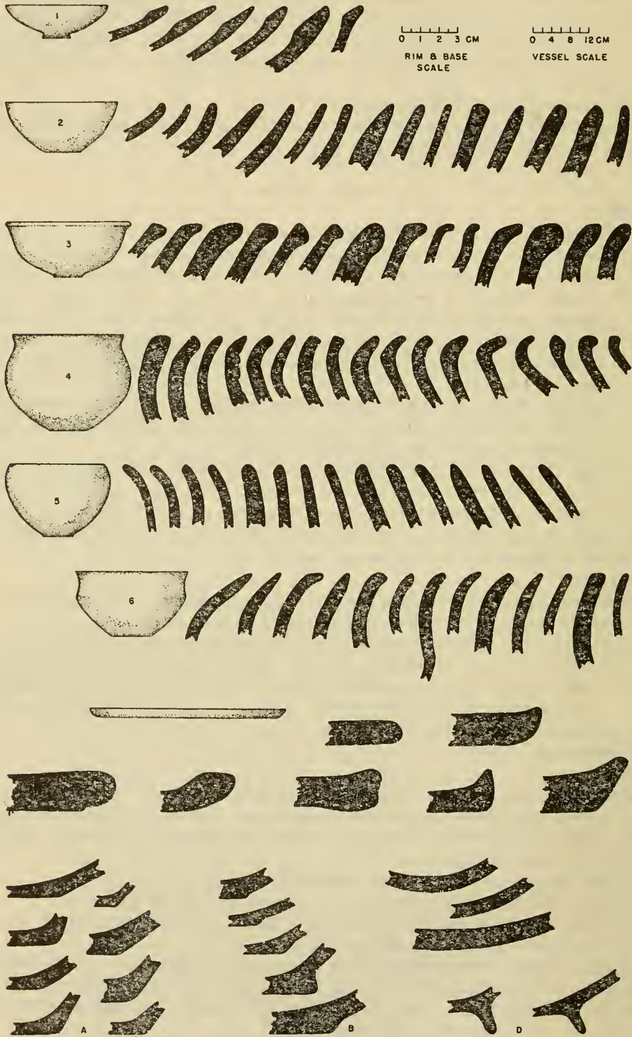

FIGURE 96.—Rim and base profiles and reconstructed vessel shapes of Yochó Plain, Taruma Phase (Appendix, table 35).

C. Rounded and unthickened or slightly thickened. One example has a series of perforations 3 mm. in diameter clustered in the center (fig. 96, *C*).

D. Annular, outflaring, with rounded lower edge. Height 1–2 cm.; diameter at lower edge 6–12 cm. (fig. 96, *D*; pl. 47, *f*).

Major vessel shapes reconstructed from sherds: In the absence of any complete or restorable vessels of Yochó Plain, the analysis of form had to be made from rims, bases, and diagnostic body sherds. Coincidences in the distribution of rim and base forms give clues to the possible association (Appendix, table 35). This evidence suggests 7 major vessel shapes:

1. Rounded, shallow bowls, with walls thickened on the interior 1.2–2.5 cm. below the lip, and tapering toward the lip, producing a flat band around the rim interior. Rounded or pointed lip. Rim diameter 16–28 cm. The temporal distribution of this form parallels that of the annular base, suggesting that they belong to the same vessel shape (fig. 96–1).
2. Shallow to deep bowls with outslanting or upcurving walls and direct rim with rounded, flattened or pointed lip. Diameter 12–44 cm.; majority 14–32 cm. (fig. 96–2).
3. Bowls with upslanting to nearly vertical walls. Rims are everted or exteriorly thickened, often producing a flat rim top. The lip is rounded. Rim diameter 8–44 cm., majority 20–30 cm. (fig. 96–3).
4. Globular jars with short everted neck or exteriorly thickened rim, rounded lip. The thickened and everted forms both occur throughout the seriated sequence, suggesting they are variants of a poorly standardized rim treatment. Rim diameter 10–38 cm.; majority 18–30 cm. (fig. 96–4).
5. Globular jars with direct rim incurving to rounded or beveled lip. Rim diameter 10–30 cm. (fig. 96–5).
6. Deep bowls or jars with concave or outcurving upper wall, everted rim and rounded, flattened, or pointed lip. The lower edge of one rim sherd extends down to a mild carination, indicating that body sherds with this form are associated with these rims. Rim diameter is 6–42 cm., majority 18–28 cm. (fig. 96–6).
7. Large, flat, circular griddles, with no standardized rim treatment. Variations include an upturned edge, interior thickening, expanding thickness at the rim, and direct rim. Thickness 1.1–2.8 cm., rim diameter 32–52 cm. (fig. 96–7; pl. 47, *h*).

Occasional decoration (pl. 47):

Applique: Ribs or small nubbins occur just below the rim on Form 2, or on body sherds. Height of projection is 3–5 mm. Nubbins are 1.0–1.5 cm. in diameter. Examples are rare.

Nicks: Rims of Form 2 occasionally have a row of small nicks along the lip, 1–5 mm. wide, 3–5 mm. deep and irregularly spaced 2–8 mm. apart. Examples occur scattered throughout the entire seriated sequence.

Unsmoothed coils: A few body sherds and rims of Form 4 and Form 5 have unsmoothed coils on the exterior, extending downward from the rim (pl. 47, *a–d*).

Fingertip impressions: A few griddles have a row of decorative fingertip impressions along the outer rim edge (pl. 47, *e*).

Temporal differences within the type: Vessel Form 1 is limited to the lower half of the sequence, and Form 3 to the upper two-thirds. Form 5 appears to be absent from the latest sites. Base Form D is characteristic of the lower half of the sequence, while Form C occurs only in the latter part of the Phase. (Appendix, table 35.) Occasional decoration of unsmoothed coils and applique is absent in the upper third of the seriated sequence.

Chronological position of the type: Yochó Plain is the dominant pottery type in the early part of the Taruma Phase. Although it declines in popularity, it is present in all sites (fig. 101).

Pottery Artifact Types

Pot rests (fig. 97).—A considerable number of irregularly shaped lumps of pottery occur in most Taruma Phase sites. The larger fragments have one or more finished surfaces indicating that they are parts of solid pot rests in the shape of a truncated cone (fig. 97, *c–f*). The paste varies greatly. Some resemble Yochó Plain, with abundant, coarse temper; a few are like Kalunye Plain, with fine, compact paste; others have an extremely sandy composition and crumble easily; some have a striated pinkish-orange and whitish structure with no temper particles evident. This variation suggests that pot rests were made from whatever materials were most available. If there was clay remaining from pottery manufacture, it was used; if not, a substitute was employed, probably clay from the nearest suitable riverbank.

Workmanship also varies greatly. Some examples are well made, with symmetrical form, smoothed surface, and occasional ornamentation on the top by fingertip impressions (fig. 97, *a*, *b*). Others are so sandy and so poorly kneaded that they have crumbled into irregularly shaped lumps. Although generally conical, the slope of the wall and the angle of junction with top or bottom vary considerably. Diameter of the upper end, which typically is slightly convex, is 6–14 cm. Diameter of the lower end, which typically is flat, is 8–16 cm., with the majority 12–16 cm. The walls instead of being straight are slightly to markedly concave on most examples, flaring outward at both top and bottom. A few fragments appear to have come from vertical-sided or tubular pot rests 6–14 cm. in diameter.

The majority of the end fragments are plain. However, two fragments, one from E–15 and one from E–16, are unusual in both shape and decoration. They appear to be from the upper end, which instead of having the typical slightly convex contour is flat or slopes upward at an angle of 40 degrees. One has a depression in the center 4 cm. in diameter and 2.7 cm. deep, undercut at the edges so that the bottom is larger than the orifice (fig. 97, *a*). The 5 cm. wide, sloping edge of the top is decorated with short, curved grooves and dotlike depressions, both made with the fingertip. From a maximum diameter of 12 cm. at the end, the walls incurve strongly toward the body, which is broken off at a length of 6.5 cm. The diameter here is 8 cm. The second example is similar in general form but larger,

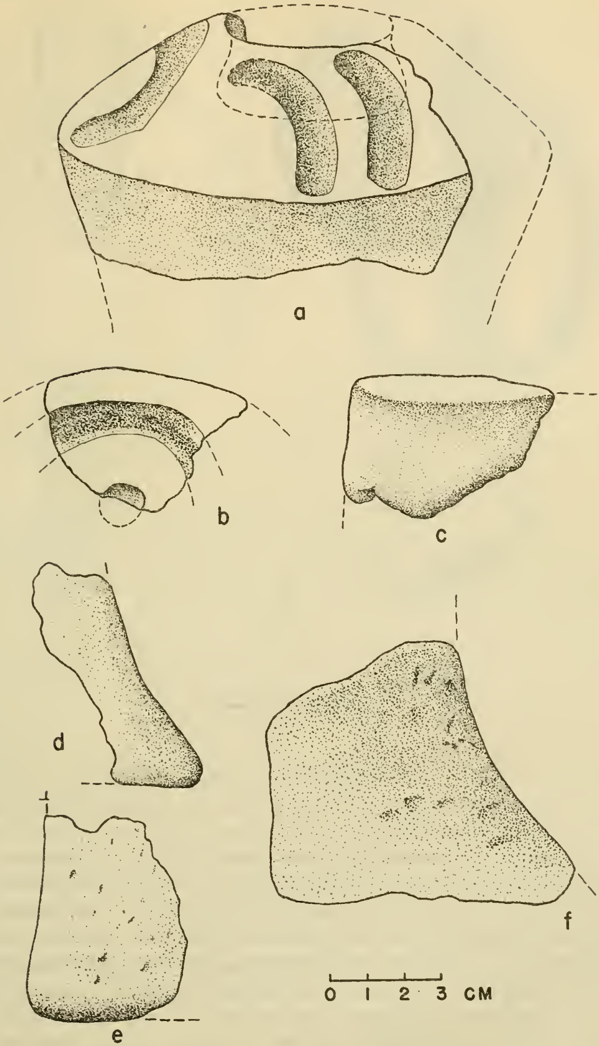

FIGURE 97.—Fragments of Taruma Phase pot rests. *a–b*, Top with grooves made by fingers. *c*, Flat top. *d–f*, Basal fragments.

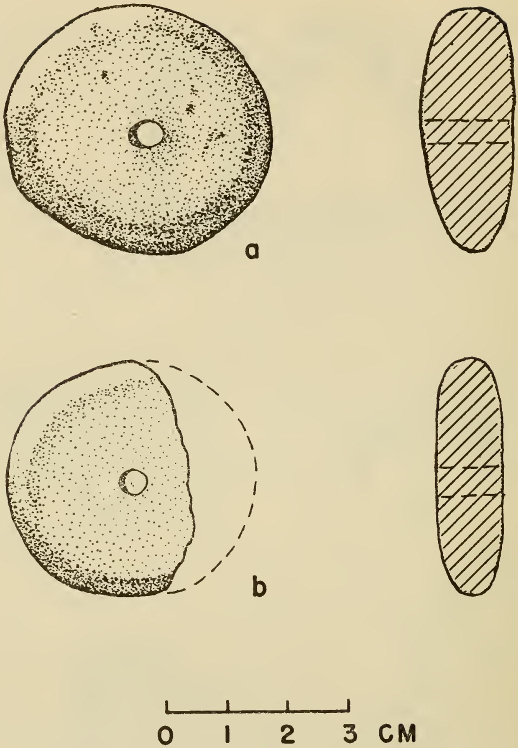

Figure 98.—Pottery spindle whorls of the Taruma Phase.

with an existing height of 12 cm., and an upper end diameter of 16 cm. On this fragment, after incurving strongly, the sidewalls continue straight downward with a diameter of 13 cm. The center of the top is broken out so that the existence of a central depression cannot be established. The edge of the sloping top is ornamented with fingertip impressions producing circular depressions and long grooves (fig. 97, *a–b*). A third very small fragment from E–3 seems to be part of a flat top. It is also decorated with finger-drawn grooves and dots. Diameter of the upper edge is 14 cm.

The present-day Wai Wai Indians, who have replaced the Taruma Phase in the upper Essequibo area, utilize pot rests of similar size and form (pl. 50), judging from the fragmentary Taruma Phase examples. These are generally 15 to 16 cm. tall and occasionally

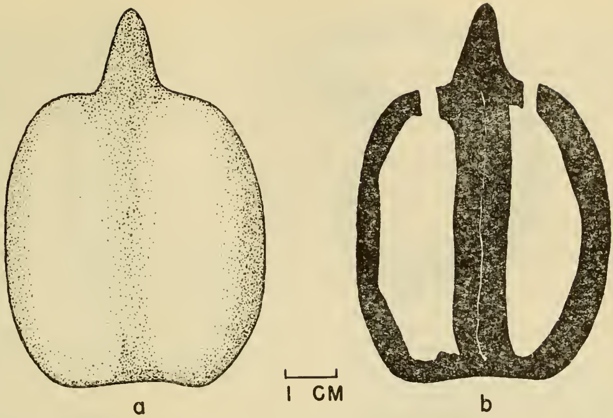

FIGURE 99.—Pottery whistle of the Taruma Phase. *a*, Side view. *b*, Cross sectional view made from an X-ray of the specimen.

decorated with fingertip impressions on the top. They are used in threes to support cooking pots over a fire.

Spindle whorls (figs. 98, 100).—Two spindle whorls in the form of thick disks perforated through the center came from the surface of E–1. They are generally symmetrical but not perfectly circular. The faces are slightly convex, and taper toward the edges. The complete specimen is Yochó Plain. It has a diameter of 4.0 by 4.4 cm., and a thickness at the center of 1.4 cm. The perforation is 4.0 by 4.5 mm. on one surface and 5 mm. in diameter on the other. The other example has one edge broken off. It is Kalunye Plain, 3.9 cm. in diameter and 1.0 cm. thick. The perforation is 5 mm. in diameter on both surfaces, and was made by poking a stick through the damp clay before firing.

A small, badly eroded disk made from a sherd and drilled somewhat off-center, may also be a spindle whorl (fig. 100, *a*). Existing diameter is 2 cm., thickness 5 mm. The biconically drilled perforation is 5 mm. in diameter. A second small, approximately circular, worked sherd, 2.3 by 2.5 cm., and lacking a perforation, may be an unfinished spindle whorl (fig. 100, *b*).

Whistles (fig. 99).—Several small, thin-walled, irregularly shaped but sharply curved sherds would have remained unclassified except for their resemblance to pottery whistles in the ethnographic collection in the University Museum, Philadelphia, made from the Taruma Indians before their extinction. The complete whistles have two

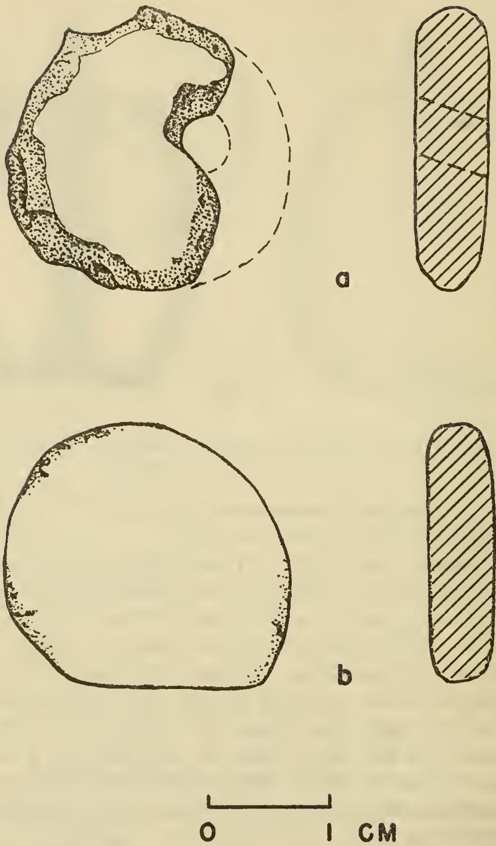

Figure 100.—Worked sherds, Taruma Phase. *a*, Badly eroded drilled disk, probably used as a spindle whorl. *b*, Unfinished spindle whorl (?).

elongated, pecan-shaped, parallel chambers joined by a narrow "bridge," at one end of which is a small, projecting, somewhat conical mouthpiece (fig. 99, *a*). A small perforation on each shoulder opens into the chambers (fig. 99, *b*). These whistles vary from 4.0–8.5 cm. in length, 4–8 cm. in width, and 2.2–4.0 cm. in thickness. Of the four sherds possibly belonging to this type of whistle, three are Yochó Plain paste (one with white slip) and one is Kalunye Plain. They are from E–7, cut 2, level 0–8 cm.; E–3, surface; E–10, cut 1, level 0–8 cm., and E–30, cut 1, level 16–24 cm.

Objects of European Origin

Five of the Taruma Phase sites produced objects of European origin, attesting to the existence of sporadic contact. This material was examined by C. Malcolm Watkins, Museum of History and Technology, Smithsonian Institution; the descriptions are given in table H.

Table H.—*Objects of European origin from Taruma Phase sites*

Site	Object	Quantity	Remarks
E-1	Sherds of brown earthenware	2	Not diagnostic.
E-8	Sherds of white earthenware	2	Narrow green line along edge where rim joins bowl.
E-9	Square iron nail	1	Length 5.5 cm.
E-18	Fragments of clear glass bottle	4	Not diagnostic.
	Fragments of badly rusted iron.	3	Possibly from a gun?
E-28	Small sherds of clear glass	2	Probably mirror fragments.
	Small sherd of thick, olive-green bottle glass	1	Not diagnostic.
	Opaque glass "seed" beads	131	White, light blue, dark blue and pink. Donut-shaped; diameter 1.0–1.5 mm.; 0.5–1.0 mm. thick; hole 0.5 mm. in diameter. Fragments of cotton thread from stringing. Probably from a bead apron.

THE SITE SEQUENCE AND ITS IMPLICATIONS

The seriation of Taruma Phase sites (fig. 101) is based on the analysis of 16 stratigraphic excavations in 11 habitation sites. All show the same general trend: a decline in the frequency of Yochó Plain and an increase in the frequency of Kalunye Plain. Interdigitation of the levels of these cuts, and seriation into this framework of those sites represented by single levels or single collections, results in a relatively smooth pattern of change in the two plain types from the beginning to the end of the Phase. At the earliest site, Yochó Plain, with coarse, crushed granite temper, comprises 96 percent of the pottery sample. From this maximum, it declines to 17.8 percent at the latest site in the sequence. Kalunye Plain shows the opposite trend, increasing from a low of 3.3 percent to a high of 75.1 percent during the same period. The third plain type, Mawiká Plain, with cariapé temper, is sporadic in occurrence, but most abundant near the middle of the seriated sequence. Its presence in only a few sites might be taken as evidence of trade or perhaps intermarriage with a woman from a group with different ceramic tradition were it not for the fact that the characteristic types of decoration for the Taruma Phase occur occasionally on cariapé-tempered pottery. This suggests that Mawiká Plain is a Taruma Phase ware, rather than one acquired by trade, although it may be a reflection of alien influence.

The decorated types of the Taruma Phase comprise 7.7 percent of the total sherds. Decoration is generally well executed and applied in a series of well-defined techniques and consistent motifs. Kana-

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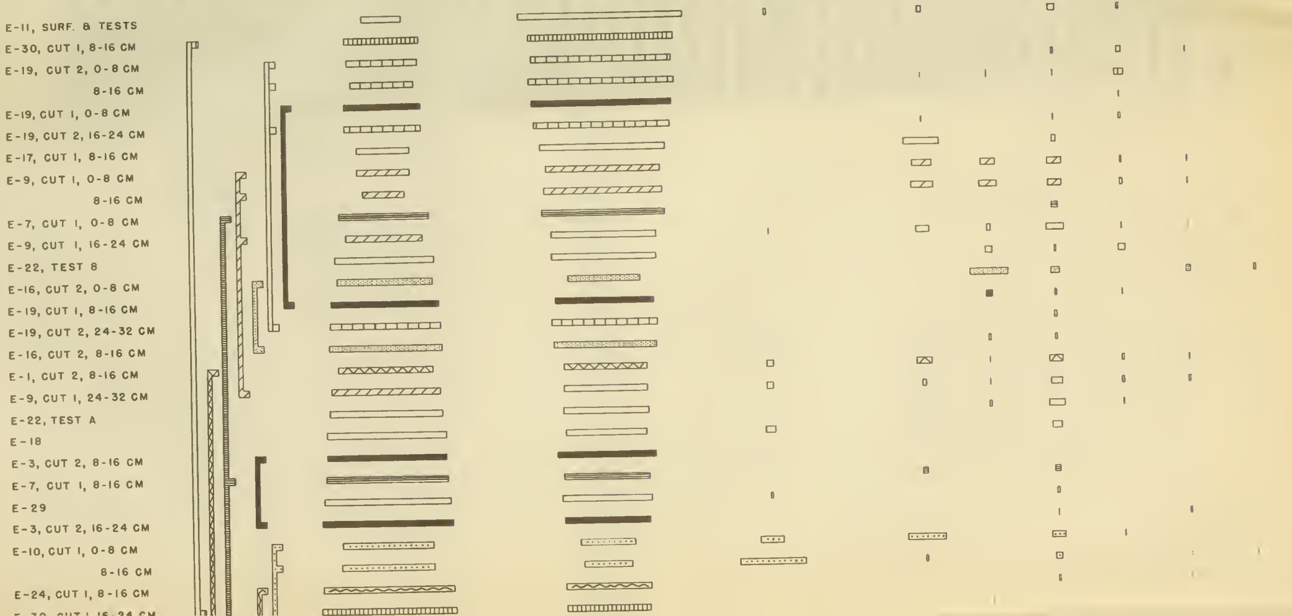
shen Incised is characterized by a series of clear-cut and standardized patterns composed of zoned parallel lines, crosshatch, or zigzag lines. Onoro Stamped is a unique and highly distinctive ornamentation produced by using the nut of the Murity palm as a roller stamp. Kassikaityu Punctate employs a wide variety of techniques, but the arrangement of the punctates follows a similar pattern of successive rows forming a band, usually below the rim. Manakakashin Red-on-White has three major motifs. Manakakashin Red has a red wash applied to one vessel surface. Of these types, only Manakakashin Red-on-White and Manakakashin Red show a slight tendency to increased popularity in the latter part of the Phase (fig. 101). The remainder exhibit a remarkable degree of consistency in both technique and frequency from the earliest to the latest levels, making them valueless as time markers. It would have been impossible to determine the relative antiquity of the various sites without the detailed percentage analysis of the plain wares.

Rim and base forms show little variation, perhaps because of the small size of the sample per level. Only in the plain pottery types can a few temporal differences be recognized. Yochó Plain Form 1, a bowl with an interiorly thickened rim, occurs only in the early half of the sequence. Yochó Plain Form 3, a deep bowl with an exteriorly thickened or slightly everted rim, is absent from the lower third of the sequence. Kalunye Plain Form 4, a globular jar with an everted rim, is also absent from the lower third of the sequence. Kalunye Plain Form 4, a globular jar with an everted rim, is restricted to the upper third of the sequence. In both of these plain types, annular bases are early and rounded ones are late, whereas flat and slight-pedestal bases are found throughout the Phase. The absence of flat bases in Kalunye Plain in the early part of the seriation probably reflects the relative rarity of that pottery type at that time, and the reduced possibility of base sherds occurring in a small sample, rather than the actual absence of the form.

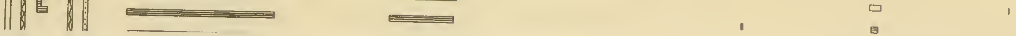
The majority of the remains of cultural significance other than potsherds are too rare to permit a temporal analysis even in terms of presence or absence. Those frequently encountered include pot rests and two kinds of raw materials: decomposed granite used to temper Yochó Plain, and felsite chips or cores from which cassava grater teeth were made. The distribution of these items indicates that the objects they reflect were present throughout the Phase (Appendix, table 29).

Analysis of the site descriptions and the site seriation brings out several characteristics of the Taruma Phase settlement pattern. The majority of the village sites are surrounded by large field clearings, the exceptions being cases where the hilltop was too small to permit


E-11, SURF. & TESTS
E-30, CUT 1, 8-16 CM
E-19, CUT 2, 0-8 CM
8-16 CM
E-19, CUT 1, 0-8 CM
E-19, CUT 2, 16-24 CM
E-17, CUT 1, 8-16 CM
E-9, CUT 1, 0-8 CM
8-16 CM
E-7, CUT 1, 0-8 CM
E-9, CUT 1, 16-24 CM
E-22, TEST B
E-16, CUT 2, 0-8 CM
E-19, CUT 1, 8-16 CM
E-19, CUT 2, 24-32 CM
E-16, CUT 2, 8-16 CM
E-1, CUT 2, 8-16 CM
E-9, CUT 1, 24-32 CM
E-22, TEST A
E-18
E-3, CUT 2, 8-16 CM
E-7, CUT 1, 8-16 CM
E-29
E-3, CUT 2, 16-24 CM
E-10, CUT 1, 0-8 CM
8-16 CM
E-24, CUT 1, 8-16 CM

E-7, CUT I, 16-24 CM

F-23



cultivation. The excessive size of some former clearings suggests that the Taruma followed the same practice as the present-day Wai Wai in progressively extending the field (figs. 80, 83–85). Where the land area is sufficient, the Wai Wai field is first cleared next to the new house. As the yield begins to decline, the adjacent area is planted. It is only after suitable land in the immediate vicinity has been exhausted that a more distant location is farmed. This stage may be accompanied by the moving of the village if the distance is great enough. That the Taruma followed a similar practice is suggested by the fact that field clearings with habitation refuse tend to be larger than those not associated with villages. Only one independent field clearing reached 200 by 100 meters, whereas nine of those adjacent to villages were as large as this or larger, and only four were smaller.

A puzzling factor in a number of the sites is the thickness of the sterile layer at the surface. This was frequently 8 cm. All of the sites are on high places, well above maximum flood level, which rules out the possibility of silt deposition subsequent to habitation. All are on the summit rather than the slope of the hill, eliminating sheet erosion as the explanation. This sterile overlay is present sporadically in sites throughout the sequence, rather than the early ones alone, indicating some factor other than time is responsible. Inquiry among botanists and geologists in the British Guiana Government service brought no clear-cut solution to this problem. Although it would be of interest to know the cause, the answer is not essential since the responsible factor apparently is unrelated to the Taruma Phase culture or its antiquity in the upper Essequibo area.

Seriation of the various strata cuts reveals that a number of the sites were occupied more than once. The large discrepancy in seriated position between Cut 1 and Cut 2 at Sites E–3, E–7, E–9, and E–16 is accountable only by this interpretation (fig. 101). If the whole site had been simultaneously inhabited, the pottery type frequencies in the cuts should overlap as they do at E–19. Further evidence in favor of the conclusion that reoccupation is involved comes from the spatial relationships of the cuts at the sites listed above. They are at opposite ends of what was interpreted in the field as a single area of habitation refuse, except in the case of E–16, where the presence of two separate refuse areas was recognized. The ceramic seriation shows that the latter represent two different occupations of the site rather than the remains of two contemporary house structures. In the other three sites, the locations of the first and second occupations appear to have overlapped to some extent, giving a continuous sherd area. If a single excavation had been made in the center, it should have revealed this situation by an unusually wide spacing between successive levels of the cut. Two examples of this are provided by

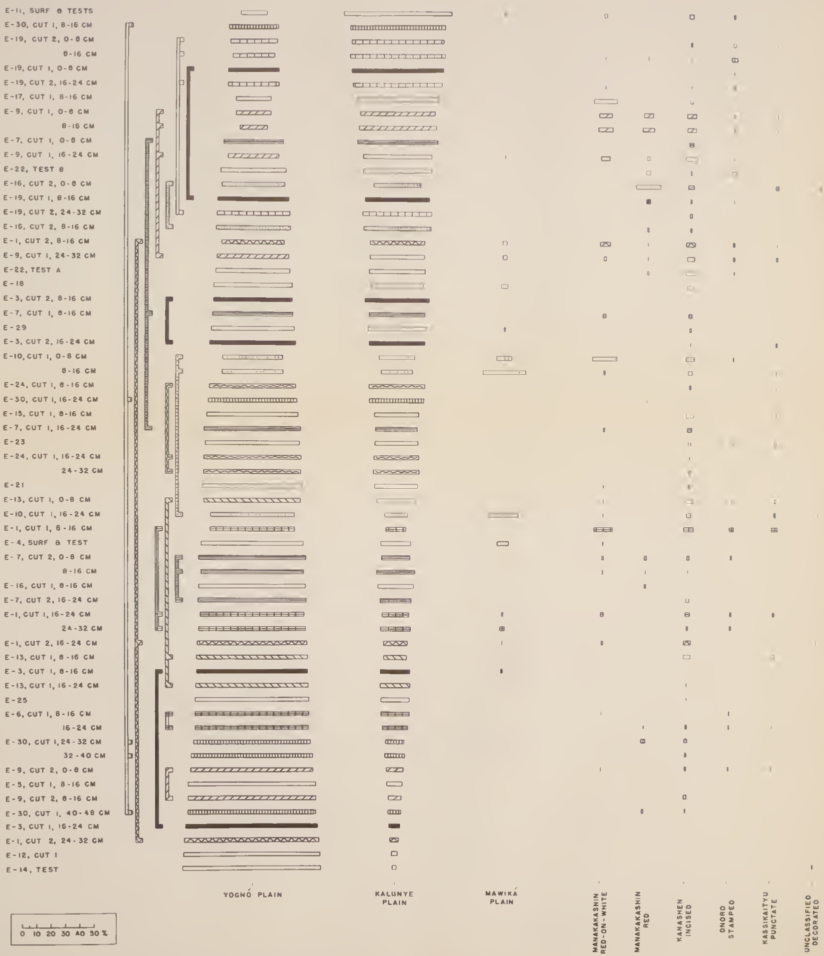


FIGURE 101.—Seriation of Taruma Phase sites on the basis of changes in pottery type frequency (Appendix, table 30).

sites in which only one cut was made. E–30 embraces in five levels almost the entire span of the Taruma Phase, while E–1, Cut 2, covers more than two-thirds of the sequence. In E–30, Cut 1, the first and second levels are at the top and middle of the sequence respectively, and the third level is almost as far below the second as the second level is below the first. Levels 4 and 5 are very close to level 3, and obviously represent the same occupation. The spacing of the levels in Cut 2 at E–1 is similar, and here the reoccupation theory is bolstered by the presence of Cut 1, which correlates with the second level of Cut 2. This indicates that the location of the second village was predominantly in the vicinity of Cut 1, which the earlier and later settlements did not overlap. Several of the other cuts show considerable separation between successive levels, but this seems partly a function of the large number of contemporary sites, whose interdigitation pushes apart what would otherwise be seen as a continuous series of levels. This appears to be true of E–3, Cut 1, since the two levels involve no greater amount of ceramic change than those of E–3, Cut 2, although the presence of a considerable number of contemporary sites and levels spaces them much farther apart (fig. 101). The situation at E–30, Cut 1, and E–1, Cut 2, however, is much too extreme to allow for any such explanation, and the reoccupation theory seems to be the best answer.

The existence of a general dating based on historical records for both the Taruma and the Wai Wai occupations of the upper Essequibo region makes it worth while to reexamine our attempts to arrive at a formula for using the rate of pottery refuse accumulation to estimate village and phase duration in Tropical Forest sites (see Meggers and Evans, 1957, pp. 245–257). As applied to sites in the region around the mouth of the Amazon the formula was: 2,600 sherds per 1.5- by 1.5-meter cut=100 years. Since all the stratigraphic excavations in the upper Essequibo area were 1 by 1 meter, the equation was reduced to conform with this dimension, giving: 1,156 sherds per 1- by 1-meter cut=100 years. Durations were calculated on this basis for all the Taruma Phase sites with stratigraphic excavations and controlled tests, and these are presented on table I, arranged in descending order. The probable number of occupations represented at each site is also shown. Comparison of the estimated total years of occupation represented by each stratigraphic cut or test (table I) with the number of occupations indicated by the separation of the levels shows that, with a single exception of 66.1 years, all cuts and tests with only one occupation have durations of less than 50 years. Eight cuts from various sites with two or three occupations have total estimated durations ranging from 24.8 to 128.8 years.

TABLE I.—*Durations of Taruma Phase sites derived from the sherd refuse accumulation formula*

Site	Total sherds per 1- by 1-meter cut or test	Estimated duration in years	Number of occupations implied by seriation of levels	Site	Total sherds per 1- by 1-meter cut or test	Estimated duration in years	Number of occupations implied by seriation of levels
E-9, Cut 1	1,490	128.8	2	E-17, Cut 1	241	20.8	1
E-19, Cut 2	1,210	104.5	2	E-16, Cut 2	199	17.2	1
E-30, Cut 1	894	77.2	3	E-15, Cut 1	193	16.7	1
E-24, Cut 1	763	66.1	1	E-3, Cut 1	180	15.6	1
E-1, Cut 2	762	66.0	3	E-23, Test	161	13.9	1
E-10, Cut 1	717	62.0	2	E-22, Test A	150	12.9	1
E-13, Cut 1	592	51.2	2	E-14, Test	139	12.0	1
E-7, Cut 2	582	50.3	1	E-4, Test	106	9.1	1
E-1, Cut 1	526	45.5	1	E-16, Cut 1	97	8.4	1
E-3, Cut 2	524	45.3	1	E-29, Test	88	7.6	1
E-6, Cut 1	454	39.2	1	E-5, Cut 1	45	3.9	1
E-7, Cut 1	441	38.2	2	E-18, Test	44	3.7	1
E-9, Cut 2	300	25.9	1	E-11, Test	35	3.0	1
E-19, Cut 1	287	24.8	2	E-28, Test	28	2.4	1
E-21, Test	276	23.8	1				

The problem of computing the total duration of the Taruma Phase from the individual site durations is complicated by the fact that many of the villages were partly or wholly contemporary, judging from the interdigitation of levels of the various cuts on the seriation chart (fig. 101). Such repetition must be eliminated from the data used to arrive at the total duration of the Phase. Several attempts were made to do this by inspection, and one of the results corresponded closely to the historically attested duration of around 200 years (see pp. 263–264 for historical details). However, the procedure was too arbitrary for objective description and the calculation could not be repeated readily by another person. An effort was made to devise a more systematic method of making the selection of levels to be included in computing total duration by measuring ceramic change. Although levels representing contemporary occupations should ideally show identical pottery type frequencies, in actual fact some variation always exists. In using the Taruma Phase data for computing the duration of the Phase, chronologically significant change must be distinguished from this normal variation during a single time period. Since there was no way of determining in advance how fast the pottery was changing, and consequently how much difference in percentage frequency of the major pottery types reflected how much time difference, the problem was approached experimentally in the following way:

Beginning at the bottom of the seriation chart (fig. 101) and working upward, the length of the bars representing the frequency of Kalunye Plain was measured, and the intervals where the difference between the bars reached 5 percent were recorded. Since there is a slight fluctuation in the trends from level to level, the curve sometimes had to be artificially smoothed in order to eliminate local distortion, but this problem was not severe. The levels included within each interval were considered to be contemporary. The sherd density formula was used to compute the duration represented by each of the individual levels, but the results often showed considerable variation. Since there was no way of knowing which of these individual durations was most accurate, the best solution seemed to be to take the average of the levels included within the interval and this was the figure used (tables J and K). To arrive at the total duration of the Phase, the averages derived for each of the successive intervals isolated on the seriation chart were added together. The same procedure was then carried out independently using Yochó Plain as an indicator of change, and although there were slight differences in the subdivision of the sequence, the resulting total duration coincided well with that based on Kalunye Plain. The experiment was repeated using 10 percent and 15 percent differences in pottery type frequency as a basis for subdivision of the sequence. In the case of the Taruma Phase, the total length of occupation based on a 10-percent change interval gave the closest approximation to the known duration of the Phase.

The intervals selected on the basis of a 10-percent change in pottery frequency are given on table J for Kalunye Plain and table K for Yochó Plain, together with the duration represented by each interval, calculated by averaging the individual durations of the levels included within it (Appendix, table 30). These two independent calculations give very similar results: a total duration of 209.6 years based on Kalunye Plain and 204.4 years based on Yochó Plain. The Taruma Indians are reported at the mouth of the Rio Negro in Brazil in A.D. 1670 and on the upper Essequibo River by A.D. 1771. This places their entry into British Guiana within an interval of 100 years. The tribe became extinct in 1925. The total duration of 204 to 210 years estimated from rate of pottery change when converted into calendar dates places their arrival at between A.D. 1715 and 1721, or within the period designated by the historical evidence.

TABLE J.—*Duration of the Taruma Phase calculated on the basis of a 10-percent change in frequency of Kalunye Plain*

Interval	Duration in years
From E-11 Tests	3.0
From E-30, Cut 1, 8-16 cm. to E-19, Cut 2, 16-24 cm., inclusive	21.3
From E-17, Cut 1, 8-16 cm. to E-7, Cut 1, 0-8 cm., inclusive	21.4
From E-9, Cut 1, 16-24 cm. to E-16, Cut 2, 8-16 cm., inclusive	18.4
From E-1, Cut 2, 8-16 cm. to E-7, Cut 1, 8-16 cm., inclusive	21.3
From E-29, Tests to E-30, Cut 1, 16-24 cm., inclusive	21.8
From E-15, Cut 1, 8-16 cm. to E-21, tests, inclusive	16.0
From E-13, Cut 1, 0-8 cm. to E-10, Cut 1, 16-24 cm., inclusive	16.9
From E-1, Cut 1, 8-16 cm. to E-7, Cut 2, 8-16 cm., inclusive	11.1
From E-16, Cut 1, 8-16 cm. to E-1, Cut 1, 24-32 cm., inclusive	16.7
From E-1, Cut 2, 16-24 cm. to E-6, Cut 1, 16-24 cm., inclusive	17.6
From E-30, Cut 1, 24-32 cm. to E-30, Cut 1, 40-48 cm., inclusive	14.9
From E-3, Cut 1, 16-24 cm. to E-14 test, inclusive	9.2
Total duration of Taruma Phase	209.6

TABLE K.—*Duration of the Taruma Phase calculated on the basis of a 10-percent change in frequency of Yochó Plain*

Interval	Duration in years
From E-11, Tests	3.0
From E-30, Cut 1, 8-16 cm. to E-19, Cut 2, 16-24 cm., inclusive	21.3
From E-17, Cut 1, 8-16 cm. to E-9, Cut 1, 8-16 cm., inclusive	25.5
From E-7, Cut 1, 0-18 cm. to E-16, Cut 2, 0-8 cm., inclusive	32.5
From E-19, Cut 1, 8-16 cm. to E-22, Test A, inclusive	18.5
From E-18, Tests to E-24, Cut 1, 8-16 cm., inclusive	19.0
From E-30, Cut 1, 16-24 cm. to E-13, Cut 1, 0-8 cm., inclusive	16.2
From E-10, Cut 1, 16-24 cm. to E-1, Cut 1, 8-16 cm., inclusive	10.1
From E-4, Test to E-1, Cut 1, 16-24 cm., inclusive	13.8
From E-1, Cut 1, 24-32 cm. to E-6, Cut 1, 16-24 cm., inclusive	16.4
From E-30, Cut 1, 24-32 cm. to E-9, Cut 2, 0-8 cm., inclusive	17.6
From E-5, Cut 1, 8-16 cm. to E-14, Tests, inclusive	10.5
Total duration of Taruma Phase	204.4

Since the agreement between the historically reported duration and that derived from refuse accumulation calculations described above is reasonably good, the experiment was continued with the new factor injected here, namely, rate of pottery change. The total amount of pottery change during the Taruma Phase seriated sequence (fig. 101) is between 63 and 64 percent. Yochó Plain declines from 96 percent to 32 percent, a change of 64 percent. At the same time, Kalunye Plain increases from 3 percent to 66 percent, a change of 63 percent. If 63.5 percent is taken as the average amount of change and 207 years the average duration indicated by the amount of refuse accumulation, then the rate of pottery change is 1 percent per 3.26 years in the Taruma Phase. This rate can be compared with the Rupununi Phase, where both archeological seriation and historical data are also available, but where the refuse density formula could not be used. The Rupununi Phase is estimated from historical evidence to have existed in British Guiana for about 200 years (see pp. 326–332). During the seriated sequence (fig. 125), Rupununi Plain increases from 11 percent to 79 percent, a change of 68 percent, while Kanuku Plain declines from 88 percent to 21 percent, an alteration of 67 percent. At a rate of 1 percent per 3.26 years, these changes in pottery type frequency correspond to 221.6 and 218.4 years respectively, and agree closely with the historically known duration, suggesting a rate of pottery change very similar to that in the Taruma Phase.

To test further the universality of this rate of pottery change, the Abary Phase can be used. This Phase was estimated from the rate of refuse accumulation formula to last either 298 or 417 years, depending on which cuts were used to arrive at the total duration (see pp. 179–182 for details). Tiger Island Plain shows a change in frequency of 84 percent, declining from a maximum of 88 percent to a minimum of 4 percent, which at the rate 1 percent per 3.26 years gives 273.8 years. Taurakuli Plain shows a 95-percent change in frequency, increasing from 19 percent to a peak of 94 percent and then declining to 74 percent; calculated at the same rate, this gives 309.7 years. These figures are close to the lower total derived from refuse accumulation calculations, and suggest it may be the more accurate of the two. However, this rate of change does not give valid results for the Koriabo Phase. Here there is a change of less than 30 percent in the pottery type frequency in the two major plain wares giving a duration of under 100 years, much less than is implied by other evidence. In this case, however, the total duration computed from the sherd refuse accumulation formula is also too low, suggesting that the duration of the Phase in the area is not adequately represented by the sites included in the survey. Aside from this instance the results of these various calculations suggest that the rate of pottery evolution, measured by alteration in plain wares, may be relatively constant under undisturbed Tropical Forest conditions. However, this impression, as well as the problems of interpretation and adequacy of site sampling, needs more investigation before the method can be considered a reliable means of estimating the passage of time.

An opportunity to check the rate of accumulation expressed in the sherd formula with ethnographic data came during the investigations of the Wai Wai. Unfortunately, only one of the two former Wai Wai villages could be used because the other (E–11) produced too few sherds to be representative of a normal rate of refuse accumulation (see pp. 198–199). At E–2, sherds were scattered on the surface of the ground inside and around the collapsing house. The number of sherds from a 2- by 2-meter area on the north side of the house was tabulated, and conversion of the total into the dimensions specified in the formula gave 177 sherds in a 1.5- by 1.5-meter area, the equivalent of 6.82 years (Meggers and Evans, 1957, p. 257). The actual duration of E–2 was reported by Wai Wai informants and resident American missionaries as about 6 years. This is remarkable agreement, but again the result cannot be considered proof of the validity of the formula without corroborating evidence from other ethnographic sites. A single instance could be just a lucky coincidence. It is our hope that these various attempts to derive formulas for determining rate of refuse accumulation, duration of Phases, and rate of evolution of plain pottery types will prove challenging enough to other anthropologists so that they will attempt similar studies with their data. Only thorough examination will make it possible to determine the reliability of this kind of approach.

ETHNOGRAPHIC EVIDENCE

The most recent enthnographic account of the Taruma Indians is by William Curtis Farabee (1918) who traveled up the Essequibo River from the junction of the Kuyuwini River to the headwaters in the latter part of 1914. En route, he passed two Taruma villages, "Tohi" and "Kushar's Village," both of which he describes. He also made a number of observations on Taruma culture and made a collection of artifacts now in the University Museum, Philadelphia. About a decade subsequent to this visit, the Taruma were decimated by disease, leaving only a handful of survivors. One of these had been adopted by the Wai Wai chief and was living with the Wai Wai at the time of our visit to the upper Essequibo in 1952–53.

No attempt will be made here to repeat or even to summarize all of Farabee's comments on the Taruma culture. The major portion of the published data is mythology (Farabee, 1918), and this cannot be checked archeologically. However, certain of his comments on settlement pattern, subsistence, and material culture will help to round out the archeological record. Since much of this data is unpublished (Farabee, MS., Notebook A), its inclusion here will enlarge the published documentation of this extinct tribe.

Agriculture.—At "Tohi," the field was estimated as 5 or more acres, the major portion of which was devoted to manioc. Scattered about were a few banana trees, papayas, cashews, sugarcane, sweetpotatoes, and cará. There was no maize. Clearing involved cutting down all the trees, which did not burn and so remained scattered over the field. A field was productive for 2 or 3 years, after which a new one had to be cleared. Fields were sometimes 2 hours' travel from the village.

Settlement pattern.—Both Farabee (MS., Notebook A) and W. E. Roth (1929) describe Taruma villages as occupying high land along the riverbank. A creek frequently runs along one edge of the elevation.

House.—The description of the Taruma house is very similar to that of the Wai Wai. Those at "Tohi" were circular, 35 feet in diameter. Vertical posts supported the roof poles, which radiated around a tall central post. In one house, the roof came almost to the ground, and the sides were open; in the other there was a 4½-foot-high sidewall. The covering was tightly braided palm thatch, leaving no smoke hole. A single door provided access. The interior was not subdivided, but each married couple occupied one section. Hammocks were suspended between posts, the husband's above the wife's. Each woman had her own fire. Dogs were kept tied on platforms about 3 feet high along the wall. Racks and baskets suspended from the rafters or crosspoles held food and miscellaneous items. Bows and arrows were kept tucked into the thatch on top of the rafters.

Pottery.—Three forms of pottery vessels are mentioned: griddles, and two shapes of cooking pots. The griddles were flat, sometimes with turned-up edges. They were three-quarters of an inch thick and 24 to 30 inches in diameter. To bake cassava bread, the griddles were placed on three stones or pottery supports. The latter are described as 7 inches high and 5 inches in diameter, in the form of truncated cones. The same kind of support was used with cooking vessels.

Cooking pots were either rounded with a slightly constricted neck and everted rim, or globular with a slight, pedestal base and an incurving rim. The former variety is said to have been made in various sizes, while the latter was always about 12 inches deep and 12 inches in diameter. (Farabee includes sketches of these forms in his field notebook.) Half of a large calabash or a pot of about a gallon capacity was used for drinking. Pottery drinking vessels are said to have been obtained from the Wai Wai. Large jars for storing beverages were sometimes decorated by crosshatching around the rim (cf. Kanashen Incised, pp. 216–217).

Watercraft.—The Taruma used both dugouts and bark canoes. Dugouts were 15 to 25 feet long, 15 to 20 inches wide, and were made from a solid log. Both ends tapered to a point. From 3 to 4 feet from each end, the sides were cut down an inch or more, giving a characteristic profile. During the drying, three sticks were inserted crosswise to keep the sides apart. Farabee describes the result as "cranky," but notes that dugouts frequently carry a husband and wife plus four or five dogs and provisions. The bark canoes were formed by making a cut some distance from each end and lifting the end piece thus separated so that the edges of the cut overlapped. These points were reinforced with cross sticks and sealed with resins to make them watertight. The result was a craft with upslanting and pointed ends. A stiff pole, 1 inch in diameter, was tied around the upper margin for stiffening and reinforcement. A third cross piece was placed in the center.

Disposal of the dead.—Failure to find any burial remains for the Taruma Phase indicated that urn burial was probably not practiced. Farabee's data permit a more specific statement that the principal method of disposal of the dead was cremation. On death, a friend or friends of a deceased man or woman took the body away to the woods. The corpse and a few personal trinkets were placed on a pile of wood about 2½ feet high, then covered with more wood until the pile was 4½ to 5 feet high. This was set on fire and left to burn down. Three or four days later, the Taruma returned and covered the ashes with leaves and brush. Children and shamans were buried, the former because cremation was too much trouble, the latter because the people did not want to disturb the spirit and so disposed of the body as quietly as possible. Property of the deceased, such as canoe, bow and arrows, and dogs, was divided among the family. There was no ceremony and no mourning. However, the house in which an adult died was usually burned and another erected nearby (Farabee, MS., Notebook 2).

Dress and ornament.—Men wore a cotton loincloth, which was long enough to hang down over the buttocks in back and half way to the knees in front. It was 8 to 9 inches wide and held by a series of three to six cotton cords tied individually around the waist. Nose, ears, and lower lip were pierced. Beads were worn around the neck and double strands around the shoulders. Bands of beads decorated the upper arm. Women wore a bead apron held by a small cotton string tied around the waist. Like the men, they wore beads on the upper arms and ornaments in the ear lobes and lower lip.

DIAGNOSTIC FEATURES OF THE TARUMA PHASE

The archeological description of the Taruma Phase is based on investigation of 24 village sites and 11 former field clearings, 5 of which produced a handful of sherds. The site descriptions viewed in terms of the ceramic analysis and seriation suggest several characteristic features of the settlement pattern. First, villages were typically surrounded by garden areas, the only exceptions being those instances in which the hilltop was too small. Second, locations selected for either habitation or agriculture were always sufficiently elevated to escape flooding at high water. Third, the duration of the village was usually relatively short. Only one refuse accumulation exceeded 32 cm. in thickness, and this was at a site (E–30) that had more than one occupation. On the other hand, this is a considerably deeper refuse accumulation than that occurring at any site of the Rupununi Phase, and in comparison with this Phase the Taruma Phase is characterized by relatively great village permanency. Fourth, the differential position in the seriated sequence of two strata cuts from the same site, as well as the excessive stretching of levels in a single cut (e.g., E–30, Cut 1), indicates that a number of the sites were occupied more than once. This practice may be correlated with the relatively small amount of high land bordering the Essequibo, but it also is subject to the interpretation that the Taruma were restricted to movement within a specified area either by choice or by the presence of inhibiting conditions farther downstream. Fifth, the conclusion that Taruma village stability was greater than that in the Rupununi Phase is fortified by the existence of separate field clearings. These fields were sufficiently close for exploitation after the fields surrounding the village ceased to be productive without making the movement of the habitation site necessary.

Village sites vary considerably in area, with a slight tendency for the later ones to be in the smaller end of the range. Smaller sites generally have shallower refuse accumulations and by inference were of lesser duration. Field clearings are correlated in size with the amount of nearly level, elevated land, and range from 50 by 70 meters to 200 by 500 meters. It is probable that the larger fields represent successive increases in the size of the clearing as the earlier portions ceased to be productive. Some of the fields were undoubtedly reused when villages returned to former locations, so that the dimensions reflect directly only the most recent clearing. A temporary shelter was often built in the field, as the finding of a few sherds in a single spot indicates.

The pottery of the Taruma Phase was classified into two major and one minor plain ware and five decorated types. Yochó Plain, tempered with fragments of decomposed granite, is dominant at the beginning of the Phase, and shows a relatively steady decline throughout the site sequence. Kalunye Plain, a fine sand-tempered ware, exhibits a corresponding increase and is the major pottery type at the close of the Phase. Mawiká Plain, tempered with cariapé, has a sporadic distribution with a tendency to maximum popularity toward the middle of the sequence. The decorated types are well defined but useless for temporal distinctions within the Phase, since they show no clear-cut trends. Decoration is by incision (Kanashen Incised), punctate (Kassikaityu Punctate), slipping and painting (Manakakashin Red and Manakakashin Red-on-White), and stamping (Onoro Stamped). Vessel shapes are simple bowl and jar forms. In the absence of complete specimens, evidence of crudity of form comes from the irregularity of the rim curvature and lack of consistency in profile at opposite edges of a single sherd. Base forms are typically flat or a slight pedestal. Annular bases are limited to the early half of the Phase and rounded bases are late.

Diagnostic pottery artifacts of the Taruma Phase include pot rests of generally conical form, and thick, disk-shaped, spindle whorls. Pottery whistles are recorded ethnographically, and the peculiar contours of a few sherds suggest that they may have belonged to this type of object. Stone artifacts are often represented by a single specimen of each type and cannot be considered as characteristic of the Taruma Phase.

Ethnographic data on the Taruma confirm the conclusion derived from archeological evidence that this group is a typical representative of the Guiana variety of Tropical Forest culture. The absence of burial sites is explained by the fact that disposal of the dead was by cremation or inhumation, neither of which can be detected archeologically under tropical forest climatic conditions. Documentary evidence establishes that the Taruma Phase became extinct in the second decade of the 20th century as a result of disease. In spite of this long post-Columbian survival, only five sites produced European trade materials, supporting the ethnographic information that the Taruma had only superficial and sporadic contact with European civilization.

THE WAI WAI PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

In recent years the upper part of the Essequibo River has been occupied by the Wai Wai, a Carib-speaking tribe that has moved gradually into British Guiana to fill the void left by the disappearance of the Taruma. Their intrusion into the area covered by the 1952–53 survey is too recent to have left much archeological evidence. Two former village locations were investigated, one of which was in the process of transformation into an archeological site, and their description is of particular interest for its bearing on the interpretation of archeological habitation sites in the tropical forest area of South America.

E–2: EREFOIMO

E–2 occupies the summit of a high hill on the right bank of the Essequibo, about half way between the Taruma Phase sites of E–3 and E–1 (fig. 79). The bank rises at about a 30-degree gradient to a height of 18 meters above the December water level. A narrow path led through the heavy growth to the hilltop, where the vegetation was smaller and less dense. The former clearing (Area B), 15 meters wide and 25 meters deep, bore no traces of former house structures, but our guide said that two houses, one large and one small, formerly stood there. Sherds were scattered on the surface, with slight concentration at the east and west ends of the clearing. Formerly cultivated plants were still observable, including *maracujá* (*Passiflora* sp.), tree gourds, *urucú* (*Bixa orellana*), castor beans, and tree cotton. There was no depth to the refuse deposit, and the soil contained large amounts of fine, lateritic concretion gravel.

Tall, secondary growth separated Area B from Area A, 50 meters farther back from the river bank. This part of the site contained the most recent habitation area, including remains of a circular, communal house, and work shelters. The habitation clearing measured about 30 meters wide by 45 meters deep and was surrounded by dense, secondary growth indicative of a former field. The main house stood near the rear of the clearing, surrounded and partly overgrown with tall jointgrass, small trees, and vines. As in Area B, much of the vegetation was still composed of cultivated species, such as *maracujá*, tree gourds, tree cotton, *urucú*, papaya, and a plant with a black berry used for fish bait. Scattered around the clearing were the remains of three small square work shelters. One was 5 meters to the northwest of the main house and measured about 2.5 by 3.5 meters. Another, 2 meters from the front edge of the clearing (25 meters from the main house), was about 5 meters square. The third, 8 meters northeast of the second, was in poorest condition and its dimensions could not be determined. Twelve meters southwest of the main house were several graves. Sherds were scattered on the surface in the vicinity of the main house and more sparsely in other parts of the clearing.

The main house was 10 meters in diameter. It had partly collapsed, but the roof settled intact and continued to protect the interior (pl. 48, *b*). Access could be gained through the rear door, the front one having been blocked by the collapse of the wall. Details of the house construction are not pertinent here,[7] but the condition of the floor and refuse are of archeological interest because they indicate how the site was left by the departing inhabitants. The floor was not level, but retained the slight unevenness of the original ground surface. Three hearths were located along the south side, each composed of three to four irregular rocks surrounding a bed of ashes. Two other hearth areas were indicated by the presence of ashes, but the absence of rocks suggests they may not have been in use when the house was abandoned. A final hearth, marked by ashes and one large rock, was at the rear, north of the doorway. Scattered in the dirt of the floor were sherds and a number of other items, including a pottery spindle whorl, a large, heavy, wooden mortar and pestle, stones used for the manufacture of grater chips, and two large fragments of a bowl containing red, white, blue, and orange glass "seed" beads, some still adhering to bits of string. The refuse also included scattered animal bones, Brazil nut shells, small gourds, and debris fallen from the decaying roof. Sherds were encountered to a depth of 2 cm. in the dirt of the floor, and showed no concentration.

The two graves near the south side of the clearing were those of children. A hole had been dug about 90 cm. square and 40 cm. deep. After the insertion of the body, the grave pit had been roofed with sticks 3 to 8 cm. in diameter and split palm trunks, laid parallel and then covered with palm leaves laid in the same direction. Grave 1 was oriented southeast-northwest, and Grave 2, east-west. Large sherds from a large cooking vessel lay on the surface at the southeast end of Grave 1.

Tall secondary growth extended beyond the edge of the house clearing for about 500 meters to the north, east, and south, indicating that

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[7] A detailed description of Wai Wai settlement pattern and material culture is being prepared for separate publication. For additional data, see Farabee, 1924.

a large field had surrounded the village. The more advanced state of the secondary growth in the field than that in the habitation area is probably correlated with two differences in the preparation and maintenance of these two parts of the site. The house surroundings are cleaned of vegetation and packed down by constant use, whereas in the fields the soil is loose and stumps remain that readily sprout into new growth. Grass seems to be most characteristic of the first stage of abandonment in habitation areas, whereas in the fields the trees return too quickly for grass to gain a foothold.

Inquiry of the Wai Wai and of Robert Hawkins, resident Protestant missionary, elicited the information that Erefoimo was abandoned in 1950 after having been occupied about 6 years. The first house was built near the river in Area B, and was inhabited by about 15 people. After someone died, this house was abandoned and another built farther back. It is this house that was partially collapsed in Area A (pl. 48, *b*). In 1949 the village was said to have contained 49 people, although the communal house is rather small to have sheltered so large a population on a permanent basis.

E–11: KUKWA MUTUTO

A grassy clearing on the left bank of the Essequibo, 40 minutes' paddling above E–10, marks the location of a former Wai Wai village said to have been abandoned in 1948. Fallen beams near the edge of the 6-meter-high bank marked the location of a former rectangular house, and other posts were scattered farther back. *Urucú*, cotton, and cannalike bushes were still growing in the clearing. That the adjacent forest had also been cleared was evident from the presence of large stumps still in sound condition in spite of the large size of the secondary forest trees. Considerable testing produced only five sherds of Wai Wai origin, although the site was reported to have been occupied for 3 to 4 years. Other artifacts included three fragments of pot rests, three felsite cores of the type used in grater manufacture, and one fragment of green bottle glass. At an earlier time, E–11 was occupied by the Taruma Phase (see pp. 198–199).

DATA FROM OTHER INVESTIGATIONS

No archeological remains have been reported by previous visitors to the area occupied by the Wai Wai Phase.

ANALYSIS OF MATERIAL

The only items of Wai Wai material culture that can be expected to survive archeologically are those made of pottery and stone. Stone was used only as a raw material, no stone tools having been made or used within living memory. Pottery was used for containers, pot rests and spindle whorls.

Too few specimens were found to make an Appendix table; instead they are listed below by site:

Site E-2: Erefoimo.—From inside the house: 130 sherds of Erefoimo Plain, 1 felsite core, 1 glass mirror fragment. From Area A: 45 sherds of Erefoimo Plain that appear to represent 4 vessels. From Area B: 228 sherds of Erefoimo Plain, 14 sherds of Erefoimo Incised, and 65 sherds of Erefoimo Painted, with 2 unclassified decorated sherds.

Site E-11: Kukwa Mututo.—5 Erefoimo Plain sherds, 1 green bottle glass fragment, and 4 rock fragments.

Stone Artifact Types

Stone remains are restricted to cores and flakes of felsite, the material used for the manufacture of cassava-grater teeth, and irregular hunks of fire-burnt granite, representing rocks used for supporting vessels on the hearth.

Pottery Type Descriptions

The description of Wai Wai pottery types is based on the analysis of 489 sherds from E-2 and E-11, as well as sherds and vessels from functioning villages. The pottery is exclusively utilitarian and predominantly undecorated. The pottery types have been named according to the binomial system and are described in alphabetical order.

EREFOIMO INCISED

Paste and surface: On Erefoimo Plain, with no effort to produce a more even surface as a basis for decoration. See Erefoimo Plain for detailed description.

Form:

Rim: Everted and exteriorly thickened, tapering to flattened lip.

Body wall thickness: 7–13 mm.

Base: None identified; undoubtedly same as Erefoimo Plain.

Vessel shapes: 1. All sherds seem to represent vessels of Erefoimo Plain Form 1: an open jar with a flat bottom, rounded shoulders, slightly constricted collar or neck, and everted rim. The single rim sherd of Erefoimo Incised has a diameter of 60 cm. Decoration is confined to the exterior of the collar or neck.

Decoration (fig. 102):

Technique: The few sherds of Erefoimo Incised in the sample show no consistency of technique. Surface varied from dry to wet, when worked, judging from the fact that incisions are sharp in one case and partially obliterated in another. The incision itself was made with a stick, either sharp producing a V-shaped mark, or blunt producing a rounded one. The lines tend to be wavy rather than straight, unequally spaced, not perfectly parallel, and overshot or undershot at intersections. Incisions are 0.5 mm. wide and 0.5 mm. or less in depth.

Motif: Rectangular or triangular panels filled with large, diagonal cross-hatch.

Temporal differences within the type: None.

Chronological position of the type: Found only at E-2: Erefoimo. Not being made in 1952.

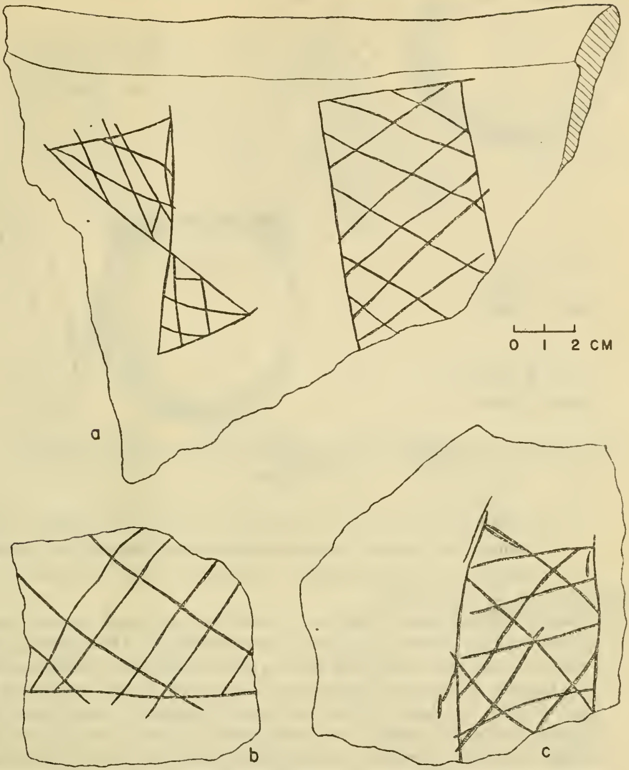


FIGURE 102.—Erefoimo Incised, Wai Wai Phase.

EREFOIMO PAINTED

PASTE AND SURFACE: Typical of Erefoimo Plain; see that type for detailed description.

FORM:

RIM: Slightly everted and direct or slightly thickened on exterior; rounded lip.

Body wall thickness: 5–11 mm.

Base: Slight pedestal, height 4–7 mm. Diameter 8–10 cm.

Vessel shapes:

1. Bowl or jar with flat, pedestal base, walls outcurving to rounded shoulder, then incurving to constricted mouth, direct or slightly thickened rim with rounded lip. Rim diameter 18–30 cm. Decoration covers the exterior (fig. 103–1).

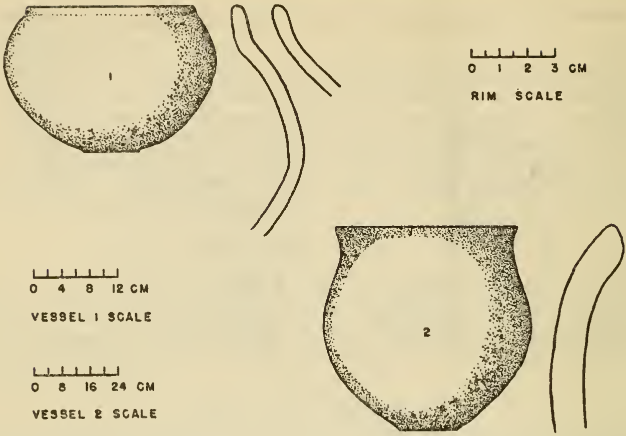


FIGURE 103.—Rim profiles and reconstructed vessel shapes of Erefoimo Painted, Wai Wai Phase.

2. Jar with flat base, walls upsloping to a rounded shoulder, then insloping to concave neck, everted rim and rounded lip. Mouth diameter 54 cm. Decoration on exterior of neck (fig. 103–2).

DECORATION (pl. 49, *f–g;* fig. 104):

Technique: Painted after firing with vegetable dyes: black derived from tree sap and red derived from *urucú* (*Bixa orellana*). After painting, the vessel is heated and coated with resin to give a glaze and protect the paint. The interior is sometimes painted but not coated so that decoration is more fugitive and tends to fade with use. Lines are unequal in width, ranging from 3 to 7 mm. on the same vessel, somewhat crooked and not equally spaced or perfectly parallel. On a few sherds the resin glaze was not applied to the entire surface but daubed on with the fingertip, creating a definite pattern due to the fact it turned a greenish black.

Motif: Straight lines combined in a variety of ways. None of the vessels represented duplicates of any of the others in pattern. The motifs include: (1) zoned parallel lines, in which a band is divided by a zigzag line into triangular areas containing parallel lines; (2) a band divided by a zigzag line into triangular areas, which are filled with V-lines paralleling the angle of the zigzag; (3) rectangular areas filled with diagonal cross-hatch (cf. Erefoimo Incised); (4) double, square spiral, the arms of which are composed of two parallel lines joined with cross lines forming a series of small squares. Designs cover the exterior and are carried across the bottom.

TEMPORAL DIFFERENCES WITHIN THE TYPE: None.

CHRONOLOGICAL POSITION OF THE TYPE:

A minor type in archeological and ethnographic sites.

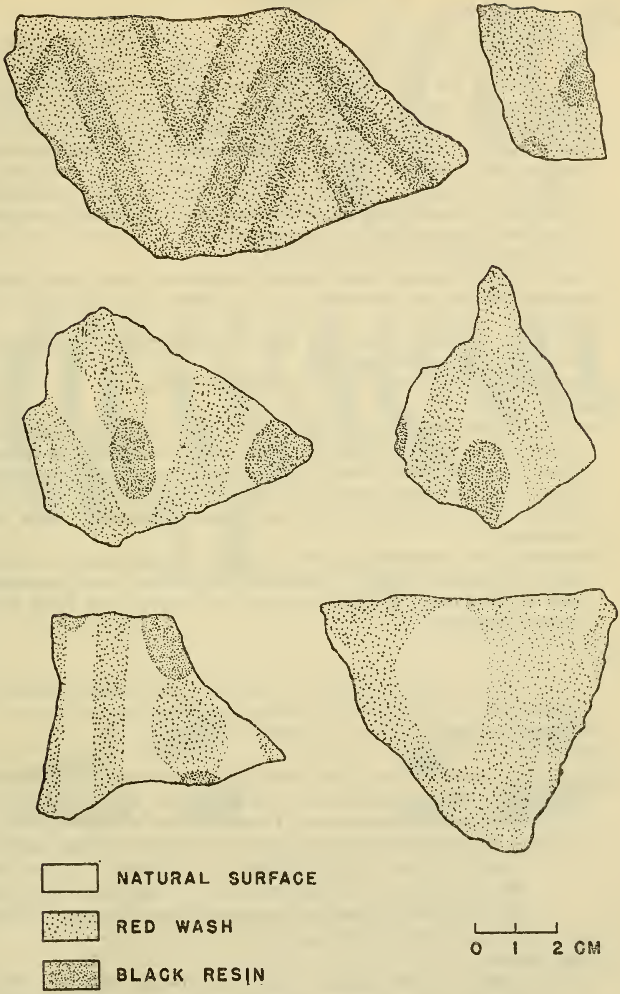


FIGURE 104.—Sherds of Erefoimo Painted showing typical motifs, Wai Wai Phase.

EREFOIMO PLAIN

PASTE:

Method of manufacture: Coiling; coils formed by rolling clay vertically between palms held out in front of chest (pl. 51, *b*). In small vessels a coil may complete the circumference; in large ones coils are joined end to end. Too dry surfaces and poor kneading of joints result in frequent fractures on coil lines, leaving both edges smooth. Coils 1.0–1.5 cm. wide.

Temper: Waterworn sand of variable size; majority of grains 1–2 mm. in diameter, but hunks 6–8 mm. in maximum dimension are not unusual. Typically small amount, but sherds with abundant temper are occasionally encountered. Temper unevenly distributed, with bunched areas separated by sparsely tempered areas. Occasional sherds have black specks from accidental inclusion of organic refuse in clay.

Texture: Poorly kneaded, giving layered appearance, with layers running parallel, diagonal or perpendicular to the surface. Occasional small air pockets.

Color: Typically bright tile orange, rarely grayish orange. Uniform color through the cross-section typical.

Firing: Oxidized (see p. 261 for ethnographic description).

SURFACE:

Color: Typically either bright orange like cross section or black. Those black on both surfaces seem to have been treated with wax or resin, or smudged at the end of the firing, since the black does not enter the cross section. Variants include black interior with light-tan exterior, and orange-gray interior with black exterior. Orange surfaces frequently show gray fire clouds.

Treatment: Poorly smoothed, leaving lumps, protruding temper and ridges. Uneven, not smooth to feel. Occasional fine smoothing marks on exterior made by the edge of a gourd fragment used for scraping away excess clay and smoothing.

Hardness: 3.5–4.

FORM:

Rim: Everted and slightly thickened on exterior, with rounded, pointed, or flattened lip. Typically uneven, unlevel, and irregularly thickened.

Body-wall thickness: 4–11 mm.; majority 6–9 mm.

Base:

A. Flat, joining sidewalls at angle of 40–60 degrees; base thickness equal to or slightly greater than body wall. Exterior of base occasionally slightly concave. Diameter 7–18 cm. (fig. 105, A).

B. Flat, with the edges rising at a steep angle before joining sidewalls, giving the effect of a low pedestal. The pedestal is formed by a rise of less than 1 cm. at an angle of 60–70 degrees, at which point the walls slope outward at an angle of 30–50 degrees. Diameter 8–13 cm. (fig. 105, B).

Vessel shapes:

1. Jar with flat base (Form A or B), walls upsloping to rounded shoulder, then inward to insloping or concave neck with slightly everted or exteriorly thickened rim. This general shape includes almost all Wai Wai pots used for cooking, storage, and eating, which differ in size and proportions but form a continuous series within the general shape. Rim diameter 16–50 cm., height 12–60 cm. (fig. 105; pls. 49, *a*, *c*–*e*, 50).

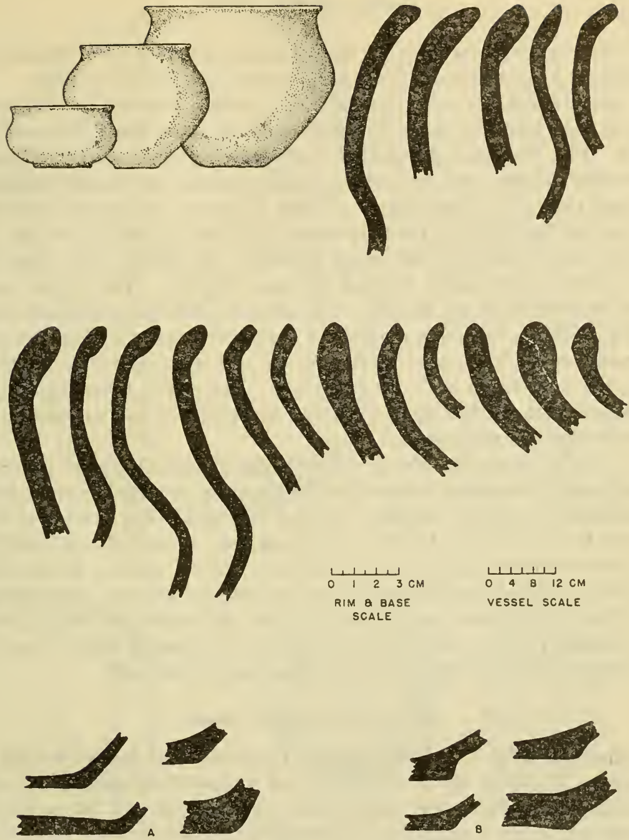


FIGURE 105.—Rim and base profiles and reconstructed vessel shapes of Erefoimo Plain, Wai Wai Phase.

2. Jar with flat, pedestallike base (Form B), walls upsloping to high, rounded shoulder, then curving inward to rim with rounded lip. This form, used for drinking, is rare and not represented in the sherd collections. One specimen collected ethnographically has the following dimensions: mouth diameter 19 cm., height 18 cm., maximum body diameter 23.5 cm., base diameter 10 cm. (pl. 49, *b*).

TEMPORAL DIFFERENCES WITHIN THE TYPE: The time span represented archeologically and ethnographically in this Wai Wai sample amounts to only about 10 years, during which time no change in Erefoimo Plain can be detected.

CHRONOLOGICAL POSITION OF THE TYPE: Dominant at all Wai Wai sites.

Pottery Artifact Types

Fired clay was used for the manufacture of two types of objects in addition to containers. These are pot rests and spindle whorls.

Pot rests (pl. 50).—Solid, cylindrical, crudely modeled pottery supports were made for use in threes to raise the vessel above the cooking fire. The Wai Wai stated that "any old clay" was used for these, whereas the clay used for pottery making came from special deposits where the quality was better. Three complete specimens, collected from the Wai Wai in 1952, measure 15–16 cm. in height, 8–9 cm. in base diameter, and 7–9 cm. in top diameter. In spite of a flat base the pot rests do not stand vertical but lean slightly. The upper ends are not level but slope slightly. The sides are straight or slightly concave, with the minimum diameter a little above center. The tops are ornamented with a central depression and a surrounding circular groove, both made with the finger tip. Fragments from the archeological sites are similar in form and construction, and measure 8–10 cm. in diameter at the ends.

Spindle whorls (fig. 106, *d*).—Flattened, globular lumps of pottery, perforated through the center for the insertion of a stick, were manufactured as spindle weights. Of the two specimens available, one from E–2 has a dark-brown to black surface, smoothed insufficiently to remove all the rough spots. The other, from an existing village, has a brown to black mottled surface coated with transparent resin giving a glaze. Diameters are 3.3 and 4.0 cm., thickness 2.0 and 3.2 cm. respectively. The perforation is slightly off center in both, 4 mm. in diameter, and made by puncturing when the clay was soft.

Objects of European Origin

The Wai Wai have had contact with Europeans for more than a century, but until the establishment of a missionary station in 1949 on the upper Essequibo, this contact was sporadic and intermittent. Trade materials consisted mainly of steel implements such as knives, axes, fishhooks, and hoes; objects of adornment such as glass beads and novelties; mirrors, plastic combs, glass bottles or chinaware. With their entry into British Guiana, the Wai Wai have had increasing access to metal containers, both iron cooking pots and enameled bowls, and their use appears to be reflected in the relatively small amount of potsherd refuse at E–2 and E–11 in comparison to Taruma Phase habitation sites.

Items of European origin collected at E–2 are as follows: 1 fragment of the bottom of a pale-green glass bottle with a rounded base; 1 fragment of a mirror made of glass 6.5 mm. thick; and 1,144 glass "seed" beads, some still strung on twisted cotton thread. They include

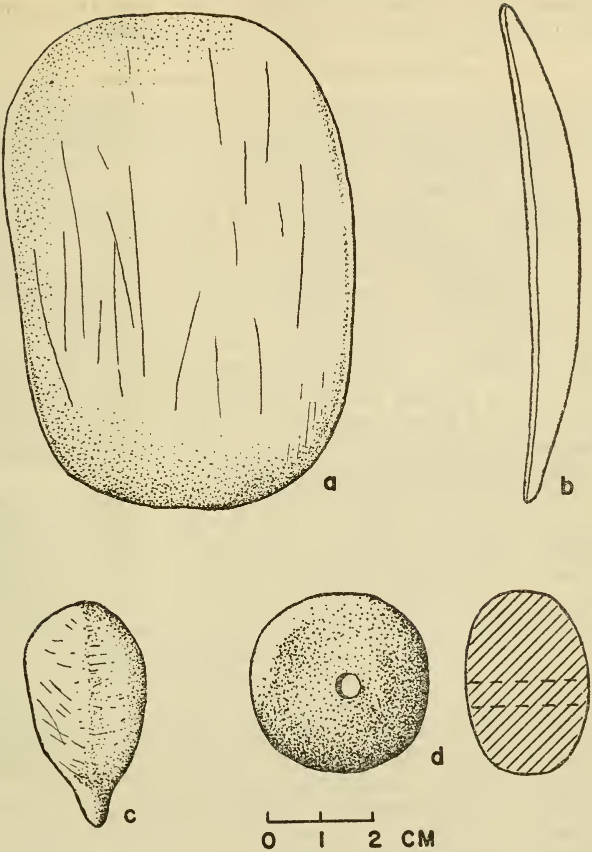


FIGURE 106.—Artifacts of the Wai Wai Phase. *a–b*, Gourd scraper used in pottery making. *c*, Nut used as pottery polisher. *d*, Pottery spindle whorl.

the following colors, sizes, and types: 280 dark-blue, almost black, and 240 bright-blue, doughnut-shaped, "seed" beads measuring 1.0 to 1.5 mm. in diameter and 0.5 mm. thick, with a hole ranging from a pinpoint to 0.5 mm. in diameter; 241 opaque, red, doughnut-shaped "seed" beads measuring 1.5 to 2.0 mm. in diameter and 1 mm. thick with a hole 0.5 to 1.0 mm. in diameter; 1 bright orange, 9 opaque white, 241 transparent white, 18 pale sky blue, and 75 dark-blue beads of the same form and dimensions as the red beads; 39 black to dark-green hexagonal beads cut from a long tube, 1.0 to 1.5 mm. thick and 2.0 mm. in diameter, with the hole 0.5 to 1.0 mm. in diameter.

THE SITE SEQUENCE AND ITS IMPLICATIONS

The sequence of Wai Wai habitation sites is established by known times of occupation given by American missionaries who remembered the date of abandonment. E–2 and E–11 are partly contemporary, E–2 having continued to be inhabited for about 2 years after E–11 was abandoned. In 1952 there were five Wai Wai villages, varying from 3 years to less than 1 year in age. Although the pottery sample from the archeological and ethnographic sites is smaller than would be ideal, it is unselected. Consequently, it does not seem likely that a larger number of sherds from the same sites would reveal more pronounced differences in paste, surface, vessel shape or other features. If this conclusion is valid, Wai Wai pottery is unusually uniform. However, it is probable that this appearance of uniformity partly results from lack of time depth in the remains, and that if the sites represented 100 years instead of only 10, a variation in one or more of the pottery characteristics could be discerned.

A possible Taruma influence on the Wai Wai ceramic tradition is indicated by the similarity of Erefoimo Incised to Kanashen Incised. Kanashen Incised, a major decorated type of the Taruma Phase, contains several well-defined design motifs, one of which is diagonal crosshatch (pp. 216–217). Erefoimo Incised occurs in small frequency in the abandoned Wai Wai villages, and was not being made in 1952. It is a crude type of incision compared to Kanashen Incised and employs crosshatch in zoned panels rather than a continuous band. The similarities between the two types of decoration may be coincidental. However, some such borrowing might be expected to have occurred during the long period in which the Wai Wai and the Taruma were in rather close contact (pp. 268–269).

The size of the sherd samples from E–2 and E–11 ought to be useful as a basis for correlating site duration and population with rate of refuse accumulation. Indeed, the results of such calculations for E–2 appear encouraging (Meggers and Evans, 1957, p. 256 and table J). Further consideration, however, suggests that there are a number of variable factors that minimize the significance of any conclusion. E–2 was inhabited by a variable population, and the houses were moved around during the period of occupation. A standard test of 1.5 by 1.5 meters, used as a basis for calculating rate of refuse accumulation, is not necessarily correlated with the occupation period but may equate with only a fraction of it. If this is true, the fact that the formula for estimating rate of refuse accumulation [8] gives a

[8] 2,600 sherds per 1.5 by 1.5 meter area = 100 years (Meggers and Evans, 1957, p. 252).

duration of 6.82 years while the actual duration is 6 years may be coincidental. On the other hand, if the pattern of use of E–2 is typical of Tropical Forest villages of this or longer duration, then the error is standardized and canceled out. If the refuse accumulation at E–2 is accepted as normal, that at E–11 cannot be so accepted. Here, in spite of diligent search and knowledge of the approximate house location, no more than 5 sherds of Wai Wai pottery types could be found. The only explanations appear to be either an abnormally small population, or an abnormal pattern of refuse disposal. The location of the house on the brink of a nearly vertical bank makes it as easy to discard refuse into the river as in some other direction, and perhaps this was done to some extent, if not completely. The location of the house deviates from the normal Wai Wai pattern in being so close to the bank. In all other cases, the slope of the hillside makes it necessary to set the house farther back to escape flooding, and rules out the disposal of refuse into the river without special effort.

The pattern of refuse distribution at E–2, where the position of the house and work shelters was still evident, shows an accumulation of sherds both inside and immediately around the main house. The major concentration was a little to one side of the habitation area, where large fragments and vessels damaged beyond use but not completely smashed were discarded. A similar pattern of refuse disposal would explain differences in sherd concentration in different parts of other Tropical Forest archeological sites.

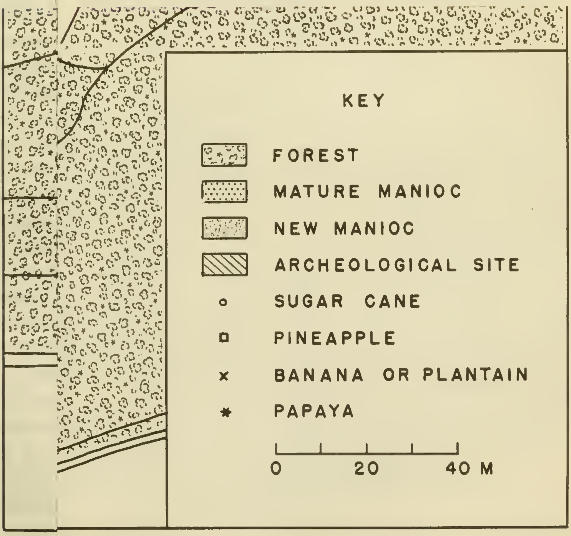
Probably the most important result of attempting to treat the Wai Wai as an archeological phase is the demonstration this provides of the value of defining extinct cultures in terms of a number of sites spread over a considerable time span. The instantaneous portrait allows a description of the culture, but if this kind of analysis is attempted after working with a large series of survey sites such as compose the Taruma Phase definition, one has the impression of groping in the dark. It was not possible to isolate any consistent paste or temper differences in Wai Wai pottery that would warrant subdivision of the plain pottery into two or more types. It was also impossible to determine which features of the ceramics are significant as time markers, and the feeling is always present that something is being overlooked. The fact that archeologists rely upon a series of samples from different points in time to reveal the aspects that change and thus have descriptive value, emphasizes the problem involved in arriving at ethnographic pottery definitions that can be integrated with archeological pottery type descriptions. It is obvious that the solution to this problem is not an easy one, and factors inherent in the two frames of reference may prevent any but a superficial type of correlation. More intense investigation of the possibilities should be undertaken, however, before all hope is abandoned.

ETHNOGRAPHIC EVIDENCE

Ethnographic information on the Wai Wai was collected by W. C. Farabee in 1913–14, when the tribe was only beginning to move across the divide into British Guiana. Farabee's description is sketchy (1924, pp. 153–176), but is accompanied by a number of illustrations and supplemented by a collection of material culture objects in the University Museum, Philadelphia. During our sojourn in Wai Wai territory in 1952–53, we attempted to record as much ethnographic information as possible and we also made a collection of objects for the Division of Ethnology, U.S. National Museum, Washington, D.C. A detailed report based on our field notes, Farabee's published and unpublished materials, and Wai Wai collections at the Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Mass., and the American Museum of Natural History, New York, is in preparation. Consequently, only those aspects of the culture most significant to archeological interpretation will be dealt with here.

Agriculture.—When a house is built, a slash-and-burn field is cleared behind it and planted. Each following year, the clearing is enlarged for a new planting, and this continues until the suitable land in the vicinity is exhausted. At this time a new field is cleared on another high spot. If this is more than about an hour's travel away by dugout, the village is usually moved to the new location. Otherwise, if the old house is in sufficiently good condition, the people may remain at least until the old fields cease to produce. When the field is not by the house, it frequently contains a small lean-to for temporary shelter. When the garden immediately adjacent to the house is beginning to die out, a small area is frequently recleared and a second planting of manioc is set out. This practice is not extended to the entire field. In addition to manioc, food crops include *cará* (*Diascoria* sp.), squash, bananas and plantains, and papaya and sugarcane. Nonedible plants such as cotton, *urucú* (*Bixa orellana*), and tree gourds are also raised, but none is planted in large quantity. The distribution of some of these crops in the field at Yaka Yaka is shown in figure 107.

Settlement pattern.—The four main Wai Wai villages inhabited in 1952–53 were all located on a rise from 3 to 9 meters above the low (December) water level. The house on the lowest spot had partially flooded during the preceding rainy season. Three of the houses were along the river, set far enough back from shore to occupy high and relatively level land. Access to the water was by a path through uncut forest, which screens the village from passers-by. The fourth settlement was some 500 meters inland where a nearby creek provided the domestic water supply. The house tends to be toward the river



the garden clearing, and the

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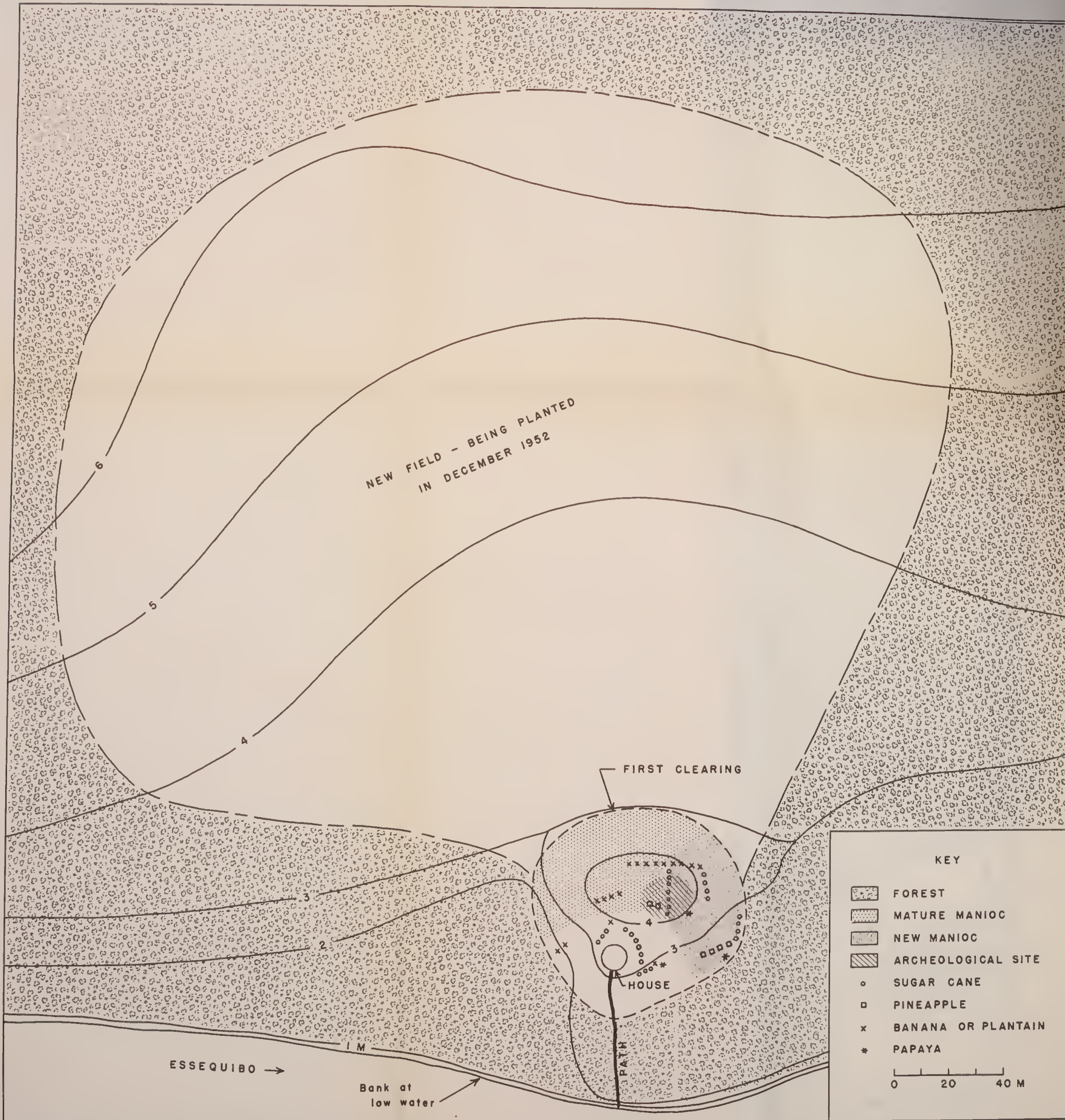

Figure 107.—Sketch map of the Wai Wai village of Yaka Yaka, showing the location of the modern house, the size of the garden clearing, and the area occupied by the Taruma Phase site of E-4.

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side of a large agricultural clearing (fig. 107). Village permanency is slight; two houses under construction in 1952 were abandoned in 1955.

House.—All the Wai Wai houses except one were 9 to 11 meters in diameter. The exception was 19 meters in diameter, almost twice the usual size. The steep, conical roof joins vertical sidewalls about 1.25 meters above the ground (pl. 48, *a*). Both roof and walls are covered with palm thatch. Two doors, at opposite sides, provide access and illumination. The inside has no partitions, but each family occupies a particular place along the side and keeps its possessions there.

Since the interior of the communal house is too dark to be used as a work place for the making of baskets, arrows, bead aprons, and other objects, several small shelters are constructed in the clearing outside. These are typically triangular, with the roof coming to a high point at the front, and with no sidewalls.

Population.—The 1952–53 adult population of four Wai Wai villages was: Yaka Yaka, five men and five women; Yewará, three men and three women; Mawiká, seven men and five women; Weelya, three men and two women.

Pottery.—Pottery is made by the women at irregular intervals, as needed. Each woman works alone. Clay is usually derived from special locations where the quality is superior to the usual river bank clays. No temper is added, so the various amounts of sand in the Wai Wai archeological material probably represent natural inclusions in clay from different sources. Large, football-shaped hunks of clay, dampened to the proper consistency for easy working, constitute the prepared raw material. Handfuls of this clay are taken for modeling into coils, which are rolled vertically between the palms held in front of the chest (pl. 51, *b*). As each coil is prepared, it is added to the vessel and pressed tightly onto the previous coil. Only the flat bottom is made without coiling by stretching the clay to the desired shape (pl. 51, *a*). After several coils have been added, the excess clay is scraped off with a piece of gourd (fig. 106, *a*, *b*; pl. 52, *a*). When all the coils have been applied and the vessel shape completed, both surfaces are given a final scraping to remove major irregularities (pl. 52, *a*). A small, smooth nut (fig. 106, *c*) may be used for further smoothing. The completed vessel is dried for about 4 days in the house near the cooking fire before being fired. For firing, the pot is placed mouth down on the ground. Bark and sticks are stacked on end around it (pl. 52, *b*), ignited, and left to burn down. If the vessel is to be painted, this is done after cooling with red and black vegetable dye. The decorated exterior is usually covered with a transparent resin added to the reheated surface so that it flows easily and makes a hard glossy coating.

Disposal of the dead.—Inhumation or cremation are practiced, neither of which leaves any archeological evidence in the tropical forest after a few years.

DIAGNOSTIC FEATURES OF THE WAI WAI PHASE

The archeological description of the Wai Wai Phase is based on two recently abandoned village sites and supplemented by information on four inhabited villages. Houses are typically small, circular, communal structures of pole and thatch, moved every 3 to 6 years. A single house constituting the village occupies a river bank usually but not always above flood level. The house is at the edge of a large garden clearing in which manioc and other food crops are grown by slash-and-burn agriculture. In settlement pattern, the Wai Wai Phase is distinguished from the Taruma Phase principally by the greater frequency with which the village is moved, resulting in a considerably shallower deposit of habitation refuse.

The pottery of the Wai Wai Phase was classified into Erefoimo Plain, a poorly made ware, and two crudely decorated types, Erefoimo Incised and Erefoimo Painted. The poor quality of this pottery may in part be the result of its gradual replacement by metal cooking vessels and containers. Erefoimo Incised may be a pale reflection of Kanashen Incised of the Taruma Phase, which also utilizes crosshatch as a motif.

Diagnostic pottery artifacts of the Wai Wai Phase are solid, cylindrical pot rests and thick, disk-shaped spindle whorls. No stone tools are made or used, nor was there any tradition of their having been used in the past. The presence of glass beads in the archeological sites confirms the fact that the Wai Wai have been recipients of European trade goods for at least since their entry into British Guiana around the beginning of the 20th century, although contact has not been sufficiently close to effect much alteration in the general culture.

COMPARATIVE DATA, CONCLUSIONS, AND INTERPRETATIONS

Archeological survey of the upper Essequibo River revealed only two successive cultural complexes. Both of these can be equated with ethnographically documented tribes, and have consequently been designated by their tribal names, the Taruma Phase and the Wai Wai Phase. The fact that such a correlation can be made is indicative of the short time that the area has been inhabited by semipermanent sedentary groups with a Tropical Forest type of culture. Prior to the arrival of the Taruma Phase, there is no record in either archeology or history that the region was inhabited, although it seems probable that wandering groups occupied it at least intermittently.

The first record of the Taruma is not in British Guiana, but at the mouth of the Rio Negro in Brazil. According to Nery (1901, p. 41):

> The first navigator of the Rio Negro seems to have been Pedro de Costa Favella in 1668–69, who went there in company with Father Theodosio, of the Order of Mercy or Redemption, and entered into communication with the Tarumá Indians by means of the Aruaquys, and with their assistance founded the first town on this river.

Brett (1852, p. 350) gives a similar account of their origin and elaborates on their subsequent history:

> The Tarumas formerly lived near the mouth of the Rio Negro. The Carmelites had a Mission among them as early as 1670. Disagreeing with other tribes, and being ill-used by the Portuguese, a portion of them fled northward, and settled near the head-waters of the Essequibo. Death made such ravages among those who remained, that the tribe was considered extinct. Mahanarva, the well-known Caribi chief, brought the first information of their existence to Demerara, but his account was so exaggerated that they were described as amphibious, and taking shelter in caverns under water. They are about four hundred in number, and their language differs from that of the other Indians of Guiana.

A map of the Guiana region by Juan de la Cruz Cano y Olmedilla, dating from 1771 to 1775, shows the Taruma in British Guiana, west of the Essequibo and north of the mountains (Cartografia Historica de Venezuela, 1946, p. 19). Another map made by Luis de Surville in 1778 shows them in the same location (op. cit., p. 21). The position on these maps agrees with the archeological distribution of the Taruma Phase and establishes a minimum antiquity for the Phase in the upper Essequibo area. If the migration mentioned by Brett took place shortly after 1670, and was a relatively rapid one, the introduction of the Taruma into British Guiana must have taken place around the beginning of the 18th century.

This documentation indicating an Amazonian origin for the Taruma Phase is difficult to check by archeological comparative data. The region from which the Taruma are said to have come, the left bank of the Rio Negro near its mouth, is unknown archeologically. Certain ceramic traits of the Taruma Phase, however, suggests a southern origin, especially the delicate red-painted designs on a fine white slip characteristic of Manakakashin Red-on-White. Sherds very similar to these have been reported from Manacapurú, just above the mouth of the Rio Negro (Hilbert, pers. corres.). By contrast, none of the Taruma Phase pottery features relate to coastal complexes, where painting is absent, modeling is frequent, and incision is different in technique and motif. If linguistic evaluations that place Taruma as an independent language, or at least non-Arawakan and non-Cariban, are to be believed, this additional evidence would also support an intrusive origin into the central Guianas.

Since there are several detailed accounts of visits to Taruma villages in the 20th century, it is of extreme importance to try to identify the archeological sites to which these villages correspond. Success in establishing such a correlation would provide a rare opportunity to check the archeological sequence established by the seriation of strata cuts in terms of pottery type frequency, and to evaluate inferences from the archeological situation against contemporary descriptions.

Schomburgk (1845, p. 35) claims to be the first European to visit the Taruma in the upper Essequibo. He saw five villages on the Kuyuwini and three on the Essequibo in 1837–38 (1841, pp. 167–169), but gives no details. The most complete description, amplified by photographs, of Taruma villages is that of W. C. Farabee who visited the region in 1914. Comparison of his published (1917) and 1914 notebook (MS.) data brings to light a number of contradictions that make correlation of the villages with the archeological sites difficult. The task is further complicated by the generalized character of Farabee's map (1917) and the fact that the place names were given to him in Wapisiana, whereas they were given to us in Wai Wai (fig. 108). A few points of geographical similarity can be used for orientation, however. The large stream entering the left bank of the Essequibo above the Kuyuwini, labeled "Duerwau" by Farabee, must, because of its size, be the Kassikaityu River. This identification is supported by the fact that there is a striking outcrop of granite just below the Kassikaityu mouth (at E–24), which is shown on Farabee's map as "Howkiuki Rock." The next landmark upstream is a falls ("Waboturia Cataract"), then a mountain on the right bank ("Kenaimataua"), and above this another falls ("Unorwauwau Cataract"). The upper falls, associated with a creek of the same name flowing from the right bank of the Essequibo, is sufficiently similar in name to the present Onoro Falls and Creek to suggest that they are the same. The only prominent hill, visible for some distance when traveling along the Essequibo River, now goes by the name of Manakakashin. It seems likely that this is the "Kanaimataua" mountain of Farabee's map. If so, then the rapids opposite it must be Manakakashin Falls. For some reason, the other two rapids between this point and the mouth of the Kassikaityu are not shown on Farabee's map.

This correlation would seem to reduce sites potentially identifiable with Farabee's villages to those on the right bank between Manakakashin and the mouth of the Kassikaityu River, namely, E–16, E–17, E–19, and E–20. The problem is complicated, however, by Farabee's field notes (MS., Notebook A), which locate the first village as "on the Essequibo River, B.G. High ground on right bank (no rocks) an hour above the rapids & short distance below Duerwow River." No village is shown below the Duerwow River on the published map (Farabee,

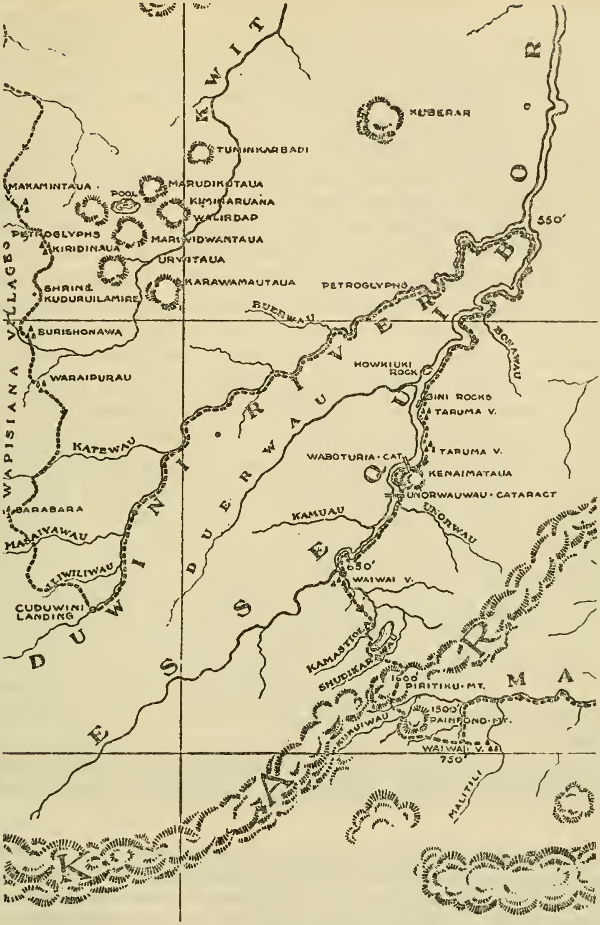

Figure 108.—Part of Farabee's map of the upper Essequibo area showing the location of Taruma villages at the time of his visit in 1914 (after Farabee, 1917).

1917), but if the field notes are accurate, E–25 must be considered. The only other site in the area, E–28, seems too far below the "Duerwow" (Kassikaityu) to fit Farabee's description.

In this ambiguous situation, an examination of the archeological sites may produce some helpful clues. Since Farabee's visit came near the end of the Taruma Phase, sites that seriate early in the sequence can be eliminated from consideration. This rules out E–25. E–20 produced too few sherds to be congruent with its identification as a village site. Since the archeological data agree better with the map than with the field notes, it must be assumed that the former is the more accurate of the two sources.

If we may conclude that the Taruma villages seen by Farabee are located below Manakakashin and above the mouth of the Kassikaityu, the choice then lies between Sites E–16, E–17, and E–19. Since the two villages are described as "a short day's journey" apart, E–19 is the most logical candidate for Farabee's "Tohi," except that there are rocks in the river at this point and Farabee specifies "no rocks." Once again, however, the field notes contradict the published map, which shows rocks in the vicinity of the village, and again the archeology agrees better with the map. The description of E–19 equates in general with Farabee's description of "Tohi." He notes that it is on "high ground"; E–19 is on a bank 18 to 20 meters above the low water level. He estimated the clearing as "5 or more acres"; we estimated it as 500 by 200 meters, all of which was probably not cleared at the same time. He describes the houses as "near the river side of the clearing"; we found the sherd refuse to be toward the front of the area of secondary growth. The major point of disagreement is Farabee's statement that "the clearing is 200 yards from the river," whereas we judged it to extend to within 10 meters of the edge of the bank. This difference can be reconciled in one of two ways: (1) the clearing was extended forward after Farabee's visit, a conclusion quite within the realm of possibility; or, (2) Farabee's occasional looseness in estimating distance (cf. pp. 267–268) makes some of his figures unreliable.

The relatively large size of the habitation area at E–19 is in keeping with Farabee's (MS., Notebook A) description of the village in 1914:

> Here there are two houses—two shelters for casava work etc. and a visitors house. The two houses are each about 35 ft. diam. and circular. One has side wall 4½ ft. high—the other comes down to ground like great straw stack. The roofs are all made of braided thorny palm leaves. Houses are about 20 ft. high with a long central pole extending from above the roof.
>
> The visitors house is 12 ft. in diameter & same height—6 side posts & one central post. The roof comes within 5 ft. of ground & no walls built in . . .
>
> Only a very small bare ground about the houses, about double the area of houses.

If we may tentatively identify Site E–19 with Farabee's "Tohi," then we are left with two possibilities for the second place, referred to as "Kushar's Village." Farabee (MS., Notebook A) gives the following description:

> A short days journey further up the Essequibo & on same right bank is the 2nd T.V. situated on a little hill 45 ft. above the river and ¼ mi. back. The houses are new & just in building—it is an old site reoccupied—an excellent location—a small stream passes near the house & to the river.

Provided Farabee is correct, the reoccupation should be a diagnostic feature. E–16, one of the two possibilities, has that characteristic, while the small refuse area at E–17 shows evidence of only one brief occupation. E–16 also resembles "Kushar's Village" in having a small stream running along the edge. The height of the bank and the distance of the habitation area from the river differ from Farabee's specifications, the bank being 6 meters high and the refuse deposit of Cut 2 (the late part of the site) about 15 meters from the bank.

The identification of E–16 with "Kushar's Village" fits the seriation picture rather well. The lowest part of Cut 2 (Level 8–16 cm.) falls below the lowest levels of Cuts 1 and 2 at E–19 (Farabee's "Tohi"), which Farabee describes as the older village. However, the percentage occurrences in these three levels are so similar that E–16, Cut 2, Level 8–16 mm. could as easily have been put above as below the two lowest levels at E–19 in the pottery type seriation (fig. 101). If this had been done, the sequence would have been exactly as Farabee described. In view of the general assumption that ceramic analyses and seriated sequences give only approximate and not absolute results, this discrepancy is minor. The archeological evidence permits us to add a postscript to Farabee's account: "Kushar's Village" was soon abandoned, whereas "Tohi" remained inhabited and perhaps was still occupied when the Taruma Phase came to an end.

The last record of a Taruma village appears to have been made by Walter E. Roth, who visited the upper Essequibo in 1925. The village he saw, 5 days' paddling upstream from the mouth of the Kuyuwini and below the mouth of the Kassikaityu (Roth, 1929, p. ix), is described as follows:

> This settlement is situated on the summit of the hill of that name [Wannawantuk] and consists of two huge houses built on a Wapishana model. The hill itself, some 300 feet high, fronts on the right bank of the Essequibo, is flanked on either side by a creek, and slopes down into a swamp, an ideal spot protected by natural defenses to withstand any surprise attack. . . . I was next led to an extraordinary structure at the foot of the hill, which was nothing less than a stepladder built up its steep declivity. It was formed of runners with wooden rungs tied crosswise, the former running zigzag at a greater or less angle according to the conformation of the slope. Extra support was afforded by a double handrail formed of vine rope attached to gaudily painted stakes driven into the ground at distances about 10 to 12 feet apart. In my climb up it to the top plateau I counted over 260 rungs and I have often pondered over the labor and skill entailed in their fixation and construction.

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The only archeological site far enough down river to equate with Wannawantuk is E–30. Its seriated position is perfect for this identification, but the description deviates slightly from Roth's. E–30 and the site Roth visited are both on the right bank of the Essequibo, but the hill at E–30 was only 16 meters above low water level in December 1952. It slopes off on all sides as Roth describes, but is steep only for the first 5 meters. A photograph in the original published version of Roth's (1925, p. 4) article, however, gives reason to believe that the hill he saw may have been much lower than "300 feet." It shows the "staircase" with an Indian climbing it. The incline is not steep and measured with a protractor is only 30 degrees to 40 degrees at the most. Roth mentions that the runners were laid "zigzag," suggesting use of a switchback arrangement. Under these circumstances 260 rungs would represent an elevation of much less than 300 feet. Thus, a combination of factors in his own data clearly implies that the hill must have been considerably lower than his estimate. Since we were not able to extend the survey downriver from E–30, it is impossible to determine whether there is another site more in agreement with Roth's description, and the correlation must therefore remain tentative. However, Roth's report supports the archeological evidence that the latest area of Taruma occupation is the region of the Essequibo below the mouth of the Kassikaityu River.

Another comment in Farabee's field notes (MS., Notebook A) confirms one of the other archeological inferences. He mentions that the people at "Kushar's Village" have fields "2 hrs. journey away where they have shelters but no houses." This is in accord with the identification of certain former clearings as fields with camp sites. Another of Farabee's comments is less clearly substantiated by the archeological situation. He states that, "They formerly had single houses, now they often have several families in a single house." Refuse areas of less than 20 meters in diameter are suggestive of communal houses. Although they are most frequent in the latter half of the Phase in such sites as E–15, E–16, E–17, E–18, the trend is not wholly consistent. E–19, which is late, is as large as any of the early sites, and Farabee describes it as having two communal houses with outbuildings. Furthermore, sites with more than one occupation cannot be distinctly subdivided into the respective areas occupied on the basis of present evidence. The best that can be concluded is that the archeological picture, while it does not clearly support Farabee's statement, does not completely rule it out.

Before the Taruma became extinct as a tribal entity, the Wai Wai had already begun to move northward into British Guiana from the headwaters of the Mapuera in Brazil. In 1852 Brett reported that "the Woyawais are a distant tribe, inhabiting the mountains near the sources of the Essequibo" (Brett, 1852, p. 349). In 1914 Farabee found a few Wai Wai settled on the British Guiana side of the border, but farther south than the area they occupied in 1952. The extinction of the Taruma about 1925 opened the upper Essequibo to Wai Wai immigration, and the greater accessibility of European goods in British Guiana versus Brazil has provided an attraction. By 1952 there were about equal numbers of Wai Wai on both sides of the border, with the northernmost village on the Essequibo just above the mouth of the Kassikaityu.

Given the historic fact that the Wai Wai were partly contemporary with the Taruma in the upper Essequibo, and that for at least 100 years the two tribes were in contact with each other, visited back and forth, and engaged in trade relations, it is of interest to examine what archeological clues exist that might lead to a reconstruction of this situation. Such evidence is very limited and indefinite in the area covered by the survey, which was predominantly Taruma Phase territory. Since Taruma Phase pottery is superior both technically and artistically to that of the Wai Wai, any trade in pottery vessels would probably have been principally from the Taruma to the Wai Wai. This would produce evidence in Wai Wai sites but not in Taruma ones, and the Wai Wai sites occupied when Taruma culture was a functioning entity are outside the area included in the survey. From the present archeological evidence, there is only one clue to suggest contact and that is the faint resemblance of Erefoimo Incised designs of the Wai Wai Phase to those of Kanashen Incised of the Taruma Phase. However, the points of comparison are so simple as to be easily explained as fortuitous, and in the absence of known contact the resemblance would be most safely regarded as such. Even with the knowledge that the opportunity for acculturation existed between the two groups, the conclusion that it happened in this case is speculative.

Archeological documentation for the Wai Wai is slight. Two sites were examined, both recently abandoned. The most conspicuous difference between these and the Taruma sites was the relative amount of pottery refuse. In Taruma sites, the deposits were frequently 25 cm. or more in thickness and sherds were relatively abundant. Neither of the Wai Wai sites produced sherds in any quantity or depth, indicating a high degree of village mobility or a decline in the use of pottery or both. Increasing reliance on metal containers and a consequent deterioration of the pottery-making art are evident at the present time, and Wai Wai village duration has been observed to vary between 3 and 8 years, indicating that both factors are involved.

At the present time (1959), the Wai Wai appear to be holding their own both numerically and culturally in the upper Essequibo in spite of intermittent contact with missionaries and other Europeans over the past 10 years. Their present area of occupation is between the mouth of the Kassikaityu and the Essequibo headwaters in British Guiana, with a few of the tribe still remaining on the Brazil side of the border. Acculturation has been slow because of the remoteness of the region and its lack of attractions for European exploitation, and there is no indication that this situation will change in the near future. If the European diseases that periodically ravage aboriginal groups in other parts of the tropical forest are not introduced, the Wai Wai Phase will probably continue to endure for a considerable number of years.

THE RUPUNUNI SAVANNA

THE RUPUNUNI PHASE

DESCRIPTION OF SITES AND EXCAVATIONS

All but one of the 39 sites investigated in the savanna and adjacent wooded hills of the Rupununi District belong to the same archeological culture, designated as the Rupununi Phase. Three major types of sites are represented: habitations, cemeteries, and localities of possible ceremonial significance.

Habitation Sites

R-2: MOCO MOCO VILLAGE

On the forested northwest flank of the Kanuku Mountains, on the upper course of the Moco Moco River, is a small habitation site (fig. 109). Sherds exposed on the surface of a path leading up the hillside were the first indication of its presence. Further exploration in an adjacent garden clearing revealed that the sherds were distributed over an area approximately 25 by 30 meters in diameter, corresponding to a slight knoll from which the land sloped toward the Moco Moco River some 500 meters to the west. Sherds were limited to the surface or in soil hilled around the tobacco plants. No other artifacts were found.

R-3: MANARI CREEK

A grassy hill about 1 km. northwest of the tree-covered slope of the Kanuku Mountains produced evidence of a Rupununi Phase village (fig. 109; pl. 53, *a*). The relatively flat summit of the hill rises some 30 meters above the adjacent savanna, providing a vantage point with a view toward the distant Pakaraima Mountains. Manari Creek runs along the base of the north edge of the hill. At the time of our visit, the site was overgrown with bunchy, bluish-green grass about 25 cm. tall and scattered small, scrubby trees. The ground surface was littered with iron concretions of pea size or larger eroded out of the lateritic soil. Sherds were concentrated in two areas, one 40 by 100 meters on the highest summit of the hill and the other 60 meters in diameter on the southwest end of the hill, which was about 2 meters lower in elevation. These two concentrations were about 500 meters apart, and sherds were thinly scattered in the intervening area. Sherds were abundant but occurred only on the surface of the hard, compacted and stony soil. The surface collection represents all parts of the site and contains, in addition to aboriginal remains, a wide variety of objects of European origin. The presence of a worked fragment of glass eliminates the possibility of later reoccupation of the spot, and analysis of these materials (see table L, pp. 315–317) establishes a relatively recent date for the site.

R–5: MARAKANATA WATERHOLE, VILLAGE 1

Sites R–5 through R–9 are in the approximate geographical center of the north Rupununi savanna, and on the watershed between drainages leading to the Amazon on the west and the Atlantic on the east (fig. 109). This area is characterized by uneven terrain and a vegetation pattern in which small irregular extensions of grassland are surrounded by large patches of forest (pl. 53, *b*). Site R–5 (fig. 110) occupies a tonguelike peninsula extending into a low area of *Ité* palm swamp. Ten meters below the summit, on the south edge of the rise, is a waterhole reputed among the local ranchers to have been dug by the Dutch. Whether or not it was improved by Europeans, this spring and swamp would have provided sufficient water for aboriginal use.

The surface of the peninsula is composed of hard, compact, lateritic soil, which could be dislodged with a trowel only with great difficulty at the time of our visit in the early part of the dry season. The grass was bunchy and tangled, but had been burned shortly before our arrival so that the ground surface was exposed. Sherds and stone artifacts were found in two places 300 meters apart, and in view of the possibility that these represented different occupations, the collections were kept separate and the areas given separate site numbers.

R–5 is the smaller of the two sites, covering an approximately circular area about 25 meters in diameter. It is located on the neck of the peninsula some 50 meters from the steep drop leading to the waterhole. The surface is generally level and liberally sprinkled with small stones. The majority of the sherds were found on the surface, several tests revealing nothing deeper than 8 cm. A controlled excavation 1 by 2 meters placed in the center of the site produced only 76 sherds.

R–6: MARAKANATA WATERHOLE, VILLAGE 2

R–6 is 300 meters west of R–5, separated from it by a slight depression (fig. 110), and situated on top of a knoll 3 meters higher than the adjacent ground level. The gravelly lateritic soil and sparse vegetation are identical to the surrounding area (pl. 53, *b*). Cultural remains were scattered over a roughly circular area 400 meters in diameter, and tests showed them to be restricted to the surface. In

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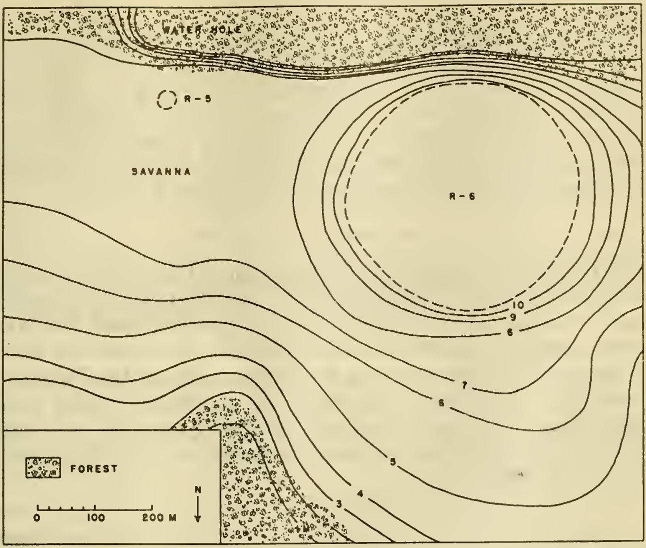

FIGURE 110.—Sketch map of R–5 and R–6, habitation sites of the Rupununi Phase.

addition to a large random surface sample of stone and pottery, a 2- by 1-meter square test was made, from which 93 sherds were obtained. The site produced an unusually large number of stone artifacts, and a few items of European origin (see table L, pp. 315–317).

R–7: LAKE AMUKU

A few kilometers north of R–6 is Lake Amuku, a small, swampy, shallow, elongated body of water. High, thick grass occupies the area immediately surrounding the lake, with large patches of forest nearby. A narrow ridge running north-south a short distance from the west margin of the water produced scattered sherds (fig. 109). The general area of their distribution was 200 by 500 meters, with a slight concentration toward the southwest part of the ridge. Collecting of a surface sherd sample was impeded by the tallness of the grass cover, but tests showed that there was no depth to the deposit.

R–8: QUATATA, VILLAGE 1

This site occupied the narrowest place in a strip of savanna between two large patches of forest (fig. 109). In both directions, the savanna opens out into a rolling, tree-sprinkled terrain. A swampy area in the forest to the southeast of the site may have provided the most

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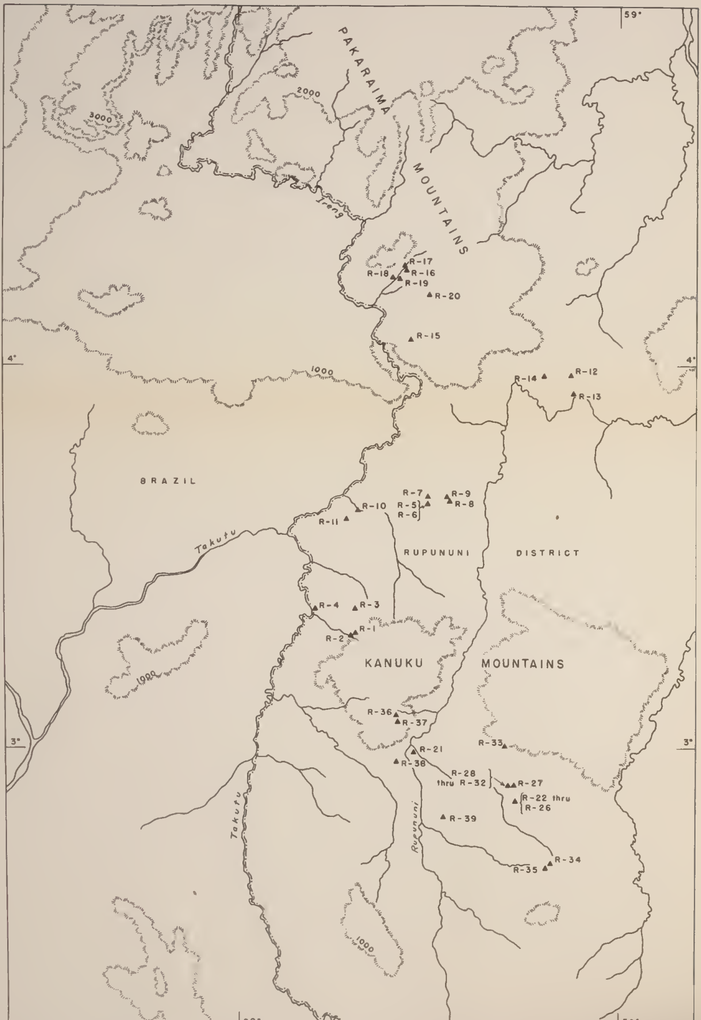

FIGURE 109.—Map showing the location of sites of the Rupununi Phase. Elevations are given in feet.

accessible water supply, although the Quatata River is not far away. Sherds were scattered on the surface over an area roughly 40 by 80 meters, with the longest axis across the open strip. In addition to aboriginal materials, the site produced numerous glass and china fragments, pieces of tin and enamelware (see table L, pp. 315–317). Lawrence Hart, our guide, recalled this spot as a place where Indians lived some 20 years before, when he was a child, a dating that conforms to the position of R–8 in the ceramic seriation chart (fig. 125).

R–9: QUATATA, VILLAGE 2

Just north of the patch of forest adjacent to the north side of R–8 is another habitation site (fig. 109). It occupies a section of savanna that is bounded on the south and west by patches of forest, but to the north permits an unobstructed view across a nearby shallow ravine of the tree-dotted landscape to the distant peaks of the Pakaraima range (pl. 54, *a*). A swampy area in the ravine provides the closest water source. The soil is typical hard, pebbly laterite, and sherds were found on the surface only, scattered over an ovoid area 60 meters long by 25 meters wide.

R–10: PIRARA LAKE

About 2 km. south of the Pirara River and 1.5 km. south of Pirara Ranch is a small body of water known as Pirara Lake or El Dorado Lake (fig. 109). Among the several small lakes in the north Rupununi savanna, this one is most often equated by the resident ranchers with the mythical Lake Parima of El Dorado fame. A low ridge dotted with cashew trees borders the lake on the south and west, providing a suitable elevation for habitation during all parts of the year. The lake, although only about 500 meters in diameter and shallow, affords good fishing today and is frequented by numerous water birds. However, in spite of these seemingly attractive features, a survey of the vicinity produced no evidence of the existence of former villages of the type characteristic of the Rupununi Phase. One spot on the ridge west of the lake produced two sherds and a scattering of charcoal, representing a brief campsite at most.

R–11: PIRARA ISLANDS

Four kilometers south of Pirara Ranch are several slight forested elevations that do not flood in the rainy season (fig. 109). Nearby are small, shallow ravines in which water can be found throughout the year. An examination was made of this area because of the local belief that it was here that Schomburgk found Indian villages at the time of his visit in 1835. Only two sherds were found just inside the margin of a patch of very dense and tangled forest. Like R–10, these remains appear to represent a campsite rather than a village.

R–12: ANNAI

A rocky slope adjacent to the foothills of the Pakaraima Range (fig. 109), northeast of the present Macusi village of Annai, produced a few aboriginal sherds and others of European origin (see table L, pp. 315–317). The area they occupy is very small and its situation corresponds to that of existing scattered homesteads in the Annai area. No surface water is found in the immediate vicinity, but artificial waterholes dug in a low part of the savanna 250 to 500 meters away serve the present population and probably were used by the residents of R–12 also. The relative abundance of European objects and the location of the site in a relatively undesirable spot are in conformity with the seriation that places R–12 among the most recent sites investigated on the Rupununi savanna (fig. 125).

R–13: RUPUNUNI LANDING

The junction of the Annai River with the left bank of the Rupununi River forms a small peninsula bounded on 3 sides by water (fig. 109). Trees occupy the banks, but the land behind is relatively open savanna. Mud deposited on the ground indicated that this bank, although some 7 meters above river level in November, floods during the rainy season. Nevertheless, sherds were scattered over an area approximately 7 by 25 meters on the peninsula. The fact that unflooded places were typical locations for Rupununi Phase villages, together with the sparsity of sherds, suggests that this may have been a dry-season camp for fishing in the Rupununi River.

R–17: UPPER KARAKARA VILLAGE

The Karakara River is one of a number of small streams that flows southwestward out of the Pakaraima Mountains into the Ireng River. R–17 is on the right bank of the Karakara (fig. 109), which in the dry season at this distance from its mouth should be more accurately termed a creek than a river. The site occupies a grassy knoll 2.0 to 2.5 meters above the level of the water 30 meters away. Rolling foothills are visible to the west and north about 1 km. distant. Sherds were scattered on the rise over an area 100 by 30 meters in which there were three small areas of somewhat greater than average concentration. Each of these was about 10 meters in diameter and probably corresponds to the former position of a house. On the west end of the site area were several recent graves covered with rocks. Sherds were on the surface, but several tests failed to reveal anything at greater depth.

R–19: LOWER KARAKARA VILLAGE

A second habitation site is located 1.5 km. from the left bank of the Karakara River, some distance below R–17 (fig. 109). It occupies a hilltop 15 to 25 meters above the surrounding terrain. The slopes rise steeply on all sides and the summit commands an excellent view in all directions. In addition to the main summit, 160 meters long by 10 to 15 meters wide, there is a shelf 2.0 to 2.5 meters lower along the west side, giving an additional area of 100 by 15 meters. Both surfaces are littered with small stones, and large granite boulders project from the edge of the summit except on the east side. Sherds were scattered on both the higher level and the shelf, with a slightly greater concentration on the latter. Tests showed no depth to the refuse. Abundant objects of European origin were also found, including glass bottles, nails, shotgun shells, and harmonica parts (see table L, pp. 315–317). Some of these may be related to a visit by Anglican missionaries, which the guide said took place about 1902.

B–20: UTETETA

The lower slope of the Kawari-eng Mountain in the southern Pakaraima range has outcrops of large granite boulders. A formation about 30 meters from the south side of Uteteta Creek contains several rock shelters (fig. 109; pl. 54, *b*) that produced Rupununi Phase ceramics. Although such locations are normally burial places, the quantity of sherds and the small size of the vessels indicate in this case that the shelters were used for habitation. The unlevel floors and small size of the shelters do not seem to provide the most desirable living conditions. These defects, together with the remoteness of the spot in the depths of the forest, suggest that this may represent the retreat of a small number of people from more accessible places, perhaps to avoid European contact.

Cave 1 is formed by a large flattened rock that projects forward from its supports for 4 meters at the deepest part of the shelter (pl. 54, *b*). Except at this crevice the shelter is less than 2 meters deep. The floor slopes from side to side and is obstructed in several places with small rocks. Being somewhat higher than the adjacent ground, it remains dry at all times. Ceiling height varies from 1.25 to 2.00 meters. Sherds were recovered from three places in a distance of 5 meters, both on and just below the surface, associated with scattered bits of charcoal and bone fragments. Part of a badly rusted sword blade was found on a ledge in the rock and fragments of small bowls came from a small crevice higher up and to the west.

Cave 2, about 15 meters west of Cave 1, is formed by a large granite, boulderlike outcrop projecting from the hillside at a 60-degree angle. The surface of the ground along its base is very irregular, sloping downward considerably from west to east, and strewn with good-sized rocks. Rounded rocks are exposed on the floor of the deepest part of the shelter. Dirt between them produced sherds to a depth of 5 cm., but this may be explained by the fact that the floor is lower than the adjacent hillside so that dirt washes in during the rainy season. This situation would make the site usable only during the dry part of the year. In addition to sherds, fragments of deer bones were found in the fine, powdery soil. A small, nearly complete Kanuku Plain bowl was wedged back under the ceiling rock, and near it were a few white glass beads.

Cave 3 is west of Cave 2 in a deep depression under a large rock, which forms both the roof and one side. The upper tip rests on a second large rock, which forms the vertical southeast wall. A third rock forms the southwest wall. The only entrance is at the northeast, where a steep slope leads down to the floor 5 meters below. An opening 1 by 4 meters in the south edge of the ceiling admits light. Ceiling height varies from 2.75 meters at the south corner to 1.15 meters at the north side. The floor is rendered uneven by the presence of rock slabs of all sizes spalled from the roof. The dirt between them was dry, loose, and contained large sherds, deer bones, and turtle shell fragments. An area of burnt dirt at the north edge may indicate a cooking fire. Because of its low floor level, this shelter, like Cave 2, would not be usable in the rainy season.

Cave 4 is on a level above the others, accessible through a passage west of the rock forming Cave 2 and also from behind the rock. Its rock-strewn floor is 3 to 4 meters above that of Cave 2, and its ceiling is formed by a capping rock 2 meters above the floor. Cracks between and behind the rocks contained many sherds as well as several nearly complete small bowls, four of which were Rupununi Plain and one Kanuku Plain. Other refuse included deer, tapir, fish, and turtle bones and the body of a glass rum bottle. Although its rock-strewn floor would seem to provide an uncomfortable living surface, this cave produced more sherds than any of the others.

R–22: WIE-WIE-TAU CAVE

Wie-wie-tau is a bald dome of granite near the eastern edge of the Rupununi savanna (pl. 55, *a*). Under a spur protruding from its northern flank is a large, low-ceilinged cave (pl. 55, *b*), whose entrance looks across a grassy inlet toward another spur 40 meters to the east. To the north, the inlet opens into savanna broken by patches of trees and outcrops of blackened granite. The cave itself is 30 meters wide across the mouth and 20 to 23 meters deep. Ceiling height decreases from 4 meters at the north side of the front to 2 meters at the south side, measuring only 1.5 meters in the rear. This is largely a result of the sloping floor rather than curvature of the ceiling. The mouth opens onto a granite shelf, which raises the floor above the level of winter flooding. Fine, powdery dirt covered the lower (north) end to a depth of 15 cm., while the remainder of the floor consisted of sloping rock. Small spalls of granite were abundant in the dirt. Small sherds were scattered in the north half, with the greatest concentration toward the front. This part of the cave, which is the region with the maximum ceiling height, also contained four hearths formed of half a dozen stones each, arranged in rings 50 cm. in diameter.

A 2- by 1-meter test excavation was made 4 meters in from the front and 6 meters from the north wall. The soil had the same powdery consistency down to 15 cm., the level of bedrock, and contained abundant small rock chips from the ceiling. Sherds were small and sparse. Occasional bone fragments representing small mammals and birds were too fragmentary to identify by species.

R–23: WIE-WIE-TAU, VILLAGE 1

A small grassy clearing on the east slope of Wie-wie-tau produced sherds on the surface over an oval area of 20 by 40 meters (fig. 109). The clearing is bounded by small brush with dense undergrowth. The light tan, sandy soil showed no discoloration as a result of habitation use.

R–24: WIE-WIE-TAU, VILLAGE 2

About a third of the distance up the northeast slope of Wie-wie-tau is a second small habitation site (fig. 109). It is divided into two small, unequal parts by a ridge of granite boulders now harboring a growth of scrubby trees. The larger part is 75 by 10 meters, the smaller 25 by 7 meters. Both had light-tan soil supporting grass, in contrast to the surrounding scrubby trees and brush. Sherds were sparse and confined to the surface of the ground.

R–25: WIE-WIE-TAU, VILLAGE 3

Slightly farther down the hillside than R–24 and separated from the latter by a 5-meter wide strip of boulders and brush is another similar grassy clearing giving evidence of Rupununi Phase habitation (fig. 109). About half of this nearly level area consists of flat expanses of blackened granite flush with the ground surface. Where soil occurs, it is light tan, sandy, and supports a low grass interspersed with occasional thin brush. One large sherd lay on one of the rocks and others were found partly buried in the dirt in the southwest part of the area. The somewhat irregular site area measures 80 by 30 meters. To the north the slope drops steeply, affording a fine view.

R–26: WIE-WIE-TAU, VILLAGE 4

A small habitation site at the foot of Wie-wie-tau occupies a broad patch of savanna on the opposite (west) side of the granite spur in which R–22 is located (fig. 109). Bounded on three sides by the wooded and rocky slope, this site has sufficient elevation to overlook the valley toward the mountain slopes on the north. A small stream flows from the hillside at the east edge of the clearing. Surface sherds were scattered over an area 20 meters in diameter west of the center of the clearing.

R–27: MAUBI-WAU, VILLAGE 1

Several kilometers north and a little west of the Wie-wie-tau area is another group of habitation sites. These are referred to as the Maubi-wau villages, after a small creek in the vicinity (fig. 109). This part of the savanna is somewhat rolling and the high places are generally covered by patches of forest. The sites are all on savanna adjacent to one of the patches of trees.

R–27 is on a grassy rise 3 to 4 meters higher than the adjacent savanna and sprinkled with Sandpaper trees (*Curatella americana*). The western end of the rise is occupied by a patch of forest about 50 meters in diameter. The site covers the area between this forest and the base of a slope on the east that culminates in a hill 15 meters higher than the site elevation. The soil is light gray and packed hard. Sherds were scattered on the surface over an area 50 by 80 meters, the west edge penetrating a short distance into the forest. In this forested area, 4 meters in from the edge of the savanna, a large Kanuku Plain vessel was discovered protruding from the surface of the ground. The bottom, which was uppermost, had been broken out. The intact walls extended 15 cm. below the surface to the slightly incurved rim with a mouth diameter of 40 cm.

R–28: MAUBI-WAU, VILLAGE 2

About 2 km. west of R–27 is another similar habitation site, occupying the edges of a thickly forested knoll (fig. 109; pl. 56, *a*). The forested summit of the knoll measures about 100 by 30 meters. Grass-covered slopes incline gradually downward on all sides. The creek, Maubi-wau, runs along the foot of a high, forested hill 2 km. to the north. Sherds occurred in three places, one curving around the west edge of the forest, one at the southeast, and one at the northeast edge. Dimensions are 15 by 30 meters, 15 by 10 meters, and 25 by 10 meters respectively. Sherd refuse did not extend more than 1 to 2 meters into the edge of the woods. Sherds were on or protruding from the surface, and occurred only rarely between the areas of habitation.

R–29: MAUBI-WAU, VILLAGE 3

One kilometer north of R–28 and separated from the latter by a low, damp, meadowlike area, is a ridge about 2 meters higher than the elevation of the surrounding savanna (fig. 109). The ridge is 250 meters long, extending in a southeast-northwest direction, and 80 meters wide. Its surface is broken in several places by groups of large granite boulders, which are especially prominent at the southeast end. Forest 100 meters to the north would have provided land suitable for slash-and-burn agriculture, and water was available 250 meters to the northwest. The grass had been recently burned and the sherds were readily visible on the surface of the ground, together with a liberal amount of lateritic gravel. One place near the center of the highest part of the ridge produced a concentration of sherds over an oval area 30 by 70 meters, none more than 2 cm. below the surface.

R–30: MAUBI-WAU, VILLAGE 4

This site occupies the northwest end of the ridge on which R–29 is located (fig. 109). The elevation is slightly lower, but otherwise conditions are the same. Sherds were concentrated over a circular area 25 meters in diameter. Fragments of two stone axes were also recovered.

R–31: MAUBI-WAU, VILLAGE 5

One of the highest hills in the Maubi-wau region is 1 km. west of R–30 (fig. 109). The eastern end slopes gently down from the tree-covered summit. Here, sherds were scattered over a large area of savanna broken by numerous large granite boulders, and scattered Sandpaper trees. The rocks divide the habitation area into two parts, the upper one 100 by 75 meters, and the lower one 75 by 30 meters. Sherds were unusually abundant over most of the site area, which is the largest in the Maubi-wau region. One small complete vessel was found 7 meters from the upper edge of the site, lying inverted with its rim a few centimeters below the surface. It is Rupununi Plain, a variant of Form 5 c. A shallow groove 2 mm. wide runs along the base of the neck or collar. Height is 11 cm., mouth diameter 14 cm., maximum body diameter 18 cm., base diameter 7 cm., neck height 2.5 cm., rim thickness 5 mm., and body wall thickness 6 mm.

R–32: MAUBI-WAU, VILLAGE 6

R–32 occupies a rise 250 meters west of R–31 and 1 to 2 meters lower in elevation (fig. 109). The site shares the summit with two small patches of woods, which it abuts. Sandpaper trees grow in considerable abundance on the sherd area as well as the adjacent savanna. The site measures 100 by 40 meters and is comparable in all respects to the other habitation spots in this part of the Rupununi savanna.

R–33: WIERAMORE

This site is represented by two complete jars brought to us by two of the local men, who made a trip up into the southern Kanukus to get them. They were said to be on or beside a flat rock in the middle of an old village, where sherds were scattered around on the ground. The description suggests a site similar to R–36 or R–37. Both vessels were Kanuku Plain, one Vessel Form 6 a (pl. 66, *e*) and the other Vessel Form 6 b (pl. 66, *f*).

R–36: MORMISWAU HEAD

A patch of savanna high in the south Kanuku Mountains matches the extent of the largest Rupununi Phase site in the survey. It occupies a basin composed of several rounded hills with a small valley between (figs. 109, 111; pl. 56, *b*). At the east end of the valley, palms and other tall trees mark the course of one creek, the Mormiswau, while the Mouri-wau drains from the northwestern edge. Forest begins at a sharply defined line on the hillside and continues up to the peaks that surround the basin. The sharpness of the line of demarcation between savanna and forest, and the coincidence of the habitation area with the savanna suggest that this is a clearing of artificial origin, dating back to the establishment of the village. Sherds were concentrated on the flatter hilltops and ridges, becoming sparser on the slopes. Four areas of most intense occupation were distributed around the basin and are indicated by the letters A, B, C, D (fig. 111). In addition to aboriginal remains, several objects of European origin were collected (see table L, pp. 315–317).

This habitation site differed from others of the Rupununi Phase in having a group of funerary urns near the center of the east half of occupation area A. These vessels were partly buried in the ground from 0.90 to 2.00 meters apart, except for one that was 10 meters from the others. They were rounded jars 28 to 50 cm. in diameter. The mouth appeared to have been covered with an inverted bowl or open jar, and fragments of bone could be detected in the dirt inside. All the burials seem to have been made at the same time, and perhaps represent an epidemic that caused the abandonment of the village, since burial in the habitation area is not characteristic of the Rupunini Phase.

R–37: BIS MOUNTAIN

On the southern side of Bis Mountain, just below the summit, are a number of grass-covered terraces and slopes (fig. 109). To the north, east, and west, the terrain rises to tree-covered peaks and ridges, while to the south the ground falls off rapidly affording an unobstructed view across the savanna far below. A small creek flows through a depression that separates the highest grassy summit from the adjacent forested hillside (fig. 112). The tall grass covering the ground impeded visibility of the surface slightly. The heaviest concentration of sherds was on and around a small rock-studded knoll near the south edge of the savanna area, although the protruding

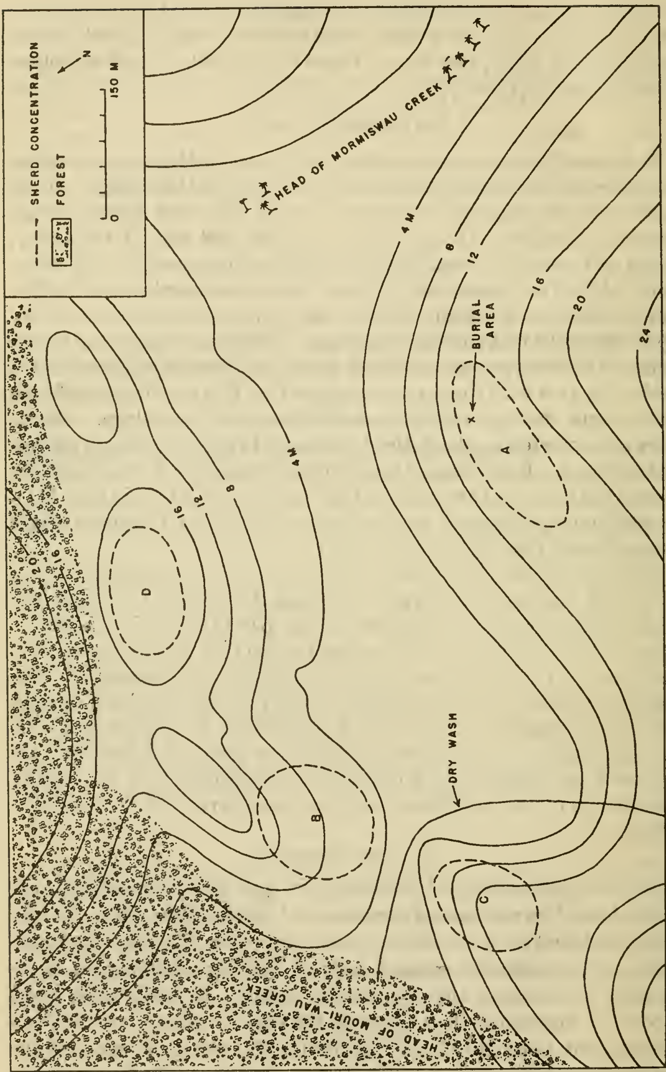

FIGURE 111.—Sketch map of R-36: Mormiswau Head, a habitation site of the Rupununi Phase.

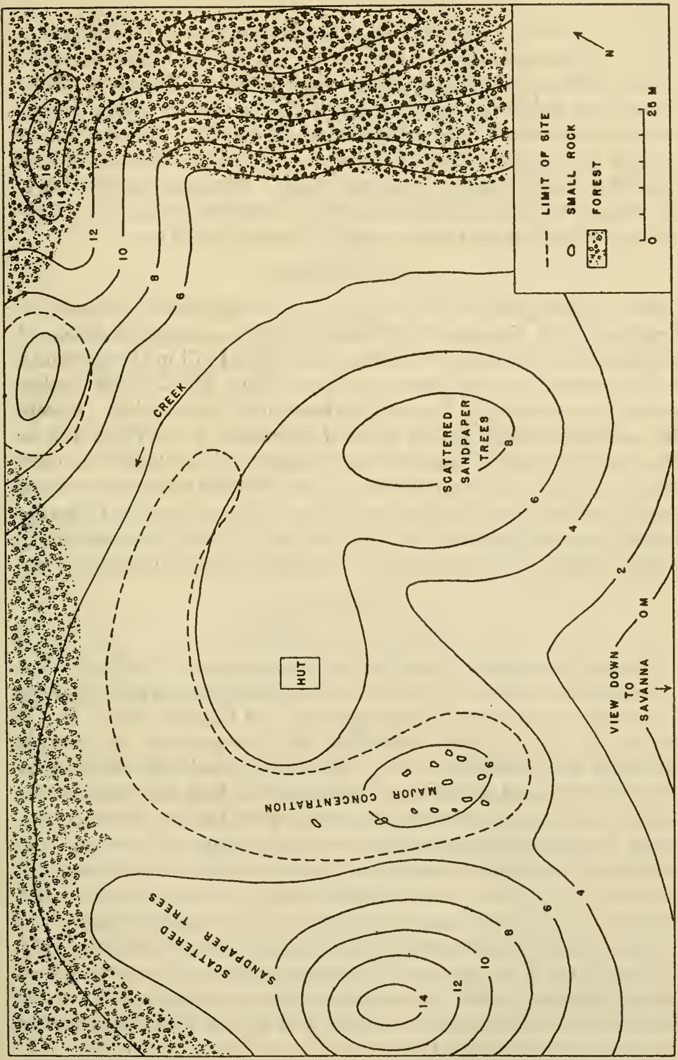

FIGURE 112.—Sketch map of R-37: Bis Mountain, a habitation site of the Rupununi Phase.

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stones would seem to make this spot ill-suited for habitation. The sherds continued to the north in a distribution that curved around a rise on the east and bordered the creek. Another sherd area occupied a small hilltop to the north, on the opposite side of the creek. Tests showed that habitation refuse occurred on the surface only. Survey revealed no sherds on the other slopes and knolls. The presence of savanna at this elevation in the mountains raises the question of whether it is of artificial or natural origin. Trees are sprinkled over the slopes, but it could not be determined whether or not this represents a gradual return to a previously forested condition.

R-39: DAWBAR-WAU

Some 3 years prior to our visit to the south Rupununi savanna, the upper half of a Kanuku Plain vessel, Form 6 a, appeared on top of a large rock at the edge of a rocky, tree-covered hill in the savanna a few kilometers east of Dadanawa (fig. 109). It had been broken straight across on a coil line and the lower half was missing. Except for associated sherds from a bowl of Rupununi Plain Form 1 b, no other pottery could be found in the vicinity. It is probable that these vessels were recently removed from an unidentified habitation site and then discarded when they became broken. The jar has the following dimensions: rim diameter 10.5 cm.; neck height 3 cm.; maximum body diameter 47 cm. The bowl was rounded with a rim diameter of 26 cm.

Cemetery Sites

R-1: MOCO MOCO SHELTER

The southwest slope of the Kanuku Mountains near the headwaters of the Moco Moco River (fig. 109) is strewn with large granite boulders camouflaged by trees, thick undergrowth, and hanging vines. R-1 is located in a small shelter created by the juxtaposition of three big rocks and several smaller ones. The ceiling overhangs the floor by only 1 meter except where two narrow crevices lead back between the rocks. Dirt and rubble washed into these from behind, forming steep slopes covered with slabs spalled from the ceiling. Other large and small rocks had fallen down toward the front of the shelter, some of them damaging pottery vessels that had been placed on the floor. Exploration revealed one complete vessel (pl. 57, *a*) near the front of the shelter and the base of a second jar 1.5 meters to the north (fig. 113). The majority of the sherds of this second vessel could not be found. Small groups of sherds in two places along the south edge of the deepest crevice belonged to Vessels 2 and 3, both Kanuku Plain but unreconstructable as to shape.

Vessel 1, the complete specimen, is a Kanuku Plain jar of Form 3 a (pl. 64, *c*). Dimensions are: height 33 to 34 cm.; rim diameter 39 cm.; shoulder diameter 41 cm.; neck height 13 cm.; base diameter 13

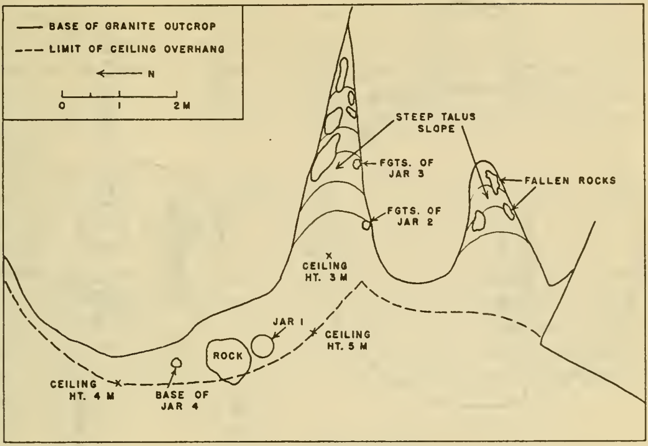

Figure 113.—Sketch map of the Rupununi Phase cemetery site of R-1: Moco Moco Shelter, showing the position of the burial jars.

cm.; rim thickness 6 mm. Associated with this jar were a number of sherds of both Kanuku and Rupununi Plain, representing at least four smaller vessels, none of them reconstructable. It seems probable that this is a complex of funerary jars comparable to the better preserved ones of R-34 and R-35. The post-European date of R-1 is established by the presence of tiny white glass beads with Vessel 1 (see table L, pp. 315-317). This specimen is now in the British Guiana Museum, Georgetown.

R-14: ROCK POINT

Northwest of Annai Village at the base of the Pakaraima Mountains is an area known as the Aranapunta Valley (fig. 109). On the south side of the east end of this valley is a grassy knoll sprinkled with Sandpaper trees. Slightly higher than the surrounding area, it is not inundated in the rainy season. Excavation at a spot indicated by the chief of Annai Village revealed a completely buried vessel of Kanuku Plain Form 3 b (pl. 65, *b*). It had been covered with an equally large vessel of Kanuku Plain Form 3 a, inverted so that its rim rested on the inner surface of the upper wall of the jar below (fig. 114). The bottom of this lid had once projected above the surface of the ground and had been broken with the passage of time. Four small rocks had been arranged along the east and southeast side so that their upper edges were from 9 cm. above the broken edge of the lid to 5 cm. below this line. The dirt inside the vessel was wet at the top, becoming dryer and harder with increased depth. Scattered sherds from

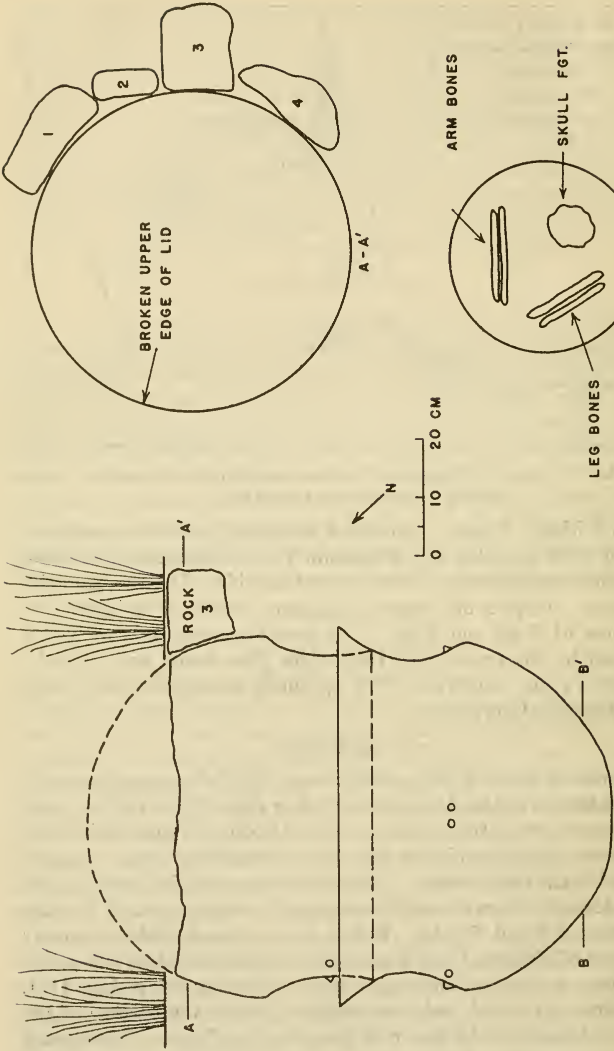

Figure 114.—Sketch showing the position of the burial urn and its contents at the Rupununi Phase site of R–14: Rock Point.

the broken lid appeared in the upper part. Badly decayed bones were found in the bottom of the jar, the leg bones on the west side, the arm bones on the northeast, and the skull on the south. No teeth could be found. The bones were impossible to preserve or to identify as to sex or age because of their bad condition. There were no associated objects.

Both jar and lid were ornamented with four pairs of small conical applique nubbins, approximately equally spaced around the neck, 1 to 3 cm. above the shoulder. All features of paste and surface are typical of Kanuku Plain. The asymmetrical jar (pl. 65, *b*) has the following dimensions: height 43 to 48 cm.; rim diameter 65.0 to 68.5 cm.; minimum neck diameter 56 cm.; shoulder diameter 61 cm.; neck height 21.5 to 22.8 cm.; rim thickness 1.3 cm. The lid was badly broken and no rim fragments could be found. Diameter at the shoulder is 56 cm.; body wall thickness is 1.2 to 1.4 cm. This jar is in the British Guiana Museum, Georgetown.

R–15: KARASABAI TRAIL

Large sherds from a Kanuku Plain jar of Form 3 a were encountered on the trail through the forest north of Karasabai Village in the southern Pakaraima Mountains (fig. 109). This vessel shape was frequently used for burial, and the adjacent hillside had many large granite outcrops with niches that would have been suitable for cemetery use, but a search produced no evidence that this vessel came from any of those investigated. It is doubtful, however, that it was brought from any great distance. Mouth diameter is 51 cm.; shoulder diameter 55 cm., and neck height 4 to 5 cm. Total height could not be reconstructed from the existing fragments.

R–16: UPPER KARAKARA CEMETERY

About 100 meters from the left bank of the upper Karakara River, opposite habitation Site R–17, is a low hill covered with grass and scattered, scrubby trees (fig. 109). Granite rocks are so abundant on the surface that one can easily step from one to the other. The most prominent feature is a badly fractured granite outcrop of large irregularly shaped rocks, about 7 by 10 meters and 4 meters high (pl. 58, *a*). This contains fissures and shelves of various sizes and elevations from the ground. One such shelter on the west side is formed by a large slab that projects freely for 1.40 meters over the sloping edge of a lower rock, making a triangular opening with a horizontal roof. A Rupununi Plain jar of Form 3 b had been placed in this crevice so that its rim was in contact with the capstone, covering the mouth completely. In order to maintain this position, a number of slabs were arranged along the rock beneath so that they formed a solid support under the pot (fig. 115; pl. 58, *b*). Subsequently, one

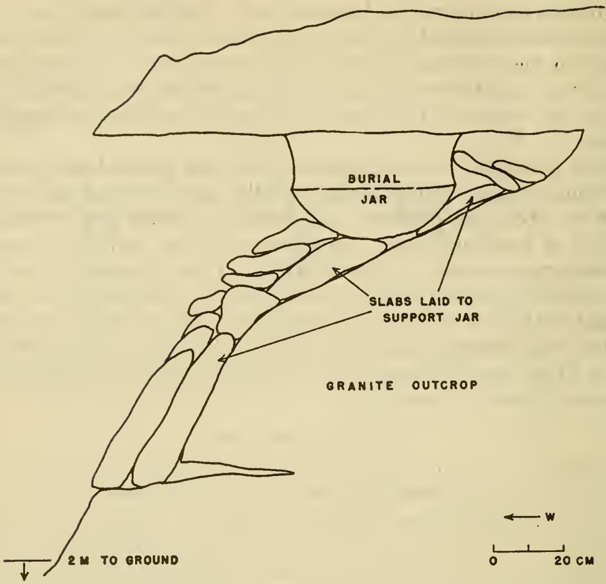

Figure 115.—Profile sketch showing the position of the burial jar at the Rupununi Phase site of R–16: Upper Karakara Cemetery.

side of the vessel had been broken out. Parts of the shaft of long bones were preserved inside, but the epiphyses and other features used for the determination of age and sex were missing. All that can be said is that the size of the long bone shafts suggests the individual was adult. The jar had the following dimensions: height 31 cm.; rim diameter 53 cm.; shoulder diameter 45 cm.; neck height 14 cm.

Although none of the other fissures in this outcrop produced any evidence of similar burial jars, the guide reported that some 10 years previously this site was visited by another person, who removed a vessel from the south side. Six others are said to have been near the base on a wide ledge on the east (pl. 58, *a*).

R–18: LOWER KARAKARA CEMETERY

On the right bank of the Karakara River downstream from R–16 is a steep hill with abundant outcroppings of granite (fig. 109). Toward the top of the hill two large boulders, one leaning against the other, form a triangular cave, the mouth of which affords an excellent view of the grassy rise across the valley on which the habitation site R–19 is located. The main part of the cave has a maximum width of about

1.50 meters at an elevation 30 cm. above the lowest level, where the floor rises to form a bench or shelf along the left half. Height on the right side, where the floor is lowest and the ceiling is highest, is 1.80 meters. A complete vessel of Rupununi Plain Form 3 a was upright on the shelf, its base surrounded by slabs of granite to keep it from falling over (fig. 116). Its top was not flush with the ceiling and no

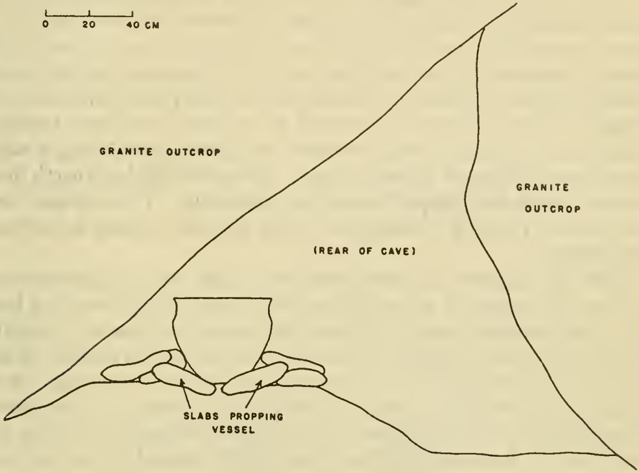

FIGURE 116.—Profile sketch showing the position of the burial urn at the Rupununi Phase cemetery site of R–18: Lower Karakara Cemetery.

sherds in the vicinity suggested the former existence of a lid. Human bones inside included the shafts of long bones and a few fragments of the skull, but the teeth, jaw, and diagnostic parts of the pelvis were missing. The sutures showed no closure and all the bones were gracile, suggesting the individual may have been a young female. The remoteness of the spot and the difficulties of transportation necessitated leaving this vessel in situ. It is a typical representative of Rupununi Plain, the neck better smoothed and more symmetrical than the body, which was irregular and showed faint indications of coils 3 cm. thick. Rim and shoulder diameters are 46 to 47 cm.; height 38 cm.; neck height 10 cm.

Along the front of the outcrop was a pile of rubble and small boulders. The large sloping rock that forms the roof of the cave overhangs so that the ground is sheltered for about a meter out from the base. In this region a second vessel was found, broken and scattered along the slope. The contents were missing. This jar is Rupununi Plain Form 3 b, with a rim and shoulder diameter of 44 cm., a neck height of 12.5 cm., and a body-wall thickness varying from 11 mm. near the bottom to 5 mm. at the rim. Twelve sticks, 1.00 to 1.25 meters long, were lying beside what was identified as the original position of the jar.

R-34: BEI-TAU, SHELTER 1

Toward the eastern margin of the south Rupununi savanna, the terrain is hilly and the grass is broken by patches of forest (fig. 109). One forested hill, known as Bei-tau (pl. 59, *a*), has a number of granite outcrops on the west side, two of which contained Rupununi Phase ceramics. Shelter 1, the largest and best preserved burial site included in the survey, was located at the base of a huge boulder, whose front surface curved outward and upward producing a sheltered area a little over 3 meters deep. The relatively level earth floor some 4 meters long sloped upward at each side. These slopes were composed of rocks of various sizes mixed with dirt washed down from the hillside.

Near the center of the level floor was a pile of thin granite slabs (pl. 59, *b*), arranged so as to completely cover the protruding base of a large inverted vessel. South of this main jar (Jar A) were five small bowls, three upright and two inverted, all on the surface of the ground (fig. 117; pl. 59, *b*). Removal of the rocks covering Jar A revealed another small vessel by the northeast side. A few sherds were scattered on the surface, most of them belonging to these six small bowls. Excavation of Jar A revealed a large jar inverted as a lid over a completely buried upright jar whose mouth was 15 cm. below the present ground surface. This lower vessel was two-thirds full of leaves, bark, and dirt. Careful examination of the contents showed no remaining traces of bone. A variety of burial goods of European origin, including fragments of glass, part of an iron knife, a coin bearing the date 1809 and perforated for suspension and glass beads, establish this burial as recent (see table L, pp. 315–317).

Further excavation of the floor of the shelter brought to light a second covered vessel, Jar H, which was completely buried. Rock slabs had been arranged over the lid in a manner similar to Jar A, suggesting that when the burial was placed in the shelter the ground level may have been lower and the lid may have protruded. The center of Jar H was 1.30 meters southwest of the center of Jar A, and Bowl F on the surface above overlapped the north side. Jar H contained a small amount of dirt, but no bone fragments remained. There was a clustering of small white glass beads on the southwest side.

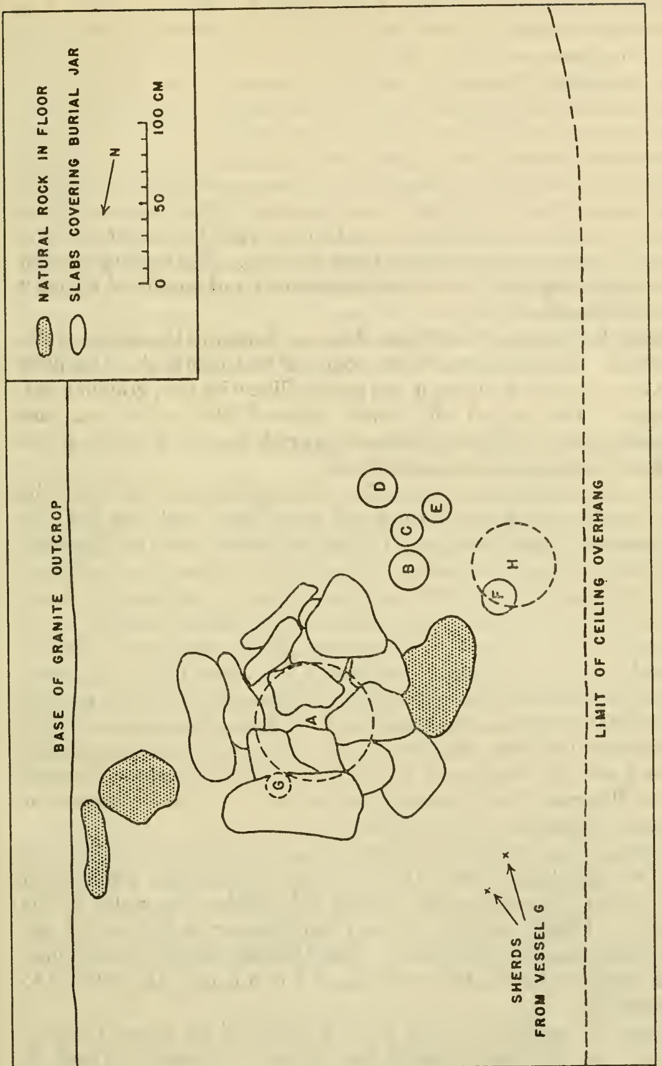

FIGURE 117.—Sketch map of the Rupununi Phase cemetery site of R–34: Bei-tau, Shelter 1, showing the position of the burial urns and associated vessels.

Jar A and its lid are both Kanuku Plain. The jar, Form 2 a, is complete except for the bottom. It is not perfectly circular, so that the diameter varies. Height is 33 cm.; rim diameter 43 to 48 cm.; maximum diameter 49 to 54 cm.; base diameter 25 to 28 cm. Pairs of rounded applique nubbins are attached at four places around the exterior 5 cm. below the rim. These nubbins are 2.5 to 3.0 cm. in diameter, 1.5 to 1.7 cm. in height and 4.5 to 5.5 cm. apart. The lid is part of a much larger vessel, the upper part of which is missing. The present rim is a cleanly broken coil line. The diameter is 60 to 64 cm. and the wall thickness 1.3 to 1.8 cm. Existing height is 30 cm. and the diameter of the flattened base is 29 cm. The existing portion has outstanding walls, which are characteristic of vessels of Forms 2 and 3 of Kanuku Plain.

Bowl B, Kanuku Plain Form 3 c, was buried to the depth of the shoulder. Its center was 95 cm. south of that of Jar A. Complete and in an upright position, it was partly filled with dry, granular soil. Height is 10.8 to 12.3 cm., mouth diameter 22.6 to 23.1 cm., base diameter 8 cm. The wall thickness expands from 2 to 3 mm. at the flattened lip to 8 mm. at the upper wall.

Vessel C, adjacent to Vessel B on the south side so that the walls were touching, was also upright and partly filled with dry dirt. It is Rupununi Plain Form 5 c. Height is 9.3 to 10.8 cm.; rim diameter 18.2 to 18.5 cm., and diameter at the slightly flattened base approximately 7 cm. The rim narrows from 6 mm. at a distance of 3 cm. below the lip to 1.5 to 2.0 mm. at the edge of the flattened lip.

Vessel D lay inverted with its center 18 cm. southeast of that of Vessel C. It is a complete specimen of Rupununi Plain (?), representing a variant of Form 5 c in which the shoulder is slightly angular rather than rounded. Height is 11.2 to 12.6 cm.; rim diameter is 20.6 to 21.0 cm. and base diameter 10 cm. The wall thickness decreases from 6 mm. at a distance of 3 cm. below the lip to 2 mm. at the edge of the flattened lip. Symmetry is poor and the base is flattened at an angle so that the rim is not level.

Vessel E was upright, its center 22 cm. southwest of Vessel C. It also was filled with dirt. It is classified as Rupununi Plain Form 1 b, with a flattened bottom slightly thickened at the center on the interior. Height is 4.0 to 4.5 cm.; rim diameter is 15.7 to 16.2 cm. and base diameter 7.0 to 7.5 cm. Wall thickness declines from 5 mm. at a distance of 2 cm. below the rim to 2 to 3 mm. at the rounded to flattened lip.

Vessel F, upside down and nearly buried, had the exposed bottom broken out. Its center was 56 cm. west of the center of Vessel B. The pottery type is Rupununi Plain Form 2 c. The base is flattened at an angle so that height is 8.7 to 9.5 cm. Mouth diameter is 19.0 to 19.5 cm. and base diameter 8.5 to 9.0 cm.

Vessel G was adjacent to the north side of the lid of Jar A, and had been badly broken by the rocks covering it. It was reconstructed as Kanuku Plain Form 5 c. Height is 13 cm.; rim diameter 25 cm.

Jar H (pl. 64, *a*) and its lid (pl. 64, *b*) were both Kanuku Plain Form 2 a, the lid being slightly larger so that its mouth fit over that of the jar. Both were ornamented with two pairs of conical nubbins attached to opposite sides of the wall at a point approximately corresponding to the maximum diameter, which is 5 cm. below the rim on the jar and 7 cm. below on the lid. The jar is not circular and the bottom is flattened at a slight angle so that the height is 27.5 to 30.5 cm. and mouth diameter 45 to 47 cm. Rim thickness is 8 to 10 mm. The lid, also somewhat asymmetrical, is 36 cm. in height and 53 cm. in mouth diameter. Wall thickness ranges between 1.3 and 1.5 cm.

All specimens from R–34 are in the collections of the Division of Archeology, U.S. National Museum, Washington, D.C.

R–34: BEI-TAU, SHELTER 2

Just north of Shelter 1 is a granite outcrop resembling a mammoth boulder, projecting from the hillside to form a sheltered area 4 meters deep and 25 meters long facing toward the west (fig. 109). The upper edge of the overhang is 15 meters above the floor level. The north half of the floor is a steep slope covered with large rocks, which also cover a small area at the south end. The central part is more level and less rocky. A single small bowl of Rupununi Plain Form 3 c lay between the rocks near the lower edge of the north talus slope, 60 cm. out from the rear wall. No other vessels or sherds could be found; if any existed they have been crushed and buried beneath the rocks spalled from the roof. Dimensions of the bowl are: height 11 to 12 cm.; rim diameter 24 cm.; base diameter 6 cm.; thickness of the flattened lip 2 to 3 mm.

R–35: TAMRIO-WAU

About 2 km. south of R–34, in a small clump of trees on a rocky elevation surrounded by savanna, is another rock shelter with multiple burial vessels (fig. 109). The shelter is formed by a large granite boulder with an outslanting front affording protection to an area 1.5 meters out from the base and 4 meters long. The opening faces northeast toward the edge of the savanna only 6 meters away. The vegetation was dense and full of vines, so that the burial area was not visible from the adjacent savanna. At the time of our visit, two small trees were growing on the floor of the shelter. Four large vessels were clustered near the center, with three small bowls wedged between them or placed nearby (fig. 118, pl. 57, *b*). Three of the large vessels turned out to be inverted lids covering

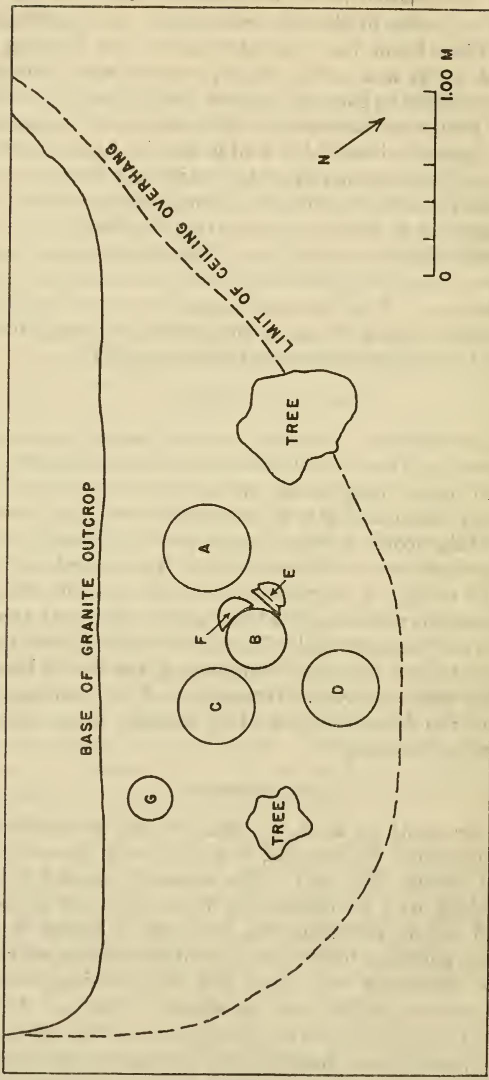

FIGURE 118.—Sketch map of the Rupununi Phase cemetery site of R–35: Tamrio-wau, showing the position of the burial jars.

buried jars, duplicating the burial pattern found at R–34, shelter 1. The fourth large jar had a small mouth and was filled with partly cremated bones. Transportation problems caused Jar A and Jar D to be left in situ; Vessels B, C, and the lid of Jar D are in the Division of Archeology, U.S. National Museum; Vessels E, F, and G, and the lid (upper jar) of Jar C are in the British Guiana Museum, Georgetown.

Jar A represents a very large vessel of Form 2 a inverted over a buried jar. No sherds could be taken for paste analysis since it was intact. Maximum body diameter is about 50 cm.

Jar B rested upright on the surface so that its wall was 25 cm. east of Jar A. It was complete except for the upper part of the neck and rim and represents Rupununi Plain Form 6 a. Jar B has the following dimensions: existing height 27 cm.; neck diameter 8.5 cm.; maximum body diameter 33 cm.; base diameter 14 cm. The existing height of the neck is 2 cm. and wall thickness at the broken edge 5 to 7 mm.

Jar B contained the only cremated remains found in Rupununi Phase cemeteries. Large fragments of bone remained unreduced to ashes, but termites had entered the jar and built their nest. Their activity cemented the entire mass together and parts of the bones had been eaten away. T. Dale Stewart, curator, Division of Physical Anthropology, examined the fragments and gave the following report:

All of the bones included in this lot show signs of burning and boring by termites. However, burning has not been uniform and as a result a separation can be made into (1) those parts which have been subject to intense heat with resulting yellowish-white color and vitrified texture; and (2) those which have been subject to less intense heat with resulting bluish-black color and somewhat chalky texture. The intensely fired bones show some distortions in shape with possibly some shrinkage in size. The less intensely fired bones are relatively unchanged in shape and size. In spite of such alterations, all of these bone fragments appear to be human; many pieces definitely are human and the rest have a decided human character.

The only evidence for multiple burial is the separation into two lots according to degree of firing. The recognizable parts among the intensely fired fragments are rather small in size; they include the anterior portion of an upper jaw, the distal end of the left humerus (epiphyses united), and parts of the lower legs. The small size of the upper jaw is especially noteworthy. The permanent upper first molars and all the upper teeth anterior thereto were present at the time of death.

The evidence as thus presented can be interpreted in two ways: (1) The heavily fired and the lightly fired bones represent two different individuals; and (2) all of the remains belong to one individual who was cremated in such a way that some parts were more intensely burned than others. Against the first interpretation and in favor of the second is the fact that there appears to be no duplication of parts in the two lots. Also in favor of the second interpretation is the fact that some of the epiphyseal surfaces are much more intensely burned than others. The chances would seem to be against two individuals of approximately the same age having been cremated. From all of this I am inclined to believe that the remains represent one individual, an adolescent male.

Vessel C consists of a wide-mouthed jar inverted over a considerably smaller vessel, whose mouth projected about 15 cm. into the lid, which had its rim about the same distance below the ground level. In addition to this large jar lid, the burial urn was covered by the inverted base of a small broken bowl, which was placed immediately over the mouth. The urn contained only dirt. Both the jar and lid are exceptionally asymmetrical and lopsided, even considering the typical crudeness of Rupununi Phase pottery. The lid is a highly distorted example of Form 3 b of Kanuku Plain. Height varies from 31 to 37 cm.; rim diameter 48 to 49 cm.; base diameter 20 cm. Thickness of the lip is 5 to 8 mm. Half of the lower exterior is blackened by soot from use in cooking. The jar is also Kanuku Plain, and appears to have had a narrow mouth (Form 6). The neck has been broken off, possibly to widen the mouth enough for the introduction of the bones. Existing height is 36 cm.; diameter of the broken mouth 13 cm.; maximum body diameter 32 cm.; base diameter 18 cm.; body wall thickness 9 to 10 mm. The bowl fragment used to cover the mouth is Kanuku Plain, with a base diameter of 11 cm., increasing to 17.5 cm. at the existing height of 3 cm.

Vessel D is another burial jar with a second vessel as a lid. It was in the center near the front of the shelter. The jar was buried with its mouth at the surface of the ground and the rim of the lid rested at the same level. Only dirt remained inside. The jar was tightly cemented into the soil and it was not removed. The lid was broken and partly missing. The pottery type of the jar unfortunately was not recorded. It had a globular body and was broken at the upper edge giving an irregular opening 15 cm. in diameter. It is probable that this is another narrow necked jar of Form 6 that was adapted for secondary burial by widening the mouth as was done with Vessel C. Maximum body diameter is 36 cm. The lid is Rupununi Plain Form 3 b, 22 cm. in height, 38 cm. in rim diameter and 16 cm. in base diameter.

Vessel E (pl. 65, *c*) is a small bowl that was lying on edge between Vessels A and B, with its mouth toward Vessel B. It was empty. The pottery type is Rupununi Plain Form 3 c, with a slight indentation or crudely incised line around the neck at the minimum diameter. Height is 11 cm.; rim diameter 21 cm.; maximum body diameter 20 cm.; body wall thickness 5 mm., decreasing to 2 mm. at the flattened lip. The bottom is rounded.

Vessel F (pl. 66, *b*), another small bowl, was also lying on edge between Vessels A and B, just south of Vessel E. It was also empty.

Although no cracks or chips revealed the paste color, the pottery type appears to be Rupununi Plain. The form is 1 a, with a height of 10.0 to 10.7 cm.; rim diameter 23.5 to 24.5 cm.; base diameter 6 cm.; and rim thickness 4 to 5 mm. It is not circular when viewed from above.

Vessel G (pl. 65, *d*) was to the west at the rear of the shelter, lying inverted and containing only a little dirt. It was classified as Rupununi Plain Form 3 c, with the following dimensions: height 10 cm.; rim diameter 22.5 to 23.2 cm., diameter at carination 20 cm.; wall thickness at rim 4 mm.

R–36: MORMISWAU HEAD

This large habitation site contained a group of burial urns in Area A. (See p. 281 and fig. 111 for details.)

Ceremonial Sites

R–21: MARIKANWAUDA

Near the south foothills of the Kanuku Mountains, between the Rupununi River and its tributary, Sand Creek, is a wooded hill (fig. 109). Trees, vines, and small brush grow over and around numerous lichen-covered granite boulders of various sizes. The largest has a nearly vertical surface 4 meters high facing toward the north. Small rocks and slabs are scattered at the base, and one forms a small ledge. A shallow bowl was standing on edge on this ledge, leaning face outward against the main rock (pl. 60, *a*). No other vessels or sherds could be located anywhere in the vicinity. A little dirt inside the bowl contained a few tiny, white, glass "seed" beads.

The bowl is Kanuku Plain Form 1 b (pl. 66, *a*). It is very asymmetrical, with an unlevel rim and a rounded bottom. Height is 5 cm.; rim diameter 28 to 30 cm.; body wall thickness 7 mm., decreasing toward the rounded lip. This vessel was deposited in the British Guiana Museum, Georgetown.

R–38: MACHE-EN-TAU

Southwest of R–21, on the opposite side of the Rupununi River, is a southern projection from the Kanuku Mountains (fig. 109). A low rise at the base of the eastern side of this projection is littered with small, blackened, granite boulders. The vegetation is grass, with scattered Sandpaper trees. Forest begins at the mountain slope 100 meters to the northwest. One of the boulders is rounded, 2 meters in diameter and 1 meter high. At the east side is a natural shelter created by a cut back in the lower part of the rock (pl. 60, *b*). Here were found two large shallow bowls, both inverted and one beneath the other. As in the case of R–21, no other vessels or sherds indicative of habitation or cemetery sites could be found anywhere in the vicinity.

The vessels are both Kanuku Plain Form 1 b, with rounded bottoms, irregularly curved walls, undulating rims and a contour that is not perfectly circular. The upper bowl is the larger: height 11.0 to 11.3 cm.; rim diameter 41 cm.; body wall thickness 1 cm., narrowing to 5 to 7 mm. at the flattened to rounded lip. The lower bowl is 8 cm. deep, 36 to 37 cm. in diameter and has a rim thickness of 4 to 5 mm., increasing slightly at the body wall. The irregular lip is flattened to rounded, depending on the area of observation.

These two specimens are now in the collections of the Division of Archeology, U.S. National Museum, Washington, D.C.

DATA FROM OTHER INVESTIGATIONS

Except for stone implements that have been found and saved by local residents, very little additional archeological information is available on the Rupununi Phase. However, what does exist corresponds in all respects with the data gathered in the 1952 survey.

Habitation Sites

R–40: ARUA

Subsequent to our visit to the Rupununi, Dr. C. R. Jones, at that time Government physician to the Amerindians, made a surface collection of sherds from a site where the Arua Creek joins the right bank of the Rupununi River, some 30 km. above the village of Yupukari. He describes the area as follows:

> It is called Arua from the abundance of Arua palm (used in thatching) found there. These fragments were scattered on a small hill where present-day Macushi are cutting fields. The soil is covered with lateritic outcrops and all fragments were more or less on the surface. I dug one pit but found nothing. The Macushi just shrug their shoulders and say "old time stuff." But no one can ever remember anyone ever decorating pots in this district. [Letter of May 19, 1954.]

The latter remark refers to the unusual amount of modeled decoration represented in the sherd sample (fig. 123, *a*, *c*, *d*). The sherds were donated to the U.S. National Museum, Washington, D.C., and are now in the collections of the Division of Archeology. Subsequently, the same site was visited by Jens Yde, who made a collection for the National Museum, Copenhagen, Denmark.

Cemetery Sites

TIRKA

Tirka Mountain is on the southern flank of the Pakaraima Range about halfway between Annai Village and the Ireng River. At the time of our visit to the Annai area, we heard reports of a cave on the slope of this mountain that was said to contain a pottery jar. We were unable to visit the shelter, but the description fits the Rupununi Phase burial pattern.

More detailed information on Tirka comes from W. C. Farabee, who investigated archeological leads while he was collecting ethnographic material in the area in 1913. He describes a site of the kind reported to us:

> . . . John said he had seen a skull under a very large rock on the top of Tirka Mt. pass and we followed him for hours up a ravine and up the mountain . . . and just at sundown reached the place and from the top of a rock John pointed in the direction of an overhanging rock and said there it is. . . .
>
> We found not only a skull but an urn burial of a man with the skull of a woman inside, and the rest of the skeleton on outside of pot. The pot had been placed in the loose blown earth under the rock where no rain could reach it and rocks piled about it and over it. One stone was off on upper side next the woman burial. . . .
>
> In the pot was the man's trinket basket and in it his knife and razor both almost rusted away; some beads and a paint stamp. The basket was just below his head. . . . Apparently nothing belonging to the woman was in the pot.
>
> The skeleton of the woman was apparently in a bundle in the carrying basket. The bones as found could not have been in natural position when buried. However, the burial may have been disturbed by animals as it was not well covered with rocks. With the woman was a great many beads . . . several kinds—her spindle whorl, and hoe were buried with her and a gourd. From the position of the beads they could not have been around the neck or around the shoulders but must have been put in a bunch or in a sack of some kind. The woman was buried against the pot on the upper, or northern side and had originally been covered with earth and stones on top. When I found the two skulls in the pot I at once looked about for evidence of another burial but didn't discover it until I was digging out the pot. . . .
>
> After taking out the pot I looked about the other rocks and a pile of rocks under the large overhanging rock near and in the photo. Upon removing the rocks a skull with nothing else about it was found—Skull No. 3. No other bones near. I had no time to explore the region.
>
> Urn No. 2 I dug up the next day after carrying the big pot down. . . . The 2nd pot was inverted, but nothing found in or about it. An infant may have been buried in it—bones entirely disappeared. Both pots were sent home from Yupikari. [Farabee, MS., Field Notebook 22.]

Both of these vessels are in the collections of the University Museum, Philadelphia. The largest is a variation of Kanuku (?) Plain Form 3, with a rounded instead of angular shoulder. Height is 56 cm., rim diameter 54.5 cm. The smaller vessel is Rupununi Plain Form 3 a, with a squat body so that the juncture of body and neck is about half way between rim and base (pl. 65, *a*). Height is 29 cm., rim diameter 45.5 to 47.0 cm.

Annai Area

Subsequent to our excavation of the buried jar at R–14, we were told of similar vessels found accidentally in the vicinity. One was found during the digging of a drainage ditch and reburied. Two others were found during excavation of a waterhole and a house post-hole. The latter one was broken and the sherds were thrown out. The former was complete and reburied by the finder, who said it was similar in shape to the one from R–14 but lacked the decorative nubbins. This information suggests that isolated burials of the type represented by R–14 are relatively numerous in this part of the Rupununi savanna. Since there is usually no surface indication, they can be found only accidentally.

Ceremonial Sites

Several writers have mentioned stone alinements near the Ireng River in the vicinity of Sites R–16 to R–19. We did not see them, nor were they reported to us by local residents at the time of our survey in the area. No ceramics have been described in association, so that the identification of their affiliation is tentative. Similar structures occur in the Aruã Phase of the Territory of Amapá, Brazil, and since this Phase has other features that relate to the north, the stone alinements in British Guiana have been correlated with its movement into the mouth of the Amazon (Meggers and Evans, 1957, pp. 38–43, 548–550). It seems reasonable to suppose that if they were of Rupununi Phase origin, other alinements would have been found in the savanna, where there is an abundance of rocks for their construction.

Petroglyphs

Very few petroglyphs have been recorded in the area occupied by the Rupununi Phase. One group is mentioned by an early explorer as located in the region between the Rupununi River and Lake Amuku (Osgood, 1946, p. 21). Another is reported by Farabee (1916, pp. 88–89; pl. 1, *a*, *c*) in the savanna between Makatawa and Makamintowa Mountains, 3 miles from the Wapishana village of Ishalton. Little can be said about their origin, since no ceramics are known to be associated. Farabee (1916, pp. 92–93) says the Wapishanas, the present inhabitants of the south Rupununi savanna, disclaim them and have no traditions about them, which leads him to conclude they are the work of an earlier people. Judging from published descriptions (e. g., Osgood, 1946), petroglyphs appear to be less common in the Rupununi savanna than in other parts of British Guiana.

ANALYSIS OF MATERIAL

Except for one fragment of turtle shell, artifacts of the Rupununi Phase are of stone or pottery. All Rupununi Phase sites produced ceramics, and 16 also had stone objects or percussion flakes. This material will be discussed typologically. The provenience data for each specimen can be found on tables 36 and 37 in the Appendix.

Stone Artifact Types

The 76 stone objects from Rupununi Phase sites can be classified into 10 types of tools. Two cores and twenty-four flakes were collected from various sites. Method of manufacture is percussion flaking or grinding. The majority are of four kinds of stone: syenite, quartzite, sandstone, or felsite. Less commonly employed are granite, chalcedony, quartz, andesite, and chert.

Anvils.—Two stones have pecked out depressions at the center of both flat surfaces, indicative of use as anvils. Both are quartzite pebbles with almost flat, parallel upper and lower surfaces and flat sides. The smaller is circular and the edges show pecking marks left by shaping. Diameter is 7.4 cm., thickness at center 3.8 cm. Use has worn depressions 1 cm. in diameter and 1 mm. deep on both faces. The second example is rectanguloid, 10 cm. long and 5.5 cm. wide. Thickness varies from 2.8 cm. at the end to 4.2 cm. at the center. A double concavity has been worn at the center of each face. The depression on one side measures 3.0 cm. by 1.2 cm. and 2.0 to 3.0 mm. deep; the one on the other surface is the same except 3.7 cm. long. Both ends of this specimen are slightly battered from use as a hammerstone.

Axes (fig. 119, pl. 61).—Fourteen complete or fragmentary axes were recovered from the site survey and three others were in the possession of local ranchers. With one exception, all are made from naturally rounded, waterworn pebbles, so that a minimum of grinding and polishing was required. The butt is flat or convex, the sides are straight and parallel, and the blade is convex. Both faces are rounded and the edges of the sides and butt are typically flattened. The upper end has notches at each side whose contour suggests that they were made by working a cord with sand abrasive from side to side until a groove 4–10 mm. deep was produced. The notches are approximately opposite one another, and their distance from the butt end varies from 1.7 to 2.3 cm., or between one-fourth and one-third of the length of the ax. This position of the notches enhances the stubby, squatty appearance of the axes, which is one of their diagnostic features. One specimen has a double set of notches, 5 to 7 mm. apart. The blade is frequently battered, suggesting that after it was damaged from cutting, an ax was often used for hammering. Less frequently, the butt end was used for this purpose. Where the blade is preserved, it is formed by the junction of the two faces along the mid line. Seen from one of the faces, it is not necessarily symmetrical, sometimes curving farther up one side than the other. The smallest

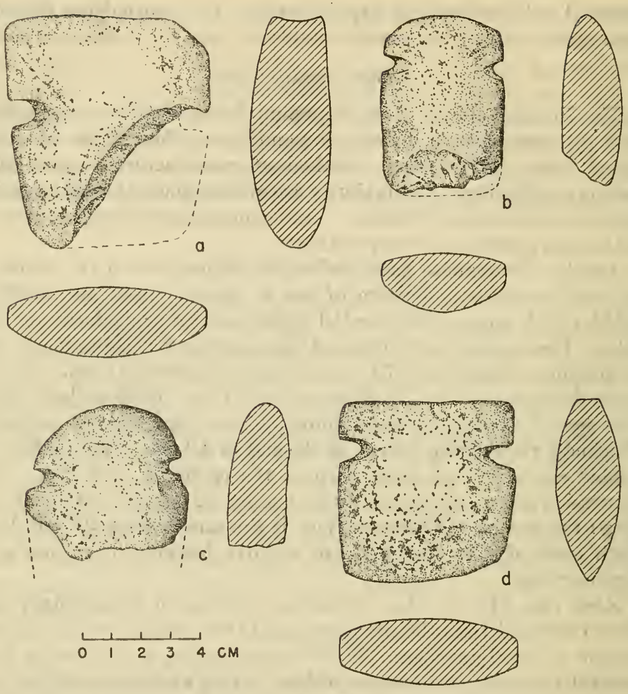

FIGURE 119.—Stone axes from habitation sites of the Rupununi Phase.

specimen is 5.5 cm. (plus about 1 cm. broken off), 4.3 cm. wide and 2.0 cm. in maximum thickness. The largest is 9.5 cm. long, 8.5 cm. wide, and 3.3 cm. in maximum thickness.

A single ax from R–40 is a pebble of andesite shaped by percussion, leaving flaked areas along the edges. It is oval rather than rectanguloid and lacks notches. The bit is curved toward one face in the manner of an adz, and is narrower than the maximum width of the tool at the center. The butt end is broken. The length is 9.5 cm., maximum width 6.0 cm., width at bit 3.5 cm., thickness 1.8 cm.

Bowls.—Rim fragments from two stone bowls of syenite have slightly outsloping walls and a flat or rounded lip. One fragment is well shaped by abrasion on both interior and exterior. It has a mouth diameter of 34 cm. and an interior depth of 6 cm. Wall thickness is 1.7 to 2.0 cm. at the rim, increasing to 3 cm. at the bottom. The other appears to have been percussion shaped and polished only on the interior. Rim diameter is about 30 cm., wall thickness 2.5 to 3.8 cm. Depth cannot be estimated.

Choppers (fig. 120).—Nine percussion-chipped implements of similar form have been classified as choppers. Two are syenite, the rest felsite. The form tends to be petalloid, with the sides converging toward a flattened or rounded butt. Two fragments have parallel sides and one specimen is irregularly circular. Chipping around the margin on both surfaces has produced a chopping edge on the sides as well as ends. One of the petalloid forms shows some battering on the large end. The circular specimen was used on all edges indiscriminately. Complete specimens of petalloid-shaped choppers range from 8.5 to 11.3 cm. in length, 5.5 to 7.2 cm. in width at the broad end, 1.0 to 4.5 cm. in width at the narrow end, and 1.5 to 2.5 cm. in thickness at the center. The irregularly circular example ranges from 6.5 to 7.5 cm. in diameter and averages 2.3 cm. thick.

Hammerstones.—Three waterworn quartzite pebbles show traces of use on one end as hammerstones. Two red jasper (chalcedony) cores bearing some percussion flaking were used for pounding. Their smaller size suggests they may have been used in the manufacture of manioc graters. A small, elongated chert pebble with use chipping toward one end may have also been employed in this way. In a somewhat different category is a barrel-shaped stone with flat ends and curved sides, symmetrically formed by pecking and abrasion. It is whitish-gray quartzite, 6.0 cm. in diameter at the center, narrowing to 4.4 and 4.2 cm. at the ends, and 5.8 cm. high. One end shows slight peck marks from use as a hammer, but otherwise the object is undamaged.

Hoes (fig. 121; pl. 62).—Hoes are the most abundant type of stone tool from Rupununi Phase sites, being represented by 32 fragments. All but three are syenite. Slabs of this material, 6 to 20 mm. in thickness, were percussion chipped to produce an implement of petalloid outline similar to that of choppers but flat surfaced and considerably thinner. The beveled blade shows a marked slickness and polish, produced by digging in the ground (pl. 62, *c–f*). The fact that the polish is more pronounced on one side than the other suggests the possibility that the hoe was hafted and its fixed position caused differential wear. No specimens were complete, but a number of fragments of similar thickness to the blade ends were found at the same sites, and it is likely that they represent the butt ends of hoes (pl. 62, *a*, *b*). The sides taper toward a rounded or flattened end in a relatively symmetrical fashion. The length of these implements cannot be determined except by estimate from fragments. Several large pieces suggest that some were 12 to 15 cm. long. Maximum width is 6 to 10 cm., width at the butt 2.8 to 5.0 cm.

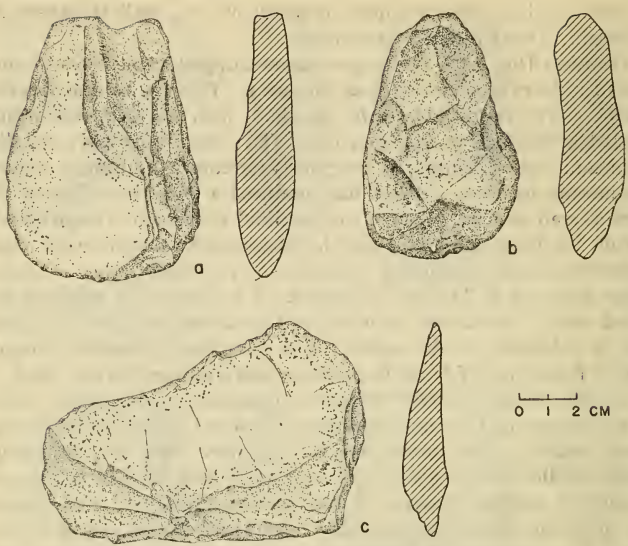

FIGURE 120.—Stone choppers from habitation sites of the Rupununi Phase.

Manos.—Five pebbles, 4 of quartzite and 1 of quartz, have one surface worn from grinding. All appear to have been circular or slightly ovoid, 8.0 to 9.5 cm. in maximum diameter and 3.1 to 4.5 cm. thick. Three have wear on only one face, the other two on both.

Metates.—Fragments of 3 metates, one each of syenite, granite, and quartzite, are identified by a slightly concave, worn surface on one side. They are broken from larger slabs 3.5 to 4.7 cm. thick. One fragment from near the edge shows a marked indention where the concave surface is set off from the border. The small size of the pieces makes reconstruction of the original dimensions impossible.

Shaft polisher (pl. 68, *i*).—A considerable number of potsherds were found with grooves on one or both surfaces, worn by abrasion. One quartzite pebble bears similar grooves. The pebble is 5.3 by 4.5 cm., and 2 cm. thick. A straight groove has been worn across each surface, one 10 mm. wide and 7 to 10 mm. deep, the other 8 to 9 mm. wide and 7 to 8 mm. deep. The latter surface also has a short depression 6 mm. wide and 1 mm. deep with a pointed end, running at right angles to the main groove.

Cores and flakes.—Two small cores and a number of percussion flakes were collected at various sites. They show little or no evidence of use and are probably either byproducts of the manufacture of

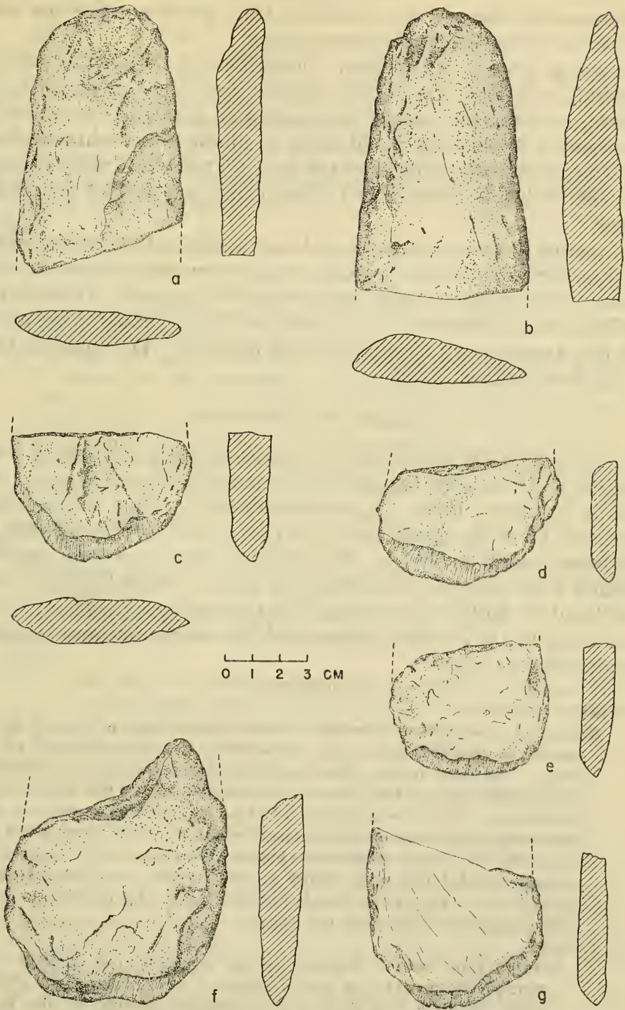

FIGURE 121.—Stone hoe fragments from habitation sites of the Rupununi Phase. *a–b*, Butt ends. *c–g*, Blade ends.

choppers and hoes or raw materials from which small chips were struck for insertion into manioc graters.

Natural stones.—A globular, hematitic-clay concretion with a natural perforation through the center was found at one site. It shows no evidence of use for hammering or pounding, for which its perforation for hafting would make it suitable. It could have been used as a club head. Diameter is 6.5 cm. The hole, directly through the center, has a diameter of 1.5 cm. at one end and 2.5 cm. at the other.

A naturally eroded stone has a long "handle" of convenient shape with a slightly downcurved end whose lower edge shows abrasion lines. This edge is parallel to main axis of the tool. The material is fine-grained quartzite. The length is 21.7 cm., width at the center 1.8 cm., tapering to 1.2 cm. toward the rear end. The abrading edge at the front is 3.2 cm. long.

Pottery Type Descriptions

A total of 8,468 sherds and 26 complete vessels, exclusive of trade pottery at R–40, form the basis for the classification of pottery types of the Rupununi Phase (Appendix, table 37). None of the vessels and only 29 of the sherds showed any kind of decoration (except for occasional small nubbins). The complete specimens were predominantly from cemetery and ceremonial sites, while the habitation sites produced the bulk of the sherds. The pottery types have been named according to the binomial system and the descriptions are arranged in alphabetical order.

KANUKU PLAIN

Paste:

Method of manufacture: The use of coiled construction is attested by numerous sherds with one or two edges broken along the coil line (pl. 63, *m–p*). The break is clean, leaving one surface convex and the other concave, and indicating that the clay was handled when too dry to give a strong bond. Coils are generally 0.7 to 2.5 cm. wide, in conformity with the typically large size of the vessels. Several bases also show coiled construction. Occasional base sherds have an impression on the exterior of a simple twilled mat upon which the vessel was placed during manufacture (pl. 67, *e*). A few sherds from the necks of a few jars have the coils unerased on the exterior (pl. 63, *g–h*).

Temper:

Granitic sand, with a high percentage of quartz and feldspar. The rounded nature of the grains suggests sand rather than crushed rock. At some sites there is a considerable amount of mica in the temper, apparently reflecting the composition of the local sand. Typical size range of particles is minute to 3 mm., with occasional larger hunks. Temper is very abundant and prominent in both cross section and surface.

Particles of black ash were observed in rare sherds from R–3 and R–20, Cave 3. Details are the same as for this variant of Rupununi Plain.

Texture: Coarse, sandy and poorly kneaded so that temper particles are not evenly distributed. Pinpoint to fissure air pockets are characteristic, especially in thicker walled sherds. Ropy or laminated structure is also characteristic of thicker walls.

Color: Reddish orange, orange, tan, reddish brown or brown through the cross section. Occasionally, a laminated orange and tan. Gray areas are sometimes present adjacent to the surfaces, but never in the center of the core. This absence of a gray core is the distinguishing characteristic of Kanuku Plain, by which it is differentiated from Rupununi Plain.

Firing: Oxidized so that surface and core are some shade of orange. Occasional fire clouds appear on the surface.

SURFACE:

Color: Shades of orange, red and brown predominate, with gray areas very rare and mostly produced by fire clouding. Color range is from a light tan or tile orange to reddish brown and brown. A single vessel will show some color variation, but usually this is not over the entire color range associated with the type.

Treatment: Incomplete smoothing or smoothing when surfaces were too dry leaves them characteristically uneven, irregular, and gritty. On the lower exterior of jars or necks of jars, coil lines may not be completely obliterated (pl. 63, *g*, *h*). Where smoothing has been more complete, broad smoothing tracks can often be distinguished. Crackle lines sometimes radiate from exposed temper grains. Even the best smoothed surfaces are typically somewhat undulating and uneven. Smaller vessels generally have the better surface finish.

Hardness: 3.5–4.

FORM:

Rim: Direct, everted, or slightly thickened on the exterior, with rounded or flattened lip.

Body wall thickness: 4–12 mm.; griddles 18–25 mm.

Body diameter: 14–60 cm.; majority 34–52 cm.

Base:

A. Flat, joining sidewalls at angle of 25–55 degrees; interior wall makes more gradual curve resulting in slightly increased wall thickness at junction. Diameter 9–24 cm.

B. Slight pedestal formed by almost vertical rise of 1.0–1.5 cm. below junction with sidewalls. Diameter 12–18 cm.

C. Rounded, unthickened. No demarcation at which to measure diameter.

Vessel shapes: The major difference between eating and drinking vessels on the one hand, and cooking and storage vessels on the other, lies in size. The four most common forms all have a range from "bowl" to "jar" dimensions, with slight variations in proportions but no distinguishing rim differences. Hence, although complete vessels can be identified as one of the variant forms for a vessel shape, this cannot be done with sherds.

1. Shallow to deep bowls with outsloping to almost vertical walls, direct rim, flattened or rounded lip. Rim diameter 14–64 cm.; majority 26–50 cm. (fig. 122–1). Sometimes lobes with rounded, scalloped edges or with deep notches extend outward along the rim. They measure 4–6 cm. long and 2.0–3.5 cm. wide (pl. 63, *a–d*).

2. Globular bowls or jars with walls rounded and incurving to direct rim with rounded lip or rim slightly thickened on exterior. Mouth diameter 12–52 cm.; majority 28–48 cm. (fig. 122–2).
3. Bowls or jars with a ridge or carination forming a sharp to rounded shoulder, above which the wall curves inward before expanding to a direct rim with flattened to rounded lip. Rim diameter 16–50 cm.; majority 28–42 cm. (fig. 122–3).

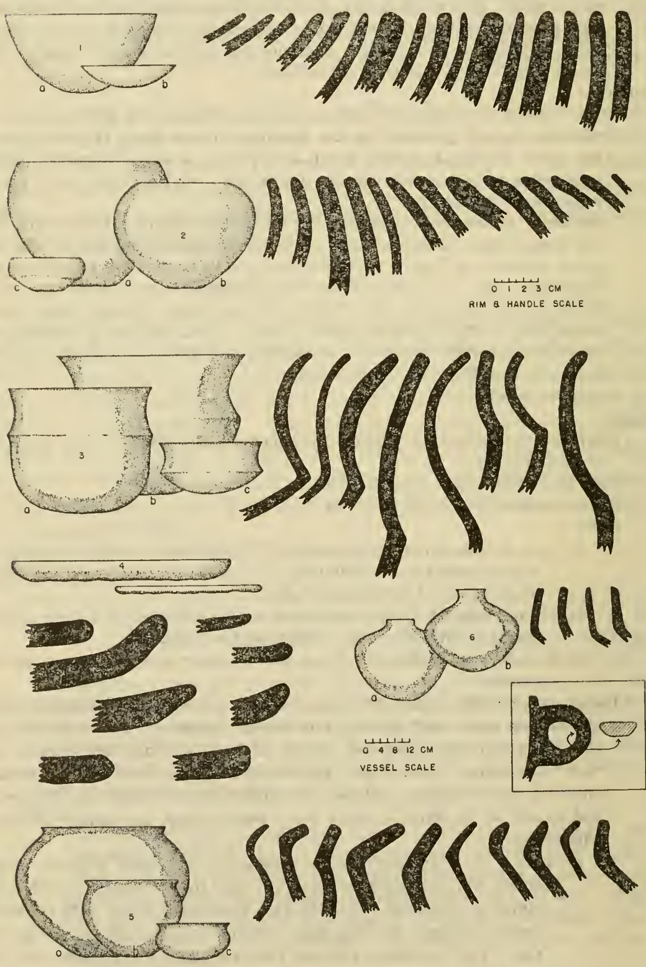

Figure 122.—Rim profiles and reconstructed vessel shapes of Kanuku Plain and Rupununi Plain, Rupununi Phase (Appendix, tables 38, 39).

4. Flat, circular griddles with slightly thickened or upturned edges. Interior relatively even, exterior typically poorly smoothed. Rim diameter 34–68 cm. (fig. 122–4; pl. 67).
5. Globular jars or bowls with everted rim and rounded lip. Rim diameter 16–50 cm.; majority 22–36 cm. (fig. 122–5).
6. Jars with rounded body and constricted neck, vertical or slightly everted rim. Rim diameter 7–14 cm. (fig. 122–6).

Appendages:

Handles: Vertical strap handles have an oval cross section 2–4 cm. wide (fig. 122; pl. 63, *l*). Only one is attached to a rim sherd and this is a vertical-sided bowl of Form 1. Fragments are rare, one each recorded from R–26, R–27, R–32 and R–36 A, and two from R–6.

Applique: A horizontal rim lug attached to the rim of a shallow bowl comes from R–32. The lug is 5 cm. long, projecting 2.5 cm., with a nicked outer edge. A similar lug probably was attached to the opposite side of the rim.

Conical nubbins 2–3 cm. in diameter and 1.5–2.5 cm. high occur in pairs at four places around the circumference above the shoulder on burial vessels of Form 3 (pl. 65, *b*) and on opposite sides below or on the rim of Form 2 (pl. 63, *e–f*). These are not firmly attached and readily slough off.

Occasional decoration: Rarely, incisions (pl. 63, *j*) or fingertip punctations (pl. 63, *i*, *k*) appear on the lips of vessels.

Temporal differences within the type: Pedestal (Form B) and rounded (Form C) bases appear to be most frequent in the early half of the sequence, although this may be a reflection of the small size of samples from later sites. Vessel Shapes 3 and 5 are slightly more characteristic in the latter half of the sequence, while Vessel Shape 2 tends to be more frequent in the earlier sites (Appendix, table 38).

Chronological position of the type: Kanuku Plain is the dominant pottery type at the beginning of the seriated sequence, representing 88.4 percent of the total pottery at the earliest site. It shows a steady decline in popularity to 20.8 percent at the latest site (fig. 125).

RUPUNUNI PLAIN

Paste:

Method of manufacture: Coiling; sherds with one edge broken on a coil line are frequent and a number show coil line breaks on two edges, one concave and the other convex (pl. 63, *m–p*). Single coils range from 1.0–2.5 cm. wide. Some base sherds have an impression on the exterior of a simple twilled mat on which the vessel rested during manufacture (pl. 67, *c*).

Temper:

Coarse granitic sand, typically readily visible and abundant, with grains protruding on eroded surfaces. Mica flecks are sometimes present, and appear to reflect the local sand composition. Temper grains are typically under 3 mm. in diameter, with occasional larger hunks.

Occasional sherds from 7 sites also contained black ash, the particles ranging from pinpoint size specks to hunks 5–8 mm. long and 0.5–1.0 mm. wide. Quantity varies from sparse to abundant. In most cases all sherds from a site appear to belong to a single vessel. Sites that produced these sherds are: R–3, R–5, R–20, Cave 2, R–20, Cave 3, R–22, R–36, and R–37.

Texture: Sandy or gritty; temper particles not always evenly distributed. Thicker sherds have irregularly shaped air pockets.

Color: Rupununi Plain is distinguished from Kanuku Plain by the presence of a gray core. A typical cross section has a light to medium-gray core bordered by light tan 1–2 mm. in from both surfaces. In some sherds the gray band is along one surface, in others the entire cross section is medium-gray or grayish orange.

Firing: Incomplete oxidizing.

SURFACE:

Color: Irregular and variable. Range from gray through grayish tan, brown, tan, and reddish tan to bright orange, with both extremes not normally found on the same specimen. Irregularly shaped, medium-gray fire clouds of all sizes relatively frequent.

Treatment: Poorly smoothed in general, leaving pits, scars and visible temper grains. Exterior of bases and of griddles unsmoothed and very uneven. Broad smoothing tracks on uneroded surfaces indicate use of a nut or stone polishing tool when the clay was fairly dry. Smoothing otherwise by hand, sometimes incompletely erasing coil junctions; sometimes the coils of jar necks are unerased (pl. 63, *g*, *h*). Thinner walled sherds have best smoothing. Coarse, deep crackle lines sometimes present.

Hardness: 4.

FORM:

Rim, base, and vessel shapes: Same as Kanuku Plain (fig. 122); see that pottery type description for details.

Appendages (pl. 63):

Handles: Vertical loop handles with oval (1.6 by 1.1 cm.) or circular (diameter 1.7 cm.) cross section. Only two examples, both from R–6, showing clean break at point of attachment to body wall.

Broad, horizontal loop attached to deep bowl below rim. Horizontal length 4.1 cm.; projection from wall 2.8 cm.; width of loop (top to bottom) 2.5 cm. At the center of the outer edge there is a small flat-topped nubbin 8 mm. high. One example from R–19.

Applique: Horizontal rim lug projecting from rim of shallow bowl of Vessel Shape 1. The lug is 5.5 cm. long, projecting 3.0 cm., and has a nicked edge. This example from R–32 is very similar to a Kanuku Plain specimen from the same site.

OCCASIONAL DECORATION: Rarely, incisions (pl. 63, *j*) or fingertip punctations (pl. 63, *i*, *k*) appear on the lips of vessels.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Vessel Shape 6 tends to be more frequent in the latter half of the sequence. Base Form B seems to be most common in the earlier half. (Appendix, table 39.)

CHRONOLOGICAL POSITION OF THE TYPE: Rupununi Plain shows a steady increase from 11.6 percent at the earliest site to become the dominant ware in the latter half of the Rupununi Phase (fig. 125).

UNCLASSIFIED CARIAPÉ-TEMPERED

A few sherds with the cariapé added to the paste were found at four sites. Because the sample is small and may be the result of trade, it was not broken down into named pottery types.

PASTE:

Method of manufacture: No evidence.

Temper: Whitish, fibrous structure of cariapé relatively abundant. About half the sherds also have a large amount of medium-coarse granitic sand.

Texture: Sandy to fine, depending on the quantity of sand present.
Color: About half are red, orange or tan through the cross sections. The remainder have a gray core.
Firing: Incompletely to completely oxidized.

SURFACE:
Color: Orange to light tan.
Treatment: Majority too badly eroded for description; one slick on exterior.
Hardness: 2.5–3.5.
Slip: Some sherds have a thin white slip on the exterior, sharply demarcated in cross section from the underlying orange paste. Texture is fine, surface eroded.

FORM:
Rim: Direct or slightly everted, with rounded or flattened lip.
Body wall thickness: 6–11 mm.
Body diameters: 26–50 cm.
Base: Flat, joining sidewalls at angle of 20–25 degrees.
Vessel shapes:
1. Globular jar with direct, slightly incurved rim and rounded lip. Rim diameter 24 and 44 cm.
2. Jar with slightly everted rim, diameter 28 cm.

DECORATION: Two sherds from R–5 bear narrow red painted lines on the exterior, one on a white slip and the other on an unslipped surface. One sherd from R–8 shows crude scratches that may be part of a design of diagonal lines.

TEMPORAL DIFFERENCES WITHIN THE TYPE: Sample too small for analysis.

CHRONOLOGICAL POSITION OF THE TYPE: Sporadic occurrence in the upper two-thirds of the seriated sequence (fig. 125).

UNCLASSIFIED DECORATED

The pottery of the Rupununi Phase is characterized by an almost complete lack of decoration. The few ornamented sherds represent a variety of techniques, none of which is sufficiently frequent or well defined to warrant the establishment of a pottery type. Unclassified Decorated includes incision, applique, punctate, white paint, white slip and red film.

Incision: The interiors of four flat base sherds from R–6 have straight parallel incised lines on the interior 7–12 mm. apart. The incisions are roughly drawn, sometimes jagged, 1–2 mm. wide and 1–2 mm. deep. The diameters of the bases are 10–12 cm.

White paint: Four body sherds from R–2 have white-painted ornamentation. Three show fine brush strokes 1–2 mm. wide on the exterior, while one has white lines 5 mm. wide on the interior.

Applique: Simple applique decoration occurs on occasional sherds. Three from R–6 have ribs 1.4 cm. wide at the base, coming to a rounded top 1 cm. high, and one has a ring 3.2 cm. in outside diameter formed by an applique strip 1 cm. wide at the base and 8–9 mm. high (fig. 123, *b*). Eight sherds from R–40 have relief modeling, in two cases on the interior surface.

Punctate: The only sherd with punctate decoration is a rim from R–22 with a band of 3 horizontal rows of punctates bordered by incised lines on the exterior just below the rim of a vessel of Form 2. The punctates are 1.0–1.5 mm. in diameter and 1.0 mm. deep.

White slip: Two sherds from R–40 are white-slipped, one on the interior and the other on the exterior. The latter is a fragment of an annular base 8 cm. in diameter.

Red film: A small number of sherds of Kanuku Plain and Rupununi Plain have a deep reddish film on one surface that appears to be a conscious addition rather than an effect of exposure or firing. The majority are red on the exterior. The only rims are two of Form 1 from R–5.

TRADE POTTERY

Taruma Phase types: R–40 produced sherds of two Taruma Phase decorated types, both distinctive and unquestionably of Taruma Phase origin. Kanashen Incised is represented by 2 rim sherds, one with zoned parallel lines and the other with crosshatch (pl. 41, *j*). Four other sherds are from a single Onoro Stamped vessel (pl. 46, *d, h*). Detailed pottery type descriptions are given under the Taruma Phase (see pp. 216–217, 225–227).

Koriabo Phase types: Several sherds represent pottery types of the Koriabo Phase. They include one modeled sherd with incisions of Koriabo Incised (pl. 36, *i*) from R–40, and four excellent examples of Koriabo Scraped (pl. 36, *f–h*) from the same site. Detailed pottery type descriptions can be found under the Koriabo Phase (see pp. 132–133, 136–137).

POTTERY ARTIFACTS

Two types of artifacts made from pottery are found in the Rupununi Phase: objects of primary manufacture and reused sherds. Neither is abundant.

Pot rests.—Three fragments belonging to the same pot rest came from R–3. The poorly mixed clay with abundant, large, granitic-sand temper and orange-tan color, as well as the base diameter of 12 cm. and the somewhat cylindrical form, are reminiscent of pot rests from the Taruma Phase (pp. 230–233).

Figurines (fig. 123).—A fragment from R–6 appears to be the front part of a crudely modeled foot of the sort found on anthropomorphic figurines from the Amazon area (fig. 123, *e*). The pottery type is Rupununi Plain. Six toes of unequal width are indicated along the front edge by gashes 2 to 3 mm. wide and 4 to 5 mm. deep. The bottom of the "foot" is flat, the upper surface slopes upward toward the back. It is broken 4.8 cm. from the tip. Height at the toes is 1.5 cm., at the broken edge 3.4 cm.

Three cylindrical legs came from R–40 (fig. 123, *c, d*). Two, both Kanuku Plain, have the foot attached. The third is Rupununi Plain. The foot is a slight forward expansion on which four grooves have been drawn to represent toes. All the legs have an anklelike protrusion on the right side just above the foot, and the most complete fragment has a similar protrusion farther up on the back of the leg. Existing height of the latter specimen is 6.2 cm. Diameter is slightly greater from front to back than from side to side. Two have dimensions of 2.1 by 1.9 cm. and 2.0 by 1.6 cm. These feet are quite differ-

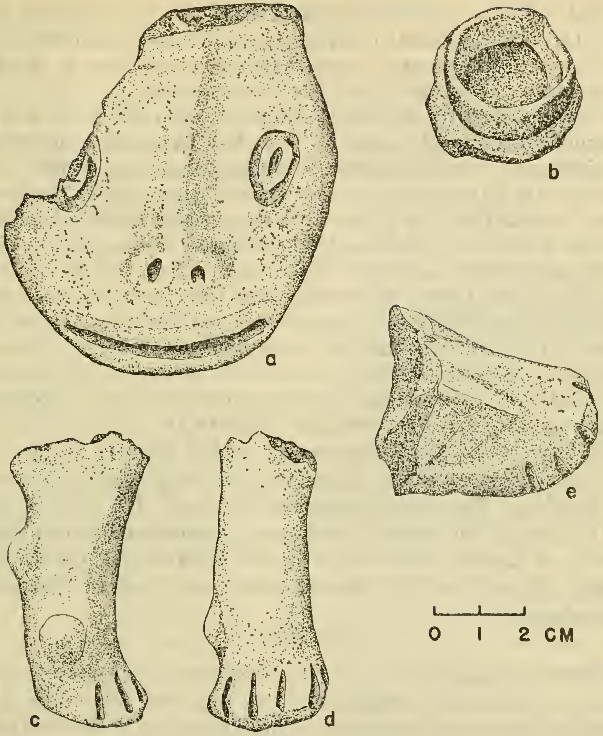

FIGURE 123.—Modeled sherds from habitation sites of the Rupununi Phase. *a*, Fragment of a figurine head or adorno. *b*, Applique ring. *c–d*, Figurine legs, probably animal. *e*, Figurine foot.

ent in style from that from R–6, and suggested to the workman an animal rather than a human form.

Another Kanuku Plain fragment from R–40 is part of a face (fig. 123, *a*). The long, low, narrow nose expands at the base to encompass deep punctates forming the nostrils. A wide mouth is drawn by a thin incision running from side to side. The eyes are formed by a short straight line encircled by another, producing an ovoid shape with the main axis directed downward. The right eye and the upper part of the forehead are missing. Broken edges all the way around indicate that the construction was hollow. It cannot be determined whether it represents a figurine head or an adorno on the side of a vessel. Existing height of the face is 8 cm.

Disk.—The coiled central section of the bottom of a Rupununi Plain vessel from R–3 appears to have been rounded into a small disk 3.8 cm. in diameter. Thickness is 11 mm. at the center and 7 mm. at the edges. The exterior surface is flat and the interior convex.

Shaft polishers (pl. 68, *a–h*).—Nineteen sherds of Kanuku and Rupununi Plain from R–5 and 46 from R–6 have one or more deep, straight grooves on the surface. The majority are flat griddle or base sherds 1.0 to 1.8 cm. thick, but a few are only 8 mm. thick. The grooves vary in depth from 3 to 12 mm. The deepest have weakened the sherd so that it has usually broken along the bottom of the groove. Where there are two or more grooves on the same surface, they typically run at right angles. Groove width varies from 6 to 14 mm. and is correlated with depth suggesting that the narrower and shallower grooves were worn by the edge of the shaft while the deep ones encompassed its total diameter. A few sherds show the end of a groove, which tapers to a rounded tip. One sherd has a groove on both surfaces. A stone with similar grooves also came from R–6 (cf. pl. 68, *i*).

Rubbing tool.—An approximately cubical piece of pottery with orange, sandy paste has scratches on one face suggesting use in rubbing or abrading. The squared edges look trimmed. The object is 4.5 by 5.0 cm. and 3.0 cm. thick. The absence of coarse sand temper characteristic of Kanuku Plain and the unusual thickness rule out the possibility of this being a reused sherd and indicate intentional manufacture.

Bone Artifacts

Either no consistent use was made of bone tools, or this material has not been preserved. Fragments of long bones and antler tips of deer from R–22 show no signs of use. Among a number of deer and rodent bones from R–20, Cave 4, only one showed such marks. This was a long bone that had been split down the middle with a steel knife. Four small fragments of turtle carapace were collected from R–20, Cave 3, one of which is worn along one edge suggesting use as a scraper.

Objects of European Origin

Eleven sites produced objects of European origin, some of which were datable with sufficient precision to permit orientation of the ceramic seriation. Materials include glass, earthenware, iron, and tin. We are indebted to C. Malcolm Watkins and Edgar M. Howell of the Museum of History and Technology, Smithsonian Institution, and George Metcalf of the Division of Archeology, Smithsonian Institution, for the identification and estimated datings, which are shown in table L.

TABLE L.—*Objects of European origin from Rupununi Phase sites*

Site	Object	Quantity	Remarks
R-1	Minute, white, opaque glass "seed" beads.	18	Diameter 1.5–2.0 mm.; thickness approximately 1 mm., diameter of perforation 1 mm. or less.
R-3	Sherds of English white earthenware.	10	One shell edge; 2 blue transfer-painted. Dating, 1815–40.
	Basal fragment of ovoid green glass bottle.	1	Not diagnostic.
	Sherd of bubbly, thin, blown bottle of aquamarine glass.	1	Glass of this type was produced in North America until about 1870.
	Sherd of olive-green, cylindrical bottle.	1	Probably earlier than 1850.
	Iron blade fragment	1	Not diagnostic.
	Felling ax	1	Crude specimen designed for a round handle. It is a somewhat degenerate form of the late 17th or early 18th century trade ax found in Indian sites in the Eastern United States. This is presumably later, but not the product of modern manufacture. Mercer (Ancient Carpenter's Tools) shows numerous felling axes of English and American origin, the nearest to this in appearance being an ax found in Chester County, Pa.
	Gun barrel	1	Eight-sided barrel of percussion cap gun, ⅝ bore (.675). Post-1819.
R-6	Sherds of hand decorated, Staffordshire, white earthenware.	5	Swags of half-red are discernible. Decoration, thickness of paste, and foot rim point to a date 1790–1815.
	Base section of blown cylinder wine bottle.	1	This shape and size in vogue from 1780–1830.
	Sherds of square, dark-amber bottle	3	Probably snuff or gin bottle. Late 18th or early 19th century.
	Window glass sherds	5	Thinness indicates date prior to 1830.
	Sherd of salt glazed stoneware	1	Not diagnostic.
R-8	Sherds of hard earthenware jar, glazed white.	4	Container for preserves.
	Sherd of molded glass	1	Raised letters ". . . N'S . . . ENT. MADE . . . CA . . ." This probably does not date from before 1880.
	Sherds of green glass bottle	4	Raised letters "POP". Late 19th or 20th century.
	Sherd of emerald green glass	1	Probably beer or mineral water bottle. Late 19th or 20th century.
	Razor blade	1	Type made by Wade and Butcher and others at the turn of 20th century.
	Tip of knife blade	1	Not diagnostic.
R-12	Sherd of olive-amber bottle glass	1	Blown glass, but not encrusted. Probably 1815–40.
	Sherds of heavy white earthenware	2	Decorated with blue transfer painting. This is some of the ubiquitous products of the Staffordshire factories, made probably between 1820 and 1840.
R-17	Sherds of cylindrical wine bottle	4	Comparable to base from R-6. Dates between 1780 and 1830.
R-19	Sherds from stoneware gin jug	5	Dutch, of a type made without much change of form or color from about 1830 to the present.
	Clay-pipe fragments	5	From different pipes, all probably mid-19th century. One is molded in a corn pattern.
	Sherd of stoneware, glazed cream color.	1	Not diagnostic.
	Miscellaneous glass bottle sherds, olive-amber and green.	13	Not earlier than 1850, but probably not later than 1900.
	Sherd of flat surfaced amber glass	1	Vertical ridges show that this was made in a mold. It is probably from a medicine bottle not earlier than 1830, but could be as late as 1900.
	Pale-green glass sherds	1	Probably from beer bottles. 1850 to early 1900's.
	Sherds from clear-glass bottles and jars.	6	Turned lavender from exposure to sun. Recent, almost certainly 20th century.
	Small sherds of clear glass	5	Not diagnostic.
	Pieces of tinned iron spoons	5	Typical, cheap, stamped tinware of the late 19th or early 20th century.
	Triangular file blade	1	Recent.
	Sardine can key	1	Do.
	Wire nails	2	Do.

TABLE L.—*Objects of European origin from Rupununi Phase sites*—Continued

Site	Object	Quantity	Remarks
R-19—Con.	Fragments of metal container	10	Metal? Too small to be diagnostic.
	Oval brass plate	1	Possibly escutcheon plate on a box or part of horse gear. Six holes.
	Iron wire keeper	1	Late 19th or early 20th century.
	Cast-iron facing of a knife	1	Designed to resemble stag-horn. Late 19th century.
	Sections of harmonicas	4	Reeds are secured by finely made small screws, representing developed workmanship, but not stamped or riveted mass production of recent times. Probably from the last half of the 19th century or early 20th century.
	Bottom of tin container	1	Recent.
	Cast-iron S hook for small chain	1	Fashion of manufacture suggests a date of after 1840, probably not later than early 1900's.
	Spoutlike sheet-iron tube	1	Probably the ferrule on a chisel or similar tool.
	Piece of hard rubber	1	Back of a comb. Probably later than 1860.
	Fragments of knife blades	2	Not diagnostic.
	Flint	1	Apparently chipped for use in flint-lock gun.
	Tin ferrule	1	From cane or swagger stick.
	Shotgun shells	2	Brass cartridges with replaceable primer caps; both marked "Joyce Ltd. London, Ejector;" One a "No. 12" and other "No. 16." Manufactured from late 1870's to 1906.
	Iron gun parts	2	From cheap trade guns. Possibly trigger guard fragments.
	Scrap iron fragment	1	Shows evidence of having been cut.
R-20, Cave 1.	Fragments of a blade	8	Probably a sword.
	Sherd of pale-green bottle glass	1	Appears to be from a blown-glass vessel.
R-20, Cave 2.	Large, opaque-white, glass beads	6	Circular beads apparently cut from a tube 4.5–5.0 mm. in diameter; length varies from 3–4 mm.
	Small, opaque-white, glass "seed" bead.	1	Circular with flat ends; diameter 3 mm., thickness 2 mm.
R-21	White, glass "seed" beads	?	Similar to those from R-1 and R-20, Cave 2.
R-34, Jar A.	Fragments of mirror	8	Silver reduced to traces.
	Parts of knife blade and ferrule	3	Not diagnostic.
	Silver coin, denomination ¼	1	"Colonies of Essequebo Demarary Token 1809" (reverse); "Georgius ... I Dei Gratia" (obverse). Perforation at upper edge for suspension, probably on necklace. Well worn.
	Scraper of bottle glass	1	1 edge of a chip of pale-green bottle glass, pressure chipped from both sides to form a scraper. Length 2.2 mm.; width 1.3 mm.; thickness 3 mm.
	Dark-blue, opaque, elongated, faceted glass beads.	6	1.8–2.0 cm. long; 6–7 mm. diameter at center; 3–5 mm. diameter at ends. Faceted surfaces ground. Beads were cut, or snapped off from a longer tube, then ends ground down slightly. Surface covered with 3 rows of 7 diamond-shaped facets, plus 2 rows of 7 isosceles triangle facets near the ends. Diameter of hole 1 or 2 mm. (fig. 124, *a*).
	Ruby-red to dark-maroon, opaque, globular, faceted glass beads	7	Globular bead ground with many irregularly shaped facets ranging from 3–6 sided. Ends also ground slightly. 3 with maximum diameter of 6 mm.; 4 with maximum diameter of 5 mm.; length 4 mm. and 6 mm. Diameter of hole tapers from 1 mm. at one end to 2 mm. at the opposite end (fig. 124, *c*).
	Lavender, opaque, spiral glass bead.	1	Spiral or "snail" made in mold, with rough edges where the mold joined. Spiral begins at the hole and expands in height and width to the maximum diameter of the bead. Maximum diameter 9 mm.; thickness 5 mm.; diameter of hole 2 mm. (fig. 124, *b*).
	Red-wine, opaque, cylindrical, faceted glass bead.	1	Cylindrical bead with irregular facets ground lengthwise. Length 4.0 mm., diameter 3.5–4.0 mm. Hole 2 mm. in diameter (fig. 124, *d*).

TABLE L.—*Objects of European origin from Rupununi Phase sites*—Continued

Site	Object	Quantity	Remarks
R-34, Jar A—Con.	Dark-blue, opaque, disk-shaped, faceted glass beads.	8	Disk-shaped, both irregular in diameter and height with ground facets, and ends slightly ground. Height 2-3 mm.; diameters 1.5-4.5 mm.; majority 2.0 mm.
	Pale, bottle-green and light-blue, transparent cylindrical glass beads.	3	Cut from a long tube. Length 2-4 mm.; diameter 2.0-2.5 mm.; diameter of hole 1 mm. (fig. 124, *h*).
	Red-wine, to dark-blue, opaque, disk to cylinder-shaped, beads.	29	Of unequal length, apparently cut from glass tube. Length ranges from 1.5-3.0 mm.; diameters 2.5, 3.0, 3.5, and 4.0 mm.; diameter of hole, 1.0-1.5 mm. (fig. 124, *e-f*).
	White, opaque glass beads	93	Cylindrical, flat ended, cut from long tubes, of various diameters and lengths. Diameters 2.5-3.5 mm.; lengths 1.0-3.5 mm.; diameters of perforation 0.5-1.0 mm. Ends frequently cut at a slight angle (fig. 124, *g*, *i*).
R-34, Jar H	White, opaque, glass beads	3,048	Cylindrical, flat-ended beads apparently cut from tube; some slightly ovoid. Diameter 2.5-3.5 mm.; thickness (length) 1.5-3.5 mm. Diameter of perforation 0.5-1.0 mm. Ends frequently cut at slight angle rather than straight across (fig. 124, *g*, *i*).
R-36	Pieces of cast-iron pan	2	Very thin and probably late 19th century.
	Iron pot hook	1	Made of one-half inch round iron rod. End of 19th century or later.
	Shell buttons	2	Like modern shirt buttons. Could be any where from 1 to 151 years old.
	Base of stoneware preserve jar, glazed over cream-white body.	1	Type used for distributing English marmalades for past 100 years, although evidence of hand workmanship points to early phase.

THE SITE SEQUENCE AND ITS IMPLICATIONS

The seriated sequence of the Rupununi Phase (fig. 125) is based on the pottery type frequencies at the 30 habitation sites. The cemetery and ceremonial sites produced too few specimens to be statistically reliable. Because of the short period of habitation, all of the sites produced only surface collections, and no stratigraphic evidence was available for determining the direction of the trends in popularity of the pottery types. Consequently, after the percentage occurrence of the two major wares, Kanuku Plain and Rupununi Plain, was plotted on strips of graph paper, and these were arranged in the order of increasing and decreasing frequency, some external evidence had to be employed to determine which was the upper end of the seriated sequence. Fortunately, the associated European material was datable in several cases with sufficient preciseness to solve the problem.

Twelve sites produced European trade material representing a considerable variety of items (table L), many of which are not diagnostic or are of types manufactured over long periods of time. Six of the sites, however, contain one or more items that can be dated more exactly, and these establish the approximate period of occupation. When these sites are placed in chronological order based on the Euro-

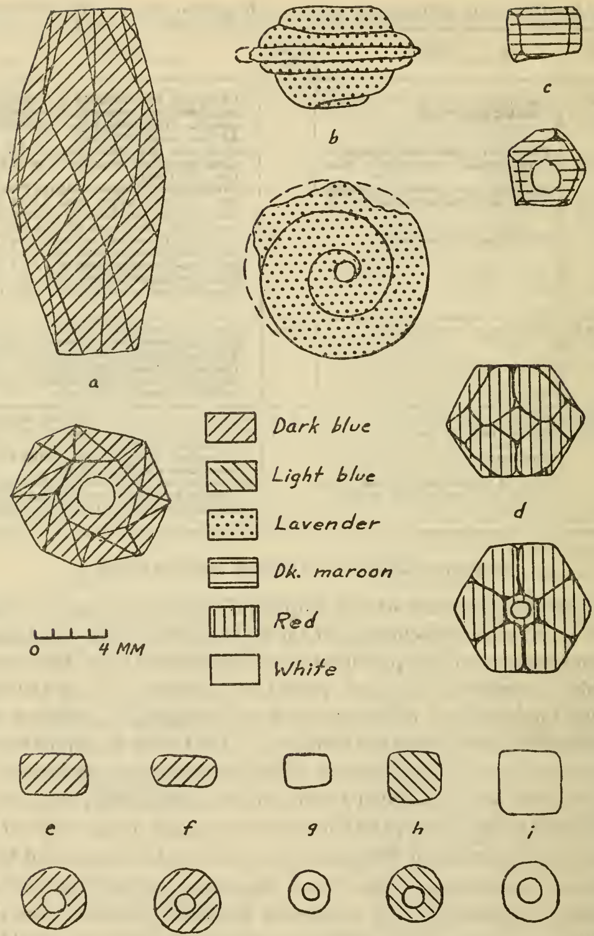

FIGURE 124.—Glass beads from Jar A at R–34, Shelter 1, a cemetery site of the Rupununi Phase.

pean trade materials, the correlation with the seriated position derived from pottery type classification is very good (table M). Only two

Table M.—*Correlation between dated and seriated position of Rupununi Phase sites with European trade materials*

Dated sequence from European trade goods		Seriated sequence from aboriginal pottery types	Dated sequence from European trade goods		Seriated sequence from aboriginal pottery types
Date	Site		Date	Site	
1880–1910	R-8	R-12	Pre-1850	R-3	R-6
Late 19th century	R-36 B	R-8	Pre-1830	R-6	R-17
1870–1900	R-19	R-36 B	1780–1830	R-17	R-3
1820–40	R-12	R-19			

sites are out of order. R–3 is third in the European dating and earliest in the pottery seriation, but this is not serious contradiction because the trade goods at R–3 give only a terminal date, and the period of occupation might well be several decades earlier, in which case the site could be placed lower down in the sequence. R–12 is more seriously out of line, being in the middle of the dated sites but last in the pottery seriation. Here, the discrepancy is more difficult to explain. The ceramic seriation and the characteristics of the site both establish R–12 as very recent, but the glass and earthenware are both dated as about 1820–40. The only explanation that suggests itself is that the European trade materials were used longer than would normally be expected or were received by the Indians after they were out-dated among the Europeans. Since the other identifications all confirm the ceramic seriation, this single exception cannot be considered a significant argument against the validity of the sequence.

The ceramic history of the Rupununi Phase is characterized by the decreasing popularity of Kanuku Plain, with an orange paste, and a corresponding increase in frequency of Rupununi Plain, with a gray core. During the period of time represented by the site survey, Rupununi Plain increases from 11.6 percent to 79.2 percent of the sherd total. At the same time, Kanuku Plain declines from an initial high of 88.4 percent to 20.8 percent. In all but five of the sites, these two pottery types comprise 98 percent or more of the total sherds, with the result that they show a smooth sequence of change. Only one site, R–40, fails to fit well because of an unusually high frequency of decorated sherds.

A small number of sherds with unusual temper or some form of decoration appear sporadically, one or more kinds occurring at only 12 of the sites. In several cases, origin by trade is demonstrable or at least suspect. Cariapé tempering was detected at five sites, with the majority of the sherds from each site attributable to one or two vessels. The distinctive nature of this temper and of the process by which it is obtained makes it seem highly improbable that it could occur accidentally. The rare and sporadic occurrence suggests derivation by trade, and in this connection it may be significant that cariapé-tempered sherds were found only at sites in the north savanna. However, the sherds are too highly eroded and the potential area of origin too little known to venture any identification. A more positive statement can be made about certain decorated sherds from R–40. They are in every respect identical with sherds of Onoro Stamped (pl. 46, *d*, *h*) and Kanashen Incised (pl. 41, *j*) from Taruma Phase sites in the upper Essequibo area and must have come to R–40 from that source. R–40 seriates between R–3, dated as pre-1850, and R–19, dated as 1850–1900, suggesting that this trade took place around the third quarter of the 19th century. The archeological evidence for the Taruma Phase (pp. 263–269) makes this date reasonable. The only cause for surprise is that there is not more evidence of this kind of contact, since trade between the two groups of Indians is attested by ethnographical and other documentary sources. The only other archeological indication is a pot rest fragment from R–3, a site that seriates slightly earlier than R–40. The form resembles the common type of pot rest from the Taruma Phase, suggesting Taruma Phase origin. Sherds of Koriabo Scraped and Koriabo Incised from R–40 are less readily explained as reflecting trade because of the presumed difference in the chronological position of the Rupununi and Koriabo Phases (see p. 334).

Unclassified decorated sherds are so few and represent such a variety of techniques, each restricted to a single site or period, that external influence seems the only logical explanation. A single mica-tempered sherd with a band of punctates bordered above and below by an incised line came from R–22. It is unparalleled in the Rupununi Phase, but both temper and decoration are reminiscent of Kaituma Incised and Punctate, Motif 3, from the Mabaruma Phase. R–2, the site immediately following R–22 in the seriated sequence, produced sherds with white slip and no other surviving ornamentation. White slipping is also found in the Mabaruma Phase and its presence at R–2 might be attributable to continuation of contact with inhabitants of the Northwest District. The next appearance of decorated sherds is somewhat later at R–40, and this time modeling is the decorative technique employed. Vessel sherds with low relief on the interior or exterior and fragments of figurines are both present in an abundance that is without parallel in the Rupununi Phase sequence. Other innovations at Site R–40 are incised lines on the interior of base sherds, and white slipping, one sherd of which has an annular base. Modeling was the only technique that was sufficiently popular to be carried on. Both R–9 and R–6, which follow R–40 in the seriation, produced a few modeled sherds or figurine fragments.

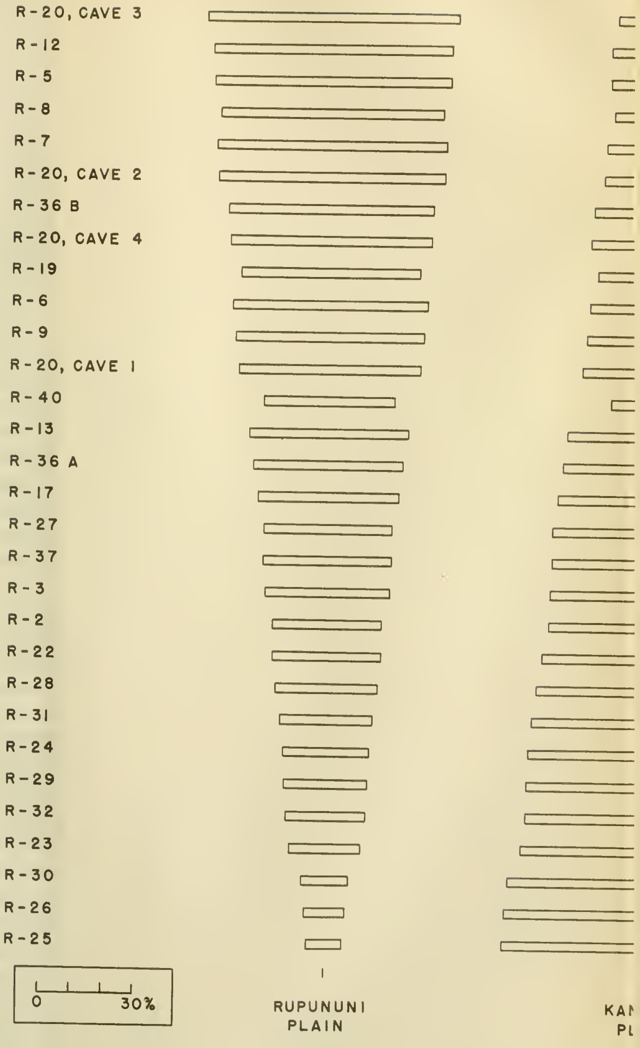

FIGURE 125.—Seriation of Rupununi Phase sit

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Types of ornamentation that seem indigenous to the Rupununi Phase, but occur only occasionally, are conical applique nubbins on large jars (pl. 65, *b*) and nicks or finger impressions on the rim edge (pl. 63, *i–k*). Sherds with a thin red film on one surface occur sporadically but are too frequent to have temporal significance.

Analysis of the vessel shapes of Kanuku Plain and Rupununi Plain shows that the same forms are represented in both wares (Appendix, tables 38–39). However, a considerable difference in relative popularity is discernible. In Kanuku Plain, Form 1 is dominant, being almost twice as common as the two next most frequent shapes, Form 2 and Form 4. In Rupununi Plain, by contrast, Forms 1, 2, and 3 are all equally represented and Form 4 is relatively rare. Form 6 is rare in both wares. The total number of rims from each site is too small for reliable percentage analysis, but several tentative conclusions can be drawn from the range of occurrence and differential frequency of forms. It seems significant, for example, that Form 4 (griddles) is most abundant in Kanuku Plain, which is the earlier type. This vessel, indispensable to the baking of cassava bread, ceases to be made in quantity in the late part of the Rupununi Phase sequence although the type of food with which it is associated is still a major item of diet today among Rupununi savanna Indians. The dying out of this form is undoubtedly correlated with the introduction by Europeans of a metal substitute, and therefore reflects increasing European contact and consequent greater ease of obtaining the more durable type of griddle.

Of the three kinds of base found on Rupununi Plain and Kanuku Plain vessels, the flat vase (Form A) is by far the most common throughout the sequence. Form B (pedestal) is next and appears to be largely restricted to the early half of the Phase. Form C (rounded) is rare and sporadic (Appendix, tables 38–39).

Most types of stone tools are too infrequent to permit the drawing of any conclusions about changes in popularity. However, it may be noted that hoes occur only in the latter half of the sequence and only at sites in the northern savanna. They are sufficiently abundant here to suggest that they ought to be represented at earlier sites if they had been in use. Possibly these hoes are stone copies of European metal hoes received by trade and considered more efficient than the aboriginal digging stick. Axes, by contrast, are found throughout the Phase, except at the latest sites where they can be presumed to have been superseded by metal counterparts.

The seriated site sequence (fig. 125) derived from ceramic frequencies has an interesting geographical aspect. All of the sites in the lower half of the sequence are in the southern savanna except R–2 and R–3, which are on the north savanna near its southern boundary.

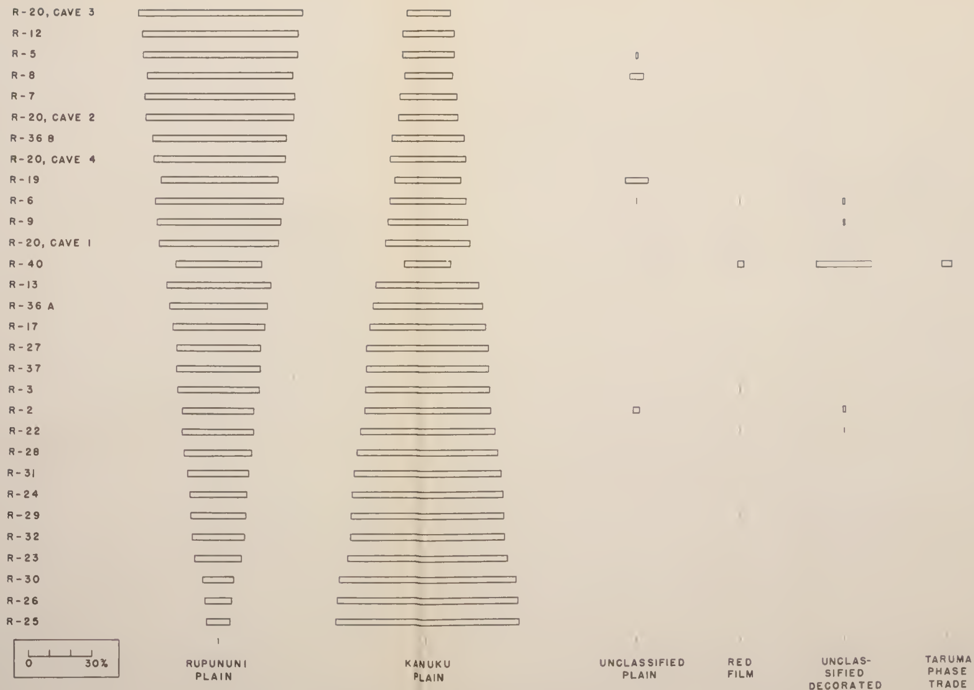

FIGURE 125.—Seriation of Rupununi Phase sites on the basis of changes in pottery type frequency (Appendix, table 37).

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Conversely, all of the sites in the upper half of the sequence are in the northern savanna with one exception, R-36, which is in the southern Kanuku Mountains. A similar geographical distinction is also evident in the cemetery and ceremonial site locations. The two ceremonial sites are both in the south savanna, although since they are relatively inconspicuous there is a possibility that they might exist in the north savanna also and not have been reported as yet. The two rock shelters with multiple urn burials and offertory vessels are both in the south savanna. Burials in the north savanna, although also typically placed in rock shelters, differ in three respects: (1) the urns are often not interred but placed instead either on a rock shelf or directly on the ground; (2) the urns are not provided with lids; and (3) associated offerings are rare. In the south savanna, form 2 and form 6 were most often employed for burial urns, and form 3 was used for the lid or for the associated small vessels. In the north savanna, all the burial urns are form 3. This difference parallels the temporal distribution of the habitation sites, if it may be assumed that since the earlier habitation sites are in the south savanna, the cemeteries in the south savanna are also the earlier. Form 3 appears to have an increasing popularity in the habitation sites and the same trend is evident in the cemeteries. The decreasing elaborateness of the burial pattern that this sequence shows probably can be explained as a reflection of the increasing Christianization of the Indians, which tends to break down aboriginal patterns of disposal of the dead.

The distributional evidence leads to the conclusion that the Rupununi Phase first occupied the south savanna, later expanding to the north. This expansion was accompanied by increasing acculturation, leading to the loss or simplification of the aboriginal ceremonial practices and methods of disposal of the dead. Distinctive artifacts were also abandoned, such as stone axes and pottery griddles for baking cassava bread. Increasing amounts of European materials at the later sites leave no doubt as to the increasing acculturation of the population, a process that is still continuing today.

If the conclusion is justified that the south savanna burials belong to the earlier part of the Rupununi Phase, then the colonial coin from R-34, Shelter 1, Jar A takes on added significance. It is not only pertinent to the age of the cemetery in which it was found, but to the introduction of the Phase into the south savanna. The coin's date, 1809, gives a maximum antiquity for R-34, Shelter 1, and the amount of wear on both surfaces of the coin makes a somewhat later date for the burial mandatory. The presence of European materials in this burial urn is suggestive of considerable value attached to them by the owner, and this attitude probably resulted from the relative scarcity of such things. Such a conclusion is in accord with the fact that none of the habitation sites in the south savanna produced any European trade materials except R-36, which is at the middle of the seriated sequence and relatively late. R-3, just north of the Kanuku Mountains, is the earliest habitation site with trade materials, and these are dated 1825-50.

ETHNOGRAPHIC EVIDENCE

In historic times the Rupununi savanna has been inhabited by two tribes, the Cariban-speaking Macusi in the north and the Arawakan-speaking Wapisiana in the south. Neither group has been the subject of detailed ethnographic investigation, although Farabee and others have reported on various aspects of their culture. In 1952 both were acculturated to a considerable degree although the aboriginal languages continued in use. No attempt will be made here to summarize all recorded ethnographic data, but only those aspects of the culture that have bearing on the archeological remains.

Subsistence.—Since the savanna is unsuitable for cultivation, the fields of both Wapisiana and Macusi are in the forest, usually at a considerable distance from the village. Clearing is done in the dry season. The vegetation is not piled but left where it falls. Burning consumes the leaves and small branches but only chars the trunks. Planting takes place at the beginning of the rainy season. Digging sticks are the main agricultural tools, the aboriginal wooden implement being replaced by one with an iron point. The Macusi also use hoes (Farabee, 1924, p. 30). Bitter manioc is the main crop. Maize, sweetpotatoes, sugarcane, sweet manioc, pineapples, pumpkins, tobacco, peppers, bananas, plantains, cashew, and papaya are also planted (Farabee, 1918, pp. 31-2). Fields are abandoned after 3 years (1924, p. 32).

Hunting and fishing contribute to the food supply but are less important than among the forest tribes (Farabee, 1924, p. 163).

Settlement pattern.—Farabee's descriptions of Wapisiana and Macusi village location and arrangement are almost identical. Both are said to be in the open savanna, typically at a considerable distance from the cultivated fields (Farabee, 1918, p. 15; 1924, p. 15). Houses are not arranged according to a plan and vary from closely spaced to widely scattered (loc. cit.).

House.—Wapisiana and Macusi houses may be for single family or multiple family occupancy. Size varies accordingly. Form may be rectangular, circular, or elliptical. Communal houses have no partitions, but each family has its own section. The floor is hard packed earth from which the surface soil was removed (Farabee, 1918, pp. 18-19; 1924, p. 18).

Pottery.—Farabee describes Macusi pottery in some detail:

> The Macusis make no fine pottery but their cooking and storage pots are well made and more beautiful in form than those of any other of the tropical tribes. There is no good potter's clay in the savannah country, but if there were there is little use for it, because the calabash takes the place of pottery vessels and serves the purpose much better. . . . The coiling process is used in making pottery. Fillets of clay are laid on in successive layers, pressed down with the fingers and smoothed inside and out by rubbing with a pebble and a piece of calabash. The clay is tempered with ashes. The vessel is fired in the open. For a large pot, a shallow hole is dug, the pot placed inside bottom upward and a fire built over it. While the pot is still hot, cassava juice is poured over it to fill up the pores. The large pots for storing or ripening drink may hold as much as twenty gallons. They are set against the main posts in the middle of the large house for protection. [1924, p. 24.]

The Wapisiana methods are similar, with the occasional addition of simple decoration:

> The Wapisianas are not good potters, partially because there is no fine clay in the immediate region. The coiling process is used in manufacturing all kinds of pottery. The pot is built up by laying on successive rolls or fillets of clay the size of one's finger. These are pressed down and made to adhere to the layers below; then smoothed on both sides by rubbing with a red jasper pebble and a piece of calabash. When completed the pot is allowed to dry in the shade, then burned in an open fire. A hole is dug, the vessel placed in it with the mouth down and a fire made of bits of dried palm and soft wood built over it. While the vessel is still hot, cassava juice is poured over it to fill the pores. Sometimes the clay is tempered with ashes. The cooking-pots usually hold about three gallons, but the storage pots for drink may be three or four times as large. There are also smaller cooking-pots for use when traveling.
>
> After the pot has been thoroughly fired it is allowed to cool before being painted. A black rock called teal is pulverized and mixed with melted gum called "diakarieib." With this the designs are painted on and allowed to dry for a time, when the pot is again fired sufficiently to melt the gum. Another gum, "gumanime," is melted and run all over the pot. When it has cooled it is smoothed and polished by rubbing.
>
> Sometimes the ground work is a red paint made of annato (*Bixa orellana*) mixed with the same gum and applied in the same way. When dry, black geometrical designs are painted on the vessel, after which it is fired again.
>
> A white slip made of felspathic clay is often used before either the red or black designs are painted on, but not until after the first hard firing. [Farabee, 1918, pp. 24–25.]

The only vessel shape that is described is the griddle used for making cassava bread and farina. A Macusi griddle is said to be 2 feet in diameter and 2 inches thick, with the edge turned up. It is placed on a tripod support of three stones or three clay pot rests 8 to 10 inches high (Farabee, 1924, p. 22). The Wapisiana griddle is of similar size and form, but is often fixed on a permanent base about 12 inches high with an opening at front and back for laying a fire beneath. Such an oven may occupy a separate building (Farabee, 1918, p. 21). In 1918, metal substitutes were being introduced according to Farabee (loc. cit.). Im Thurn (1883, pp. 261–262) says, however, that iron griddles had already replaced the aboriginal form by the time of his visit in 1878.

In the collections of the University Museum, Philadelphia, there are several pottery vessels collected by Farabee and cataloged as made by the Wapisiana Indians. They include a pottery griddle 70 to 71 cm. in diameter, cat. No. SA 271 (pl. 67, *a*), and two small globular jars of Vessel Form 5 c, cat. No. SA 276. One jar (pl. 66, *c*) measures 19.5 cm. in diameter and 9.5 cm. high, and the other jar (pl. 66, *d*) 23.5 cm. in diameter and 12.0 cm. high.

Spindle whorls.—The only other artifacts mentioned by Farabee that might be found archeologically are spindle whorls in the form of a disk of stone, shell, or pottery 2 inches in diameter (1918, p. 30; 1924, p. 27). These were used by both tribes.

Disposal of the dead.—Both Macusi and Wapisiana are reported to inter the body in the ground. A Macusi is usually buried at a distance from the village, but an old man may be buried beneath the floor and the house abandoned (Farabee, 1924, p. 81). Schomburgk (1836, p. 238) reports coming upon a Macusi village abandoned because of the death of one of the chief's wives and finding "the cassava field in good cultivation, the huts well built, and some newly thatched, earthenware pots, balls of cotton, a hammock half-finished . . ."

Wapisiana practice differed slightly according to the sex of the deceased. A man was buried beneath the floor, in a shallow grave dug under his hammock. His possessions were piled over the grave and the house was burned. A woman might be buried in the house or in a grave a considerable distance away as was done with children. Personal ornaments and her hammock were buried with her, but cooking utensils were inherited by her family (Farabee, 1918, p. 100). Farabee reports a tradition among the Wapisiana that the dead were formerly cremated (loc. cit.).

DIAGNOSTIC FEATURES OF THE RUPUNUNI PHASE

On the basis of 29 habitation sites represented in the survey, villages of the Rupununi Phase can be characterized as typically less than 5,000 square meters, with the refuse distributed over a circular or ovoid area. Almost one-third of the sites covered less than 1,000 square meters. At the other extreme are three very large sites of the order of 100,000 square meters. All three (R–6, R–7, and R–36) belong in the upper half of the seriated sequence. Whatever their explanation, such extensive sites are not usual or typical of the Rupununi Phase. In no instance did the refuse deposit extend more than 3 cm. below the ground surface, indicating a very short period of occupancy and a high frequency of movement of the village. The majority of the sites are on the savanna, usually occupying a knoll or hilltop and often bordered on one side by a patch of trees. A few sites in the earlier part of the sequence are on a forested slope not more than a kilometer in from the edge of the savanna. Proximity to rivers or even large streams is not characteristic, implying that watercourses did not furnish the major avenue of transportation and communication.

The seriation of Rupununi Phase habitation sites is based on an increasing frequency of Rupununi Plain and a corresponding decreasing frequency of Kanuku Plain. The trends are such that the sites in the lower half of the sequence have a majority of Kanuku Plain and those in the upper half have a majority of Rupununi Plain. None of the types of decoration has any temporal or quantitative significance, and the variety of techniques seems to reflect outside influences felt at different times by certain villages.

The most distinctive stone tool associated with the Rupununi Phase is a stubby, rectanguloid ax with lateral notches (fig. 119; pl. 61). More abundant than axes, but restricted to the upper part of the sequence, are stone hoes (fig. 121; pl. 62) made of flat slabs of rock roughly shaped by percussion blows and with a high polish on the tip of the blade produced by digging in the sandy soil. The appearance of these tools only after extended European contact suggests that they are an imitation of a European metal hoe deemed superior to the aboriginal digging stick. Other stone artifacts include bowls, choppers, hammerstones, manos, and metates.

The Rupununi Phase can be equated with the Macushi and Wapisiana Indians who are known to have occupied some of the later sites in the sequence. The sampling of sites represented in the Rupununi savanna survey leads to the conclusion that the entry of these groups onto the savanna is very recent. Present evidence makes it impossible to date the intrusion earlier than the end of the 18th century. Use of the savanna for hunting at an earlier time is probable, but the choice of the savanna for residence is clearly a post-European phenomenon, dictated by the economic advantages of proximity to European settlements.

COMPARATIVE DATA, CONCLUSIONS, AND INTERPRETATIONS

The archeological picture on the Rupununi savanna is of a very recent occupation by a single pottery-making group, designated as the Rupununi Phase. Prior to the arrival of this group, the region was probably exploited by wandering hunters and gatherers, but evidence of their existence is restricted to a few scattered finds of chipped stone tools. Sites of the Rupununi Phase include habitations, cemeteries, and places of possible ceremonial significance. Taken together, they give a more complete description of the cultural complex than can be provided for any of the other archeological phases in British Guiana. Among the diagnostic features are frequent moving of the village, secondary urn burial in rock shelters (or when these are absent, in the ground), pottery that is crude in form and lacking decoration, and the use of stone tools, especially stone hoes and stubby axes with lateral notches.

In all of its features, the Rupununi Phase is distinct from all of the other archeological phases recognized in British Guiana. The absence of any affiliations with complexes along the coast or on the upper Essequibo River minimizes the possibility of its derivation from the north, south, or east. Although the archeology of the Mazaruni region that borders the Rupununi on the north is little known, indications are that secondary urn burial there was never an important method of disposal of the dead (Butt, 1958). However, rock shelters with large burial urns of Rupununi Phase forms have been reported by Homet (1953) from the northern part of the Territory of Rio Branco, in adjacent Brazil. Several were covered with an inverted jar or bowl, a frequent Rupununi Phase custom, and at least one contained glass beads (op. cit., p. 10 and pls. 7, 8). Holdridge (1933, pp. 70–72) describes a visit to two caves containing large undecorated burial urns in the Serra Maruahy (Marari?) north of the Rio Uraricoera, also in the Territory of Rio Branco.

This extension of the distribution of the Rupununi Phase to the east coincides with historical evidence that the Wapisiana and Macusi inhabited the Brazilian savanna. A map by Nicholas Horstman published in 1748 shows the Macusi occupying the area north of the Takutu River and the Kanuku Mountains and the Wapisiana on the Brazilian savannas south of the Takutu and Uraracuera Rivers (Farabee, 1918, p. 13). A slightly later map, dated 1771–75, by Juan de la Cruz Cano y Olmedilla (Cartografia Historica de Venezuela, 1946, p. 19) shows the Macusi in the southern Rupununi and the "Maripisanas" in Brazil. Luis de Surville's map of 1778 places the Macusi in the northern Rupununi savanna and east of the Essequibo River; the Wapisiana are not shown (op. cit., p. 21). Schomburgk found the Macusi in the north Rupununi in 1835; by this time the Wapisiana were occupying the area between the Essequibo and the Branco, having displaced the Macusi (Farabee, 1918, p. 13). At the time of his visit in 1913, Farabee (op. cit., p. 14) found old men living east of the Rupununi River who remembered stories their fathers told of migration from the west.

The absence of adequate archeological information makes it impossible to trace the Rupununi Phase farther backward in time. Its appearance in the Rio Branco savanna probably does not greatly antedate its arrival in British Guiana, since glass beads are associated with the burial urns in both places. Schomburgk once proposed a theory that the Macusi came from the Orinoco on the basis of resemblances between Macusi words and names given by Ralegh of tribes along that river (1848, p. 78, footnote 1). Since the Orenoqueponi are defined by Ralegh as "all the nations betweene the river [Orinoco] and those mountaines in sight called Wacarima [Pacaraima]" (1848, p. 75), this does not place the origin of the Macusi more specifically than to suggest that they moved in from the north. Verification or rejection of this hypothesis will have to await future archeological work in the interior of Venezuela.

This historical information must be taken into consideration in trying to correlate the archeological and ethnographic data from the Rupununi. The archeological sequence, which extends into the 20th century, presents a uniform picture in settlement pattern, burial practices, and pottery types. However, ethnographically the Rupununi is subdivided into two tribes with linguistic affiliation to two different language families, suggesting quite different origins. Culturally, the Cariban-speaking Macusi and Arawakan-speaking Wapisiana do not differ greatly, at least in aspects that can be recognized archeologically. Farabee's descriptions of village pattern, pottery making, and disposal of the dead are almost identical for the two tribes (see pp. 323–325). When we first began to correlate the archeological and ethnographical data, we assumed the archeological divisions were the same as the ethnographic ones and that our failure to find a difference between the remains north and south of the Kanuku Mountains was an indication that ceramic complexes are not necessarily correlated with tribal entities. When the historical, geographical, and chronological data were combined, however, it seemed possible that the archeological remains of all the Rupununi sites belonged exclusively to the Macusi. The following evidence supports this conclusion:

Although sites were investigated on both the northern and southern Rupununi savannas, the seriation chart shows that the early sites are all in the south and the late ones in the north. This site distribution is explainable only in terms of a shift in geographical location of the culture from south to north through time. The dates (see table L) derived from European trade materials place the two earliest sites in the north savanna as 1819–50 and 1780–1830, suggesting that this shift took place between 1800 and 1850. The majority of the historical records tend to support a recent intrusion of the Wapisiana into the southern Rupununi with the consequent displacement of the Macusi to the north. This movement had already taken place by Schomburgk's visit in 1835, but probably not too many years before because

Farabee (1918, p. 14) reported that in 1913 he met old men whose fathers had told them about coming from the west.

The only apparent contradiction to the conclusion that the archeological survey of the Rupununi found only Macusi sites is an account of Schomburgk's visit to a Wapisiana village in the southern part of the Kanuku Mountains in 1836. He describes the ascent as follows:

> The path, Indian-like, led over fallen trees, between boulders of granite, and was often so steep that we had to use hands and feet. . . . After a march of eight hours and a half, we reached a settlement of the Warpeshanas, where we intended to rest for the night. . . The height was between 2,300 and 2,500 feet above the plain. [1836, p. 250.]

This generalized description fits the approach and environs of R–36, but could also apply to other places in the mountains not explored by our survey. The reason for suspecting that R–36 might be the village seen by Schomburgk is that its seriated position in the Rupununi Phase sequence suggests that it was inhabited at the time of his visit (table N). Thus, if R–36 is the Wapisiana village that Schomburgk saw, and not a Macusi site, the question again arises whether the Macusi and Wapisiana archeological remains really differ. In the south Rupununi savanna the historical and archeological data do not permit a final answer at present.

The north Rupununi savanna was visited by Im Thurn in 1878. He lived for several months at the Macusi village of Quatata, which he describes as "one of the largest settlements on the savannah, [which] consists of ten houses, all oval or round" (1883, p. 34). It was located on a high place, with a view across the plain to the Pakaraima Mountains (op. cit., p. 36). This description coincides well with that of R–9, and this site is also in the correct position in the seriated sequence to have been inhabited in 1878 (see table N). Although Im Thurn mentions trading with the Indians and observed them using European items, no trade goods were found at R–9. This situation emphasizes the fact that the absence of objects of European origin at a site does not necessarily indicate a precontact date.

Although much of Im Thurn's data are too general to use for comparison, two comments he makes on the Rupununi are of interest in terms of the archeological record. He noted that "stone implements, though no longer used in Guiana, are to be found in greater or less abundance throughout the district" (op. cit, p. 39). If R–9 represents the Quatata village he visited, then this observation is verified archeologically since stone axes were found at two sites (R–6 and R–19) that follow R–9 in the seriated sequence. Im Thurn also noted that "a large circular iron griddle or plate, of European manufacture" was used for baking cassava bread, and then he speculates that a stone slab was used earlier, suggesting that by the time of his visit pottery

Table N.—*Correlation of geographical and historical data on Rupununi Phase sites*

Sites in seriated sequence	Date from European trade materials	Reconstructed time scale	Environmental setting		Geographical location		Remarks
			Forest	Savanna	North	South	
R-20, Cave 3		1950	×		×		
R-12	1820–1840?			×	×		
R-5				×	×		
R-8	1880–1900+			×	×		Inhabited in 1930?
R-7				×	×		
R-20, Cave 2			×		×		
R-36 B	1890+	—1900—	(×)		×*		
R-20, Cave 4			×		×		[1879—primary burial by interment].
R-19	1860–1900			×	×		[1879—stone axes still used; no pottery griddles].
R-6	1790–1830			×	×		
R-9				×	×		Visited by Im Thurn in 1878?
R-20, Cave 1				×	×		
R-40		—1850—	×?		×		Trade sherds from Taruma and Koriabo Phases.
R-13				×	×		
R-36 A			(×)		×*		Visited by Schomburgk in 1836?
R-17	1780–1830			×	×		[By 1835, Wapisiana have replaced Macusi on south Rupununi].
R-27				×		×	
R-37			(×)		×*		
R-3	1819–1850			×	×		
R-2			×		×*		
R-22				×?		×	
R-28		—1800—		×		×	[1796—Introduction of cattle to savanna].
R-31				×		×	
R-24			(×)			×	
R-29				×		×	
R-32				×		×	
R-23			(×)			×	
R-30				×		×	
R-26				×		×	
R-25			(×)			×	
		—1750—					[1738—Wapisiana in Brazil, Macusi in British Guiana].

*=In Kanuku Mountains.
(×)=savanna corresponds to site area and probably is the effect of clearing so that the site may be classified as in the forest.
[ ]=Historical data not referring to any specific site.

griddles were already things of the past (op. cit., pp. 261–2). The analysis of vessel shapes through time (Appendix, tables 38, 39) shows that Form 4, griddles, is represented at only three sites following R–9 and all three are marginal to the north savanna, two being in the Pakaraima Mountains (R–20, Cave 2 and Cave 3) and one in the southern Kanukus (R–36 B). Although pottery griddles were practically obsolete, it seems strange that they would have been forgotten so soon, particularly in view of the fact that Farabee, who came 40 years later, found them still in use. Indeed, Im Thurn't wording suggests that he did not question the Indians but arrived at his conclusion by inference. A conclusion in keeping with both archeological and ethnographic evidence is that metal griddles were preferred but not always available in large enough supply to eliminate the necessity of manufacturing pottery ones occasionally.

The strikingly short duration of Rupununi Phase villages, implied by the sparse accumulation of sherd refuse at all habitation sites, finds its explanation in the ethnographically documented practice of abandonment of the village when a death occurred. The strictness with which the Indians adhered to this custom regardless of the newness or convenience of the settlement caused comment from several early visitors (e.g., Schomburgk, 1836, p. 238), who appear to have considered it wasteful. In view of the contrast between the depth and density of refuse at these sites and at those in other parts of British Guiana visited in this survey, it seems probable that in general thin deposits of the Rupununi Phase type can be interpreted as reflecting the abandonment of the village for supernatural reasons rather than ecological ones.

Although the existence of trade relations between the Taruma and the tribes of the Rupununi savannas is attested by contemporary observers (Im Thurn, 1883, p. 273; Farabee, 1924, p. 21), archeological verification is practically nonexistent. The only evidence is the presence of a few sherds of diagnostic Taruma Phase decorated pottery types at the Rupununi Phase site of R–40, which dates from around 1850. Several sherds of Koriabo Phase decorated types came from the same site (pl. 36, *f*, *i*) and the significance of these is more dubious. Although the location of R–40 on the bank of the Rupununi River, a potential route of communication between the interior and the coast, makes trade relations between the two phases reasonable, other evidence suggests that the aboriginal cultures of the Northwest District were no longer in existence in the 19th century. Aside from the possibility that the Koriabo Phase sherds at R–40 are not related to the Rupununi Phase occupation of the site, the only apparent explanation is that the Koriabo Phase either lasted longer than has been assumed in the Northwest District, or retreated toward the interior where European contact was less intense and survived there. Perhaps future archeological investigation along the lower and middle course of the Essequibo will provide the missing evidence and permit a choice between these alternatives.

The ethnographic data disagree with the archeological record in two important points. One concerns the method of disposal of the dead, which is reported by all observers to be primary interment. The Wapisiana are said to have a tradition of an earlier practice of cremation, but there appears to be no contemporary record of urn burial. Considering the fact that missionaries were among the

Macusi by the early part of the 19th century, suppression of such a heathen practice is most probable. The presence of a worn 1809 coin in one urn proves that the custom of urn burial survived well into the 19th century.

The second point of disagreement is in the description of pottery making. Both the Macusi and Wapisiana are said by Farabee (see p. 324) to use ashes for tempering the clay, whereas the major wares of the Rupununi Phase are tempered with coarse to fine sand. Occasional sherds from seven sites contained traces of black ash, but the addition of this material was by no means typical and its presence was considered nonsignificant for purposes of classification and establishment of pottery types. Four of the sites showing this feature, however, are in the late part of the sequence, with a probable dating of post-1900. If this represents the beginning of a trend toward the use of ash temper, then Farabee's observation would be acceptable from an archeological standpoint.

Cattle were introduced into the savannas of the Rio Branco, Brazil, and the Rupununi of British Guiana at the end of the 18th century. Thus, the lives of the savanna Indians have been touched by this European-introduced economy for the past 150 years, with the result that overt expressions of their aboriginal culture have largely disappeared. Macusi and Wapisiana economy is tied to the cattle industry by the fact that it constitutes directly or indirectly the primary source of monetary income. Proximity to a center of European settlement has brought a benefit in terms of improved health, with the consequence that the aboriginal population in this area is on the increase and is likely to maintain itself in the foreseeable future.

THE CULTURAL SEQUENCE IN BRITISH GUIANA: GENERAL CONCLUSIONS AND IMPLICATIONS

The colony of British Guiana extends inland from the coast halfway to the Amazon in the northeastern corner of South America. Included within its borders are vast expanses of virgin forest, a narrow coastal band of mangrove swamp and beautiful stretches of tree-sprinkled, lateritic savanna. Mountains form a backdrop on the south and west, but are too low to constitute a geographical barrier to the easy movement of men or animals. British Guiana, along with its two neighboring European colonies to the east, is one of the areas of lowest population density in South America today. Archeological investigation has shown that a similar situation existed in pre-European times. Then, as now, the largest population concentration was on the coast, and coastwise communication was far more highly developed than contacts between the coast and the interior. In spite of differences in technological development, political organization and economic orientation, British Guiana today is the easily recognizable descendant of its aboriginal forebear.

The peopling of the Guianas began at an unknown time, when some of the wandering hunters who represent the first human inhabitants of the American continent filtered southward and eastward (fig. 126). The only evidence of their existence is a handful of beautifully chipped stone projectile points found by accident in gravels of several British Guiana rivers (pl. 8). When these hunters arrived, how numerous they were, and what became of them are questions that may never be answered except by inference from conditions elsewhere in South America because of the small chance of finding sites in British Guiana, even if they should exist. The lush vegetation that covers most of the terrain and the lack of habitable caves or large rock shelters, coupled with the characteristic paucity of artifacts in sites of the lithic horizon as it is known in other parts of the New World, all place high odds against other than the accidental encounter of such remains.

The earliest well defined archeological complex is that of the shellfish gathering Alaka Phase (fig. 126).[9] The distribution of this preceramic culture appears to be limited to the coast west of the Essequibo

[9] The repetition of data has been kept to a minimum in this concluding summary. The evidence upon which the statements that follow are based can be found in the chapters at the end of each geographical section in the body of the report.

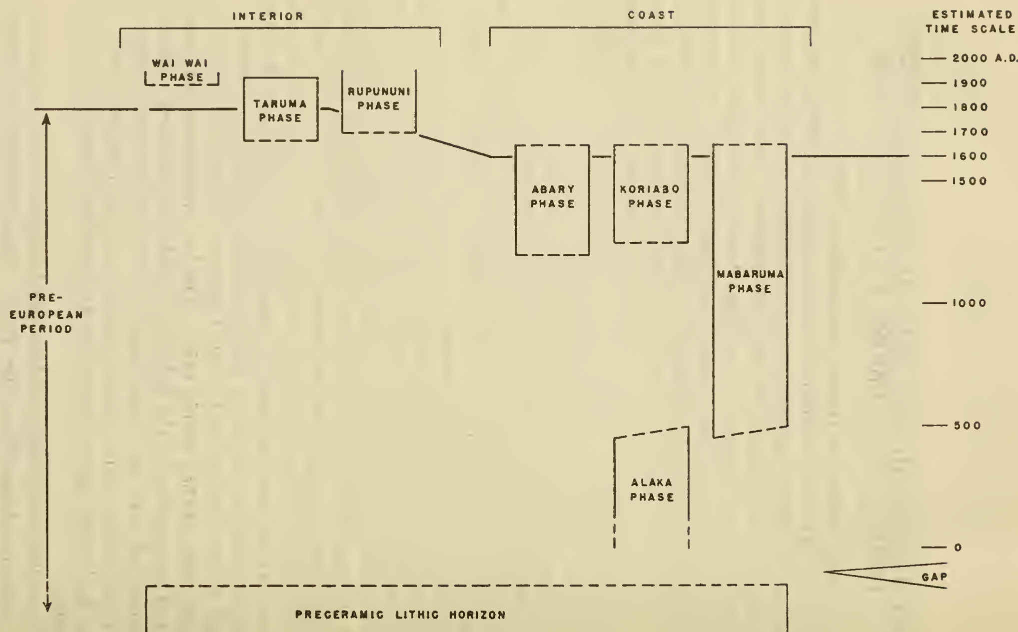

FIGURE 126.—The reconstructed archeological sequence in British Guiana, showing the relative chronological position and approximate duration of the various Phases.

River, where the various species of shellfish that provided the main food supply are found (fig. 58). At the time of this writing, no carbon 14 dates or other means are available for estimating the antiquity of this way of life in British Guiana. Shell middens occur in many places on the South American coasts, but few have been studied carefully or dated. Some have artifact assemblages similar to that of the Alaka Phase, others do not. These differences may be chronological or geographical or both. Until information is more specific, all that can be said is that the Alaka Phase represents a general subsistence adaptation that was widespread along the coasts of the New World before the introduction of agriculture.

During the period of its existence, the Alaka Phase underwent several important changes. The preceramic complex is characterized by the presence of percussion-made tools and the absence of pottery. Into this assemblage pottery was introduced, but its good quality as well as its sparsity suggest that the first examples were acquired by trade rather than made by the people of the Alaka Phase. A later innovation was the use of abrasion in the manufacture of stone tools. Finally, a new kind of plain pottery tempered with crushed shell (Wanaina Plain) appears in increasing abundance, associated with trade sherds of Mabaruma Phase origin (see table A). This sequence of changes has been interpreted as reflecting gradual acculturation, in which plant domestication replaced shellfishing as the focal point of subsistence, and pottery making, polished stone tools, and probably other traits not detectable by archeology were acquired. This conclusion is supported by the fact that all of these traits are known to be much earlier on the coast of Venezuela and farther to the west, and must have diffused into British Guiana from that direction (fig. 127).

The presence of trade sherds of Mabaruma Phase pottery types at a late Alaka Phase site implies that the migration of the first pottery-making group into the Northwest District came at about the time the Alaka Phase had completed its transition from food gathering to agriculture (fig. 126). The modeled and incised decoration (Aruka Incised, Akawabi Incised and Modeled, Kaituma Incised and Punctate, Mabaruma Incised), as well as vessel shapes and other distinctive ceramic features, leaves no doubt about the affiliation of the Mabaruma Phase with the Barrancoid style centering on the mouth of the Orinoco. A number of carbon 14 dates have been derived for this ancestral Barrancoid style, making it possible to place its expansion into British Guiana at around A.D. 500. Contact with the Alaka Phase appears to have been peaceful, but the earlier culture was ultimately overwhelmed by the newcomers without leaving any visible effect on the latter.

The Mabaruma Phase presents a contrast to the other pottery making groups identified in British Guiana in the elaborateness of its ceramics. Surfaces are well finished and frequently polished, vessel shapes incorporate annular bases and broad flangelike rims, and decoration by incision and modeling occurs on 13.8 percent of the total sherds. Although there is variation in the size of habitation sites, the upper end of the range is much larger than in any of the other phases.[10] These features suggest that population concentrations may have been larger and that sociopolitical organization may have been slightly more advanced than in a typical Tropical Forest culture. Unfortunately there is no evidence of burial practices or ceremonialism, either of which might provide a clue to the existence of occupational division of labor or differences in social status. In view of this inference of higher cultural development, it is of interest to note the influence that the Mabaruma Phase exerted on two contemporary Tropical Forest groups with which it came into contact. Decorated sherds of Mabaruma Phase types exceed those of the local style in sites of the Abary Phase and the Koriabo Phase, but evidence of reciprocation is very slight.

A considerable amount of change can be detected in Mabaruma Phase pottery during the time covered by the seriated sequence. Some decorative motifs died out and others were introduced (fig. 48), and several modifications occurred in vessel shape, not to mention the alterations in paste characteristics, especially evident in the plain wares (fig. 49). These changes appear to represent a gradual evolutionary simplification in vessel shape and decoration, but the possibility of some external influence cannot be ruled out, especially with reference to the change in adorno style (cf. fig. 49). During the latter part of its existence, the Mabaruma Phase expanded along the coast toward the southeast, and also reinvaded its Orinoco homeland. Its termination was probably brought about by increasing European settlement, but there is no direct evidence of this in the form of historical documentation or trade materials in British Guiana.

The third intruder into British Guiana was the Abary Phase, whose arrival is estimated to date at around A.D. 1100 (fig. 126). From a postulated origin in Trinidad, the group moved into the Northwest District where it came in contact with the Mabaruma Phase (fig. 127). A friendly relationship between the two peoples is suggested by the strength of the influence exerted on Abary Phase potters and the evidence of continuing trade after the newcomers settled on the Abary River. The small habitation sites and simple ceramics of the Abary Phase imply that it represents a typical culture of the Tropical Forest

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[10] Site R–36 of the Rupununi Phase is an exception, but dates from the 19th century and probably reflects influences not present in the aboriginal situation.

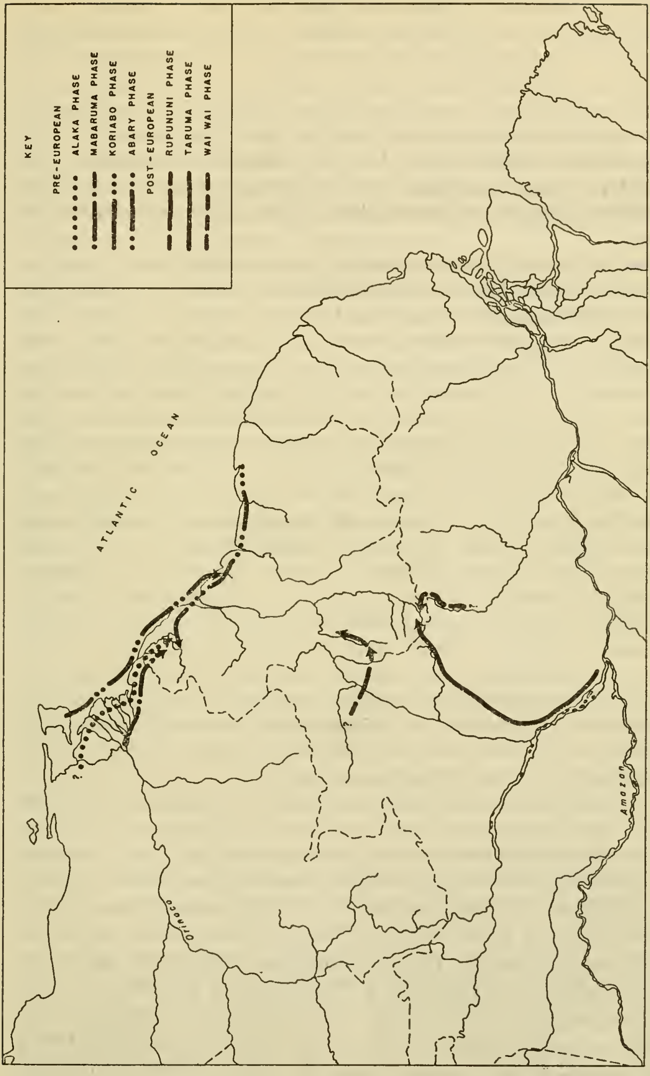

FIGURE 127.—Routes of migration into British Guiana reconstructed from analysis of the affiliations of the archeological Phases.

level of development. Disposal of the dead was by secondary urn burial in cemeteries. With the passage of time, the Mabaruma Phase influence on the pottery disappears leaving only the occasional and rudimentary decoration and simple utilitarian vessel forms native to the Abary Phase. As was postulated for the Mabaruma Phase, it seems probable that this culture survived until European times. An early description, dating from A.D. 1670, identifies the Indians in the vicinity as Arawak and there is a good possibility that they are descendants of the peoples of the Abary Phase, although this cannot be proved.

The final coastal invader detected by our archeological investigation is the Koriabo Phase, which arrived in the Northwest District during the latter part of the Mabaruma Phase occupation (fig. 126). The contemporaneity of these two groups is demonstrated by trade sherds in the sites of both, although the exchange was unequal and Mabaruma Phase sherds are far more frequent in Koriabo Phase sites than the reverse. The earliest indication of Koriabo Phase contact is slightly later in the Mabaruma Phase seriated sequence than the time at which the Abary Phase contact is postulated to have occurred, or about A.D. 1200–1300. Details of rim form and decorative technique point to a derivation from the east, with specific resemblances discernible on the coast of Dutch Guiana (fig. 127). Koriabo Phase pottery is sand tempered and is characterized by simple decoration by incision (Koriabo Incised) or scraping (Koriabo Scraped), both of which may be accompanied by small adornos or applique. Habitation areas are small, and there is no evidence of the method of disposal of the dead. The seriated sequence shows very little pottery change, supporting the conclusion that the duration of the Phase in the Northwest District was relatively short. Evidence of commerce with the Mabaruma Phase continues to the end, which probably coincided with European domination of the Guiana coast.

During the time the foregoing events were taking place on the coast, there is no evidence to indicate that pottery making groups inhabited any of the interior portion of the colony. On the upper Essequibo, the earliest remains are those of the Taruma Phase, whose migration from the lower Rio Negro in Brazil (fig. 127) is dated historically as posterior to A.D. 1670 (fig. 126). Taruma Phase pottery is predominantly sand tempered. Decoration includes incision (Kanashen Incised), painting (Manakakashin Red-on-White and Manakakashin Red), stamping with a palm nut (Onoro Stamped), and punctation (Kassikaityu Punctate). Pottery artifacts are restricted to pot rests, whistles, and spindle whorls. Since the Taruma Phase survived into the 20th century, the archeological data can be correlated with ethnographic information provided by various European visitors to the upper Essequibo region. The Taruma are described as living in communal houses surrounded by slash-and-burn garden clearings, having a social organization based on kinship, and a rudimentary development of religious ideas. Disposal of the dead was by cremation or inhumation, with the remains deposited in isolation, explaining the absence of any archeological evidence. The Taruma population, never very large, was decimated by disease and the culture became extinct about 1925, when the few individuals that remained went to live with other tribes. Four adult men living with the Wai Wai in Brazil and British Guiana were the only known survivors in 1952.

For at least 100 years prior to their extinction, the Taruma are reported to have traded with the Wai Wai (fig. 126), a Cariban-speaking tribe living at the headwaters of the Mapuera River in adjacent Brazil. By the beginning of the present century, the Wai Wai had begun to filter across the Acarai Mountains into British Guiana and this migration has been accelerated since 1950 (fig. 127). Wai Wai pottery is sand-tempered and undecorated except for occasional crude incision (Erefoimo Incised) or painting (Erefoimo Painted). Neither stone nor pottery artifacts exist, except for pottery spindle whorls and pot rests. In recent times, accessibility of European trade materials has led to the deterioration of pottery making as well as some of the perishable crafts, and the Wai Wai Phase is consequently growing increasingly difficult to detect archeologically. Ethnographically, the culture is a typical representative of the Guiana variant of the Tropical Forest pattern and is in many respects virtually identical to that of the Taruma Phase.

Introduction of Tropical Forest culture into the Rupununi savanna took place even later than on the upper Essequibo (fig. 126). Information derived from historical accounts and from the analysis of European trade materials at Rupununi Phase sites indicates that this group moved into British Guiana from adjacent Brazil sometime during the 18th century (fig. 127). The pottery is the crudest of all the archeological Phases in the colony, and decoration is almost completely lacking. Stone tools, however, are relatively abundant and include notched axes, hoes, and hammerstones as the most numerous forms. Habitation sites vary in area but the refuse is consistently limited to the surface of the ground, indicating a very slight degree of village permanency. Disposal of the dead was by secondary burial in urns placed under the shelter of a granite outcrop, and sometimes accompanied by beads or other trinkets or by small bowls presumably once containing food. Shallow bowls found in isolated locations have been interpreted as representing offerings of a ceremonial nature. Although contact with Europeans appears to have occurred since the introduction of the Rupununi Phase into British Guiana, there was little acculturation until after about 1925. Since then, the Indians have adopted European dress and other outward aspects of modern civilization, and have abandoned the burial practices, stone tools, and to a great extent the pottery making that identifies the Rupununi Phase archeologically.

This reconstruction of British Guiana prehistory is based on detailed information from four portions of the colony, two on the coast and two in the interior (fig. 127). While this leaves large, intervening sections unknown, there is no reason to believe that future archeological investigation will materially alter the general conclusions presented here. Details of a particular phase may be expanded and other archeological phases may be distinguished, but it can be confidently predicted that no pottery-making culture will be earlier than the Mabaruma Phase in time of arrival and that all will belong to the generalized Tropical Forest pattern of culture. The only known archeological site that cannot be fitted into the phase classification in this report is an urn cemetery at Seba, on the lower Demerara River (fig. 58; Carter, 1943), which may represent such an undescribed archeological culture, occupying the central British Guiana coast. Consequently, although the results of our survey and excavations do not exhaust the archeological possibilities in British Guiana, we feel that they provide detailed information on the areas most strategically placed with reference to potential routes of migration and diffusion and thus provide a safe basis for inferences of broader scope.

The cultural sequence in British Guiana has bearing on a number of theories and assumptions of general significance. Like the region at the mouth of the Amazon, this area acted as a recipient rather than an originator of culture traits and complexes. The late post-Columbian appearance of pottery making groups in the southern part of the colony substantiates the hypothesis that the Guianas functioned as a refuge area rather than a fountainhead of Tropical Forest cultural development as was once postulated (see Meggers and Evans, 1957, pp. 603–607 for a detailed discussion of the literature on this subject). The antiquity of settlement by Tropical Forest groups is greatest at both margins of the area—the mouth of the Orinoco and the mouth of the Amazon—implying primary migrations and/or diffusion down these two major rivers from the west. Spread along the coast of the Guianas appears to have been incredibly slow, and toward the interior practically nil. In fact, it is an open question whether the Rupununi savanna or the upper Essequibo would have yet been invaded by Tropical Forest culture had the aboriginal balance not been upset by the arrival of Europeans. Infiltration had undoubtedly been farther inland than the immediate fringes, but what is known of both archeology and ethnography of the central part of British Guiana does not suggest that penetration was deep or that the populations involved were large (cf. Im Thurn, 1883, pp. 11–12, 202).

In addition to providing a basis for the reconstruction of South American prehistory, the data presented in this report are applicable to several specialized problems. One is the relative priority of maize and manioc cultivation in northern South America. On the basis of evidence at Momíl on the north coast of Colombia, Reichel-Dolmatoff (1956, pp. 270–272; 1957, p. 233) has postulated that manioc preceded maize in that region. This conclusion rests on the fact that griddles of the type used for the preparation of bitter manioc in the Tropical Forest area today occur in the earlier part of the deposit, referred to as Momíl I. In Momíl II there is a sudden appearance of metates and manos, which are usually considered to imply the cultivation of maize. Cruxent and Rouse (1959, pp. 263–265) have analyzed their data on Venezuela for evidence on this point, and conclude that a similar priority existed there, with maize diffusing from the west and replacing manioc in the Andean portion of Venezuela but never reaching the eastern part of the country. Their conclusion is based on the fact that griddles are characteristic throughout the archeological sequence in the east but are absent in the later western sites.

Investigation of the occurrence of griddles and of milling stones in the archeological sequence in British Guiana shows very little temporal difference. Stone fragments identified as parts of manos or metates come from all Phases except the Taruma and Wai Wai, while griddle sherds occur in all the pottery making Phases except the Wai Wai, where metal has been substituted. In view of the assertion by Cruxent and Rouse that maize cultivation was not present in eastern Venezuela, the question arises as to whether milling or grinding tools necessarily imply maize. It has been shown in other parts of the Americas, notably in the southwestern United States, that such implements are characteristic of seed gatherers, so that the conclusion that they reflect maize agriculture is tentative in the absence of other supporting evidence, such as the introduction of Mesoamerican pottery traits found by Reichel-Dolmatoff on the Colombian coast. The presence of milling stones in the British Guiana phases could be dismissed on the basis that they are associated with a method of wild food preparation were it not for their apparent late position in the Alaka Phase sequence. This Phase is interpreted as having initially had a nonagricultural economy based principally on shellfish gathering. Toward the end of its existence, pottery appears and there are indications that agriculture was also introduced. There are no artifacts to support this subsistence change except for the appearance of milling stone fragments at the latest site. If these artifacts were not restricted to use with cultivated plants, then it would seem likely that they should be found in earlier sites when the economy was indisputably nonagricultural. In view of the small scale of Alaka Phase excavations, it is possible that the milling stones have a longer time span than existing data suggest. However, the fact that similar artifacts continue throughout the British Guiana sequence, in association with economies known to be based on agriculture, seems significant. In this connection, it should be noted that Rouse and Cruxent (1959, pp. 266, 229) also report a few grinding tools from both Barrancas and Los Barrancos styles at the mouth of the Orinoco. Thus, while it is obvious from archeological and ethnographic evidence that bitter manioc was a major staple in the Guiana area, it cannot be argued with equal validity that maize was absent here. The best that can be said is that the existing data are inconclusive so that either interpretation is possible.

The correlation of pottery griddles with the use of bitter manioc is so widely attested ethnographically in lowland South America that the same correlation can be assumed when griddles are encountered in the same area archeologically. It is more questionable, however, to infer the absence of bitter manioc from the absence of griddles, since other methods of manioc preparation are still in use in the Tropical Forest area (e.g., Levi-Strauss, 1948, p. 363; Lipkind, 1948, pp. 181–182), and probably were more common in the earlier stages of domestication of the plant. In a discussion of the distribution and antiquity of griddles, it must therefore be kept in mind that these data reflect the spread of a particular technique of bitter manioc preparation and not necessarily the first spread of the use of the plant as food.

In view of the ethnographic association of bitter manioc with the Tropical Forest area, it is interesting to note that the greatest antiquity of griddles appears to be marginal to that area. In British Guiana they appear earliest in the Northwest District, and diffusion along the coast toward the east was very slow. Cruxent and Rouse (1959, p. 244) report griddles from the earliest pottery making cultures in eastern Venezuela, which they date in the vicinity of 1000 B.C. By contrast, griddles do not appear at the mouth of the Amazon until the Aruã Phase, which came from the north shortly before the first European contact (Meggers and Evans, 1957, pp. 602–603). In the interior of British Guiana they are even later, since the first pottery making groups here did not arrive before the end of the 17th century. This dating rules out the Guianas as the place of origin of griddles. At present, the earliest occurrences are Saladero at the mouth of the Orinoco and possibly Momíl I on the north coast of Colombia. Relatively early dates, in the vicinity of A.D. 500, are attested from the Upper Orinoco (Evans, Meggers, and Cruxent, 1960, pp. 359–369).

and from eastern Ecuador (Meggers and Evans, MS.). More evidence from other parts of the northern and western lowlands is needed, however, before an attempt to pinpoint the origin of the use of griddles for bitter manioc preparation can be considered anything more than wild speculation.

The fact that several of the Phases distinguished by archeological evidence in British Guiana survived not only into historic times but to the present day provides an unusual opportunity for the checking of archeological techniques of classification and analysis and the interpretations derived from them. Although we are less concerned with the reverse, this situation also permits verification of ethnographic reporting. The only instance that we will cite here is the conflict between archeological evidence that the practice of secondary urn burial existed on the Rupununi savanna well into the 19th century and contemporary reports that the only method of disposal of the dead known to the Indians was direct interment (see p. 325). However, in view of the frequently encountered tendency of Indians to conceal customs that are frowned upon by white people, especially missionaries or priests, this contradiction is easy to explain.

The existence of ethnographic and historical evidence for the Rupununi and Taruma Phases provides an independent means of checking the seriated site sequences, and consequently the validity of the classification of pottery into types upon which the principle of seriation is based. For the Rupununi Phase, the absence of deposits deep enough for stratigraphic excavation made it impossible to identify the direction of the trends of pottery type change by archeological means. Fortunately European trade goods existed in a number of surface collections and these could be dated. The dates that were assigned coincided very closely with the chronological order derived from the seriation of the percentage occurrence of pottery types at the habitation sites (table N). This striking correlation is rather strong demonstration that the method of ceramic seriation and the premises on which it is based are sound. Agreement between the seriated site sequence and the historical records was equally good for the Taruma Phase. Here it was possible to identify the archeological remains of two villages visited by Farabee and their position at the end of the Taruma Phase sequence is exactly as it should be. These results do not of course imply that the method of ceramic seriation cannot be misused or the results misinterpreted, but they do suggest that the method itself is a sound approach to the problem of building a detailed, relative chronology for a phase.

Unfortunately, few techniques for arriving at archeological inferences are as objective and systematic as pottery type classification and seriation. Consequently, it is easy to go too far in making interpretations or to be overly cautious and limit conclusions to those clearly supported by the facts. Since only a small fraction of the content of a living culture is preserved in the best archeological record, a conservative attitude means that inferences will be minimal. If archeologists have a goal beyond pure recording, it is necessary for them to push the data as far as possible in the direction of interpretation. From this point of view, the principal question is at what point this effort ceases to be scientific reasoning and becomes unwarranted speculation.

The difficulty of arriving at criteria for distinguishing legitimate from unwarranted inference is illustrated by the evidence of trade relations between aboriginal groups in British Guiana. The ethnographic reports are consistent in describing extensive and intensive interchange of products. A quotation from Im Thurn will serve as an illustration:

> To interchange their manufactures the Indians make long journeys. The Wapianas visit the countries of the Tarumas and the Woyowais, carrying with them canoes, cotton hammocks, and now very frequently knives, beads, and other European goods; and, leaving their canoes and other merchandise, they walk back, carrying with them a supply of cassava-graters, and leading hunting dogs—all which things they have received in exchange for the things which they took. The Macusis visit the Wapiana settlements to obtain graters and dogs, for which they give ourali-poison and cotton hammocks; and they again carry such of these graters and dogs as they do not themselves require, together with more of their own ourali and of their cotton hammocks, to other Indians—to the Arecunas, who give in return balls of cotton or blow-pipes; or to the True Caribs, who pay in pottery. In this way, travellers with goods and with news constantly pass from district to district. [1883, p. 273.]

When the archeological records of the Taruma Phase and Rupununi Phase are examined for evidence of this contact, the results are very disappointing for an obvious reason: the items traded are predominantly of a perishable nature whereas the archeological remains are confined to objects of pottery and stone. Only one Rupununi Phase site produced a few sherds of Taruma Phase vessels, and no Rupununi Phase items were found at any Taruma Phase site. No archeologist would feel justified in inferring from this slim evidence that communication between these two groups was close and continuous. A similar contrast exists between the ethnographically recorded frequency of contact between the Taruma and the Wai Wai and the absence of any archeological indication of contact with the possible exception of a dubious hint of acculturation in pottery decoration.

On the other hand, the archeological record sometimes clearly supports an inference of close and continued intercommunication. The large quantity of trade pottery of Mabaruma Phase origin in sites of the Abary Phase and the Koriabo Phase is an example. The conclusion that these three Phases were contemporary and engaged in extensive trading with each other is so abundantly documented that it can be presented as a fact rather than an inference. The difference between the coastal and interior situations can be summed up in one point: in the former area pottery figured as a major item of trade, in the latter it did not.

This contrast epitomizes the problems inherent in making archeological inferences. The small proportion of the original constellation of traits that survives in the archeological record is a fact that no archeologist is allowed to forget. However, it is also important to recognize that surviving traits may not maintain their original relative importance. As in the case of the Taruma Phase sherds from a Rupununi Phase site, a small clue may reflect a situation of major significance and long duration. Any analysis of affiliations or reconstruction of routes of movement depends on magnifying and distilling such vague and tenuous bits of evidence. Even if ethnographic and historical facts can be cited in support, the interpretation may not be proved. Drawing of archeological inference becomes a tightrope walk balanced betweeen the abysses of excessive scientific caution and excessive creative imagination. Too conservative an approach will miss important ideas that may guide or stimulate future work. Too free speculation will produce interpretations that are divorced from reality or cannot be checked by anthropological techniques. Avoidance of the extremes becomes easier when the body of cultural theory developed by other branches of anthropology is used to guide and evaluate archeological inferences. The benefits of such application accrue not only to archeology but to anthropology as a whole.

The integration of archeological evidence on British Guiana with other kinds of data helps to place this part of South America in a realistic light. In a world view, the position of the Guianas today with regard to population density, economic development or political influence is certainly marginal. In the first few centuries after the discovery of America, however, expectations ran high. The early explorers spoke in glowing terms of the potential of the "rich Empire" and the "large and beautiful country" of Guiana. A quotation from Ralegh will illustrate their enthusiasm:

> The Empire of Guiana is directly East from Peru towards the Sea, and lieth under the Equinoctial line, and it hath more golde than any part of Peru, and as many or moe great Cities than ever Peru had when it flourished most: it is governed by the same lawes, and the Emperour and people observe the same religion, and the same forme and policies in government as were used in Peru, not differing in any part: and I have bene assured by such of the Spaniards as have seene Manoa the Imperial Citie of Guiana, which the Spaniards call El Dorado, that for the greatnesse, for the riches, and for the excellent seat, it farre exceedeth any of the world, at least of so much of the world as is knowen

to the Spanish nation: it is founded upon a lake of salt water of 200. leagues long like unto Mare Caspium. And if we compare it to that of Peru . . ., it will seeme more than credible . . . because we may judge of the one by the other. [Ralegh, 1811, p. 123.]

During the 17th and 18th centuries, European powers fought to gain control of the region, inspired in part by the tales of El Dorado. However, when exploration dissolved these tales into mythology and colonization revealed the harsh realities of exploiting the tropical lowlands, attention was turned to more promising lands and the Guianas sank into obscurity. In the 20th century, experts have been sent by the United Nations and other organizations to analyze the problems and potentialities and to suggest means of furthering economic development. Their reports are not very encouraging (e.g., Evans, 1939).

Against the argument that this history is an accident, reflecting only the whims of fate or of mankind, there are two kinds of evidence. One is embodied in this book, which shows that in pre-European times the Guianas occupied a position similar to the one they hold today. They were far removed from the centers of New World civilization, and basic inventions and discoveries reached them not only centuries but millennia after their introduction to the western coasts of the continent. Once agriculture replaced hunting and wild food gathering, the foundation was laid for the kind of development that brought dense populations and elaborate sociopolitical systems elsewhere. In the Guianas, however, the primitive pattern of small, semipermanent villages and simple, kinship-based societies was never superseded.

Historical records of the post-European period refute the implication that this failure to reach a higher level of cultural development is the result of the marginal geographical position occupied by the Guianas with reference to the centers of New World civilization. With reference to Europe, the Guianas were more accessible than southern South America or western North America during several centuries. For a long time they were on a main trade route that sent ships to the mouth of the Amazon, then along the coast to Trinidad and the Caribbean Islands before turning homeward. When transportation was exclusively by water, their geographical position was ideal in terms of accessibility or proximity to the centers of civilization. The fact that nothing came of this suggests that geographical marginality was not the crucial factor in the pre-Columbian situation either.

If population composition, accessibility to centers of civilization, and economic conditions are all variables between the aboriginal and the modern situation, none of them can be used to explain the fact that the Guianas then and now have remained underdeveloped in comparison to other parts of South America. The explanation must lie in some condition constant through time and directly related to exploitation of the region by man. The most obvious factor is the environment, and since agriculture is generally acknowledged to be the foundation of cultural development, the agricultural potential of the environment would seem to be particularly significant. It has been argued (Meggers, 1954, 1957) that the combination of temperature and rainfall characteristics of the tropical lowlands of South America is unfavorable to intensive agricultural exploitation. In the case of British Guiana, it has been shown further (Evans, 1939) that the soils found in most parts of the colony are of low initial fertility, making intensive agricultural exploitation even more difficult. These data strongly suggest that the environment is crucial in explaining the secondary role of the Guianas throughout their occupation by man.

The main purpose of this report has been the reconstruction of prehistory in a small portion of northeastern South America, rather than the solution of a complex theoretical problem like the interrelationship between environmental potential and cultural development. However, the effort to explain the cultural complexes that were found forces us to consider it. It is important to recognize that archeology can make a major contribution to the solution of this kind of problem by providing time perspective in which the current ecological picture can be compared with others previously existing in the same area so that the variables can be sorted out and the constant factors isolated for investigation. For such a comparison to be made, the archeological data must be supplied in a form that geographers and other interested scientists can use. Unfortunately, archeologists have not always done their best to supplement detailed description of sites and artifacts with synthesis and interpretation of the kind that nonspecialists require. The contribution that our science is in a position to make is clear. We might take as our motto a statement once made by Patrick Henry, who pointed out that "I have but one lamp by which my feet are guided and that is the lamp of experience. I know of no way of judging the future but by the past."

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APPENDIX (TABLES 1–39)

TABLE 1.—*Frequency of stone artifacts by site, level, and rock material at sites of the Alaka Phase*

Artifact type	N-6: Little Kaniaballi shell midden																					N-8: Alaka Creek shell midden						
	Level 0–24 cm.							Level 24–72 cm.							Level 72–105 cm.							Level 0–25 cm.						
	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total
Percussion-made core tools:																												
Chopper	1						1	1						1	3						3	7						7
Chopper-hammerstone																						9			1			10
Hammerstone																												
Hafted hammerstone																												
Hoe																												
Large core pick								1						1								2						2
Percussion-made flake tools:																												
Blade	5						5	1						1								8				1		9
Pick: Small								2						2								4	1	1	3			9
Large	1						1															2						2
Scraper																							2					2
Percussion-made tools with some abrasion:																												
Celt																												
Mortar																												
Pestle																												
Polished tools:																												
Celt																												
Chisel or gouge																												
Mano																												
Metate																												
Pestle																												
Rubbing stone																												
Total	7						7	5						5	3						3	32	3	1	4	1		41
Flakes	2						2							0							0	26						26
Natural rocks		5					5							0							0		14		18			32

TABLE 1.—*Frequency of stone artifacts by site, level, and rock material at sites of the Alaka Phase*—Continued

Artifact type	N-8: Alaka Creek shell midden—Continued																											
	Level 25-50 cm.							Level 50-75 cm.							Level 75-100 cm.							Level 100-125 cm.						
	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total
Percussion-made core tools:																												
Chopper	3		1				4	4						4	3						3	2						2
Chopper-hammerstone																												
Hammerstone																												
Hafted hammerstone																												
Hoe																												
Large core pick															1						1							
Percussion-made flake tools:																												
Blade	14	1					15	5						5	5						5							
Pick: Small	9			4			13								5						5	1						1
Large																												
Scraper																												
Percussion-made tools with some abrasion:																												
Celt																												
Mortar																												
Pestle																												
Polished tools:																												
Celt																												
Chisel or gouge			1			1	2																				1	1
Mano																												
Metate																												
Pestle																												
Rubbing stone																												
Total	26	1	2	4		1	34	9						9	14						14	3					1	4
Flakes	9	9		2			20							0							0							0
Natural rocks				7			7		1		4		1	6		2					2		2		4		1	

Artifact type	N-8: Alaka Creek shell midden—Continued																											
	Level 125–150 cm.							Level 150–175 cm.							Level 175–200 cm.							Level 200–260 cm.						
	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total
Percussion-made core tools:																												
Chopper	1						1	3						3														
Chopper-hammerstone																												
Hammerstone															1						1							
Hafted hammerstone																												
Hoe																												
Large core pick	1						1																					
Percussion-made flake tools:																												
Blade	1						1	3						3	2						2							
Pick: Small								1						1	1						1							
Large																												
Scraper																												
Percussion-made tools with some abrasion:																												
Celt																												
Mortar																												
Pestle																												
Polished tools:																												
Celt																												
Chisel or gouge																												
Mano																												
Metate																												
Pestle																												
Rubbing stone																												
Total	3						3	7						7	4						4							0
Flakes	2						2							0							0							0
Natural rocks		1					1		1		1			2					1	1	2		2			1		3

TABLE 1.—*Frequency of stone artifacts by site, level, and rock material at sites of the Alaka Phase*—Continued

Artifact type	N–9: Alaka Island shell midden																											
	Surface							Level 0–25 cm.							Level 25–50 cm.							Level 50–75 cm.						
	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total
Percussion-made core tools:																												
Chopper															1						1							
Chopper-hammerstone	1						1	12						12														
Hammerstone			1				1																					
Hafted hammerstone																												
Hoe																												
Large core pick								3						3	2						2	1						1
Percussion-made flake tools:																												
Blade	6		4				10	11						11	2						2			3				3
Pick: Small			2				2	8			4			12	2	1	1				4	2		2				4
Large															1						1							
Scraper									4					4		5					5		2					2
Percussion-made tools with some abrasion:																												
Celt																												
Mortar																												
Pestle								1						1														
Polished tools:																												
Celt																												
Chisel or gouge										1				1														
Mano																												
Metate																												
Pestle								1						1														
Rubbing stone				1			1				2			2														
Total	7		7	1			15	36	4	1	6			47	8	6	1				15	3	2	5				10
Flakes							0							0	5		1			2	8	3	2	1		1		7
Natural rocks		1	3	2			6	36	5		32			73		5		12	8		25		5		8			13

Artifact type	N-9: Alaka Island shell midden—Continued																					N-10: Sand Creek shell midden						
	Level 75–100 cm.							Level 100–125 cm.							Level 125–245 cm.							Surface						
	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total
Percussion-made core tools:																												
Chopper	1						1	4						4								4						4
Chopper-hammerstone								4						4														
Hammerstone	1						1								2						2		1		2			3
Hafted hammerstone																												
Hoe																												
Large core pick								5						5	2						2							
Percussion-made flake tools:																												
Blade	4						4	1						1	3						3	4						4
Pick: Small	4	1		1			6	4	1		3			8	2		2			1	5	2	1	1		2		6
Large																						1						1
Scraper									1					1									9					9
Percussion-made tools with some abrasion:																												
Celt																												
Mortar															1						1							
Pestle												1		1					1		1							
Polished tools:																												
Celt																												
Chisel or gouge																												
Mano																												
Metate																												
Pestle												1		1														
Rubbing stone																									1			1
Total	10	1		1			12	18	2		3	2		25	10		2		1	1	14	11	11	1	3	2		28
Flakes	1	1					2							0	3						3	5	10					15
Natural rocks				2	2		4				5			5				2			2		9		10	15		34

TABLE 1.—*Frequency of stone artifacts by site, level, and rock material at sites of the Alaka Phase*—Continued

Artifact type	N-11: Hosororo Creek midden																											
	Surface							Level 0–25 cm.							Level 25–50 cm.							Level 50–75 cm.						
	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total
Percussion-made core tools:																												
Chopper	1						1																	5				5
Chopper-hammerstone																												
Hammerstone	1		2				3			1				1			5				5			1				1
Hafted hammerstone			3				3																					
Hoe			3				3																					
Large core pick										1				1			1				1							
Percussion-made flake tools:																												
Blade			12				12			6				6			1				1			9				9
Pick: Small			17				17			14				14			12				12			3				3
Large			9				9			7				7			5				5							
Scraper																												
Percussion-made tools with some abrasion:																												
Celt										1				1			1				1							
Mortar																												
Pestle										1				1														
Polished tools:																												
Celt					3		3																					
Chisel or gouge																												
Mano					1		1																					
Metate					1		1																					
Pestle																												
Rubbing stone																												
Total	2		46		5		53			31				31			25				25			18				18
Flakes			18				18			8				8			11				11			6				6
Natural rocks		11	14	2			27		4	1	2		5	12		5		3			8							0

Artifact type	N-16: Akawabi Creek—Surface and tests							Grand total		
	Andesite	Quartz	Mica. schist	Limonite or hematite	Gneiss	Misc.	Total	Artifacts	Flakes	Natural rocks
Percussion-made core tools:										
Chopper			1				1			
Chopper-hammerstone		2	2				4			
Hammerstone	8		4				12			
Hafted hammerstone										
Hoe										
Large core pick			3				3			
Percussion-made flake tools:										
Blade			18				18			
Pick: Small			14				14			
Large			13				13			
Scraper		1					1			
Percussion-made tools with some abrasion:										
Celt			1			2	3			
Mortar										
Pestle					1		1			
Polished tools:										
Celt										
Chisel or gouge										
Mano										
Metate										
Pestle			1				1			
Rubbing stone				1			1			
Total	8	3	57	1	1	2	72	496		
Flakes	5	15	39				59		187	
Natural rocks	5	32		20			57			333

Table 2.—*Frequency of stone artifacts by site, level, and rock material at sites of the Mabaruma Phase*

Artifact type	N-1: Mabaruma Headquarters																															
	Surface								Level 0-8 cm.								Level 8-16 cm.								Level 16-24 cm.							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished																																
Choppers	1							1																								
Flake blades or knives									1							1							1	1								
Hammerstones																																
Hoes																																
Knife—polished																																
Mano																																
Metate			1					1																								
Polishing stones																																
Total	1		1					2	1							1							1	1								0
Flakes								0	2							2							1	1	2							2
Natural rocks					1			1					1			1				1			2	3					2		1	3

Artifact type	N-1: Mabaruma Headquarters—Continued																								N-4: Koriabo Point							
	Level 24–32 cm.								Level 32–40 cm.								Cut 1-Extension								Surface							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished																																
Choppers																																
Flake blades or knives																	1							1								
Hammerstones																										1						1
Hoes																																
Knife—polished																																
Mano																																
Metate																																
Polishing stones					1			1																								
Total					1			1								0	1							1		1						1
Flakes								0	1							1	1							1		1						1
Natural rocks					2			2			1		1			2		1						1			2					2

TABLE 2.—*Frequency of stone artifacts by site, level, and rock material at sites of the Mabaruma Phase*—Continued

Artifact type	N-4: Koriabo Point—Continued																															
	Level 0–8 cm.								Level 8–16 cm.								Level 16–24 cm.								Level 24–32 cm.							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished																																
Choppers																																
Flake blades or knives												1				1																
Hammerstones		1						1			1					1																
Hoes																																
Knife—polished																																
Mano																																
Metate																																
Polishing stones																																
Total		1						1			1	1				2								0								0
Flakes			3	1	1			5		3						3		2	1					3			2		1			3
Natural rocks			19		18		3	40		2	16		9		2	29			6		3		2	11			2					2

Artifact type	N-12: Hosororo Hill																															
	Surface								Level 16-24 cm.								Level 24-32 cm.								Level 32-40 cm.							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished	----	2	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Choppers	1	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----
Flake blades or knives	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	1
Hammerstones	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	1	----	----	----	----	----	----	----	----
Hoes	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Knife—polished	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	1	----	----	----	----	----	----	----	----
Mano	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Metate	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Polishing stones	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Total	1	2	----	----	----	----	----	3	----	----	1	----	----	----	----	1	1	2	----	----	----	----	----	3	----	1	----	----	----	----	----	1
Flakes	4	----	----	----	----	----	2	6	1	----	----	----	----	----	----	1	2	----	----	----	----	----	----	2	----	----	----	----	----	----	----	0
Natural rocks	----	----	----	----	----	----	1	1	----	----	----	----	3	----	11	14	----	----	3	----	3	----	6	12	----	----	----	----	----	----	----	0

TABLE 2.—*Frequency of stone artifacts by site, level, and rock material at sites of the Mabaruma Phase*—Continued

Artifact type	N-13: Hobodeia															
	Level 0-15 cm.								Level 15-30 cm.							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished																
Choppers																
Flake blades or knives		2						2								
Hammerstones									1							1
Hoes																
Knife—polished																
Mano																
Metate																
Polishing stones																
Total		2						2	1							1
Flakes	1							1		3						3
Natural rocks			2		12		2	16			2		12		1	15

Artifact type	N-13: Hobodeia															
	Level 30-45 cm.								Level 45-60 cm.							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished																
Choppers																
Flake blades or knives									2				1			3
Hammerstones																
Hoes																
Knife—polished																
Mano																
Metate																
Polishing stones																
Total								0	2				1			3
Flakes	1							1	1							1
Natural rocks			4		2			6	2		1					3

Artifact type	N-14: Hobodeia School							
	Surface							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished	----	----	----	----	----	----	----	----
Choppers	----	----	----	----	----	----	----	----
Flake blades or knives	----	----	----	----	----	----	----	----
Hammerstones	----	----	----	----	----	----	----	----
Hoes	1	----	----	----	----	----	----	1
Knife—polished	----	----	----	----	----	----	----	----
Mano	----	----	----	----	----	----	----	----
Metate	----	----	1	----	----	----	----	1
Polishing stones	----	----	----	----	----	----	----	----
Total	1	----	1	----	----	----	----	2
Flakes	----	----	----	----	2	----	----	2
Natural rocks	----	1	----	----	4	----	2	7

Artifact type	N-15: Hotokwai							
	Surface							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished	----	----	----	----	----	1	----	1
Choppers	----	----	----	----	----	----	----	----
Flake blades or knives	----	----	----	----	----	----	----	----
Hammerstones	----	----	----	----	----	----	----	----
Hoes	4	----	----	----	----	----	----	4
Knife—polished	----	----	----	----	----	----	----	----
Mano	----	----	----	----	----	----	----	----
Metate	----	----	----	----	----	----	----	----
Polishing stones	----	----	----	----	----	----	----	----
Total	4	----	----	----	----	1	----	5
Flakes	6	----	----	----	1	----	----	7
Natural rocks	----	----	3	----	2	----	3	8

Artifact type	N-16: Akawabi Creek							
	Surface							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished	----	----	----	----	----	----	----	----
Choppers	----	----	----	----	----	----	----	----
Flake blades or knives	----	----	----	----	----	----	----	----
Hammerstones	3	----	----	----	----	----	----	3
Hoes	----	----	----	----	----	----	----	----
Knife—polished	----	----	----	----	----	----	----	----
Mano	----	----	----	----	----	----	----	----
Metate	----	----	----	----	----	----	----	----
Polishing stones	1	----	----	----	----	----	----	1
Total	4	----	----	----	----	----	----	4
Flakes	5	1	----	----	2	----	----	8
Natural rocks	7	----	----	----	4	----	----	11

Artifact type	N-19: Kumaka Creek							
	Surface							
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total
Celts—polished	----	----	----	----	----	----	----	----
Choppers	----	----	----	----	----	----	----	----
Flake blades or knives	----	----	----	----	----	----	----	----
Hammerstones							2	2
Hoes	----	----	----	----	----	----	----	----
Knife—polished	----	----	----	----	----	----	----	----
Mano	----	----	----	----	----	----	----	----
Metate	----	----	----	----	----	----	----	----
Polishing stones	----	----	----	----	----	----	----	----
Total	----	----	----	----	----	----	2	2
Flakes	----	----	----	----	1	----	2	3
Natural rocks	----	----	----	----	1	----	----	1

TABLE 2.—*Frequency of stone artifacts by site, level, and rock material at sites of the Mabaruma Phase*—Continued

Artifact type	N-19: Kumaka Creek								N-20: Koberimo Hill																N-23: Barambina Hill								Grand total		
	Level 0-15 cm.								Level 0-8 cm.								Level 8-16 cm.								Surface										
	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Mica. schist	Quartzite	Granite	Felsite	Quartz	Andesite	Misc.	Total	Artifacts	Flakes	Natural rocks
Celts—polished	1	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Choppers	2	----	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Flake blades or knives	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Hammerstones	3	----	----	----	----	----	----	3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Hoes	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Knife—polished	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Mano	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Metate	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Polishing stones	----	----	----	----	----	----	----	----	----	----	----	----	2	----	----	2	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	1	----	----	----
Total	6	----	----	----	----	----	----	6	----	----	----	----	2	----	----	2	----	----	----	----	----	----	----	0	1	----	----	----	----	----	----	1	46	----	----
Flakes	7	----	2	----	----	----	----	9	1	----	1	----	----	----	----	2	----	----	----	----	----	----	1	1	----	----	----	----	----	----	----	0	----	69	----
Natural rocks	----	----	----	----	----	----	3	3	----	----	----	----	1	----	----	1	----	----	----	----	1	----	1	2	1	----	----	----	----	----	----	1	----	----	198

TABLE 3.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Mabaruma Phase*

Pottery types	Mabaruma Headquarters		N-1 : Cut 1															
	Surface		Level 0–8 cm.		Level 8–16 cm.		Level 16–24 cm.		Level 24–32 cm.		Level 32–40 cm.		Level 40–48 cm.		Level 48–56 cm.		Annex	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																		
Mabaruma Plain	27	------	173	35.6	155	41.2	141	41.7	167	60.7	171	61.2	65	53.8	91	57.6	77	34.2
Hosororo Plain	13	------	189	39.0	115	30.4	98	28.8	56	20.3	41	14.6	33	27.3	43	27.2	74	32.9
Hotokwai Plain	16	------	83	17.1	65	17.2	52	15.3	23	8.3	41	14.6	9	7.4	10	6.4	19	8.5
Koberimo Plain	1	------	7	1.4	3	.7	------	------	------	------	------	------	------	------	------	------	------	------
Unclassified Plain	------	------	------	------	------	------	------	------	1	.3	------	------	------	------	------	------	------	------
Decorated types:																		
Kaituma Incised and Punctate	------	------	------	------	------	------	------	------	1	.3	------	------	------	------	------	------	------	------
Mabaruma Incised	9	------	1	.2	5	1.3	15	4.4	8	2.9	12	4.3	4	3.3	7	4.5	14	6.2
Akawabi Incised and Modeled	5	------	13	2.6	11	2.9	8	2.4	4	1.4	5	1.8	3	2.5	2	1.2	5	2.2
Aruka Incised	8	------	20	4.1	22	5.8	25	7.4	16	5.8	7	2.5	6	4.9	3	1.0	12	5.3
Red Painted	------	------	------	------	2	.5	------	------	------	------	2	.7	1	0.8	1	.6	24	10.7
White Slipped	1	------	------	------	------	------	------	------	------	------	1	.3	------	------	------	------	------	------
Unclassified Decorated	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Trade pottery:																		
Barima Plain?	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1	.6	------	------
Koriabo Incised	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	80	------	486	100.0	378	100.0	339	100.0	276	100.00	280	100.0	121	100.0	158	100.0	225	100.0

TABLE 3.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Mabaruma Phase*—Continued

Pottery types	N-4: Cut 1								N-12: Cut 1									
	Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Level 32-40 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																		
Mabaruma Plain	148	40.8	148	56.8	54	50.0	15	45.5	39	19.9	30	14.5	62	12.5	86	14.2	13	9.9
Hosororo Plain	65	17.8	37	14.2	39	36.1	11	33.4	107	54.7	118	56.9	225	45.6	254	42.0	69	52.7
Hotokwai Plain	110	30.3	52	19.9	13	12.1	1	3.0	16	8.1	3	1.4	9	1.8	20	3.3	5	3.8
Koberimo Plain	1	.2							13	6.6	32	15.4	83	16.8	169	27.8	27	20.6
Unclassified Plain																		
Decorated types:																		
Kaituma Incised and Punctate	1	.2	1	.4					5	2.6	2	.9	20	4.1	17	2.8	5	3.8
Mabaruma Incised	11	3.0	5	1.9	1	.9			1	0.5	2	.9	3	.6	1	.1		
Akawabi Incised and Modeled	10	2.7	2	.7	1	.9	1	3.0	3	1.5	2	.9	31	6.3	15	2.4	4	3.1
Aruka Incised	13	3.6	14	5.4			3	9.1	10	5.1	16	7.7	58	11.7	43	7.1	8	6.1
Red Painted			2	.7			2	6.0	1	.5	2	.9						
White Slipped											1	.5						
Unclassified Decorated																		
Trade pottery:																		
Barima Plain?	5	1.4											2	.4				
Koriabo Incised									1	.5			1	.2	2	.3		
Total	364	100.0	261	100.0	108	100.0	33	100.0	196	100.0	208	100.0	494	100.0	607	100.00	131	100.0

Pottery types	N-13: Cut 1								N-14		N-15		N-16		N-16		N-16	
	Level 0-15 cm.		Level 15-30 cm.		Level 30-45 cm.		Level 45-60 cm.		Surface		Surface		Surface		Test B		Adjusted	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																		
Mabaruma Plain	52	14.9	47	7.7	27	12.1	36	24.2	177	38.4	51	39.6	27	15.8	20	5.6	47	8.9
Hosororo Plain	114	32.8	61	9.9	32	14.3	37	24.8	100	21.8	29	22.5	35	20.4	69	19.3	104	19.7
Hotokwai Plain	136	39.1	367	59.5	109	49.0	40	26.8	116	25.2	46	25.6	10	5.8	84	23.5	94	17.8
Koberimo Plain	4	1.1	12	1.9	19	8.5	14	9.4	44	9.5			56	32.8	52	14.5	108	20.5
Unclassified Plain			1	.1	1	.5												
Decorated types:																		
Kaituma Incised and Punctate	7	2.0	22	3.5	6	2.6	6	4.1					6	3.5	8	2.2	14	2.7
Mabaruma Incised					1	.5	1	.7	2	.4					11	3.1	11	2.1
Akawabi Incised and Modeled	9	2.5	20	3.2	3	1.3	7	4.7	10	2.1			11	6.5	51	14.4	62	11.7
Aruka Incised	22	6.3	83	13.4	25	11.2	8	5.3	11	2.4	3	2.3	25	14.6	59	16.5	84	15.9
Red Painted	1	.2																
White Slipped													1	0.6	1	.3	2	.3
Unclassified Decorated			2	.3														
Trade pottery:																		
Barima Plain?	4	1.1	3	.5					1	.2					1	.3	1	.2
Koriabo Incised															1	.3	1	.2
Total	349	100.0	618	100.0	223	100.0	149	100.0	461	100.0	129	100.0	171	100.0	357	100.0	528	100.0

TABLE 3.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Mabaruma Phase*—Continued

Pottery types	N-17		N-18		N-19		N-20: Cut 1								N-21		N-22		N-23	
	Surface		Surface		Cut 1		Level 0—8 cm.		Level 8—16 cm.		Level 16—24 cm.		Level 24—32 cm.		Surface		Surface		Surface	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																				
Mabaruma Plain	3	------	94	47.4	56	20.2	64	12.8	40	12.8	31	13.3	27	18.6	297	58.1	140	65.0	13	------
Hosororo Plain	2	------	75	27.6	110	39.8	217	43.3	117	37.6	77	33.1	49	33.8	189	37.0	51	23.6	4	------
Hotokwai Plain	------	------	------	------	1	.4	14	2.8	12	3.9	68	29.2	31	21.4	9	1.7	9	4.1	1	------
Koberimo Plain	6	------	6	3.0	75	27.0	117	23.3	88	28.2	17	7.3	6	4.1	------	------	5	2.3	7	------
Unclassified Plain	------	------	------	------	------	------	------	------	------	------	------	------	------	------	5	.9	------	------	------	------
Decorated types:																				
Kaituma Incised and Punctate	------	------	------	------	3	1.0	13	2.6	6	1.9	5	2.1	1	.7	------	------	------	------	------	------
Mabaruma Incised	------	------	------	------	------	------	6	1.2	3	.9	2	.8	4	2.7	------	------	4	1.8	------	------
Akawabi Incised and Modeled	------	------	------	------	6	2.2	24	4.8	13	4.2	11	4.7	12	8.3	------	------	2	.9	------	------
Aruka Incised	4	------	------	------	25	9.0	42	8.4	31	9.9	18	7.8	12	8.3	3	.6	2	.9	------	------
Red Painted	1	------	19	9.5	1	.4	3	.6	2	.6	4	1.7	3	2.1	3	.6	3	1.4	------	------
White Slipped	------	------	------	------	------	------	------	------	------	------	------	------	------	------	5	.9	------	------	------	------
Unclassified Decorated	------	------	5	2.5	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Trade pottery:																				
Barima Plain?	------	------	------	------	------	------	1	.2	------	------	------	------	------	------	1	.2	------	------	------	------
Koriabo Incised	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	16	------	199	100.0	277	100.0	501	100.0	312	100.0	233	100.0	145	100.0	512	100.0	216	100.0	25	------

TABLE 4.—*Frequency of rim and vessel shapes of Akawabi Incised and Modeled at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Form 1	Form 2	Form 3	Form 4	Total rims per level
N-12, Surface and Level 0-8 cm	4	1		2	7
N-12, Level 8-16 cm					
N-12, Level 16-24 cm				3	3
N-12, Level 24-32 cm	1	1			2
N-12, Level 32-40 cm	1				1
N-19, Surface and Level 0-8 cm	1			3	4
N-20, Level 0-8 cm					
N-20, Level 8-16 cm					
N-16	1	3			4
N-20, Level 16-24 cm					
N-20, Level 24-32 cm	2				2
N-13, Level 0-15 cm		1			1
N-13, Level 15-30 cm				3	3
N-13, Level 30-45 cm				1	1
N-13, Level 45-60 cm					
N-1, Level 0-8 cm					
N-14					
N-15					
N-4, Level 0-8 cm	3		1		4
N-1, Level 8-16 cm			1		1
N-1, Level 16-24 cm					
N-21					
N-4, Level 8-16 cm					
N-4, Level 16-24 cm					
N-1, Level 24-32 cm			2		2
N-1, Level 32-40 cm			1		1
N-1, Level 40-48 cm					
N-22					
N-1, Level 48-56 cm					
N-11, Level 0-25 cm					
N-11, Level 25-50 cm					
N-11, Level 50-75 cm					
Total	13	6	5	12	36

TABLE 5.—*Frequency of decorative motifs of Akawabi Incised and Modeled at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Motif 1: Low relief	Motif 2: Sculptured high relief	Motif 3: Adornos—Barrancoid	Motif 4: Adornos—Non-Barrancoid	Motif 5: Conical nubbins	Miscellaneous	Total per level
N-12, Surface and Level 0-8 cm	22	7		3			32
N-12, Level 8-16 cm	2			1			3
N-12, Level 16-24 cm	20	4		1	5		30
N-12, Level 24-32 cm	9	3			3		15
N-12, Level 32-40 cm	4						4
N-19, Surface and Level 0-8 cm	1	3		2	3		9
N-20, Level 0-8 cm	21	2		1			24
N-20, Level 8-16 cm	11	2					13
N-16	39	17		5		1	62
N-20, Level 16-24 cm	6	3	1	1			11
N-20, Level 24-32 cm	9	3					12
N-13, Level 0-15 cm	1			2	5	1	9
N-13, Level 15-30 cm	1	2		11	3	3	20
N-13, Level 30-45 cm	2			1			3
N-13, Level 45-60 cm	6	1					7
N-1, Level 0-8 cm	11	2					13
N-14	2	2	1	1	4		10
N-15							
N-4, Level 0-8 cm	5	1	1	2	1		10
N-1, Level 8-16 cm	5	5	1				11
N-1, Level 16-24 cm	2	3	2			1	8
N-21							
N-4, Level 8-16 cm			1			1	2
N-4, Level 16-24 cm						1	1
N-1, Level 24-32 cm	3		1				4
N-1, Level 32-40 cm	2		1			2	5
N-1, Level 40-48 cm		2	1				3
N-22	2						2
N-1, Level 48-56 cm		1	1				2
N-11, Level 0-25 cm	4						4
N-11, Level 25-50 cm							
N-11, Level 50-75 cm							
Total	190	63	11	31	24	10	329

TABLE 6.—*Frequency of rim and vessel shapes of Aruka Incised at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Form 1	Form 2	Form 3	Form 4	Form 5	Miscellaneous	Total rims per level
N-12, Surface and Level 0-8 cm	3	3		2			8
N-12, Level 8-16 cm	1						1
N-12, Level 16-24 cm	4	4	1	7	1	1	18
N-12, Level 24-32 cm	1	1		1	2		5
N-12, Level 32-40 cm				1			1
N-19, Surface and Level 0-8 cm	1	5		1	1		8
N-20, Level 0-8 cm	3	1		3			7
N-20, Level 8-16 cm	2	1		1			4
N-16	2	3	3	11	2	1	22
N-20, Level 16-24 cm	2						2
N-20, Level 24-32 cm	2						2
N-13, Level 0-15 cm	1	1	4	1			7
N-13, Level 15-30 cm	8	13	2	3			26
N-13, Level 30-45 cm	3	2	2				7
N-13, Level 45-60 cm					1		1
N-1, Level 0-8 cm	1						1
N-14		3	1	1			5
N-15			1				1
N-4, Level 0-8 cm	1			2			3
N-1, Level 8-16 cm	1				1	1	3
N-1, Level 16-24 cm	3			1			4
N-21				2			2
N-4, Level 8-16 cm	2			1			3
N-4, Level 16-24 cm							
N-1, Level 24-32 cm				1			1
N-1, Level 32-40 cm				1			1
N-1, Level 40-48 cm							
N-22							
N-1, Level 48-56 cm				1			1
N-11, Level 0-25 cm							
N-11, Level 25-50 cm							
N-11, Level 50-75 cm							
Total	41	37	14	41	8	3	144

TABLE 7.—*Frequency of decorative motifs of Aruka Incised at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Motif 1: Unzoned recti-linear	Motif 2: Unzoned curvi-linear	Motif 3: Zoned	Motif 4: Lines on interior of everted rims	Motif 5: Lines on exterior of rims	Totals per level
N-12, Surface and Level 0-8 cm	3	3		10	7	23
N-12, Level 8-16 cm	2	1		4	1	8
N-12, Level 16-24 cm	3	1	2	2	10	18
N-12, Level 24-32 cm	8		1	4	2	15
N-12, Level 32-40 cm	1				2	3
N-19, Surface and Level 0-8 cm	5	1		5	3	14
N-20, Level 0-8 cm	1			1	4	6
N-20, Level 8-16 cm	4	1		3		8
N-16	2	4		4	6	16
N-20, Level 16-24 cm		2			1	3
N-20, Level 24-32 cm	1				1	2
N-13, Level 0-15 cm	2			6	1	9
N-13, Level 15-30 cm	12	1	1	18	5	37
N-13, Level 30-45 cm	2		1	5	4	12
N-13, Level 45-60 cm		1			1	2
N-1, Level 0-8 cm	5					5
N-14	1		1	4		6
N-15				1		1
N-4, Level 0-8 cm	4	2			1	7
N-1, Level 8-16 cm		4			4	8
N-1, Level 16-24 cm	4	2			3	9
N-21	1				1	2
N-4, Level 8-16 cm	2	1			3	6
N-4, Level 16-24 cm	2					2
N-1, Level 24-32 cm	1	2			1	4
N-1, Level 32-40 cm					1	1
N-1, Level 40-48 cm						
N-22	1					1
N-1, Level 48-56 cm		1			1	2
N-11, Level 0-25 cm	4	2				6
N-11, Level 25-50 cm	1					1
N-11, Level 50-75 cm						
Total	72	29	6	67	63	237

TABLE 8.—*Frequency of rim, base, and vessel shapes of Hosororo Plain at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Common Form 1	Common Form 2	Common Form 3	Common Form 4	Common Form 5	Less Common Form 1	Less Common Form 2	Total rims per level	Base Form A	Base Form B	Base Form C	Total bases per level
N-12, Surface and Level 0-8 cm	1		1			1		3				
N-12, Level 8-16 cm	1	1						2	2	1		3
N-12, Level 16-24 cm	2	2		2				6				
N-12, Level 24-32 cm	5	1	1	2				9	1			1
N-12, Level 32-40 cm												
N-19, Surface and Level 0-8 cm	1	2		1				4				
N-20, Level 0-8 cm		1		3	1			5	2	1		3
N-20, Level 8-16 cm	1		1					2				
N-16	1	4		1	1			7		5		5
N-20, Level 16-24 cm	2							2		1		1
N-20, Level 24-32 cm	1		1					2	1			1
N-13, Level 0-15 cm	2	4		1				7				
N-13, Level 15-30 cm	4							4				
N-13, Level 30-45 cm	1			1				2				
N-13, Level 45-60 cm	1	1		1				3				
N-1, Level 0-8 cm			1		1			2			1	1
N-14										1		1
N-15												
N-4, Level 0-8 cm	1					1	1	3				
N-1, Level 8-16 cm					1	1		2				
N-1, Level 16-24 cm	2	1	2	1				6			2	2
N-21	4	6						10	1			1
N-4, Level 8-16 cm		1						1	1			1
N-4, Level 16-24 cm												
N-1, Level 24-32 cm	1			1	1			3			1	1
N-1, Level 32-40 cm	1	1			2			4				
N-1, Level 40-48 cm	1				1			2			1	1
N-22	1		1		1			3				
N-1, Level 48-56 cm					1			1			1	1
N-11, Level 0-25 cm				1				1				
N-11, Level 25-50 cm		1						1				
N-11, Level 50-75 cm												
Total	34	26	8	15	10	3	1	97	8	9	6	23

Table 9.—*Frequency of rim, base, and vessel shapes of Hotokwai Plain at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Common Form 1	Common Form 2	Common Form 3	Common Form 4	Less Common Form 1	Less Common Form 2	Total rims per level	Base Form A	Base Form B	Total bases per level
N-12, Surface and Level 0-8 cm										
N-12, Level 8-16 cm		2					2			
N-12, Level 16-24 cm										
N-12, Level 24-32 cm		1				1	2			
N-12, Level 32-40 cm										
N-19, Surface and Level 0-8 cm										
N-20, Level 0-8 cm				1			1			
N-20, Level 8-16 cm				1			1			
N-16	1	3		7			11	3	4	7
N-20, Level 16-24 cm										
N-20, Level 24-32 cm				1			1			
N-13, Level 0-15 cm	7	1			2	1	11	1		1
N-13, Level 15-30 cm	4	1			3	1	9	4		4
N-13, Level 30-45 cm	4	1			1	1	7	1		1
N-13, Level 45-60 cm		2			1		3			
N-1, Level 0-8 cm								1	1	2
N-14			1	1			2	1	2	3
N-15	1			1			2			
N-4, Level 0-8 cm			4			1	5	1	1	2
N-1, Level 8-16 cm	1		1	1			3			
N-1, Level 16-24 cm		1	1			1	3	1		1
N-21										
N-4, Level 8-16 cm	1		3				4	1		1
N-4, Level 16-24 cm		2					2	1		1
N-1, Level 24-32 cm										
N-1, Level 32-40 cm			1	1			2			
N-1, Level 40-48 cm										
N-22		1					1			
N-1, Level 48-56 cm						1	1			
N-11, Level 0-25 cm										
N-11, Level 25-50 cm	1	1		3			5			
N-11, Level 50-75 cm										
Total	20	16	11	17	7	7	78	15	8	23

TABLE 10.—*Frequency of rim and vessel shapes of Kaituma Incised and Punctate at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Form 1	Form 2	Form 3	Form 4	Miscellaneous	Total rims per level
N-12, Surface and Level 0-8 cm			1	2	1	4
N-12, Level 8-16 cm	1					1
N-12, Level 16-24 cm	4	2	1			7
N-12, Level 24-32 cm	3	1	1		2	7
N-12, Level 32-40 cm	3		1			4
N-19, Surface and Level 0-8 cm	1					1
N-20, Level 0-8 cm	4	1	1		1	7
N-20, Level 8-16 cm				1		1
N-16	2	3	3			8
N-20, Level 16-24 cm					1	1
N-20, Level 24-32 cm	1				1	2
N-13, Level 0-15 cm	1		2			3
N-13, Level 15-30 cm	4		1	1	2	8
N-13, Level 30-45 cm					1	1
N-13, Level 45-60 cm	2			1		3
N-1, Level 0-8 cm						
N-14						
N-15						
N-4, Level 0-8 cm	1					1
N-1, Level 8-16 cm						
N-1, Level 16-24 cm						
N-21						
N-4, Level 8-16 cm						
N-4, Level 16-24 cm						
N-1, Level 24-32 cm						
N-1, Level 32-40 cm						
N-1, Level 40-48 cm						
N-22						
N-1, Level 48-56 cm						
N-11, Level 0-25 cm	1		1			2
N-11, Level 25-50 cm						
N-11, Level 50-75 cm						
Total	28	7	12	5	9	61

TABLE 11.—*Frequency of decorative motifs of Kaituma Incised and Punctate at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Motif 1: Lines ending in punctates	Motif 2: Lines alternating with punctates	Motif 3: Areas of punctates	Totals per level
N-12, Surface and Level 0-8 cm	15	5	5	25
N-12, Level 8-16 cm	1		1	2
N-12, Level 16-24 cm	18	5	7	30
N-12, Level 24-32 cm	12		4	16
N-12, Level 32-40 cm	5			5
N-19, Surface and Level 0-8 cm	2		2	4
N-20, Level 0-8 cm	10	3		13
N-20, Level 8-16 cm	6			6
N-16	9	3	4	16
N-20, Level 16-24 cm	5			5
N-20, Level 24-32 cm	2			2
N-13, Level 0-15 cm	5	2		7
N-13, Level 15-30 cm	11	6	4	21
N-13, Level 30-45 cm	4	2		6
N-13, Level 45-60 cm	4	2		6
N-1, Level 0-8 cm				
N-14				
N-15				
N-4, Level 0-8 cm	1			1
N-1, Level 8-16 cm				
N-1, Level 16-24 cm				
N-21				
N-4, Level 8-16 cm	1			1
N-4, Level 16-24 cm				
N-1, Level 24-32 cm	1			1
N-1, Level 32-40 cm				
N-1, Level 40-48 cm				
N-22				
N-1, Level 48-56 cm				
N-11, Level 0-25 cm	13			13
N-11, Level 25-50 cm	1			1
N-11, Level 50-75 cm				
Total	126	28	27	181

TABLE 12.—*Frequency of rim, base, and vessel shapes of Koberimo Plain at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Common Form 1	Common Form 2	Common Form 3	Less Common Form 1	Less Common Form 2	Less Common Form 3	Total rims per level	Base Form A	Base Form B	Base Form C	Total bases per level
N-12, Surface and Level 0-8 cm											
N-12, Level 8-16 cm											
N-12, Level 16-24 cm	3		1			2	6	1			1
N-12, Level 24-32 cm	3		5			1	9	1	1	1	3
N-12, Level 32-40 cm	1	1					2				
N-19, Surface and Level 0-8 cm	2	1					3				
N-20, Level 0-8 cm		2	1	1			4				
N-20, Level 8-16 cm	2	1	4		1		8				
N-16			1	1			2	1	2	1	4
N-20, Level 16-24 cm		2	2	1			5	1			1
N-20, Level 24-32 cm											
N-13, Level 0-15 cm			1				1				
N-13, Level 15-30 cm											
N-13, Level 30-45 cm		1		1			2				
N-13, Level 45-60 cm											
N-1, Level 0-8 cm											
N-14	2						2				
N-15											
N-4, Level 0-8 cm					1		1				
N-1, Level 8-16 cm			2				2				
N-1, Level 16-24 cm											
N-21											
N-4, Level 8-16 cm											
N-4, Level 16-24 cm											
N-1, Level 24-32 cm											
N-1, Level 32-40 cm											
N-1, Level 40-48 cm											
N-22											
N-1, Level 48-56 cm											
N-11, Level 0-25 cm											
N-11, Level 25-50 cm											
N-11, Level 50-75 cm			1				1				
Total	13	8	18	4	2	3	48	4	3	2	9

TABLE 13.—*Frequency of rim and vessel shapes of Mabaruma Incised at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Form 1	Form 2	Miscellaneous	Total rims per level
N-12, Surface and Level 0-8 cm	1			1
N-12, Level 8-16 cm	2			2
N-12, Level 16-24 cm	2			2
N-12, Level 24-32 cm	1			1
N-12, Level 32-40 cm				
N-19, Surface and Level 0-8 cm		1		1
N-20, Level 0-8 cm	2	1		3
N-20, Level 8-16 cm	2	1		3
N-16	6	2		8
N-20, Level 16-24 cm		2		2
N-20, Level 24-32 cm				
N-13, Level 0-15 cm				
N-13, Level 15-30 cm	1			1
N-13, Level 30-45 cm				
N-13, Level 45-60 cm	1			1
N-1, Level 0-8 cm	1	1	1	3
N-14				
N-15				
N-4, Level 0-8 cm	5	5		10
N-1, Level 8-16 cm	4	1		5
N-1, Level 16-24 cm	9	7		16
N-21				
N-4, Level 8-16 cm	3	2		5
N-4, Level 16-24 cm	1			1
N-1, Level 24-32 cm	1	3	2	6
N-1, Level 32-40 cm	5	2	1	8
N-1, Level 40-48 cm	3			3
N-22		2		2
N-1, Level 48-56 cm	10	3		13
N-11, Level 0-25 cm				
N-11, Level 25-50 cm	1			1
N-11, Level 50-75 cm				
Total	61	33	4	98

TABLE 14.—*Frequency of rim, base, and vessel shapes of Mabaruma Plain at sites of the Mabaruma Phase*

Sites in seriated sequence (fig. 48)	Common Form 1	Common Form 2	Common Form 3	Common Form 4	Common Form 5	Common Form 6	Less Common Form 1	Total rims per level	Base Form A	Base Form B	Base Form C	Base Form D	Total bases per level
N-12, Surface and Level 0-8 cm									2				2
N-12, Level 8-16 cm	1							1					
N-12, Level 16-24 cm						2		2					
N-12, Level 24-32 cm		2						2					
N-12, Level 32-40 cm													
N-19, Surface and Level 0-8 cm													
N-20, Level 0-8 cm	1	1						2					
N-20, Level 8-16 cm				2				2					
N-16	1					1		2	1	2			3
N-20, Level 16-24 cm		1			1	1	1	4					
N-20, Level 24-32 cm	2							2					
N-13, Level 0-15 cm	1							1					
N-13, Level 15-30 cm		1						1					
N-13, Level 30-45 cm	1				1			2					
N-13, Level 45-60 cm	1	1	1	1				4					
N-1, Level 0-8 cm	1	1	2	1				5	1				1
N-14		2	1	1				4	2				2
N-15		1						1					
N-4, Level 0-8 cm		2	1			3	1	7					
N-1, Level 8-16 cm	2		1		1	1		5					
N-1, Level 16-24 cm	3		1		1	1		6		1			1
N-21	1	4		1	1			7	2				2
N-4, Level 8-16 cm		3	2		2	3	2	12	2	1			3
N-4, Level 16-24 cm	1	1			1			3					
N-1, Level 24-32 cm	1		4	2	3	1		11	1	2	3		6
N-1, Level 32-40 cm	1	1	3			1		6	3	1	1		5
N-1, Level 40-48 cm				1				1	2		1		3
N-22	2	1	1	3	1	1		9	3		2		5
N-1, Level 48-56 cm			3	2	1			6					
N-11, Level 0-25 cm	1		1					2					
N-11, Level 25-50 cm	1	4			2			7				1	1
N-11, Level 50-75 cm	1	2						3	1				1
Total	23	28	21	14	15	15	4	120	20	7	7	1	35

TABLE 15.—*Frequency of stone artifacts by site, level, and rock material at sites of the Koriabo Phase*

N-2: Koriabo — Surface

Artifact type	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	---	---	---	---	---
Chisel—polished	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---
Hammerstones	1	---	---	---	---	---	---	---	---	1
Mano	---	---	---	1	---	---	---	---	---	1
Mortar	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	---	---	---
Total	1	---	---	1	---	---	---	---	---	2
Flakes	---	---	---	---	---	---	---	---	---	0
Natural rocks	1	1	---	---	---	---	---	---	---	2

N-2: Koriabo — Cut 1: Level 0-8 cm.

Artifact type	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	---	---	---	---	---
Chisel—polished	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---
Hammerstones	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	---	---	---
Total	---	---	---	---	---	---	---	---	---	0
Flakes	---	1	---	---	---	---	---	---	---	1
Natural rocks	---	4	1	---	---	---	---	1	---	6

N-2: Koriabo — Cut 1: Level 8-16 cm.

Artifact type	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	1	---	---	---	1
Chisel—polished	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---
Hammerstones	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	---	---	---
Total	---	---	---	---	---	1	---	---	---	1
Flakes	---	---	---	---	---	---	---	---	---	0
Natural rocks	---	4	1	---	---	---	---	---	---	5

N-2: Koriabo — Cut 1: Level 16-24 cm.

Artifact type	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	---	---	---	---	---
Chisel—polished	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---
Hammerstones	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	---	---	---
Total	---	---	---	---	---	---	---	---	---	0
Flakes	---	2	---	---	---	---	---	---	---	2
Natural rocks	---	4	---	---	---	---	---	---	---	4

TABLE 15.—*Frequency of stone artifacts by site, level, and rock material at sites of the Koriabo Phase*—Continued

N-2: Koriabo—Continued

Artifact type	Cut 3: Level 0–8 cm.									
	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	---	---	---	---	---
Chisel—polished	---	---	---	---	---	---	---	---	---	---
Choppers	1	---	---	---	---	---	---	---	---	1
Flake blades and knives	1	1	---	---	---	---	---	---	---	2
Hammerstones	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	1	---	1
Total	2	1	---	---	---	---	---	1	---	4
Flakes	2	---	---	---	---	---	---	---	---	2
Natural rocks	---	10	3	---	---	---	---	2	---	15

N-3: Mrs. Robert's Landing

Artifact type	Surface									
	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	1	---	---	---	---	---	---	---	---	1
Celts—polished	---	---	---	---	---	---	---	---	---	---
Chisel—polished	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---
Hammerstones	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	1	---	---	---	---	1
Polishing stones	---	---	---	---	---	---	---	---	---	---
Total	1	---	---	---	1	---	---	---	---	2
Flakes	---	---	---	---	---	---	---	---	---	0
Natural rocks	1	1	---	---	---	---	---	---	---	2

Artifact type	Cut 1: Level 8–16 cm.									
	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	---	---	---	---	---
Chisel—polished	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---
Hammerstones	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	---	---	---
Total	---	---	---	---	---	---	---	---	---	0
Flakes	---	---	---	---	---	---	---	---	---	0
Natural rocks	1	13	1	---	---	---	---	---	1	16

Artifact type	Cut 1: Level 16–24 cm.									
	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	---	---	---	---	---
Chisel—polished	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---
Hammerstones	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	---	---	---
Total	---	---	---	---	---	---	---	---	---	0
Flakes	1	---	---	---	---	---	---	---	---	1
Natural rocks	---	6	---	---	---	---	---	---	---	6

Artifact type	N-5: Bamboo Hill																			
	Cut 1: Level 16–24 cm.										Cut 1: Level 24–32 cm.									
	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total
Adz—polished	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chisel—polished	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hammerstones	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	---	---	---	---	---	---	---	---	---	0	---	---	---	---	---	---	---	---	---	0
Flakes	---	---	---	---	---	---	---	---	---	0	---	---	---	---	---	---	---	---	---	0
Natural rocks	---	2	1	---	---	---	---	---	---	3	---	3	---	---	---	---	---	2	---	5

Artifact type	N-7: Warapoco																				Grand total		
	Cut 1: Level 0–8 cm.										Cut 1: Level 8–16 cm.												
	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total	Quartzite	Quartz	Granite	Mica. schist	Syenite	Felsite	Andesite	Iron concr.	Miscellaneous	Total	Artifacts	Flakes	Natural rocks
Adz—polished	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Celts—polished	---	---	---	---	---	---	1	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---
Chisel—polished	1	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---
Choppers	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Flake blades and knives	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hammerstones	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mano	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mortar	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Polishing stones	---	---	---	---	---	---	---	1	---	1	---	---	---	---	---	---	---	1	---	1	---	---	---
Total	1	---	---	---	---	---	1	1	---	3	---	---	---	---	---	---	---	1	---	1	13	---	---
Flakes	---	1	1	---	---	---	---	---	1	3	---	2	---	---	---	---	---	---	---	2	---	11	---
Natural rocks	---	2	26	1	---	---	---	24	---	53	---	1	6	---	---	---	---	---	---	7	---	---	124

TABLE 16.—*Frequency of pottery types from surface collections and stratigraphic excavations at sites of the Koriabo Phase*

Pottery types	N-2: Koriabo		N-2: Cut 1						N-2: Cut 2				N-2: Cut 3				N-3: Mrs. Robert's Landing	
	Surface		Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 0-8 cm.		Level 8-16 cm.		Level 0-8 cm.		Level 8-16 cm.		Surface	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																		
Koriabo Plain	240	52.9	223	49.3	239	44.0	59	44.4	136	42.4	85	57.9	144	39.2	30	38.0	373	58.3
Warapoco Plain	112	24.8	141	31.2	143	26.4	33	24.8	103	32.2	38	25.9	105	28.6	21	26.5	226	35.3
Barima Plain	10	2.2	15	3.3	34	6.2	9	6.8	7	2.2	4	2.7	2	.5	3	3.8	6	.9
Unclassified Plain	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Decorated types:																		
Koriabo Incised	40	8.8	23	5.1	49	9.0	11	8.3	2	.6	4	2.7	24	6.5	1	1.3	1	.1
Koriabo Scraped	2	.4	3	.6	5	.9	2	1.5	4	1.2	------	------	1	.3	4	5.0	------	------
White slipped	2	.4	------	------	1	.2	------	------	4	1.2	2	1.3	7	1.9	1	1.3	------	------
Unclassified Decorated	6	1.3	------	------	5	.9	------	------	------	------	------	------	------	------	------	------	1	.1
Trade pottery of Mabaruma Phase origin:																		
Koberimo Plain	9	1.9	7	1.5	22	4.0	10	7.5	10	3.1	------	------	32	8.7	10	12.6	10	1.6
Hosororo Plain	------	------	16	3.5	7	1.3	3	2.3	24	7.5	7	4.8	35	9.5	5	6.3	------	------
Hotokwai Plain	1	.2	12	2.6	22	4.0	2	1.5	13	4.0	5	3.4	8	2.1	2	2.6	------	------
Mabaruma Incised	2	.4	------	------	1	.2	------	------	------	------	------	------	------	------	------	------	------	------
Kaituma Incised and Punctate	2	.4	1	.2	1	.2	1	.7	1	.3	------	------	1	.3	------	------	3	.4
Akawabi Incised and Modeled	12	2.6	9	1.9	3	.5	1	.7	10	3.1	------	------	4	1.1	1	1.3	8	1.2
Aruka Incised	14	3.1	2	.4	12	2.2	2	1.5	7	2.2	2	1.3	3	.8	1	1.3	13	2.1
Red slipped	3	.6	------	------	------	------	------	------	------	------	------	------	2	.5	------	------	------	------
Unclassified Decorated	------	------	2	.4	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	455	100.0	454	100.0	544	100.0	133	100.0	321	100.0	147	100.0	368	100.0	79	100.0	641	100.0

Pottery types	N-3: Cut 1								N-5: Cut 1						N-7: Warapoco		N-7: Cut 1			
	Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Surface		Level 0-8 cm.		Level 8-16 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																				
Korlabo Plain	47	54.7	239	47.0	91	50.1	28	65.2	40	53.4	194	45.4	64	46.2	28	21.8	68	27.8	27	33.8
Warapoco Plain	29	33.9	151	29.8	58	31.8	12	27.9	20	27.7	167	39.1	63	45.4	60	46.9	110	45.1	47	58.9
Barima Plain	1	1.1							4	5.3	8	1.9			1	0.8	6	2.5	1	1.2
Unclassified Plain			55	10.8	1	0.5														
Decorated types:																				
Korlabo Incised					1	0.5					1	.2								
Korlabo Scraped																				
White slipped			1	.2	3	1.6					1	.2								
Unclassified Decorated			3	.6							2	.4								
Trade pottery of Mabaruma Phase origin:																				
Koberimo Plain	7	8.1	22	4.3	10	5.6			5	6.7	4	.9			22	17.2	28	11.5	1	1.2
Hosororo Plain	1	1.1	4	.8	4	2.2	2	4.6	1	1.3	11	2.6	3	2.1	7	5.5	17	6.9	1	1.2
Hotokwai Plain			9	1.7					1	1.3	1	.2	1	.7						
Mabaruma Incised	1	1.1													3	2.3	1	.4		
Kaituma Incised and Punctate			5	.9					3	4.0	20	4.7	3	2.1						
Akawabi Incised and Modeled			11	2.2	4	2.2	1	2.3	1	1.3	9	2.1	2	1.4	5	3.9	8	3.3		
Aruka Incised			9	1.7	10	5.5					10	2.3	3	2.1	2	1.6	6	2.5	3	3.7
Red slipped																				
Unclassified Decorated																				
Total	86	100.0	509	100.0	182	100.0	43	100.0	75	100.0	428	100.0	139	100.0	128	100.0	244	100.0	80	100.0

TABLE 17.—*Frequency of rim and vessel shapes of Barima Plain and Koriabo Incised at sites of the Koriabo Phase*

Sites in seriated sequence (fig. 57)	Barima Plain					Koriabo Incised		
	Form 1	Form 2	Form 3	Form 4	Total rims per level	Form 1	Form 2	Total rims per level
N-3, Level 0-8 cm								
N-3, Level 8-16 cm						1		1
N-3, Level 16-24 cm								
N-2, Level 0-8 cm	2	1			3	1	1	2
N-2, Level 8-16 cm			1		1			
N-2, Level 16-24 cm								
N-5, Level 8-16 cm								
N-5, Level 16-24 cm								
N-5, Level 24-32 cm								
N-7, Level 0-8 cm				1	1			
N-7, Level 8-16 cm								
Total	2	1	1	1	5	2	1	3

TABLE 18.—*Frequency of rim, base, and vessel shapes of Koriabo Plain at sites of the Koriabo Phase*

Sites in seriated sequence (fig. 57)	Form 1	Form 2	Form 3	Form 4	Form 5	Form 6	Form 7	Miscellaneous	Total rims per level	Base A	Base B	Base C	Total bases per level
N-3, Level 0-8 cm	2	1	1		1				5				
N-3, Level 8-16 cm	8	6	2	1	1	1	3	1	23		1		1
N-3, Level 16-24 cm	2		1						3				
N-2, Level 0-8 cm	15	1	8	1	4	4	2	2	37	7	1	1	9
N-2, Level 8-16 cm	1		1	3	7	1	7		20		1	1	2
N-2, Level 16-24 cm			1		2		6		9				
N-5, Level 8-16 cm	1				1		3		5				
N-5, Level 16-24 cm	2	2	3				4		11				
N-5, Level 24-32 cm			1	2			1	1	5	1			1
N-7, Level 0-8 cm	1						3		4				
N-7, Level 8-16 cm													
Total	32	10	18	7	16	6	29	4	122	8	3	2	13

TABLE 19.—*Frequency of rim and vessel shapes of Koriabo Scraped at sites of the Koriabo Phase*

Sites in seriated sequence (fig. 57)	Form 1	Form 2	Form 3	Total rims per level
N-3, Level 0-8 cm				
N-3, Level 8-16 cm				
N-3, Level 16-24 cm				
N-2, Level 0-8 cm	3	1	2	6
N-2, Level 8-16 cm	2		1	3
N-2, Level 16-24 cm		1		1
N-5, Level 8-16 cm				
N-5, Level 16-24 cm				
N-5, Level 24-32 cm				
N-7, Level 0-8 cm				
N-7, Level 8-16 cm				
Total	5	2	3	10

TABLE 20.—*Frequency of rim, base, and vessel shapes of Warapoco Plain at sites of the Koriabo Phase*

Sites in seriated sequence (fig. 57)	Form 1	Form 2	Form 3	Total rims per level	Base A	Base B	Base C	Total bases per level
N-3, Level 0-8 cm					2	2		4
N-3, Level 8-16 cm			3	3	1			1
N-3, Level 16-24 cm					1			1
N-2, Level 0-8 cm	6	2	2	10	4			4
N-2, Level 8-16 cm	5		1	6	2		1	3
N-2, Level 16-24 cm					2			2
N-5, Level 8-16 cm	1		2	3			1	1
N-5, Level 16-24 cm	4			4				
N-5, Level 24-32 cm					1			1
N-7, Level 0-8 cm		1	5	6	1			1
N-7, Level 8-16 cm								
Total	16	3	13	32	14	2	2	18

TABLE 21.—*Frequency of decorative motifs of trade sherds of Akawabi Incised and Modeled at sites of the Koriabo Phase*

Sites in seriated sequence (fig. 57)	Motif 1	Motif 2	Motif 3	Motif 4	Motif 5	Total
N-3, Level 0-8 cm						
N-3, Level 8-16 cm	8			3		11
N-3, Level 16-24 cm	3	1				4
N-2, Level 0-8 cm	7	8		2		17
N-2, Level 8-16 cm	2	1				3
N-2, Level 16-24 cm						
N-5, Level 8-16 cm						
N-5, Level 16-24 cm	1	3		2		6
N-5, Level 24-32 cm		3				3
N-7, Level 0-8 cm	3	1				4
N-7, Level 8-16 cm	1					1
Total	25	17		7		49

TABLE 22.—*Frequency of decorative motifs of trade sherds of Aruka Incised at sites of the Koriabo Phase*

Sites in seriated sequence (fig. 57)	Motif 1	Motif 2	Motif 3	Motif 4	Motif 5	Total
N-3, Level 0-8 cm						
N-3, Level 8-16 cm			1	2		3
N-3, Level 16-24 cm		4		1	2	7
N-2, Level 0-8 cm		1		7	1	9
N-2, Level 8-16 cm	3	2		3	1	9
N-2, Level 16-24 cm	1			1		2
N-5, Level 8-16 cm						
N-5, Level 16-24 cm	2	1	1			4
N-5, Level 24-32 cm			1	1		2
N-7, Level 0-8 cm				2		2
N-7, Level 8-16 cm					2	2
Total	6	8	3	17	6	40

TABLE 23.—*Frequency of decorative motifs of trade sherds of Kaituma Incised and Punctate at sites of the Koriabo Phase*

Sites in seriated sequence (fig. 57)	Motif 1	Motif 2	Motif 3	Total
N-3, Level 0-8 cm				
N-3, Level 8-16 cm	1	2	1	4
N-3, Level 16-24 cm				
N-2, Level 0-8 cm	3		1	4
N-2, Level 8-16 cm			1	1
N-2, Level 16-24 cm	1			1
N-5, Level 8-16 cm	3			3
N-5, Level 16-24 cm	11	6	2	19
N-5, Level 24-32 cm	2	1		3
N-7, Level 0-8 cm				
N-7, Level 8-16 cm				
Total	21	9	5	35

TABLE 24.—*Frequency of stone artifacts by site, level, and rock material at sites of the Abary Phase*

Sites in seriated sequence (fig. 77)	Adz		Axes or celts				Bead		Hammer-stones			Manos				Metate		Rubbing stones			Chips and cores					
	Fine-grained schist	Total	Andesite	Fine-grained quartzite	Fine-grained schist	Total	Feldspar	Total	Andesite	Granite	Total	Andesite	Gabbro	Granite	Total	Granite	Total	Limonite	Hematite	Total	Andesite	Felsite	Granite	Quartz	Quartzite	Total
B-3, Cut 2:																										
Level 0-8 cm																										
Level 8-16 cm														1	1											
Level 16-24 cm																										
Level 24-32 cm			1			1				1	1															
Level 32-40 cm																										
Level 40-48 cm			1			1																				
Level 48-56 cm																								1		1
B-2, Cut 1:																										
Level 0-8 cm																										
Level 8-16 cm									1		1															
Level 16-24 cm							1	1																		
Level 24-32 cm																										
Level 32-40 cm																										
Level 40-48 cm																										
B-1, Cut 1:																										
Level 0-8 cm																						2		1		3
Level 8-16 cm																						1		1		2
B-1, Cut 2:																										
Level 0-8 cm																										
B-1, Cut 1:																										
Level 16-24 cm																								3		3
Level 24-32 cm																							1			1
B-1, Cut 2:																										
Level 8-16 cm																										
Level 16-24 cm																										
B-1, Cut 1:																										
Level 32-40 cm																					1			1		2
B-1, Cut 2:																										
Level 24-32 cm																										
Level 32-40 cm																			1	1					2	2
B-1, Cut 1:																										
Level 40-48 cm																										
B-1, Cut 2:																										
Level 40-48 cm																										
Level 48-56 cm																										
B-1, Surface	1	1	2			2				1	1	1	1		2	1	1	1		1						
B-2, Surface																										
B-3, Surface			2		1	3				2	2			1	1						1		2	6	2	11
Total		1				7		1			5				4		1			2						25

TABLE 25.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Abary Phase*

Pottery types	B-1: Tiger Island		B-1: Cut 1														B-1: Cut 2							
	Surface		Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Level 32-40 cm.		Level 40-48 cm.		Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																						
Taurakuli Plain	80	------	715	71.5	582	69.5	430	65.4	224	61.2	167	57.1	49	41.8	186	70.8	120	49.6	140	60.6	114	45.4
Abary Plain	3	------	85	8.5	69	8.2	17	2.6	4	1.1	5	1.7	3	2.6	12	4.5	------	------	------	------	------	------
Tiger Island Plain	37	------	143	14.3	144	17.2	190	28.8	131	35.8	112	38.4	63	53.8	60	22.8	116	48.0	83	36.0	134	53.4
Unclassified Plain	13	------	18	1.8	21	2.5	7	1.0	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Decorated types:																						
Unclassified Incised	2	------	11	1.0	9	1.0	1	.2	2	.5	2	.6	------	------	2	.8	1	.4	4	1.7	1	.4
Unclassified Modeled	4	------	3	.3	8	.9	4	.6	3	.8	3	1.0	------	------	3	1.1	------	------	4	1.7	2	.8
Mabaruma Phase trade or influence (cf. table F):																						
Kaituma Incised and Punctate	------	------	------	------	------	------	2	.3	1	.2	------	------	1	.9	------	------	------	------	------	------	------	------
Aruka Incised	------	------	6	.6	2	.2	4	.6	------	------	1	.3	------	------	------	------	2	.8	------	------	------	------
Akawabi Incised and Modeled	3	------	2	.2	3	.3	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Mabaruma Incised	2	------	2	.2	------	------	1	.2	1	.2	1	.3	1	.9	------	------	1	.4	------	------	------	------
White Slipped	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1	.4	------	------	------	------
Red Painted	------	------	------	------	------	------	------	------	1	.2	1	.3	------	------	------	------	------	------	------	------	------	------
Hotokwai Plain	------	------	16	1.6	2	.2	2	.3	------	------	1	.3	------	------	------	------	1	.4	------	------	------	------
Total	144	------	1001	100.0	840	100.0	658	100.0	367	100.0	293	100.0	117	100.0	263	100.0	242	100.0	231	100.0	251	100.0

Pottery types	B-1: Cut 2—Continued						B-2: Dr. Ho's Landing		B-2: Cut 1												B-3: Taurakuli	
	Level 32–40 cm.		Level 40–48 cm.		Level 48–56 cm.		Surface		Level 0–8 cm.		Level 8–16 cm.		Level 16–24 cm.		Level 24–32 cm.		Level 32–40 cm.		Level 40–48 cm.		Surface	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																						
Taurakuli Plain	188	48.7	66	10.7	92	19.5	81	89.0	265	88.7	217	85.2	112	86.3	76	82.7	136	86.1	210	93.4	56	26.9
Abary Plain	1	.3							1	.3	1	.3			2	2.1					26	12.5
Tiger Island Plain	193	49.9	543	88.0	372	79.1			22	7.4	10	3.9			5	5.4	18	11.4			122	58.7
Unclassified Plain	1	.2					9	9.9	10	3.3	27	10.6	16	12.3	9	9.8			13	5.7		
Decorated types:																						
Unclassified Incised			4	.6	1	.2	1	1.1					1	.7			4	2.5	2	.9	2	.9
Unclassified Modeled	2	.5	1	.1	3	.6																
Mabaruma Phase trade or influence (cf. table F):																						
Kaituma Incised and Punctate																						
Aruka Incised	1	.2			1	.2																
Akawabi Incised and Modeled	1	.2											1	.7								
Mabaruma Incised			1	.1	1	.2															1	.5
White Slipped																						
Red Painted			3	.5	1	.2			1	.3											1	.5
Hotokwai Plain																						
Total	387	100.0	618	100.0	471	100.0	91	100.0	299	100.0	255	100.0	130	100.0	92	100.0	158	100.0	225	100.0	208	100.0

TABLE 25.—*Frequency of pottery types in surface collections and stratigraphic excavations at sites of the Abary Phase*—Continued

Pottery types	B-3: Cut 1								B-3: Cut 2													
	Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Level 32-40 cm.		Level 40-48 cm.		Level 48-56 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																						
Taurakuli Plain	25	38.5	120	29.0	48	44.1	38	47.0	52	74.3	447	65.2	1095	63.4	1424	64.8	931	80.8	756	85.5	315	82.7
Abary Plain	25	38.5	137	33.2	25	22.9	16	19.7	14	20.0	205	29.9	500	28.8	669	30.3	195	16.9	91	10.3	57	15.0
Tiger Island Plain	15	23.0	150	36.3	35	32.1	26	32.1	3	4.3	29	4.2	127	7.3	91	4.1	16	1.4	21	2.3		
Unclassified Plain											2	.3			3	.1	5	.4	7	.8		
Decorated types:																						
Unclassified Incised			3	.7			1	1.2	1	1.4	3	.4	6	.3	9	.4	4	.3	9	1.0	9	2.3
Unclassified Modeled			1	.2	1	.9							1	.1	7	.3	1	.1	1	.1		
Mabaruma Phase trade or influence (cf. table F):																						
Kaituma Incised and Punctate																						
Aruka Incised			2	.4																		
Akawabi Incised and Modeled																						
Mabaruma Incised			1	.2									1	.1								
White Slipped																						
Red Painted																	1	.1				
Hotokwai Plain																						
Total	65	100.0	414	100.0	109	100.0	81	100.0	70	100.0	686	100.0	1730	100.0	2203	100.0	1153	100.0	885	100.0	381	100.0

TABLE 26.—*Frequency of rim, base, and vessel shapes of Abary Plain at sites of the Abary Phase*

Sites in seriated sequence (fig. 77)	Vessel Form 1	Vessel Form 2	Unclassied	Total rims per level	Base Form A	Base Form B	Total bases per level
B-3, Cut 2:							
Level 0-8 cm							
Level 8-16 cm	1	1		2			
Level 16-24 cm	1	11	1	13			
Level 24-32 cm	8	14		22		2	2
Level 32-40 cm	6			6	1		1
Level 40-48 cm	3	1		4			
Level 48-56 cm	4	5		9			
B-2, Cut 1:							
Level 0-8 cm							
Level 8-16 cm							
Level 16-24 cm							
Level 24-32 cm			1	1			
Level 32-40 cm							
Level 40-48 cm							
B-1, Cut 1:							
Level 0-8 cm	2		2	4		3	3
Level 8-16 cm	2		1	3	1		1
B-1, Cut 2, Level 0-8 cm							
B-1, Cut 1:							
Level 16-24 cm	2			2			
Level 24-32 cm							
B-1, Cut 2:							
Level 8-16 cm							
Level 16-24 cm							
B-1, Cut 1, Level 32-40 cm	2			2			
B-1, Cut 2:							
Level 24-32 cm							
Level 32-40 cm							
B-1, Cut 1, Level 40-48 cm							
B-1, Cut 2:							
Level 40-48 cm							
Level 48-56 cm							
Total	31	32	5	68	2	5	7

TABLE 27.—*Frequency of rim, base, and vessel shapes of Taurakuli Plain at sites of the Abary Phase*

Sites in seriated sequence (fig. 77)	Vessel Form 1	Vessel Form 2	Vessel Form 3	Vessel Form 4	Rare Vessel Form 1	Rare Vessel Form 2	Rare Vessel Form 3	Unclassified	Total rims per level	Base Form A	Base Form B	Base Form C	Total bases per level
B-3, Cut 2;													
Level 0-8 cm	1		1						2				
Level 8-16 cm	24		9						33				
Level 16-24 cm	27		44					1	72	1		1	2
Level 24-32 cm	91		37						128		8		8
Level 32-40 cm	45		36						81		5		5
Level 40-48 cm	19		40					1	60	2	1		3
Level 48-56 cm	26		12						38				
B-2, Cut 1:													
Level 0-8 cm	2		8			1		1	12				
Level 8-16 cm	6		10			1		1	18	1			1
Level 16-24 cm	5		2						7				
Level 24-32 cm	2		3			1			6				
Level 32-40 cm	2		6			2			10		2		2
Level 40-48 cm	7		7					1	15		1		1
B-1, Cut 1:													
Level 0-8 cm	54	4	12	1	1	7	1		80	4			4
Level 8-16 cm	31	6	21	8		4	1	3	74	3	2		5
B-1, Cut 2, Level 0-8 cm	7		3	1				2	13	2			2
B-1, Cut 1:													
Level 16-24 cm	26	1	6	2		1	1	1	38	4			4
Level 24-32 cm	14	3	1		1	2		2	23	3			3
B-1, Cut 2:													
Level 8-16 cm	4	1	4						9				
Level 16-24 cm	11	6	3					3	23	1		1	2
B-1, Cut 1, Level 32-40 cm	15		4	3	1				23	3			3
B-1, Cut 2:													
Level 24-32 cm	3		3					1	7	1			1
Level 32-40 cm	11	3		1					15	2		1	3
B-1, Cut 1, Level 40-48 cm	1			1					2				
B-1, Cut 2:													
Level 40-48 cm		1	1				2	6	10				
Level 48-56 cm	2		1				2	1	6				
Total	436	25	274	17	3	19	7	24	805	27	19	3	49

TABLE 28.—*Frequency of rim, base, and vessel shapes of Tiger Island Plain at sites of the Abary Phase*

Sites in seriated sequence (fig. 77)	Vessel Form 1	Vessel Form 2	Vessel Form 3	Vessel Form 4	Rare Vessel Form 1	Rare Vessel Form 2	Rare Vessel Form 3	Unclassified	Total rims per level	Base Form A	Base Form B	Base Form C	Total bases per level
B-3, Cut 2:													
Level 0-8 cm													
Level 8-16 cm	4	1							5				
Level 16-24 cm				6					6				
Level 24-32 cm	1								1				
Level 32-40 cm	1		2						3				
Level 40-48 cm	1								1				
Level 48-56 cm													
B-2, Cut 1:													
Level 0-8 cm													
Level 8-16 cm													
Level 16-24 cm													
Level 24-32 cm													
Level 32-40 cm													
Level 40-48 cm													
B-1, Cut 1:													
Level 0-8 cm	2	2	2	4					10	1			1
Level 8-16 cm	23	4	1	7	1		1		37				
B-1, Cut 2, Level 0-8 cm			2						2				
B-1, Cut 1:													
Level 16-24 cm	14					2			16	1			1
Level 24-32 cm	3		2	2	1				8				
B-1, Cut 2:													
Level 8-16 cm	9		2	3	1		2		17				
Level 16-24 cm	6		3	4					13			1	1
B-1, Cut 1, Level 32-40 cm	3	2	1	1		2			9				
B-1, Cut 2:													
Level 24-32 cm	1			4					5	1			1
Level 32-40 cm	7	1	5				1		14				
B-1, Cut 1, Level 40-48 cm	2			2	2	2		2	10				
B-1, Cut 2:													
Level 40-48 cm	18		12		2	2	1		35	8			8
Level 48-56 cm	10	14	9	5			1		39	6	4		10
Total	105	24	41	38	7	8	6	2	231	17	4	1	22

TABLE 29.—*Frequency of stone artifacts at sites of the Taruma Phase*

	E-1, Surface	E-1, Cut 1, Level 16-24 cm.	E-1, Cut 2, Level 8-16 cm.	E-6, Cut 1, Level 8-16 cm.	E-6, Cut 1, Level 16-24 cm.	E-7, Surface	E-7, Cut 1, Level 0-8 cm.	E-7, Cut 1, Level 8-16 cm.	E-7, Cut 2, Level 8-16 cm.	E-3, Surface	E-9, Cut 1, Level 16-24 cm.	E-9, Cut 2, Level 0-8 cm.	E-10, Surface	E-10, Cut 1, Level 0-8 cm.	E-10, Cut 1, Level 8-16 cm.	E-13, Cut 1, Level 0-8 cm.	E-13, Cut 1, Level 8-16 cm.	E-15, Cut 1, Level 8-16 cm.	E-16, Cut 2, Level 8-16 cm.	E-17, Cut 1, Level 8-16 cm.	E-18	E-19, Cut 1, Level 0-8 cm.	E-19, Cut 2, Level 0-8 cm.	E-19, Cut 2, Level 8-16 cm.	E-19, Cut 2, Level 16-24 cm.	E-22	E-24, Cut 1, Level 8-16 cm.	E-24, Cut 1, Level 16-24 cm.	E-24, Surface	E-28	E-29	E-30, Cut 1, Level 32-40 cm.	E-30, Cut 1, Level 40-48 cm.	Total
Artifacts:																																		
Ax	1																																	1
Chopper	1																																	1
Griddle fragments(?)	3																1																	4
Rubbing stone:																																		
Hematite	1					1	1																											3
Quartz		1																		1				1									1	4
Possible artifacts:																																		
Quartz crystal												1																						1
Quartz pebble			1															1																2
Resin																			2															2
Raw materials:																																		
Manioc grater chips—felsite	1	3						1	2	1	1	2	1	1	1	1	1				2		2		2	1	1	2	1	15	1		1	44
Cores and flakes:																																		
Chert					1																													1
Quartz				1				1								1																		3
Sandstone			2																															2
Pottery temper—decomposed granite						3	2	2		9		2		6					5			2						5				3	3	42

Table 30.—*Frequency of pottery types from surface collections, tests, and stratigraphic excavations at sites of the Taruma Phase*

Pottery types	E-1: Kanashen		E-1: Cut 1								E-1: Cut 2						E-3: Yochó		E-3: Cut 1				E-3: Cut 2			
	Surface		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Level 32-40 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Surface and broadside		Level 8-16 cm.		Level 16-24 cm.		Level 8-16 cm.		Level 16-24 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																										
Yochó Plain	575	60.5	41	58.6	238	72.0	78	74.4	20	------	140	42.7	255	75.8	91	94.0	249	56.1	54	77.1	101	92.0	56	54.3	251	59.6
Kalunye Plain	138	14.5	10	14.3	63	19.0	22	20.9	----	------	125	38.2	56	16.6	6	6.0	185	41.8	15	21.4	9	8.0	47	45.7	165	39.2
Mawiká Plain	18	1.8	----	------	5	1.5	3	2.9	----	------	12	3.6	2	.5	----	------	----	------	1	1.5	----	------	----	------	----	------
Decorated types:																										
Kanashen Incised	107	11.2	5	7.1	10	3.0	1	.9	----	------	21	6.4	18	5.3	----	------	3	.6	----	------	----	------	----	------	2	.5
Kassikaityu Punctate	7	.7	3	4.3	3	.9	----	------	----	------	2	.6	----	------	----	------	2	.4	----	------	----	------	----	------	3	.7
Manakakashin Red-on-White	68	7.2	9	12.8	7	2.1	----	------	----	------	23	7.0	5	1.5	----	------	----	------	----	------	----	------	----	------	----	------
Manakakashin Red	4	.5	----	------	----	------	----	------	----	------	1	.3	----	------	----	------	5	1.1	----	------	----	------	----	------	----	------
Onoro Stamped	34	3.6	2	2.9	5	1.5	1	.9	----	------	4	1.2	----	------	----	------	----	------	----	------	----	------	----	------	----	------
Unclassified Decorated	----	------	----	------	----	------	----	------	----	------	----	------	1	.3	----	------	----	------	----	------	----	------	----	------	----	------
Total	951	100.0	70	100.0	331	100.0	105	100.0	20	------	328	100.0	337	100.0	97	100.0	444	100.0	70	100.0	110	100.0	103	100.0	421	100.0

Table 30.—*Frequency of pottery types from surface collections, tests, and stratigraphic excavations at sites of the Taruma Phase*—Continued

Pottery types	E-4		E-5: Cut 1		E-6: Cut 1				E-7		E-7: Cut 1						E-7: Cut 2						E-8		E-9	
	Surface and tests		Level 8-16 cm.		Level 8-16 cm.		Level 16-24 cm.		Surface		Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Tests		Broadside	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																										
Yochó Plain	108	70.6	40	89.0	137	79.0	220	78.7	77	69.4	42	41.3	146	55.4	50	66.7	88	74.5	160	71.6	181	75.5	2		152	45.3
Kalunye Plain	32	20.9	5	11.0	35	20.0	51	18.2	28	25.2	57	55.9	104	39.4	22	29.3	24	20.3	60	26.8	53	22.0			117	34.8
Mawiká Plain	12	7.9							1	.9															1	.3
Decorated types:																										
Kanashen Incised							4	1.4	3	2.7	3	2.8	7	2.6	2	2.7	2	1.7	1	.4	6	2.5			20	5.9
Kassikaityu Punctate							2	.7	2	1.8															8	2.4
Manakakashin Red-on-White	1	.6			1	.5							7	2.6	1	1.3	1	.9	2	.8					24	7.2
Manakakashin Red							1	.3									2	1.7	1	.4					8	2.4
Onoro Stamped					1	.5	2	.7									1	.9							6	1.7
Unclassified Decorated																										
Total	153	100.0	45	100.0	174	100.0	280	100.0	111	100.0	102	100.0	264	100.0	75	100.0	118	100.0	224	100.0	240	100.0	2		336	100.0

Pottery types	E-9: Cut 1								E-9: Cut 2				E-10		E-10: Cut 1						E-11		E-12: Cut 1			
	Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Level 24-32 cm.		Level 0-8 cm.		Level 8-16 cm.		Surface		Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Surface		Level 8-16 cm.		Level 16-24 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																										
Yochó Plain	47	24.0	81	19.4	181	34.9	175	49.1	164	85.5	96	88.9	5	------	80	40.7	150	42.0	95	58.0	20	17.8	43	98.0	37	92.5
Kalunye Plain	102	52.1	227	54.4	250	48.1	136	38.1	23	11.9	10	9.3	19	------	50	25.5	79	22.1	26	15.8	84	75.1	1	2.0	3	7.5
Mawiká Plain	----	------	----	------	2	.4	11	3.1	----	------	----	------	1	------	20	10.4	107	30.1	34	20.7	1	.9	----	------	----	------
Decorated types:																										
Kanashen Incised	13	6.6	24	5.8	41	7.8	20	5.6	2	1.1	2	1.8	3	------	12	6.1	12	3.4	5	3.1	4	3.5	----	------	----	------
Kassikaityu Punctate	1	.5	2	.5	1	.2	3	.8	1	.5	----	------	----	------	----	------	2	.5	2	1.2	----	------	----	------	----	------
Manakakashin Red-on-White	18	9.2	43	10.3	32	6.2	7	1.9	1	.5	----	------	1	------	33	16.8	6	1.6	1	.6	2	1.8	----	------	----	------
Manakakashin Red	13	6.6	34	8.2	9	1.7	1	.3	----	------	----	------	----	------	----	------	----	------	----	------	----	------	----	------	----	------
Onoro Stamped	2	1.0	6	1.4	4	.7	4	1.1	1	.5	----	------	----	------	1	.5	----	------	----	------	1	.9	----	------	----	------
Unclassified Decorated	----	------	----	------	----	------	----	------	----	------	----	------	----	------	----	------	1	.3	1	.6	----	------	----	------	----	------
Total	196	100.0	417	100.0	520	100.0	357	100.0	192	100.0	108	100.0	29	------	196	100.0	357	100.0	164	100.0	112	100.0	44	100.0	40	100.0

Table 30.—*Frequency of pottery types from surface collections, tests, and stratigraphic excavations at sites of the Taruma Phase*—Continued

Pottery types	E-13 : Cut 1						E-14		E-15		E-15 : Cut 1		E-16 : Cut 1		E-16 :Cut 2				E-17 : Cut 1		E-18		E-19		E-19: Cut 1	
	Level 0-8 cm.		Level 8-16 cm.		Level 16-24 cm.		Test		Water's edge		Level 8-16 cm.		Level 8-16 cm.		Level 0-8 cm.		Level 8-16 cm.		Level 8-16 cm.		Broad-side		Surface		Level 0-8 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																										
Yochó Plain	151	66.5	197	77.0	85	78.0	133	96.0	210	72.5	121	62.8	72	74.2	45	42.9	48	51.2	59	24.4	47	54.0	21	43.8	55	35.2
Kalunye Plain	61	26.9	41	16.0	23	21.2	5	3.3	49	16.8	61	31.6	24	24.8	35	33.4	44	46.8	138	57.3	32	36.8	23	48.1	100	64.2
Mawiká Plain																					4	4.6				
Decorated types:																										
Kanashen Incised	11	4.9	13	5.1	1	.8			24	8.3	10	5.1			4	3.8	1	1.0	5	2.1	4	4.6	1	2.0		
Kassikaityu Punctate	2	.9	5	1.9					6	2.0	1	.5			2	1.9							2	4.1		
Manakakashin Red-on-White.	1	.4																	39	16.2						
Manakakashin Red													1	1.0	18	17.1	1	1.0					1	2.0		
Onoro Stamped	1	.4							1	.4															1	.6
Unclassified Decorated							1	.7							1	.9										
Total	227	100.0	256	100.0	109	100.0	139	100.0	290	100.0	193	100.0	97	100.0	105	100.0	94	100.0	241	100.0	87	100.0	48	100.0	156	100.0

Pottery types	E-19: Cut 1—Continued		E-19: Cut 2								E-20		E-21		E-22		E-22		E-23		E-24		E-24: Cut 1			
	Level 8–16 cm.		Level 0–8 cm.		Level 8–16 cm.		Level 16–24 cm.		Level 24–32 cm.		Test		Test		Test A		Test B		Test		River bank		Level 0–8 cm.		Level 8–16 cm.	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																										
Yochó Plain	65	49.6	75	32.4	139	28.7	112	35.6	90	50.0	6	----	190	69.0	77	51.4	43	44.9	105	65.4	70	90.0	45	72.6	175	59.3
Kalunye Plain	59	45.1	148	64.2	321	66.4	195	62.0	87	48.3	----	----	81	29.4	59	39.4	46	47.9	48	29.8	8	10.0	14	22.6	116	39.4
Mawiká Plain	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2	3.2	----	----
Decorated types:																										
Kanashen Incised	2	1.5	2	.8	1	.2	2	.6	3	1.7	----	----	3	1.0	11	7.3	1	1.0	3	1.8	----	----	1	1.6	3	1.0
Kassikaityu Punctate	----	----	1	.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3	1.8	----	----	----	----	1	.3
Manakakashin Red-on-White.	----	----	----	----	1	.2	1	.3	----	----	----	----	1	.3	----	----	----	----	----	----	----	----	----	----	----	----
Manakakashin Red	4	3.1	----	----	1	.2	----	----	----	----	----	----	----	----	2	1.3	3	3.1	----	----	----	----	----	----	----	----
Onoro Stamped	1	.7	5	2.2	21	4.3	5	1.5	----	----	----	----	1	.3	1	.6	3	3.1	2	1.2	----	----	----	----	----	----
Unclassified Decorated	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Total	131	100.0	231	100.0	484	100.0	315	100.0	180	100.0	6	----	276	100.0	150	100.0	96	100.0	161	100.0	78	100.0	62	100.0	295	100.0

Table 30.—*Frequency of pottery types from surface collections, tests, and stratigraphic excavations at sites of the Taruma Phase*—Continued

Pottery types	E-24: Cut 1—Con. Level 16–24 cm. Count	E-24: Cut 1—Con. Level 16–24 cm. Percentage	E-24: Cut 1—Con. Level 24–32 cm. Count	E-24: Cut 1—Con. Level 24–32 cm. Percentage	E-25 Test Count	E-25 Test Percentage	E-26 Test Count	E-26 Test Percentage	E-27 Test Count	E-27 Test Percentage	E-28 Test Count	E-28 Test Percentage	E-29 Test Count	E-29 Test Percentage	E-30: Cut 1 Level 8–16 cm. Count	E-30: Cut 1 Level 8–16 cm. Percentage	E-30: Cut 1 Level 16–24 cm. Count	E-30: Cut 1 Level 16–24 cm. Percentage	E-30: Cut 1 Level 24–32 cm. Count	E-30: Cut 1 Level 24–32 cm. Percentage	E-30: Cut 1 Level 32–40 cm. Count	E-30: Cut 1 Level 32–40 cm. Percentage	E-30: Cut 1 Level 40–48 cm. Count	E-30: Cut 1 Level 40–48 cm. Percentage
Plain types:																								
Yochó Plain	196	67.6	78	67.3	137	79.3	8						50	56.8	14	34.0	97	61.1	73	81.2	279	84.6	244	89.2
Kalunye Plain	91	31.4	37	31.9	35	20.2			3				36	41.0	27	66.0	61	38.3	12	13.3	47	14.2	25	9.1
Mawiká Plain											42		1	1.1										
Decorated types:																								
Kanashen Incised	2	.7	1	.8	1	.5							1	1.1					2	2.2	4	1.2	2	.7
Kassikaityu Punctate																								
Manakakashin Red-on-White																	1	.6	3	3.3			3	1.0
Manakakashin Red	1	.3																						
Onoro Stamped																								
Unclassified Decorated																								
Total	290	100.0	116	100.0	173	100.0	8		3		42		88	100.0	41	100.0	159	100.0	90	100.0	330	100.0	274	100.0

Table 31.—*Frequency of rim, base, and vessel shapes of Kalunye Plain at sites of the Taruma Phase*

Sites in seriated sequence (fig. 101)	Vessel Form 1	Vessel Form 2	Vessel Form 3	Vessel Form 4	Unclassified	Total rims per level	Base Form A	Base Form B	Base Form C	Base Form D	Total bases per level
E-11, Surface and Tests		1		1	1	3	1				1
E-30, Cut 1, Level 8-16 cm				1		1					
E-19, Cut 2, Level 0-8 cm	3	3	3	3	1	13					
E-19, Cut 2, Level 8-16 cm	7	13	3	4	3	30					
E-19, Cut 1, Level 0-8 cm	2	2	1	1		6	1	2			3
E-19, Cut 2, Level 16-24 cm	11	7		6	1	25	1	1			2
E-17, Cut 1, Level 8-16 cm	3	2	1	3		9					
E-9, Cut 1, Level 0-8 cm	3	3	4	3		13			1		1
E-9, Cut 1, Level 8-16 cm	8	1	3	2	2	16	3				3
E-7, Cut 1, Level 0-8 cm		1				1			1		1
E-9, Cut 1, Level 16-24 cm	4	2	2	1		9	4				4
E-22, Test B											

E-16, Cut 2, Level 0-8 cm	1	2			1	4	1				1
E-19, Cut 1, Level 8-16 cm	2	1	1			4		3			3
E-19, Cut 2, Level 24-32 cm			1			1		1			1
E-16, Cut 2, Level 8-16 cm	1	1	1			3					
E-1, Cut 2, Level 8-16 cm	3			1		4	1				1
E-9, Cut 1, Level 24-32 cm	5	6	3		1	15	1				1
E-22, Test A							1				1
E-18		1		1		2					
E-3, Cut 2, Level 8-16 cm											
E-7, Cut 1, Level 8-16 cm	1	1			1	3					
E-29											
E-3, Cut 2, Level 16-24 cm		8				8					
E-10, Cut 1, Level 0-8 cm	1	1				2					
E-10, Cut 1, Level 8-16 cm											
E-24, Cut 1, Level 8-16 cm	3	2	2			7		1			1
E-30, Cut 1, Level 16-24 cm	2		1		1	4					
E-15, Cut 1, Level 8-16 cm	1	1				2					
E-7, Cut 1, Level 16-24 cm											
E-23			2			2		1			1
E-24, Cut 1, Level 16-24 cm	4	2	3		1	10	1	1			2
E-24, Cut 1, Level 24-32 cm	1	1				2					
E-21	3	2	1			6		2			2
E-13, Cut 1, Level 0-8 cm											
E-10, Cut 1, Level 16-24 cm											
E-1, Cut 1, Level 8-16 cm											
E-4, Surface and Test	1	2				3					
E-7, Cut 2, Level 0-8 cm	1		1			2					
E-7, Cut 2, Level 8-16 cm	1		2			3					
E-16, Cut 1, Level 8-16 cm	2	1			1	4					
E-7, Cut 2, Level 16-24 cm	2	1			1	4					
E-1, Cut 1, Level 16-24 cm											
E-1, Cut 1, Level 24-32 cm											
E-1, Cut 2, Level 16-24 cm	3					3					
E-13, Cut 1, Level 8-16 cm	1		1		1	3					
E-3, Cut 1, Level 8-16 cm	1					1					
E-13, Cut 1, Level 16-24 cm	2					2		1			1
E-25	1	2				3					
E-6, Cut 1, Level 8-16 cm	2					2					
E-6, Cut 1, Level 16-24 cm		2				2					
E-30, Cut 1, Level 24-32 cm	1		1			2					
E-30, Cut 1, Level 32-40 cm	1	1	1			3					
E-9, Cut 2, Level 0-8 cm	1	2				3					
E-5, Cut 1, Level 8-16 cm	1	1				2					
E-9, Cut 2, Level 8-16 cm								2		1	3
E-30, Cut 1, Level 40-48 cm	1					1					
E-3, Cut 1, Level 16-24 cm											
E-1, Cut 2, Level 24-32 cm											
E-12, Cut 1, Levels combined											
E-14, Test											
Total	91	76	38	27	16	248	15	15	2	1	33

TABLE 32.—*Frequency of rim and vessel shapes and decorative motifs of Kanashen Incised at sites of the Taruma Phase*

Sites in seriated sequence (fig. 101)	Vessel Form 1	Vessel Form 2	Vessel Form 3	Unclassified	Total rims per level	Motif 1	Motif 2	Motif 3	Motif 4	Unclassified	Total sherds per level
E-11, Surface and Tests							2			2	4
E-30, Cut 1, Level 8-16 cm											
E-19, Cut 2, Level 0-8 cm									1	1	2
E-19, Cut 2, Level 8-16 cm									1		1
E-19, Cut 1, Level 0-8 cm											
E-19, Cut 2, Level 16-24 cm						2					2
E-17, Cut 1, Level 8-16 cm	1	1			2	3	1			1	5
E-9, Cut 1, Level 0-8 cm	3	1			4	7	4	1		1	13
E-9, Cut 1, Level 8-16 cm	3	4	1		8	12	5	1		6	24
E-7, Cut 1, Level 0-8 cm						1	2				3
E-9, Cut 1, Level 16-24 cm	1	5	1	1	8	22	7			12	41
E-22, Test B										1	1
E-16, Cut 2, Level 0-8 cm		1	1		2	3			1		4
E-19, Cut 1, Level 8-16 cm						1	1				2
E-19, Cut 2, Level 24-32 cm						1	2				3
E-16, Cut 2, Level 8-16 cm										1	1
E-1, Cut 2, Level 8-16 cm		1	1		2	14	1		4	2	21
E-9, Cut 1, Level 24-32 cm		4			4	14	1	1		4	20
E-22, Test A	1				1		4	3		4	11
E-18			1		1			2		2	4
E-3, Cut 2, Level 8-16 cm											
E-7, Cut 1, Level 8-16 cm	2				2	2	1			4	7
E-29								1			1
E-3, Cut 2, Level 16-24 cm		1			1		1				1
E-10, Cut 1, Level 0-8 cm	1	2			3	1	1		2	8	12
E-10, Cut 1, Level 8-16 cm		2			2		1	6		5	12
E-24, Cut 1, Level 8-16 cm			1		1	2				1	3
E-30, Cut 1, Level 16-24 cm											
E-15, Cut 1, Level 8-16 cm	1		1		2	2	8				10

E-7, Cut 1, Level 16-24 cm						2					2
E-23										3	3
E-24, Cut 1, Level 16-24 cm			1		1	1			1		2
E-24, Cut 1, Level 24-32 cm						1					1
E-21	2				2	1	2				3
E-13, Cut 1, Level 0-8 cm		3			3		5	1	1	4	11
E-10, Cut 1, Level 16-24 cm	1	1			2	1		2		2	5
E-1, Cut 1, Level 8-16 cm							1			4	5
E-4, Surface and Tests											
E-7, Cut 2, Level 0-8 cm							1	1			2
E-7, Cut 2, Level 8-16 cm						1					1
E-16, Cut 1, Level 8-16 cm											
E-7, Cut 2, Level 16-24 cm										6	6
E-1, Cut 1, Level 16-24 cm						4		1		5	10
E-1, Cut 1, Level 24-32 cm										1	1
E-1, Cut 2, Level 16-24 cm	1	4	2		7	8	3	1	4	2	18
E-13, Cut 1, Level 8-16 cm	2				2		4		2	7	13
E-3, Cut 1, Level 8-16 cm											
E-13, Cut 1, Level 16-24 cm		1			1		1				1
E-25										1	1
E-6, Cut 1, Level 8-16 cm											
E-6, Cut 1, Level 16-24 cm		1			1	2			1	1	4
E-30, Cut 1, Level 24-32 cm									1	1	2
E-30, Cut 1, Level 32-40 cm			1		1	3			1		4
E-9, Cut 2, Level 0-8 cm	1				1	1		1			2
E-5, Cut 1, Level 8-16 cm											
E-9, Cut 2, Level 8-16 cm								1		1	2
E-30, Cut 1, Level 40-48 cm						2					2
E-3, Cut 1, Level 16-24 cm											
E-1, Cut 2, Level 24-32 cm											
E-12, Cut 1, Levels combined											
E-14, Test											
Other	11	26	7		44						
Total	31	58	18	1	108	114	59	23	20	93	309

Table 33.—*Frequency of rim and vessel shapes of Kassikaityu Punctate, Manakakashin Red, and Manakakashin Red-on-White at sites of Taruma Phase*

Sites in seriated sequence (fig. 101)	Kassikaityu Punctate				Manakakashin Red				Manakakashin Red-on-White				
	Rim Form 1	Rim Form 2	Unclassified	Total rims per level	Rim Form 1	Rim Form 2	Unclassified	Total rims per level	Rim Form 1	Rim Form 2	Rim Form 3	Unclassified	Total rims per level
E-11, Surface and Tests									2				2
E-30, Cut 1, Level 8-16 cm													
E-19, Cut 2, Level 0-8 cm													
E-19, Cut 2, Level 8-16 cm													
E-19, Cut 1, Level 0-8 cm													
E-19, Cut 2, Level 16-24 cm													
E-17, Cut 1, Level 8-16 cm									1				1
E-9, Cut 1, Level 0-8 cm					2			2	1	1			2
E-9, Cut 1, Level 8-16 cm	1			1	3			3	1				1
E-7, Cut 1, Level 0-8 cm													
E-9, Cut 1, Level 16-24 cm					2			2	2	1			3
E-22, Test B													
E-16, Cut 2, Level 0-8 cm													
E-19, Cut 1, Level 8-16 cm					2			2					
E-19, Cut 2, Level 24-32 cm													
E-16, Cut 2, Level 8-16 cm													
E-1, Cut 2, Level 8-16 cm													
E-9, Cut 1, Level 24-32 cm	1			1						1			1
E-22, Test A													
E-18													
E-3, Cut 2, Level 8-16 cm													
E-7, Cut 1, Level 8-16 cm													
E-29													
E-3, Cut 2, Level 16-24 cm													
E-10, Cut 1, Level 0-8 cm													
E-10, Cut 1, Level 8-16 cm													

E-24, Cut 1, Level 8-16 cm			1	1									
E-30, Cut 1, Level 16-24 cm							1	1					
E-15, Cut 1, Level 8-16 cm													
E-7, Cut 1, Level 16-24 cm													
E-23	1			1									
E-24, Cut 1, Level 16-24 cm					1			1					
E-24, Cut 1, Level 24-32 cm													
E-21													
E-13, Cut 1, Level 0-8 cm													
E-10, Cut 1, Level 16-24 cm													
E-1, Cut 1, Level 8-16 cm		1		1									
E-4, Surface and Test													
E-7, Cut 2, Level 0-8 cm													
E-7, Cut 2, Level 8-16 cm													
E-16, Cut 1, Level 8-16 cm													
E-7, Cut 2, Level 16-24 cm													
E-1, Cut 1, Level 16-24 cm													
E-1, Cut 1, Level 24-32 cm													
E-1, Cut 2, Level 16-24 cm											1		1
E-13, Cut 1, Level 8-16 cm													
E-3, Cut 1, Level 8-16 cm													
E-13, Cut 1, Level 16-24 cm													
E-25		1		1									
E-6, Cut 1, Level 8-16 cm									1				1
E-6, Cut 1, Level 16-24 cm	1			1		1		1					
E-30, Cut 1, Level 24-32 cm					2			2					
E-30, Cut 1, Level 32-40 cm													
E-9, Cut 2, Level 0-8 cm													
E-5, Cut 1, Level 8-16 cm													
E-9, Cut 2, Level 8-16 cm													
E-30, Cut 1, Level 40-48 cm					1			1					
E-3, Cut 1, Level 16-24 cm													
E-1, Cut 2, Level 24-32 cm													
E-12, Cut 1, Levels combined													
E-14, Test													
Other	7	3	1	11	3	2		5	2	5	3	2	12
Total	11	5	2	18	16	3	1	20	10	8	4	2	24

TABLE 34.—*Frequency of decorative techniques of Kassikaityu Punctate and decorative motifs of Manakakashin Red-on-White at sites of the Taruma Phase*

Sites in seriated sequence (fig. 101)	Decorative techniques of Kassikaityu Punctate						Decorative motifs of Manakakashin Red-on-White				
	Fingertip pressed	Fingertip pushed	Finger-nail pressed	Jabbed	Gashed	Total per per level	Motif 1	Motif 2	Motif 3	Unclassified (eroded)	Total per level
E-11, Surface and Tests										2	2
E-30, Cut 1, Level 8-16 cm											
E-19, Cut 2, Level 0-8 cm					1	1					
E-19, Cut 2, Level 8-16 cm										1	1
E-19, Cut 1, Level 0-8 cm											
E-19, Cut 2, Level 16-24 cm								1			1
E-17, Cut 1, Level 8-16 cm							3	2	3	31	39
E-9, Cut 1, Level 0-8 cm			1			1	2	1	2	13	18
E-9, Cut 1, Level 8-16 cm		1	1			2	2	1	4	36	43
E-7, Cut 1, Level 0-8 cm											
E-9, Cut 1, Level 16-24 cm				1		1	1	1	3	27	32
E-22, Test B											
E-16, Cut 2, Level 0-8 cm	2			1		3					
E-19, Cut 1, Level 8-16 cm											
E-19, Cut 2, Level 24-32 cm											
E-16, Cut 2, Level 8-16 cm											
E-1, Cut 2, Level 8-16 cm				2		2				23	23
E-9, Cut 1, Level 24-32 cm				2	1	3				7	7
E-22, Test A											
E-18											
E-3, Cut 2, Level 8-16 cm											
E-7, Cut 1, Level 8-16 cm										7	7
E-29											
E-3, Cut 2, Level 16-24 cm		1		1		2					
E-10, Cut 1, Level 0-8 cm							1	3	1	28	33
E-10, Cut 1, Level 8-16 cm				1	1	2		1		5	6
E-24, Cut 1, Level 8-16 cm				1		1					

E-30, Cut 1, Level 16-24 cm											
E-15, Cut 1, Level 8-16 cm		1				1					
E-7, Cut 1, Level 16-24 cm										1	1
E-23		2		1		3					
E-24, Cut 1, Level 16-24 cm											
E-24, Cut 1, Level 24-32 cm											
E-21								1			1
E-13, Cut 1, Level 0-8 cm		2				2		1			1
E-10, Cut 1, Level 16-24 cm	2					2				1	1
E-1, Cut 1, Level 8-16 cm	1		1	1	1	4			2	7	9
E-4, Surface and Tests											
E-7, Cut 2, Level 0-8 cm										1	1
E-7, Cut 2, Level 8-16 cm										2	2
E-16, Cut 1, Level 8-16 cm											
E-7, Cut 2, Level 16-24 cm											
E-1, Cut 1, Level 16-24 cm		1		1	1	3			2	5	7
E-1, Cut 1, Level 24-32 cm											
E-1, Cut 2, Level 16-24 cm										5	5
E-13, Cut 1, Level 8-16 cm	6					6					
E-3, Cut 1, Level 8-16 cm											
E-13, Cut 1, Level 16-24 cm											
E-25		3				3					
E-6, Cut 1, Level 8-16 cm										1	1
E-6, Cut 1, Level 16-24 cm					2	2					
E-30, Cut 1, Level 24-32 cm											
E-30, Cut 1, Level 32-40 cm											
E-9, Cut 2, Level 0-8 cm				1		1				1	1
E-5, Cut 1, Level 8-16 cm											
E-9, Cut 2, Level 8-16 cm											
E-30, Cut 1, Level 40-48 cm											
E-3, Cut 1, Level 16-24 cm											
E-1, Cut 2, Level 24-32 cm											
E-12, Cut 1, Levels Combined											
E-14, Test											
Other	1	6	4	7	4	22					
Total	12	17	7	20	11	67	9	12	17	204	242

TABLE 35.—*Frequency of rim, base, and vessel shapes of Yochó Plain at sites of the Taruma Phase*

Sites in seriated sequence (fig. 101)	Vessel Form 1	Vessel Form 2	Vessel Form 3	Vessel Form 4	Vessel Form 5	Vessel Form 6	Vessel Form 7	Unclassified	Total rims per level	Base Form A	Base Form B	Base Form C	Base Form D	Total bases per level
E-11, Surface and Tests		1		3				1	5					
E-30, Cut 1, Level 8-16 cm														
E-19, Cut 2, Level 0-8 cm		2		1				1	4	1				1
E-19, Cut 2, Level 8-16 cm		3	3						6	1	1			2
E-19, Cut 1, Level 0-8 cm			1				1		2	2	1			3
E-19, Cut 2, Level 16-24 cm		4					1		5	1	1			2
E-17, Cut 1, Level 8-16 cm		2		1			+		3					
E-9, Cut 1, Level 0-8 cm							+			1	1			2
E-9, Cut 1, Level 8-16 cm		2					2	1	5	1	1			2
E-7, Cut 1, Level 0-8 cm														
E-9, Cut 1, Level 16-24 cm		1	1	2		6			10	6	2			8
E-22, Test B		3							3					
E-16, Cut 2, Level 0-8 cm														
E-19, Cut 1, Level 8-16 cm		3						1	4	1				1
E-19, Cut 2, Level 24-32 cm		6					+		6	2	3	1		6
E-16, Cut 2, Level 8-16 cm		1			1			1	3	1				1
E-1, Cut 2, Level 8-16 cm		1	1	5	1	1	1	2	12	2	1	1		4
E-9, Cut 1, Level 24-32 cm		4	1	1	2	5	2	1	16	3	1	1		5
E-22, Test A		1		2					3	2		1		3
E-18				1					1	1				1
E-3, Cut 2, Level 8-16 cm			1			1			2					
E-7, Cut 1, Level 8-16 cm		1	2	1	1				5	3		1		4
E-29		1							1					
E-3, Cut 2, Level 16-24 cm		1	2		1	1	+	1	6	1	1			2
E-10, Cut 1, Level 0-8 cm		1	2	2		1		1	7					
E-10, Cut 1, Level 8-16 cm		2	4		1				7	1	1			2
E-24, Cut 1, Level 8-16 cm		8	1	2	1				12					
E-30, Cut 1, Level 16-24 cm			2		1		+	1	4	1			1	2
E-15, Cut 1, Level 8-16 cm		1	5	2		1	+		9		1		1	2

E-7, Cut 1, Level 16-24 cm		1	1		1				3						
E-23	1			1	1	1			4	1					1
E-24, Cut 1, Level 16-24 cm		5				1		1	7	2	9				11
E-24, Cut 1, Level 24-32 cm		2			1				3		1				1
E-21		3	1	3	1	1	+		9	1	3				4
E-13, Cut 1, Level 0-8 cm		2	1		1		1		5		1				1
E-10, Cut 1, Level 16-24 cm			1	2			1		4		1				1
E-1, Cut 1, Level 8-16 cm	1	1		1	2		+		5		1				1
E-4, Surface and Test		1	1	2			+	1	5						
E-7, Cut 2, Level 0-8 cm		2					+		2		2				2
E-7, Cut 2, Level 8-16 cm		3					+	1	4		3				3
E-16, Cut 1, Level 8-16 cm		2					+	1	3	1					1
E-7, Cut 2, Level 16-24 cm		4		1	3		3		11		2			1	3
E-1, Cut 1, Level 16-24 cm		1		1		2	1	1	6	9	5				14
E-1, Cut 1, Level 24-32 cm	1	2				1	1		5		4				4
E-1, Cut 2, Level 16-24 cm	1	11		5		1		2	20	5	5				10
E-13, Cut 1, Level 8-16 cm		2		1	1		+		4	1	4			1	6
E-3, Cut 1, Level 8-16 cm					1		+		1	1					1
E-13, Cut 1, Level 16-24 cm		1		2	1				4	3	2				5
E-25		3		1			+	1	5	1	2				3
E-6, Cut 1, Level 8-16 cm		5						3	8	1					1
E-6, Cut 1, Level 16-24 cm		4		3				2	9	1					1
E-30, Cut 1, Level 24-32 cm		3					+		3	1					1
E-30, Cut 1, Level 32-40 cm	2	8			2		+	3	15	2	3			1	6
E-9, Cut 2, Level 0-8 cm		5		1	1		1	1	9	1					1
E-5, Cut 1, Level 8-16 cm		1		1		1			3						
E-9, Cut 2, Level 8-16cm		8							8	3					3
E-30, Cut 1, Level 40-48 cm		5					+	1	6	1	3				4
E-3, Cut 1, Level 16-24 cm		3		1	1		+		5		1				1
E-1, Cut 2, Level 24-32 cm		5					2	1	8	2				1	3
E-12, Cut 1, Levels combined		1		3			+		4	2					2
E-14, Test															
Other	2	27	9	14	6	6		7	71						
Total	8	170	40	66	32	30	17	37	400	70	67	5	6	148

+ = Body sherds indicative of presence of Form 7.

TABLE 36.—*Frequency of stone artifacts by site and rock material at sites of the Rupununi Phase*

Artifact type	R-5								R-6								R-7								R-8							
	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total
Abrader?																																
Anvil										1						1																
Ax									1	1	1					3																
Bowl									1							1																
Chopper																	1							1								
Hammerstone		1						1		2						2																
Hoe	3							3	16							16	7							7	1							1
Mano										2						2										1						1
Metate									1	1			1			3																
Shaft polisher										1						1																
Total	3	1						4	19	8	1		1			29	8							8	1	1						2
Core																										1						1
Flake	2		1					3																	3			1				4
Natural stone																																

Artifact type	R-9								R-19								R-20 Cave 4								R-26							
	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total
Abrader?																		1						1								
Anvil																																
Ax											1					1																
Bowl									1							1																
Chopper																																
Hammerstone														2	1	3																
Hoe	2							2				1				1																
Mano																																
Metate																																
Shaft polisher																																
Total	2							2	1		1	1		2	1	6		1						1								
Core						1		1																								
Flake	3			2				5	2		1	2		1	1	7															1	1
Natural stone																		1						1								

TABLE 36.—*Frequency of stone artifacts by site and rock material at sites of the Rupununi Phase*

Artifact type	R-27								R-28								R-29								R-30							
	Syenite	Qartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total
Abrader?	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Anvil	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Ax	----	----	2	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	1	----	----	----	2
Bowl	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Chopper	----	----	----	1	----	----	----	1	----	----	----	2	----	----	----	2	----	----	----	1	----	----	----	1	1	----	----	----	----	----	----	1
Hammerstone	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Hoe	----	----	----	2	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Mano	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	1	----	----	----	----	----	----	----	----
Metate	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Shaft polisher	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Total	----	----	2	3	----	----	----	5	----	----	----	2	----	----	----	2	----	1	----	1	----	----	----	2	1	----	1	1	----	----	----	3
Core	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Flake	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Natural stone	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Artifact type	R-31								R-32								R-36								R-40								Provenience indefinite								Artefact totals
	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	Syenite	Quartzite	Sandstone	Felsite	Granite	Chalcedony	Miscellaneous	Total	
Abrader?	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
Anvil	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	1	2
Ax	---	---	---	---	---	---	---	---	---	2	1	---	---	---	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	1	---	---	2	---	---	---	---	2	14
Bowl	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2
Chopper	---	---	---	2	---	---	---	2	---	---	---	1	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	9
Hammerstone	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	1	7
Hoe	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	32
Mano	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5
Metate	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3
Shaft polisher	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
Total	---	---	---	2	---	---	---	2	---	2	1	1	---	---	1	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	1	---	2	2	---	---	---	---	4	76
Core	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2
Flake	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3	---	---	---	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	24
Natural stone	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2

Table 37.—*Frequency of pottery types from surface collections at sites of the Rupununi Phase*

Pottery types	R-2		R-3		R-5		R-5: Cut 1		R-6		R-7		R-8		R-9		R-10		R-11		R-12	
	Surface		Surface		Surface		Level 0-8 cm.		Surface		Surface		Surface		Surface		Surface		Surface		Surface	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																						
Kanuku Plain	150	61.0	296	60.5	71	25.2	7	9.4	253	36.5	7	28.0	14	23.4	29	39.2			2		17	25.4
Rupununi Plain	84	34.1	193	39.3	208	73.8	62	84.0	429	61.6	18	72.0	42	70.0	44	59.4	2				50	74.6
Unclassified Cariapé Tempered	8	3.3			3	1.0			2	.2			4	6.6								
Unclassified Decorated:																						
Incised									4	.6					1	1.4						
White painted	4	1.6																				
Applique									5	.7												
Punctate																						
Red Film			1	.2			5	6.6	3	.4												
Trade pottery:																						
Taruma Phase:																						
Kanashen Incised																						
Onoro Stamped																						
Koriabo Phase:																						
Koriabo Incised																						
Koriabo Scraped																						
Totals	246	100.0	490	100.0	282	100.0	74	100.0	696	100.0	25	100.0	60	100.0	74	100.0	2		2		67	100.0

Pottery types	R-13		R-17		R-19		R-20		R-20		R-20		R-20		R-22		R-22		R-23		R-24	
	Surface		Surface		Surface		Cave 1		Cave 2		Cave 3		Cave 4		Surface		Test		Surface		Surface	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																						
Kanuku Plain	8	50.0	122	55.8	140	32.5	21	41.2	27	28.8	29	20.8	80	37.0	216	63.5	75	71.4	89	77.4	30	73.2
Rupununi Plain	8	50.0	97	44.2	244	56.5	30	58.8	67	71.2	110	79.2	136	63.0	122	35.9	30	28.6	26	22.6	11	26.8
Unclassified Cariapé Tempered					48	11.0																
Unclassified Decorated:																						
Incised																						
White painted																						
Applique																						
Punctate															1	.3						
Red Film															1	.3						
Trade Pottery:																						
Taruma Phase:																						
Kanashen Incised																						
Onoro Stamped																						
Koriabo Phase:																						
Koriabo Incised																						
Koriabo Scraped																						
Totals	16	100.0	219	100.0	432	100.0	51	100.0	94	100.0	139	100.0	216	100.0	340	100.0	105	100.0	115	100.0	41	100.0

TABLE 37.—*Frequency of pottery types from surface collections at sites of the Rupununi Phase*—Continued

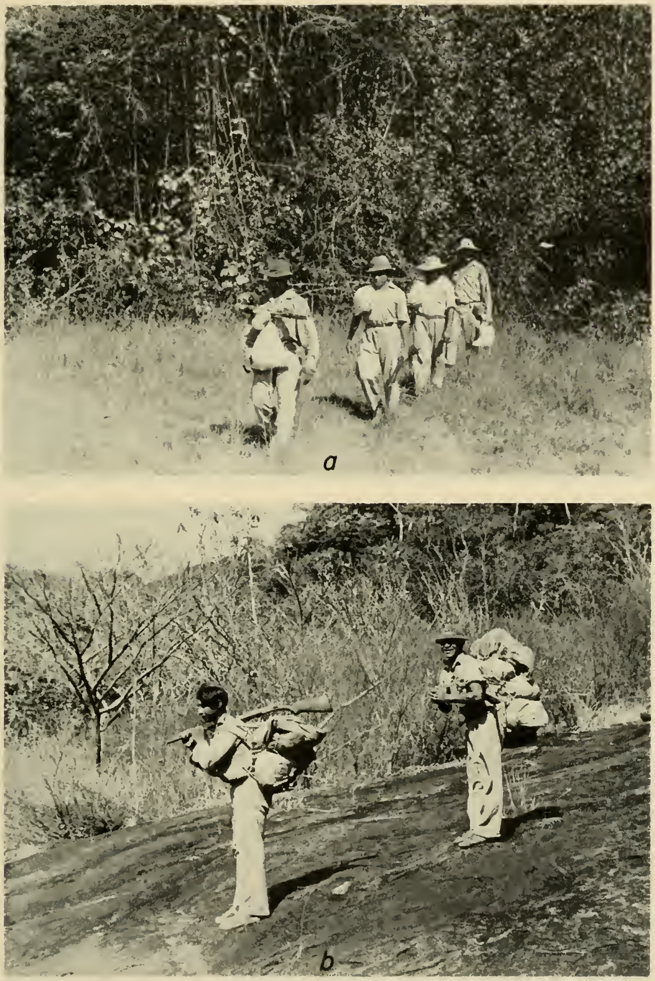
Pottery types	R-25		R-26		R-27		R-28		R-29		R-30		R-31		R-32		R-36		R-36		R-37		R-40	
	Surface		Surface		Surface		Surface		Surface		Surface		Surface		Surface		Surface Area A		Surface Area B		Surface		Surface	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Plain types:																								
Kanuku Plain	137	88.4	116	87.3	903	59.6	329	68.1	380	74.0	100	85.5	345	71.0	359	74.4	131	53.3	138	35.6	70	59.7	13	23.3
Rupununi Plain	18	11.6	17	12.7	610	40.4	154	31.9	133	25.8	17	14.5	140	29.0	124	25.6	115	46.7	250	64.4	47	40.3	23	41.1
Unclassified Cariapé Tempered																								
Unclassified Decorated:																								
Incised																							2	3.6
White painted																							8	14.1
Applique																								
Punctate																							2	3.6
Red Film									1	.2														
Trade Pottery:																								
Taruma Phase:																								
Kanashen Incised																							2	3.6
Onoro Stamped																							1	1.8
Koriabo Phase:																								
Koriabo Incised																							1	1.8
Koriabo Scraped																							4	7.1
Totals	155	100.0	133	100.0	1513	100.0	483	100.0	514	100.0	117	100.0	485	100.0	483	100.0	246	100.0	388	100.0	117	100.0	56	100.0

TABLE 38.—*Frequency of rim, base, and vessel shapes of Kanuku Plain at sites of the Rupununi Phase*

Site	Vessel Form 1	Vessel Form 2	Vessel Form 3	Vessel Form 4	Vessel Form 5	Vessel Form 6	Unclassified	Rim total	Total sherds from site	Base Form A	Base Form B	Base Form C	Total base
Habitation sites in seriated sequence (fig. 125)													
R-20, Cave 3			4	1				5	139				
R-12									67				
R-5	2	1			2			5	282	3			3
R-8					3			3	60				
R-7									25				
R-20, Cave 2	1		1	1				3	94				
R-36 B	7	1	1	1	6	1	2	19	388				
R-20, Cave 4									216				
R-19									432				
R-6	15	1	16	2	4		1	39	696	12	1		13
R-9	1							1	74	2			2
R-20, Cave 1		2	4		3			9	51				
R-40	2	1			3		1	7	56				
R-13									16				
R-36 A	3	5	1	3	5	2	3	22	246	3			3
R-17		1	2	1				4	219				
R-27	9	13		12				34	1,513		3		3
R-37	5			1	1			7	117				
R-3	2	6	4	3				15	490	4			4
R-2				2				2	246				
R-22	15			2	10	4	4	35	445	3	1	2	6
R-28	6	1		9	3			19	483	1	1		2
R-31	3	3	1	6	2	1		16	485	4	3		7
R-24		1		1		1		3	41				
R-29	10	1		1				12	514	2	1		3
R-32	7	6	1	6	3		1	24	483	14	6		20
R-23		1						1	115				
R-30	2			2				4	117	2			2
R-26	1					1		2	133				
R-25		12						12	155			1	1
Total	91	56	35	54	45	10	12	303		50	16	3	69
Cemetery sites													
R-1			1					1					
R-14			2					2					
R-15			1					1					
R-34, Shelter 1		3	1		1		1	6					
R-35			1			1		2					
Total		3	6		1	1	1	12					
Ceremonial sites													
R-21	1							1					
R-38	2							2					
Total	3							3					

TABLE 39.—*Frequency of rim, base, and vessel shapes of Rupununi Plain at sites of the Rupununi Phase*

Site	Vessel Form 1	Vessel Form 2	Vessel Form 3	Vessel Form 4	Vessel Form 5	Vessel Form 6	Unclassified	Rim total	Total sherds from site	Base Form A	Base Form B	Base Form C	Total base
Habitation sites in seriated sequence													
R-20, Cave 3	1		5		2			8	139				
R-12									67				
R-5		4				2	1	7	282	5			5
R-8	1	2			1		1	5	60				
R-7					1			1	25				
R-20, Cave 2	1	2	8					11	94			1	1
R-36 B	10		9		4			23	388	3	1		4
R-20, Cave 4			12				1	13	216			1	1
R-19	3		9				3	15	432	3			3
R-6	6	22	12	5	4	1	2	52	696	12			12
R-9		1						1	74				
R-20, Cave 1	4		2					6	51	1		2	3
R-40		2	1	1	1		6	11	56	3			3
R-13									16				
R-36 A	7	8			4			19	246	4			4
R-17		2	2					4	219	1			1
R-27	6	15						21	1,513	2	2		4
R-37	4			1	1			6	117				
R-3		1	4					5	490	1			1
R-2	1				1	1(?)		3	246	1			1
R-22	10	1	3		5		1	20	445	2		1	3
R-28	3							3	483	1			1
R-31	5	8		2	1(?)			16	485	7	1		8
R-24			1					1	41				
R-29	4				1			5	514	1			1
R-32	2			1	1		1	5	483	2	2		4
R-23									115				
R-30	1							1	117				
R-26				1				1	133				
R-25									155				
Total	69	68	68	11	27	4	16	263		49	6	5	60
Cemetery sites													
R-1													
R-14													
R-15													
R-16			1					1					
R-18			2					2					
R-34, Shelter 1	1	1			2			4					
R-34, Shelter 2			1					1					
R-35	1		3			1		5					
Total	2	1	7		2	1		13					



Travel by foot on the Rupununi savanna. *a*, Emerging from the forest surrounding R–21. *b*, Descending the southern slope of the Kanuku Mountains.

Travel by horseback on the Rupununi savanna. *a*, Southern Pakaraima Mountains en route to Tipuru. *b*, Fording a marsh at the foot of the Pakaraima Mountains.

Travel by Fordson truck and Land Rover on the Rupununi savanna. *a*, Testing a creek bed for fording. *b*, Stuck in a mudhole.

a

b

Old and new forms of transportation. *a*, Hauling Rupununi Phase jars from R–34 and R–35 on an ox cart. *b*, A British Guiana Airways C–47 plane at Gunn's Strip near the upper Essequibo River.

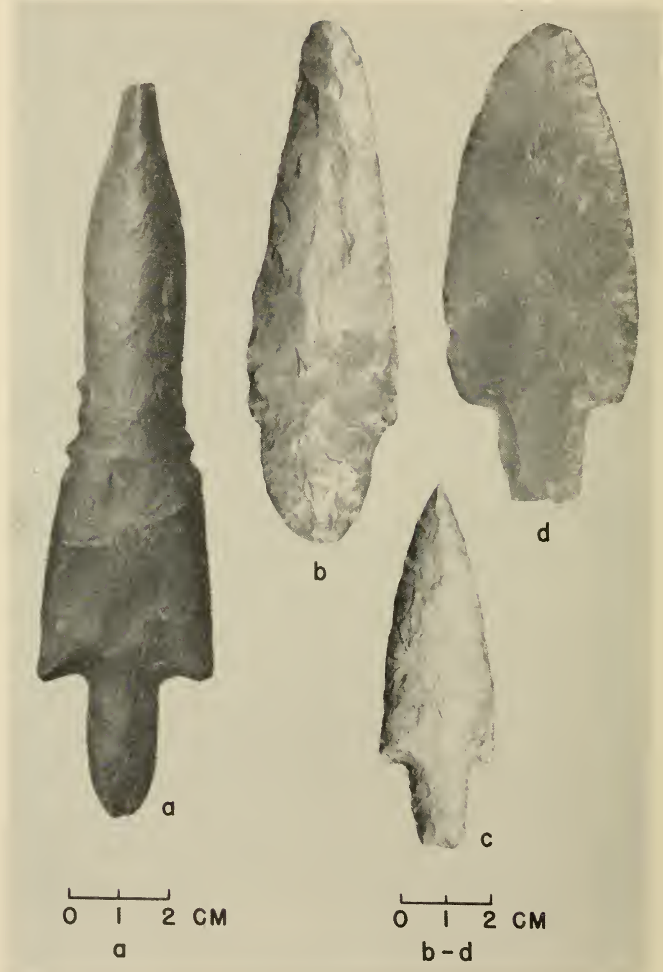
a

b

Expedition housing. *a*, The church-schoolhouse at Tipuru in the southern Pakaraima Mountains. *b*, British Guiana official Government Rest House at Koriabo Northwest District.

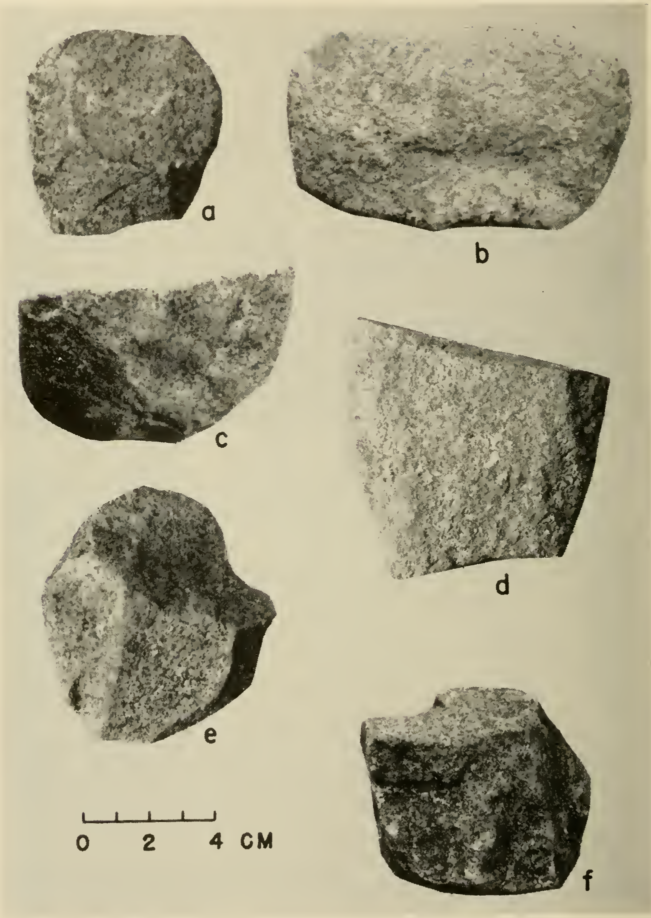
Facilities in the upper Essequibo. *a*, An overnight camp of waterproof nylon tarps and palm thatch shelter. *b*, Enjoying Wai Wai hospitality by eating pepper pot and cassava bread.

Travel by watercraft. *a*, A Wai Wai dugout on the Kassikaityu River. *b*, A Carib dugout on the Barima River.

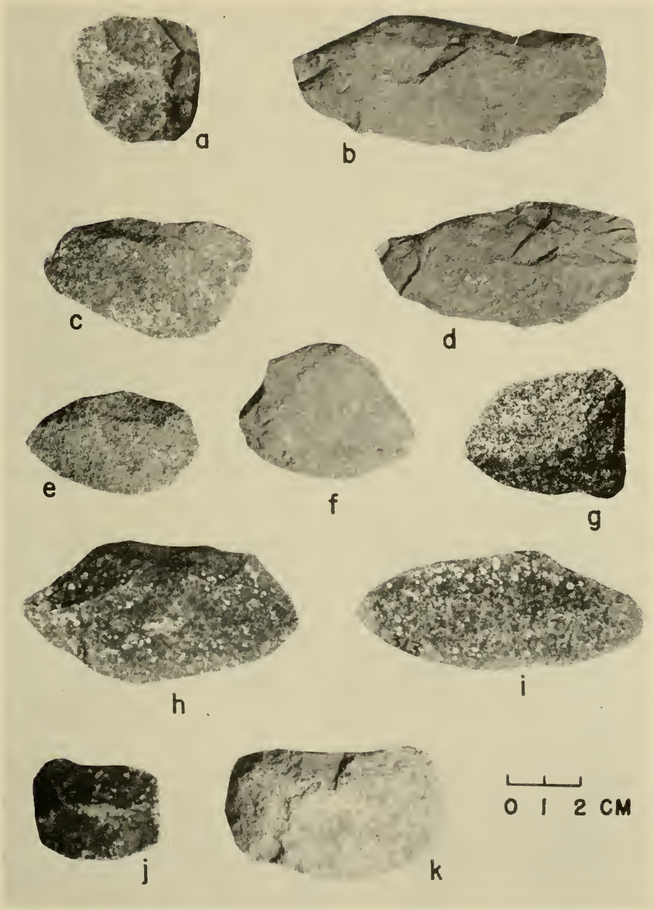


Projectile points of the preceramic, lithic horizon. *a*, Ireng River, Rupununi District. *b–d*, Cuyuni River, Mazaruni District.

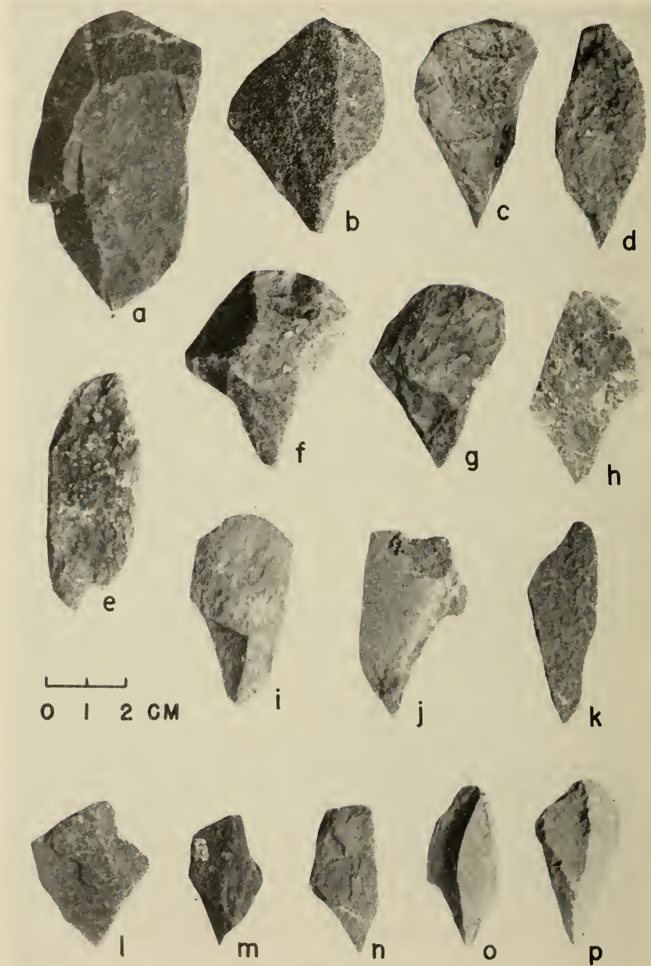
The Northwest lowlands. *a*, View of Kumaka Hill from Hosororo Hill across the lowlands bordering the Aruka River. *b*, View looking southeast from the summit of Hosororo Hill, with the Aruka River in the foreground.



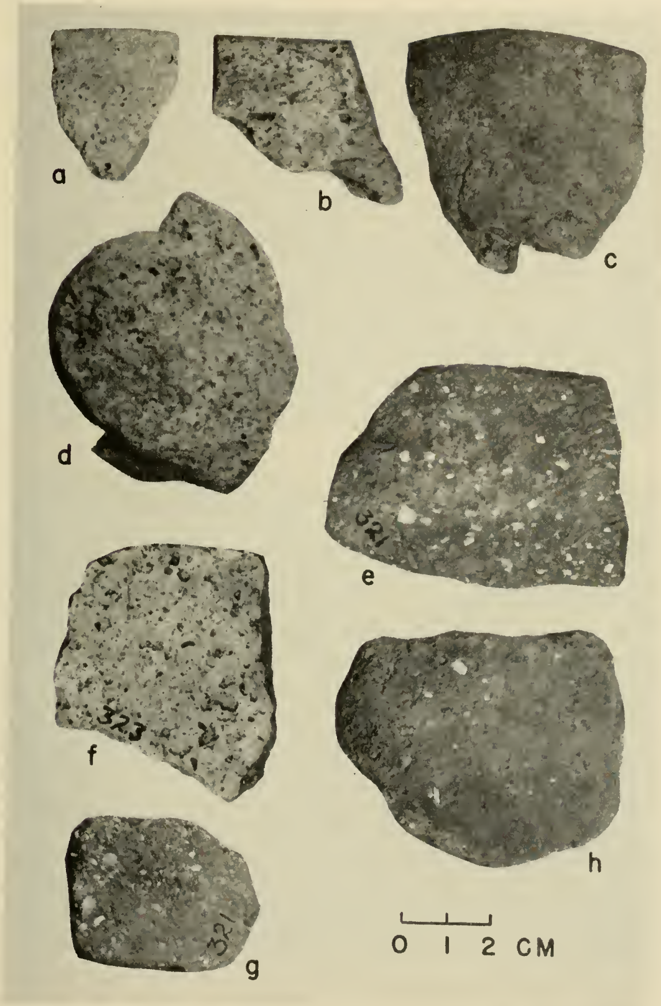
Choppers: percussion-made core tools of the Alaka Phase.



Blades: percussion-made flake tools of the Alaka Phase.



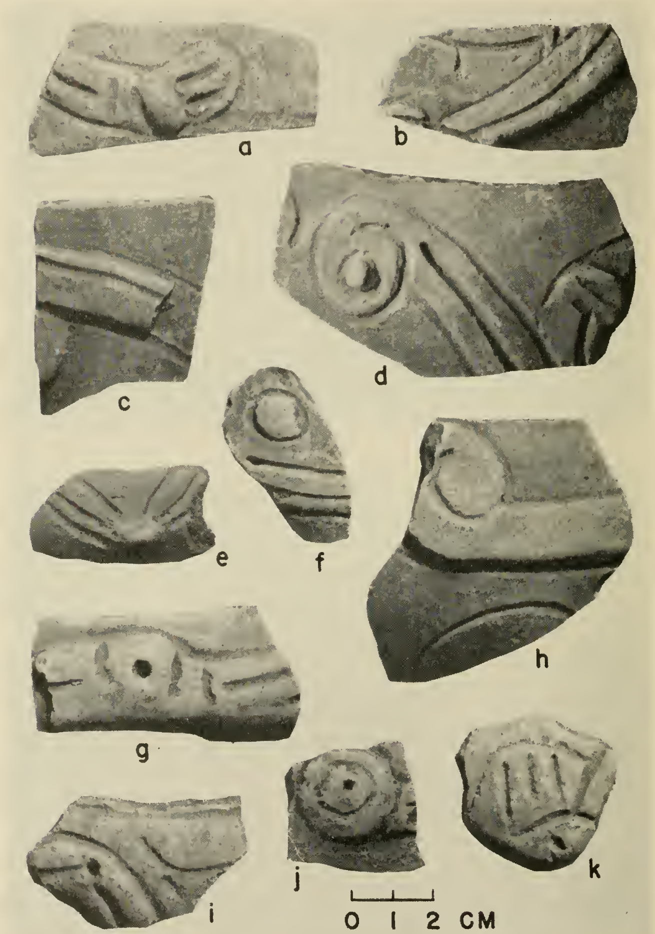
Picks: Percussion-made flake tools of the Alaka Phase. *a–h*, Large. *i–p*, Small.



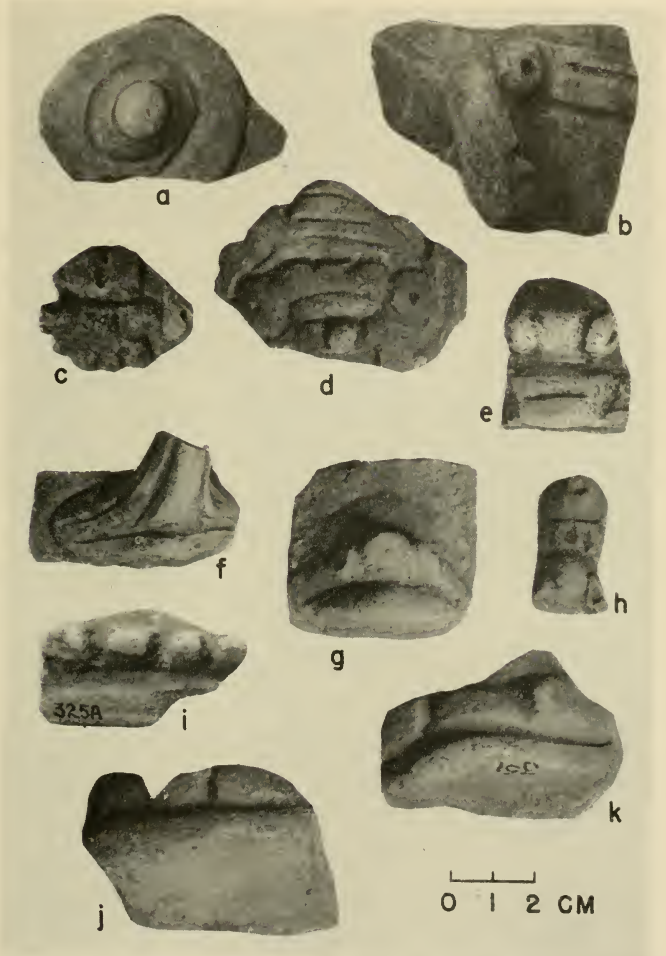
Type sherds of Wanaina Plain, Alaka Phase. Note the crushed shell temper visible on the surface of sherds *e*, *g*, and *h*, and the holes left from leached shell temper in *a*, *b*, *d*, and *f*.

M-1: Mabaruma Headquarters, a habitation site of the Mabaruma Phase. *a*, General view showing the main street and government buildings over the central part of the site. *b*, Excavation of Cut 1 in the front yard of the guest house. Osgood's excavations in 1944 were to the right of the two-story building.

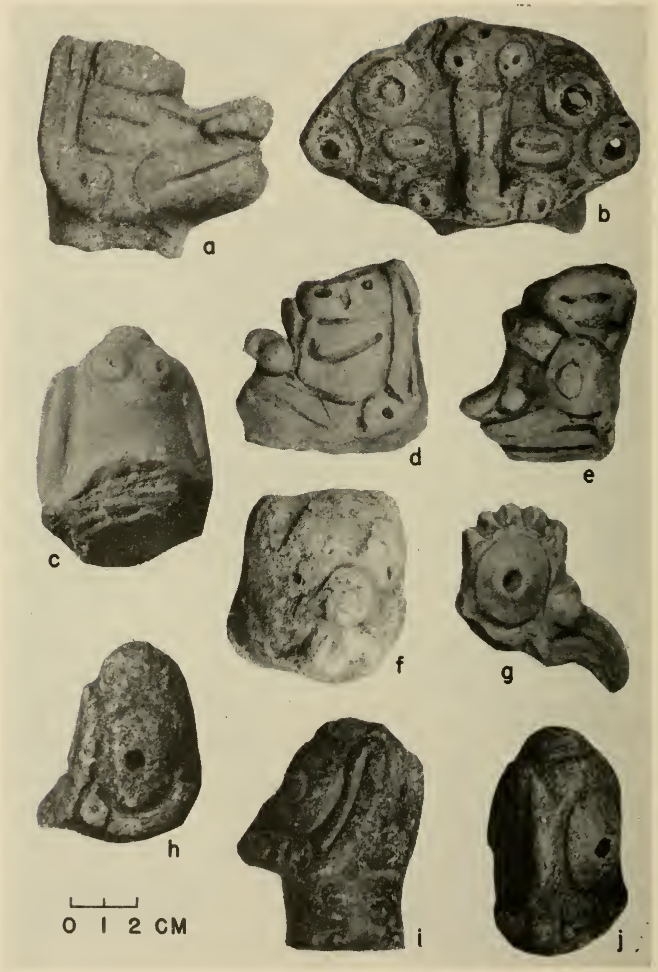
Habitation sites of the Mabaruma Phase. *a*, N-13: Hobodeia. *b*, N-14: Hobodeia School.



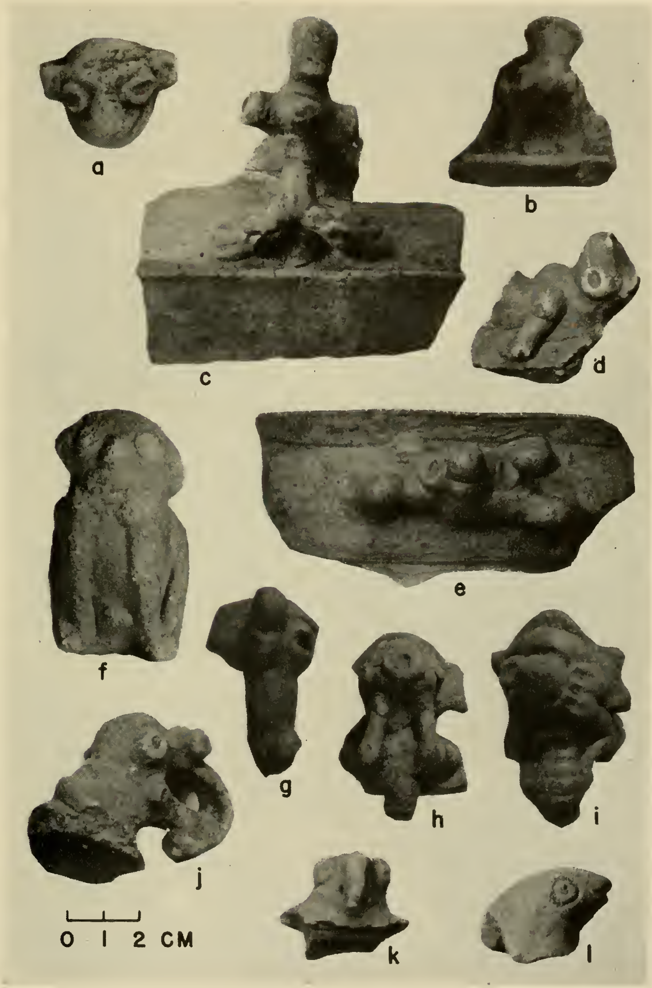
Type sherds of Akawabi Incised and Modeled, Motif 1: low relief, Mabaruma Phase.



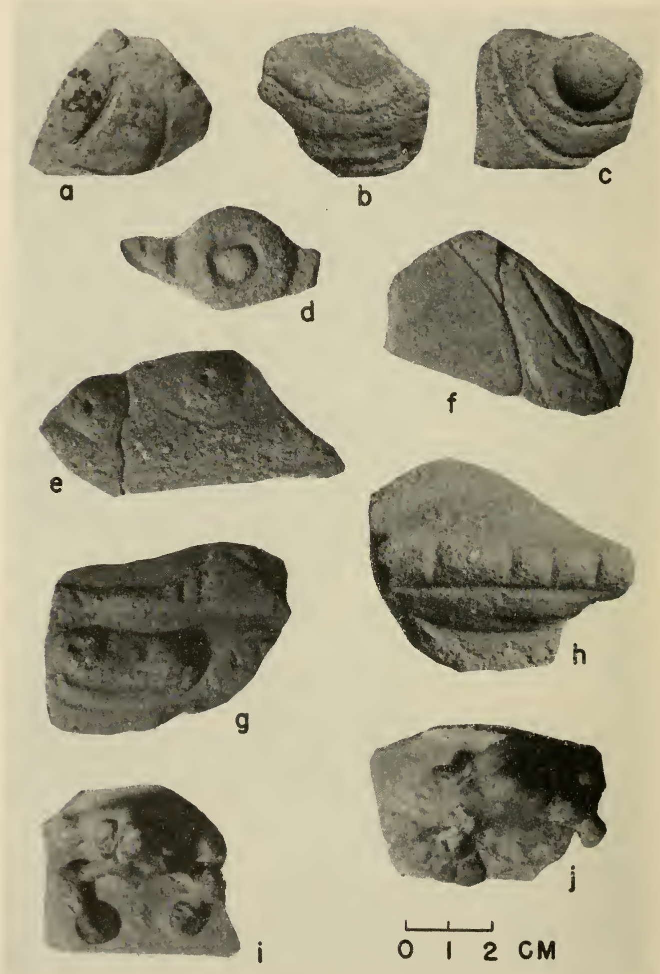
Type sherds of Akawabi Incised and Modeled Motif 2: high relief, Mabaruma Phase.



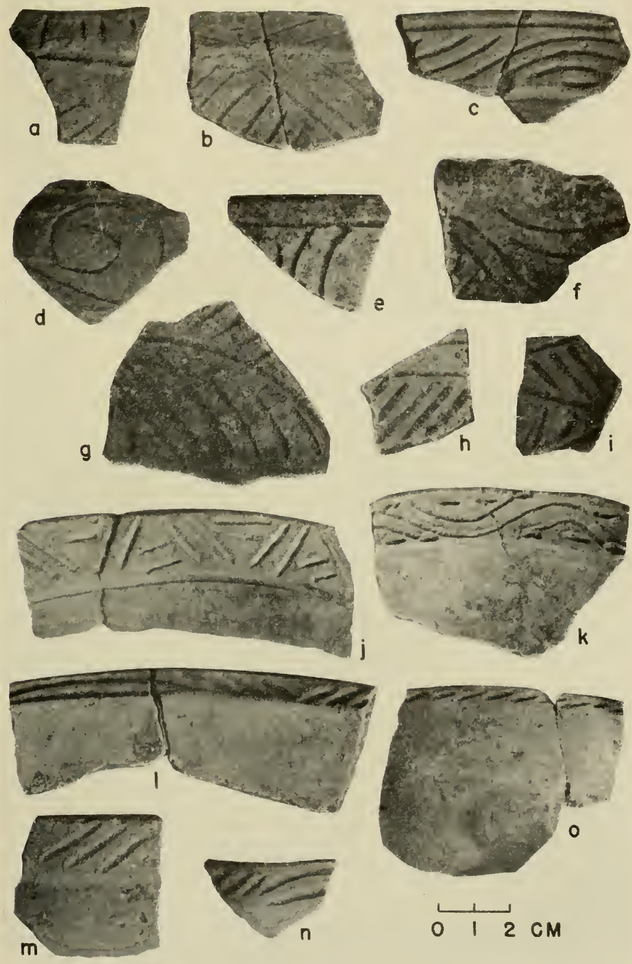
Type sherds of Akawabi Incised and Modeled, Motif 3: Barrancoid adornos, Mabaruma Phase.



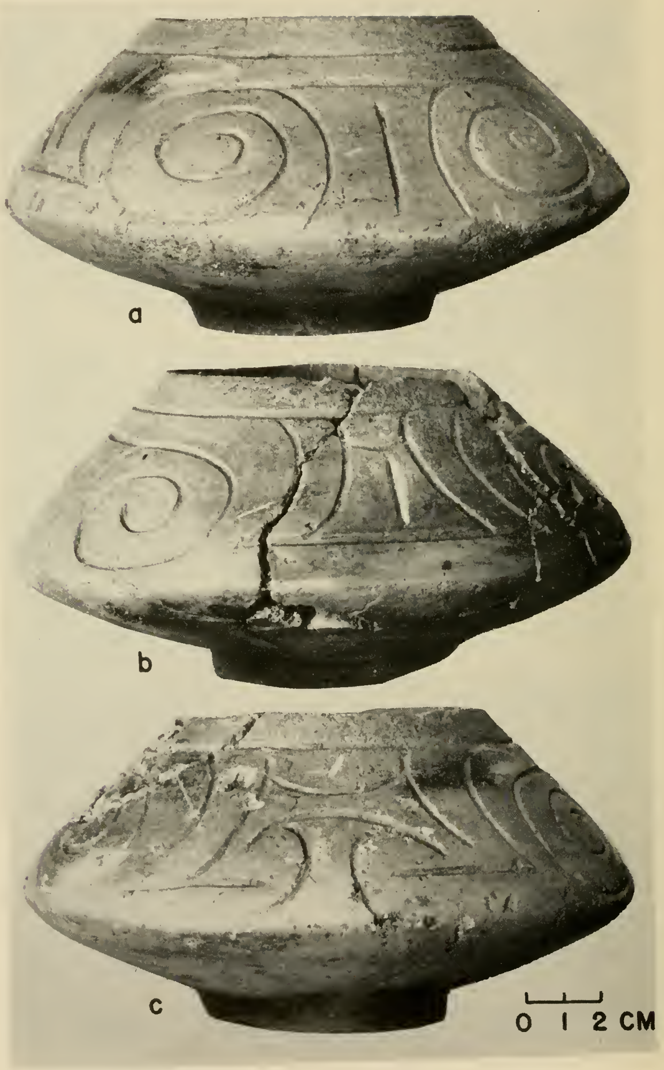
Type sherds of Akawabi Incised and Modeled, Motif 4: non-Barrancoid adornos, Mabaruma Phase.



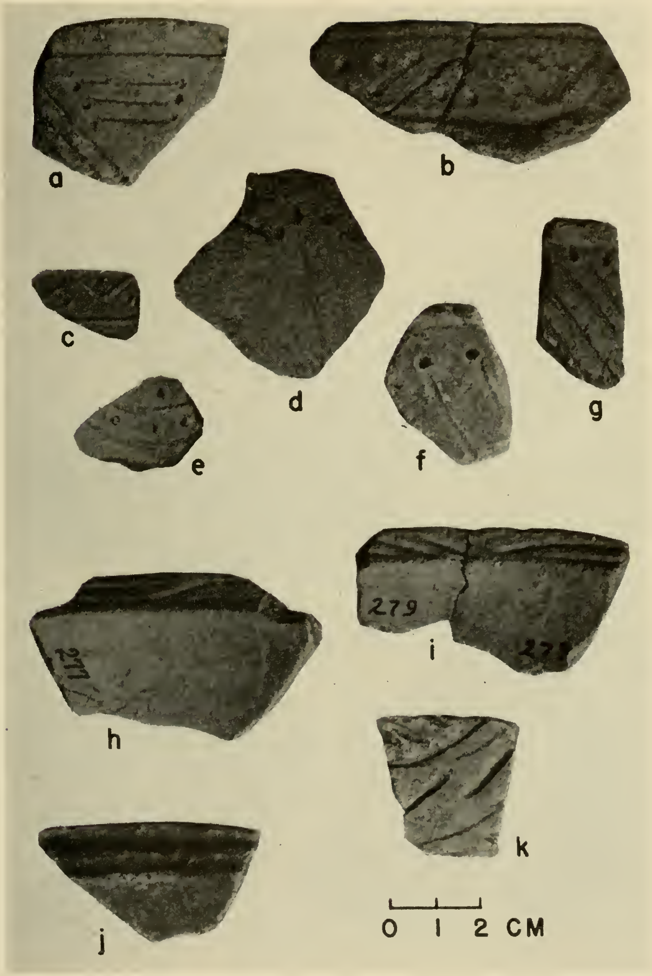
Sherds of Akawabi Incised and Modeled of the Mabaruma Phase recovered from sites of the Koriabo Phase. *a–f*, Motif 1: low relief. *g–h*, Motif 2: high relief. *i–j*, Motif 4: non-Barrancoid adornos.



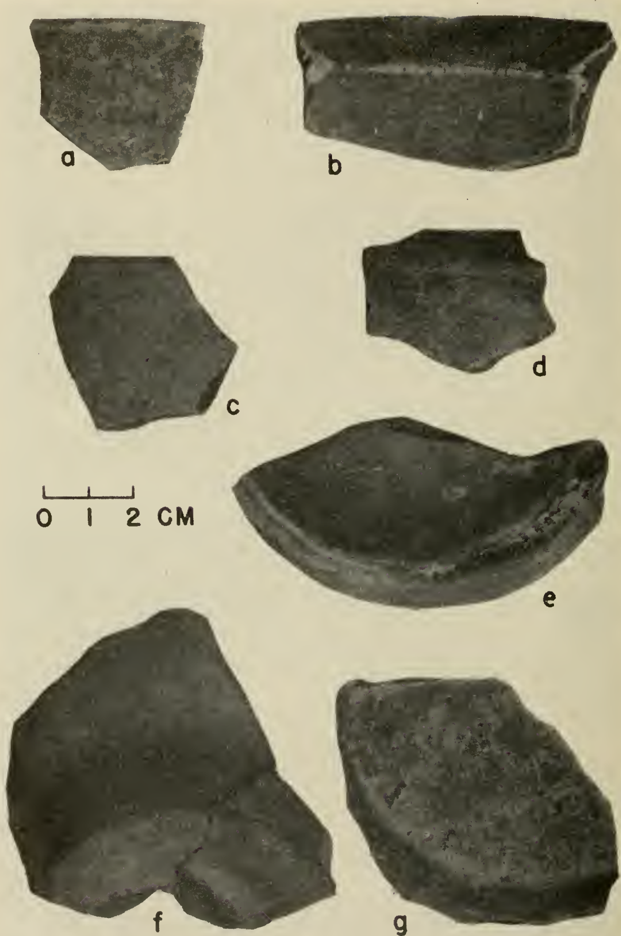
Type sherds of Aruka Incised, Mabaruma Phase. *a–b*, Motif 1: unzoned, rectilinear. *c–f*, Motif 2: unzoned, curvilinear. *g–i*, Motif 3: zoned incisions. *j–l*, Motif 4: bands of incised lines on interior of everted rims. *m–o*, Motif 5: lines on exterior of rims.



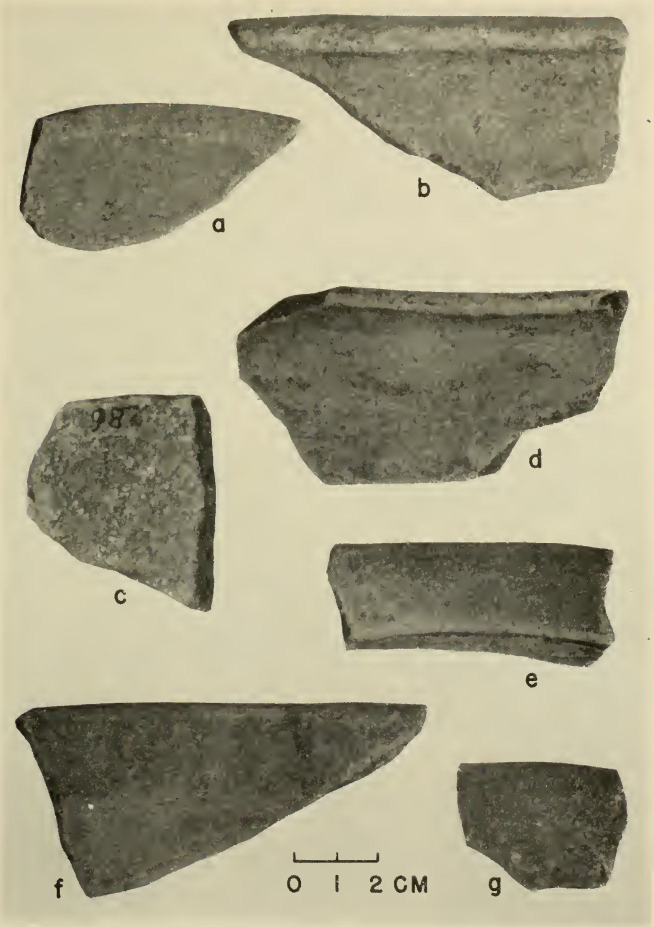
Aruka Incised bowl from M–1; Motif 2: unzoned, curvilinear.



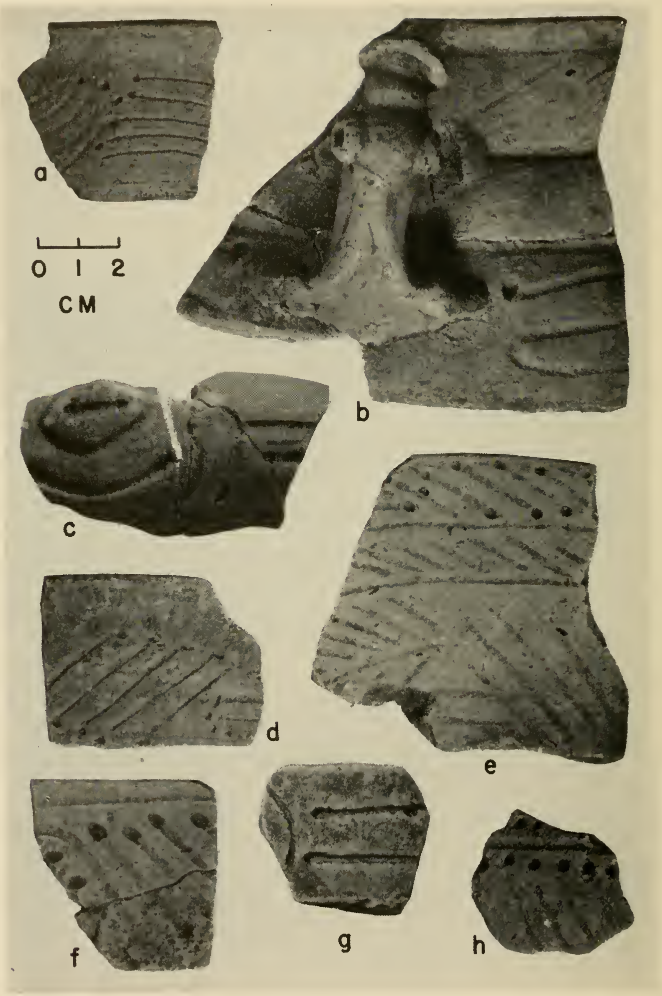
Sherds of Mabaruma Phase decorated types recovered from sites of the Koriabo Phase. *a–g*, Kaituma Incised and Punctate. *h–k*, Aruka Incised.



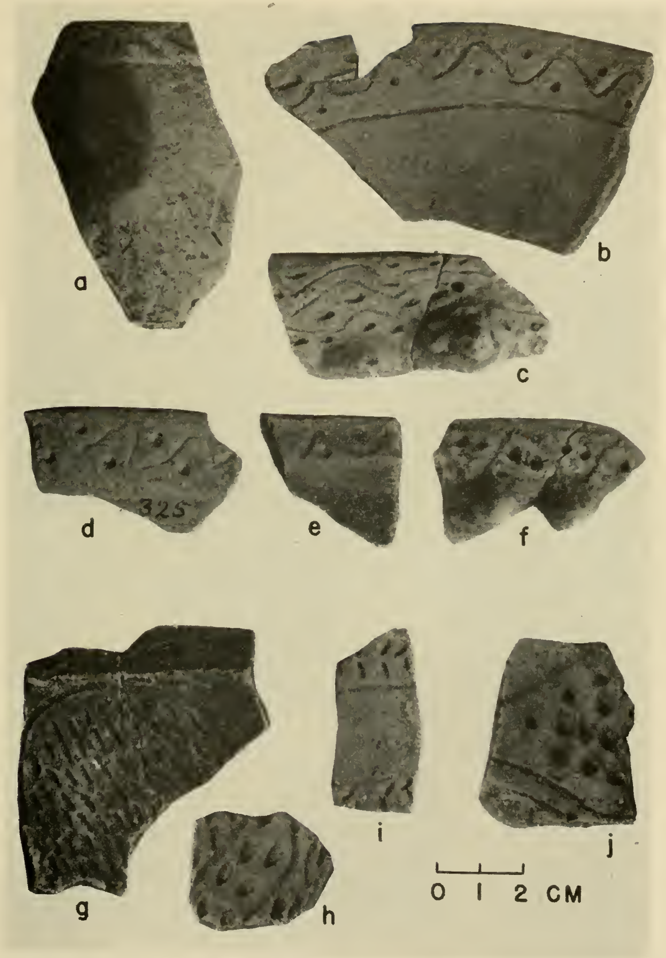
Type sherds of Hosororo Plain, Mabaruma Phase. *a–d*, Rims. *e–f*, Annular base. *g*, Flat pedestal base.



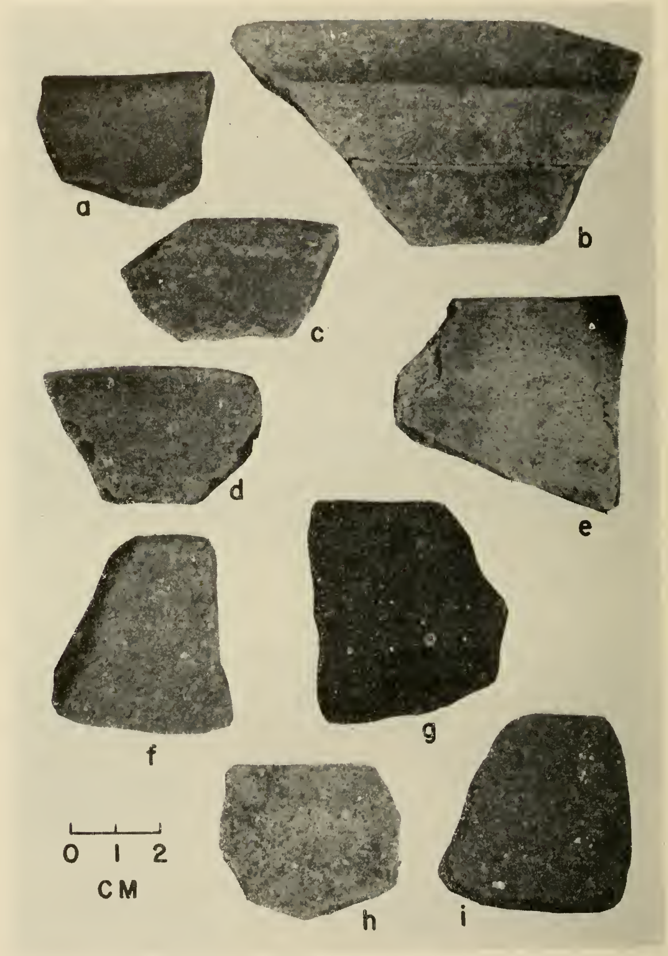
Type sherds of Hotokwai Plain, Mabaruma Phase.



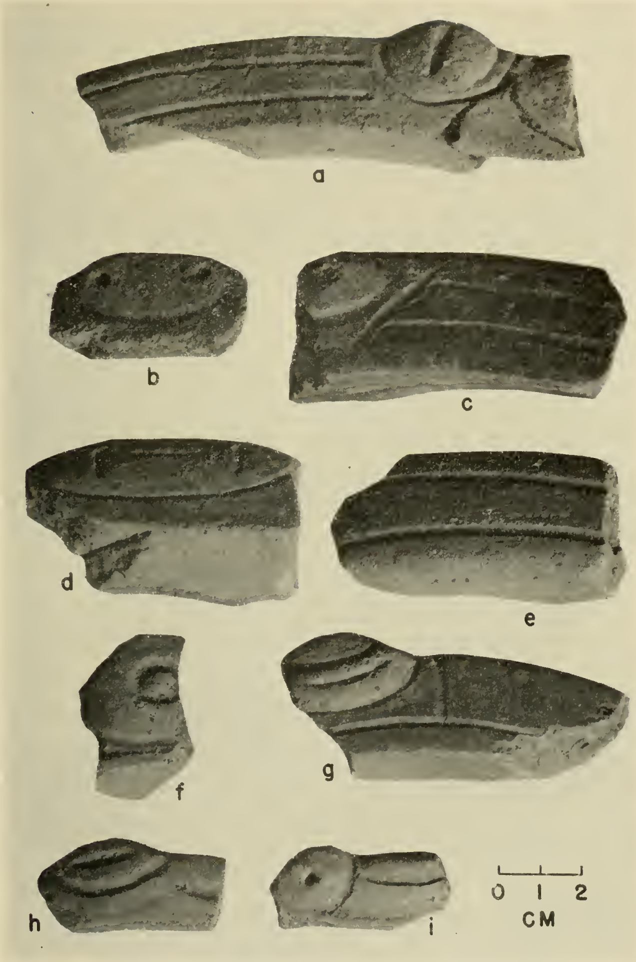
Type sherds of Kaituma Incised and Punctate, Mabaruma Phase. *a, c–h,* Motif 1: incised lines ending in punctates. *b,* Motif 1 combined with an adorno of Akawabi Incised and Modeled, Motif 4: non-Barrancoid adornos.



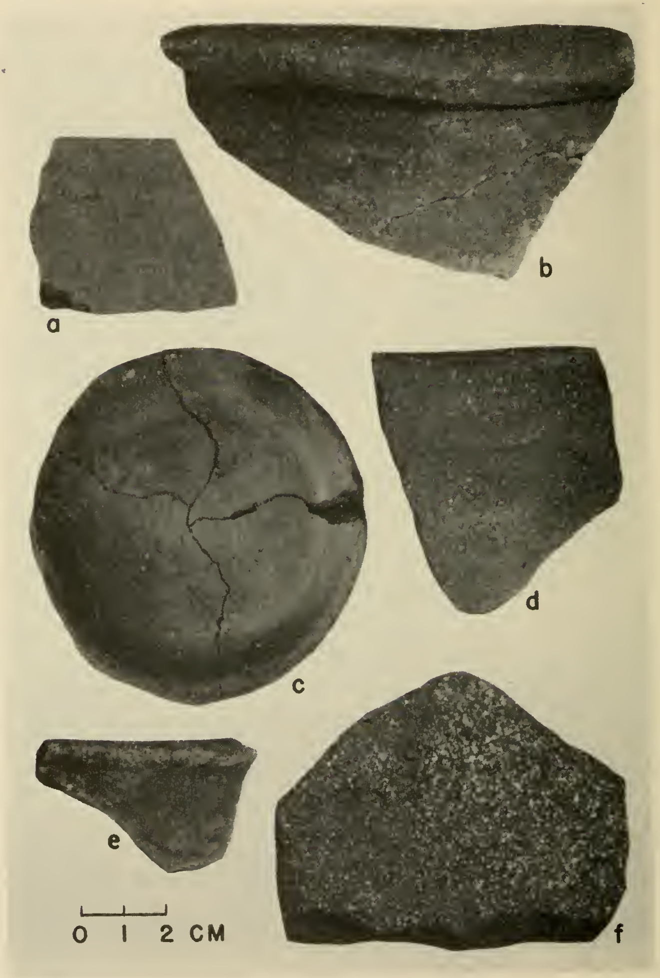
Type sherds of Kaituma Incised and Punctate, Mabaruma Phase. *a–f*, Motif 2: incised lines alternating with punctates. *g–j*, Motif 3: areas of punctates bounded or divided by incised lines.



Type sherds of Koberimo Plain, Mabaruma Phase. *a–e*, Rims. *b*, *g–i*, Particles of the mica temper sparkle on the surfaces.

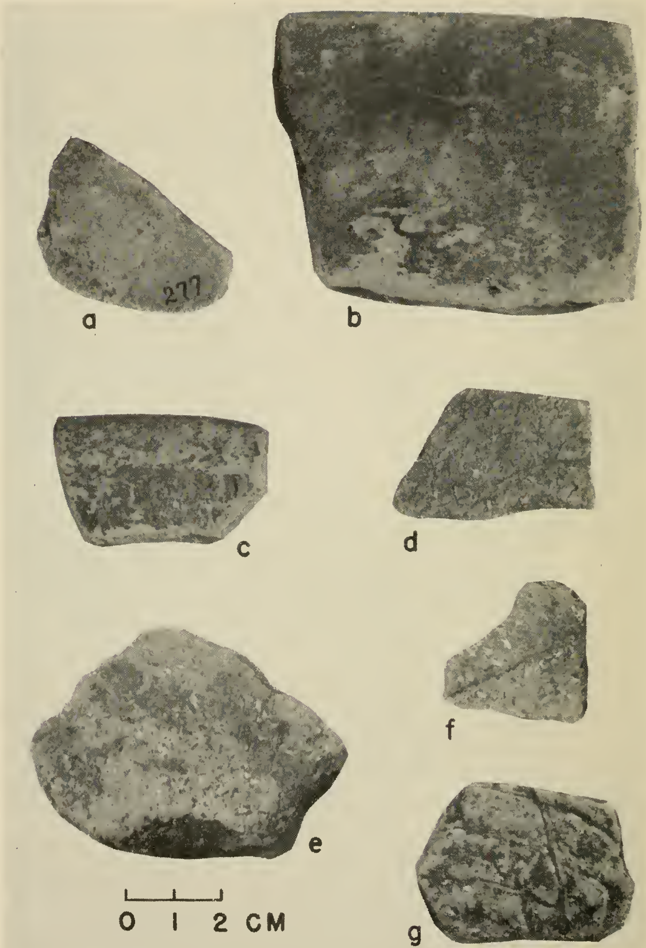


Type sherds of Mabaruma Incised, Mabaruma Phase.

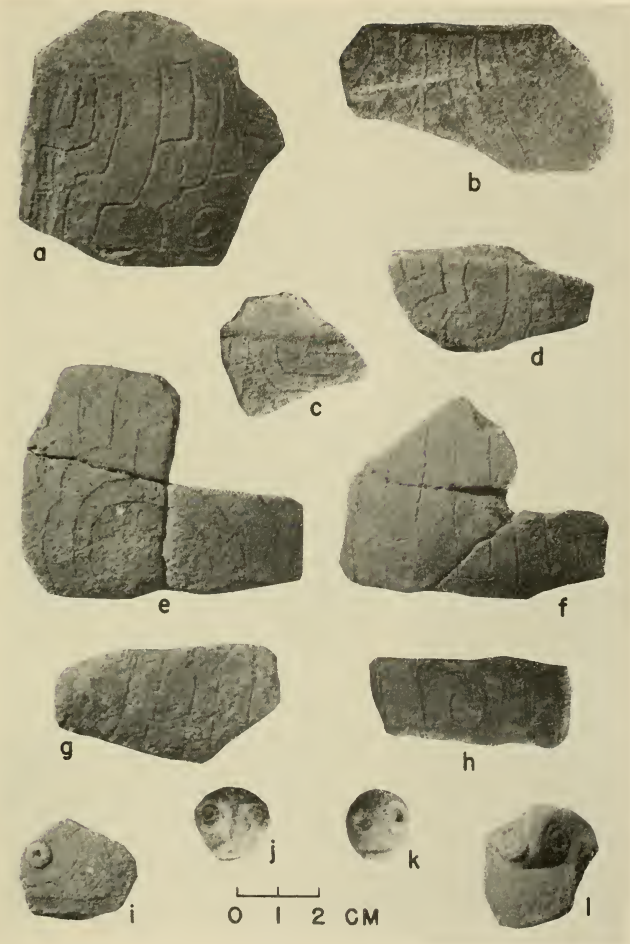


Type sherds of Mabaruma Plain, Mabaruma Phase. *a–b*, *d–e*, Rims. *c*, Annular base. *f*, Large particles of waterworn sand temper visible on surfaces.

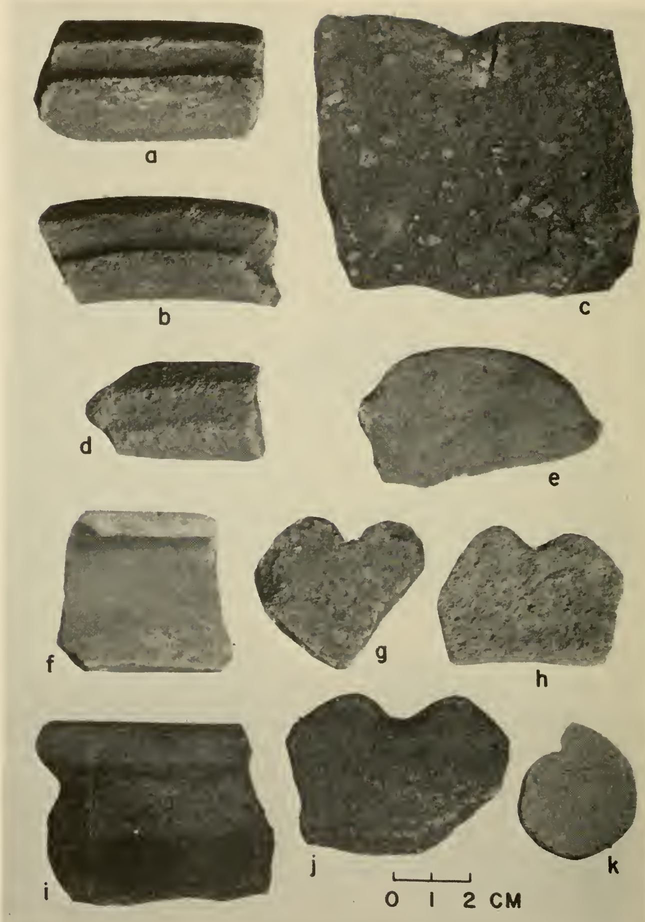
N–7: Warapoco Mission, a habitation site of the Koriabo Phase. *a*, View of the site from the water's edge. *b*, A boulder on the bank of Warapoco Creek at the foot of the site, used for grinding.



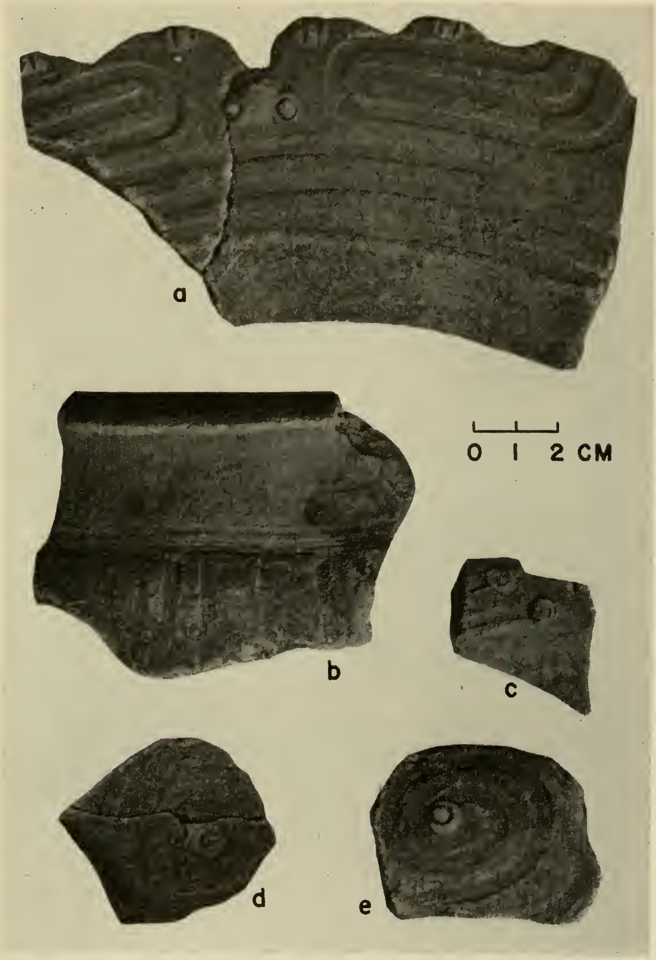
Type sherds of Barima Plain, Koriabo Phase. *a*, Body sherd. *b–e*, Rims. *d–g*, Cariapé temper visible on surfaces.



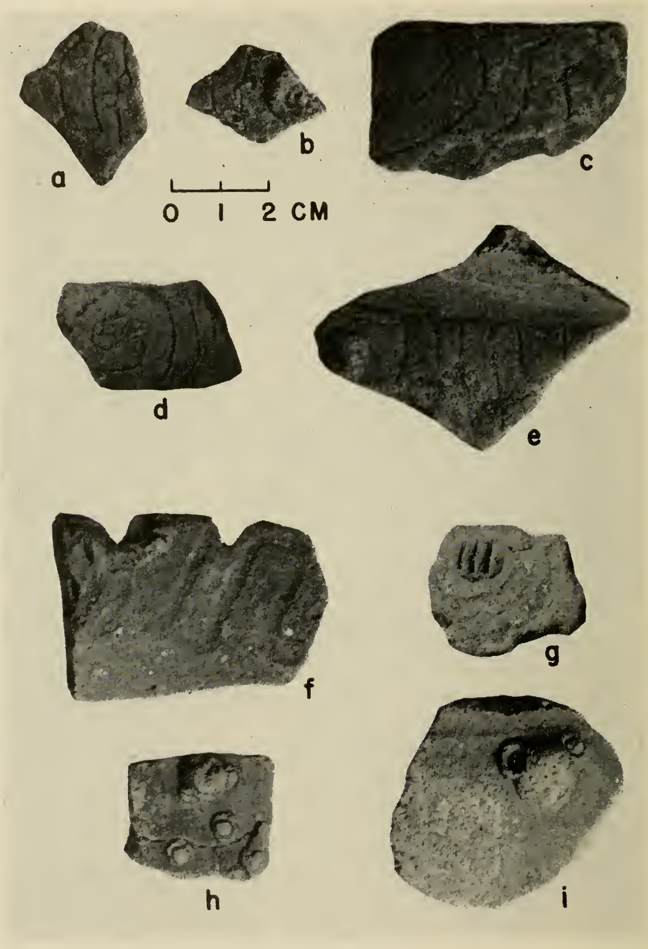
Type sherds of Koriabo Incised, Koriabo Phase.



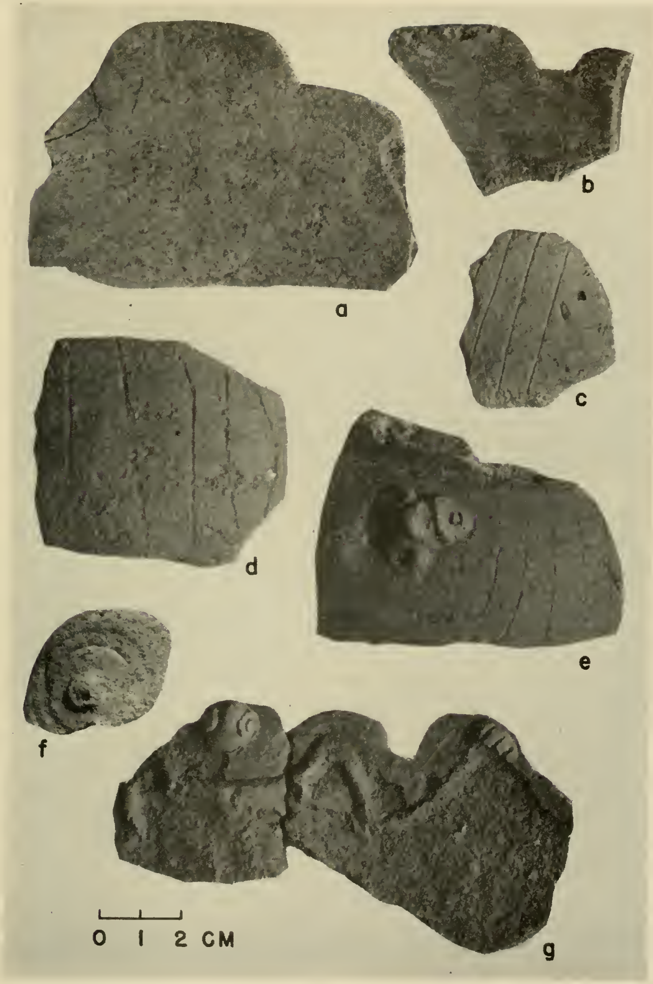
Type sherds of Koriabo Plain and Warapoco Plain, Koriabo Phase. *a–b*, *d*, *f*, *i*, Rims. *c*, Coarse waterworn sand temper particles. *e*, *g–h*, *j*, Lobed rims. *k*, Sherd showing coiling.



Type sherds of Koriabo Scraped, Koriabo Phase.

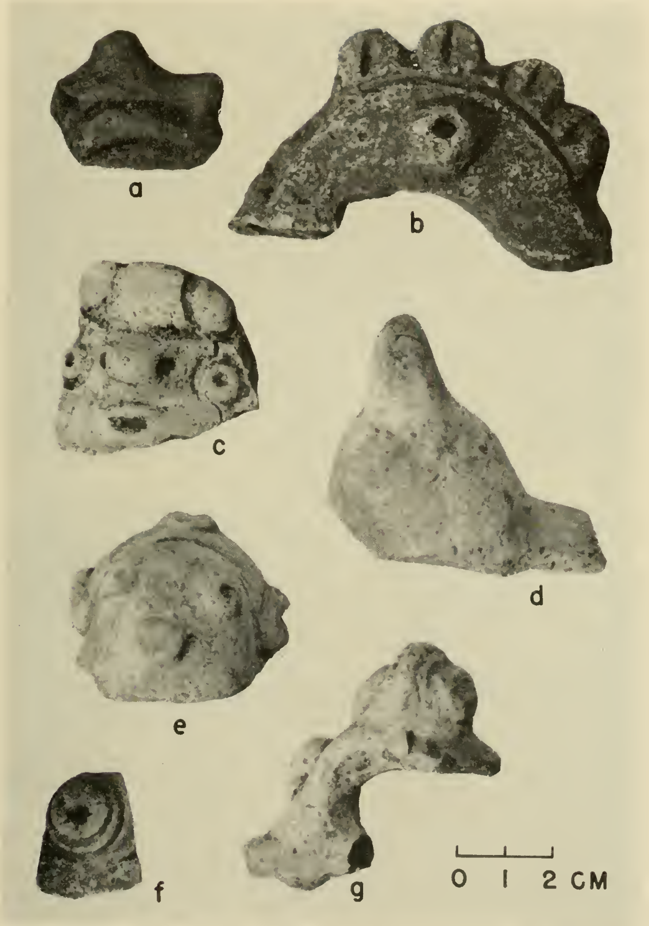


Sherds of Koriabo Phase decorated types recovered from sites of other Phases. *a–e*, Koriabo Incised sherds from sites of the Mabaruma Phase. *f–h*, Koriabo Scraped sherds from R–40 of the Rupununi Phase. *i*, Koriabo Incised sherd from R–40 of the Rupununi Phase.



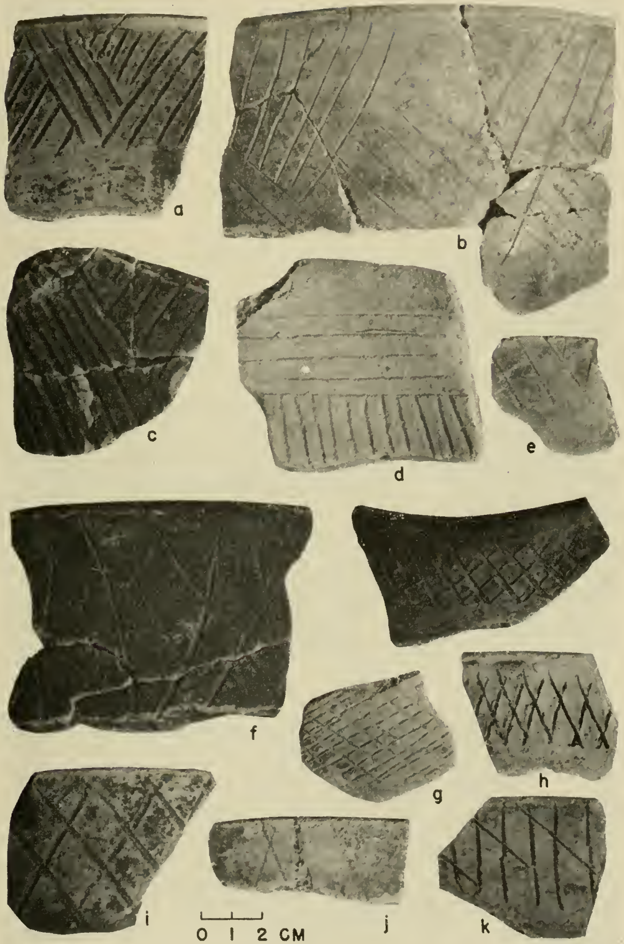
Sherds with Koriabo Phase types of decoration and form from the Charlesburg site, Dutch Guiana. *a–b*, Lobed rims. *c–e*, Koriabo Incised decoration. *f–g*, Koriabo Scraped decoration. *e*, *f–g*, Typical Koriabo Phase modeling.

Habitation sites of the Abary Phase. *a*, B–1: Tiger Island. *b*, B–3: Taurakuli.

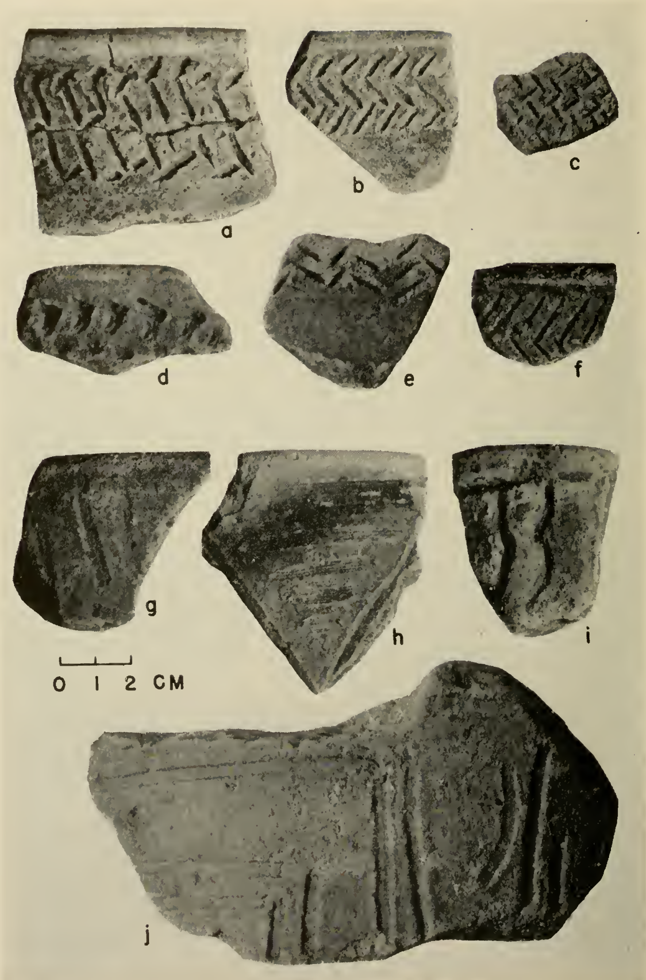


Decorated sherds from Abary Phase sites. *a–b*, *g*, Unclassified modeled. *c–f*, Sherds of Abary Phase manufacture copying motifs of Akawabi Incised and Modeled of the Mabaruma Phase.

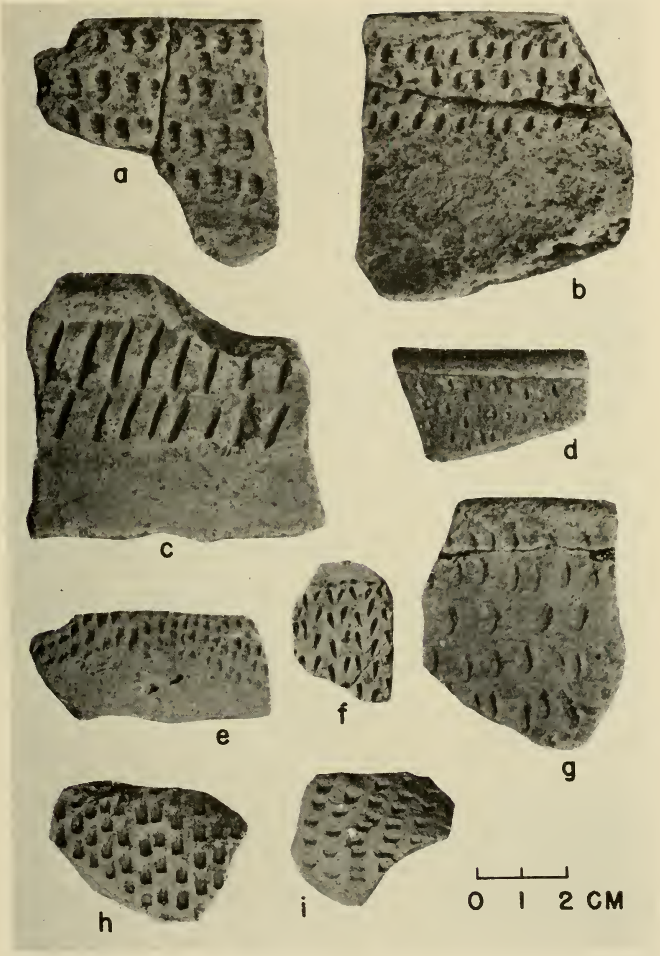
General views of the upper Essequibo River. *a*, The river opposite E–1. *b*, Typical scene along banks.



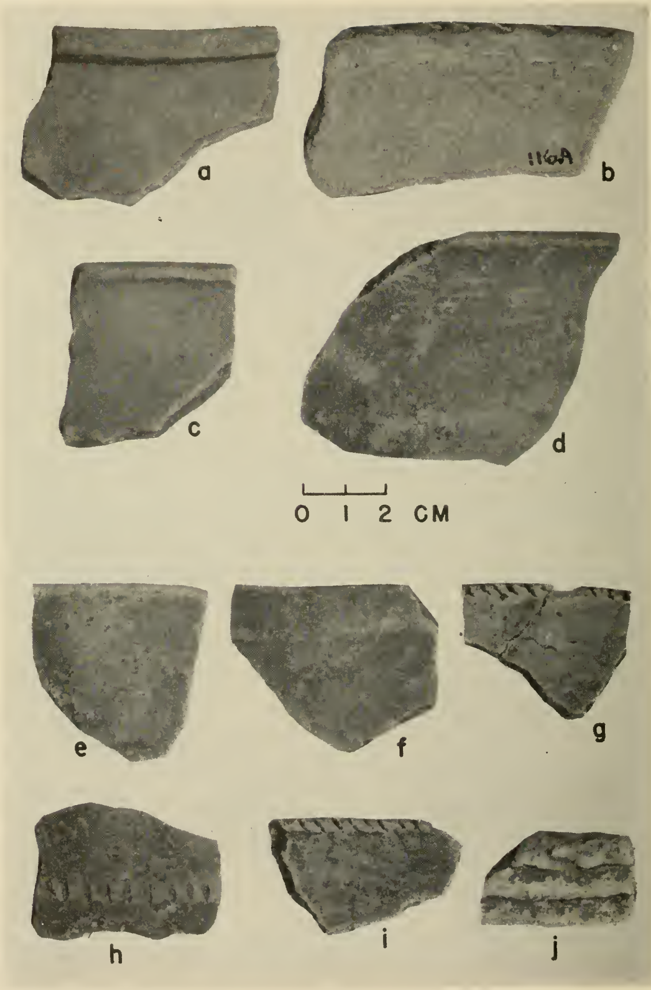
Type sherds of Kanashen Incised, Taruma Phase. *a–e*, Motif 1: zoned parallel lines. *f–k*, Motif 2: crosshatch. *j*, Recovered from site R-40 of the Rupununi Phase.



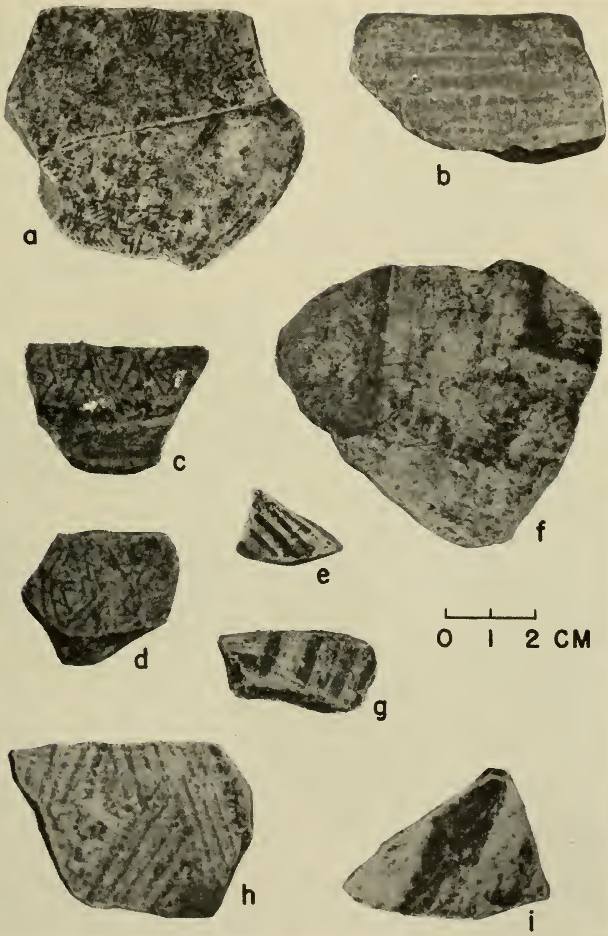
Type sherds of Kanashen Incised, Taruma Phase. *a–f*, Motif 3: zigzag. *g–j*, Motif 4: broad scrapings.



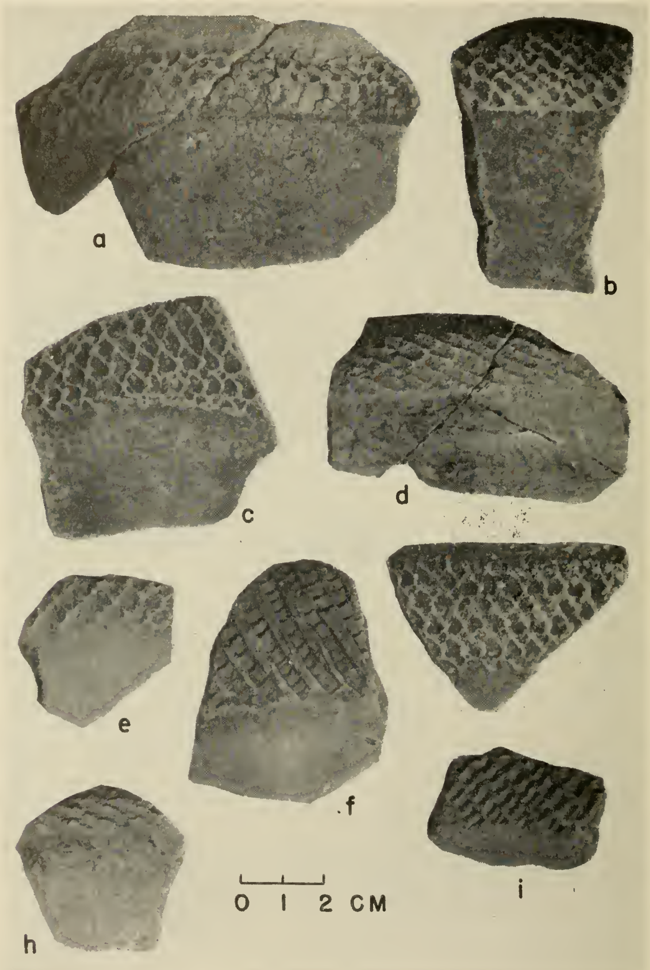
Type sherds of Kassikaityu Punctate, Taruma Phase.



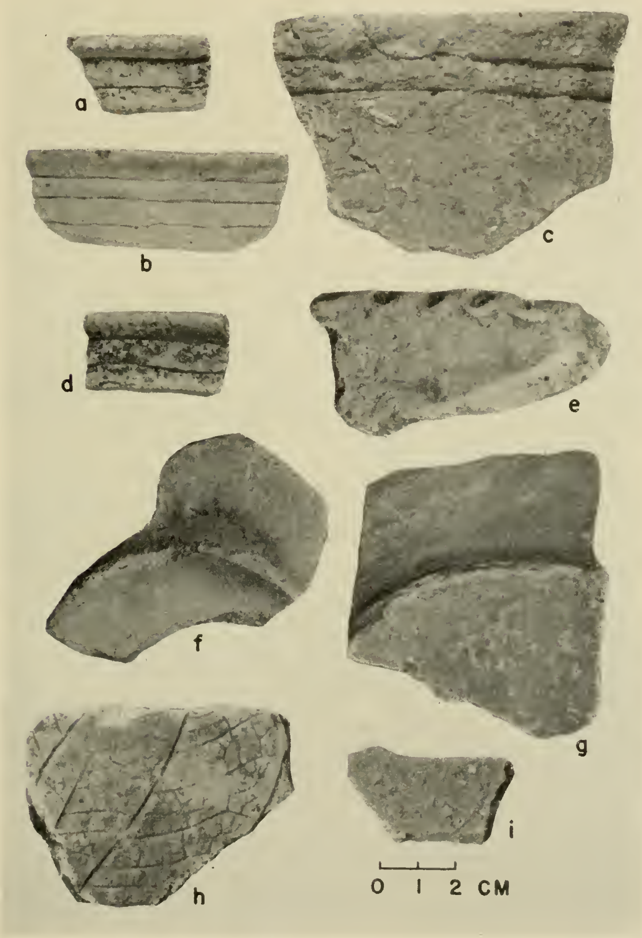
Pottery types of the Taruma Phase. *a–d*, Type sherds of Kalunye Plain. *e–j*, Type sherds of Manakakashin Red.



Type sherds of Manakakashin Red-on-white, Taruma Phase. Designs are all badly eroded; see figs. 92, 93 for details. *a*, *c–d*, Motif 1: intricate, overall patterns. *b*, *e*, *g–h*, Motif 2: zoned, parallel lines. *f*, *i*, Motif 3: broad lines.



Type sherds of Onoro Stamped Taruma Phase. *d* and *h*, Recovered from site R–40 of the Rupununi Phase.



Type sherds of Yochó Plain, Taruma Phase. *a–d*, Rim sherds with unerased coils on neck. *e*, Finger-pressed rim. *f*, Annular base. *g*, Pedestal base. *h*, Leaf impression on griddle base. *i*, Large temper particles of decomposed granite.

Habitation sites of the Wai Wai Phase. *a*. Yaka Yaka Village in 1952. *b*, E–2: Erefoimo, an abandoned village showing the collapsed house marked by the tall center pole.

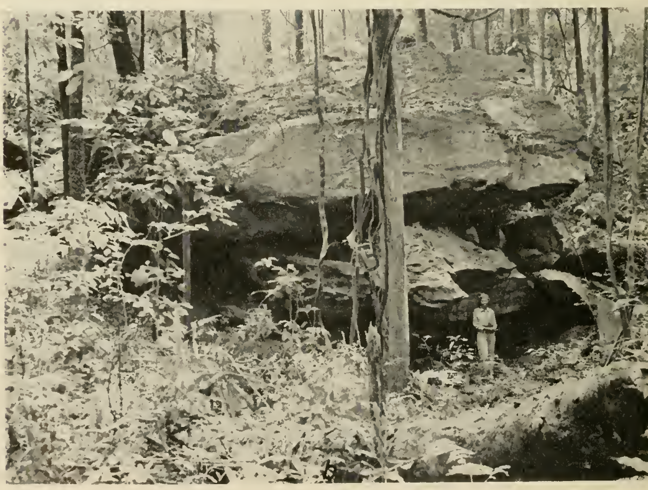
Pottery vessels of the Wai Wai Phase. *a–e*, Erefoimo Plain. *f–g*, Erefoimo Painted.

Pot rests of the Wai Wai Phase, showing the manner in which they are used to support a vessel over a cooking fire.

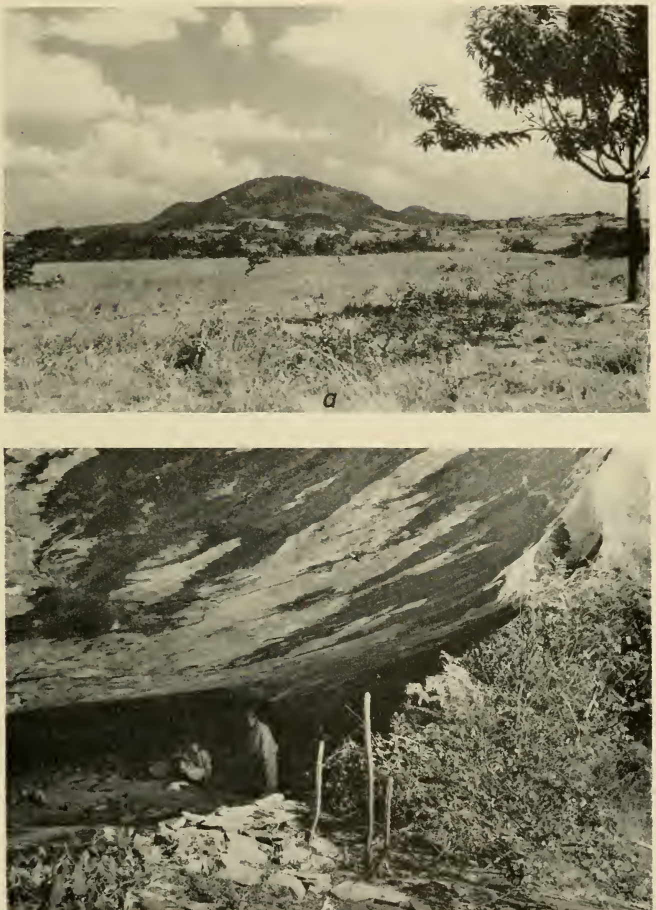
Wai Wai pottery making. *a*, Adding the first coil to the prepared base. *b*, Preparing a coil. Note the partially erased and scraped coils of the lower part of the vessel, and the finger impressions where coils are pressed together.

Wai Wai pottery making. *a*, Smoothing the interior with a gourd scraper. *b*, Firing the completed vessel with slabs of bark as fuel.

Habitation sites of the Rupununi Phase. *a*, R–3: Manari Creek, with a flank of the Kanuku Mountains in background. *b*, R–5 and R–6: Marakanata Water Hole, with Sandpaper tree in foreground and termite hills in background.

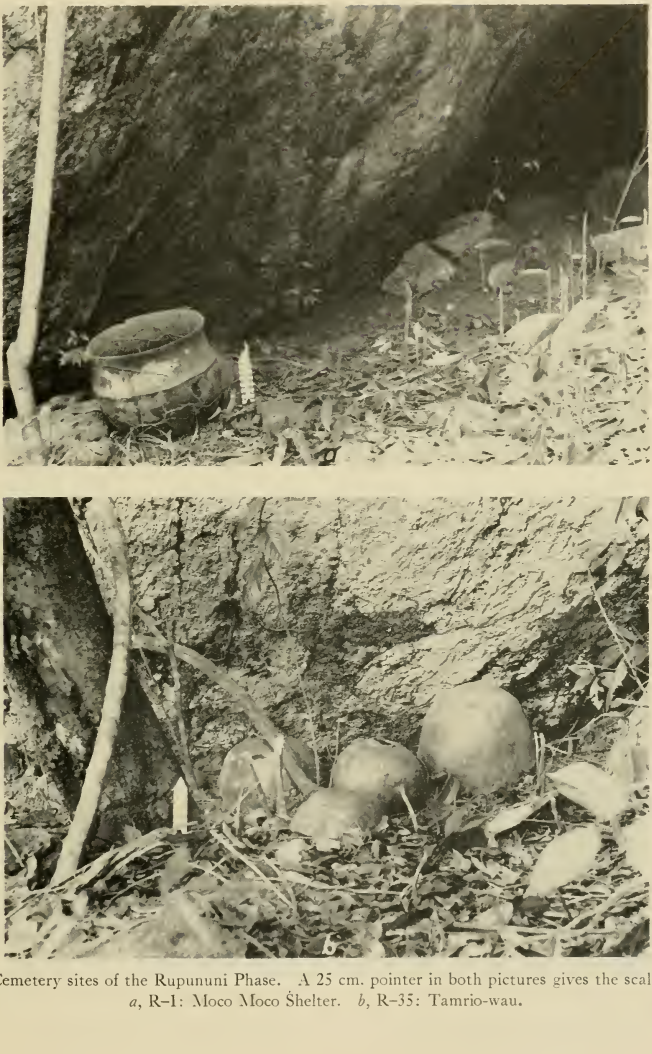


Habitation sites of the Rupununi Phase. *a*, R–9: Quatata, Village 2, with Pakaraima Mountains in the distance. *b*, R–20: Uteteta, Cave 1.



Habitation sites of the Rupununi Phase. *a*, View of Wie-wie-tau, the location of habitation sites R–22 through R–26. *b*, R–22: Wie-wie-tau, Cave 1.

Habitation sites of the Rupununi Phase. *a*, R–28: Maubi-wau, Village 2. *b*, R–36: Mormiswau Head.

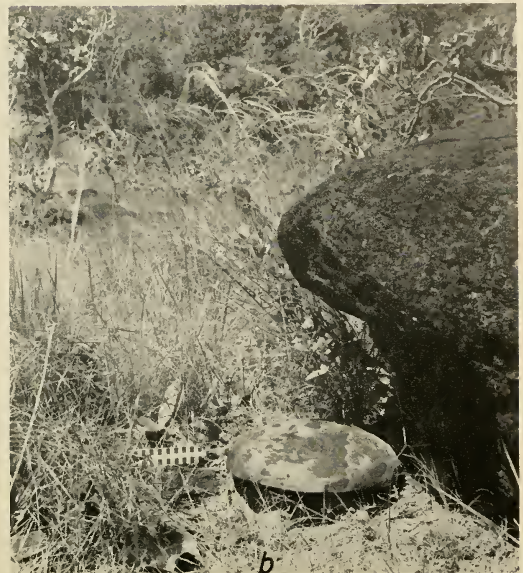


Cemetery sites of the Rupununi Phase. A 25 cm. pointer in both pictures gives the scale.
a, R-1: Moco Moco Shelter. *b*, R-35: Tamrio-wau.

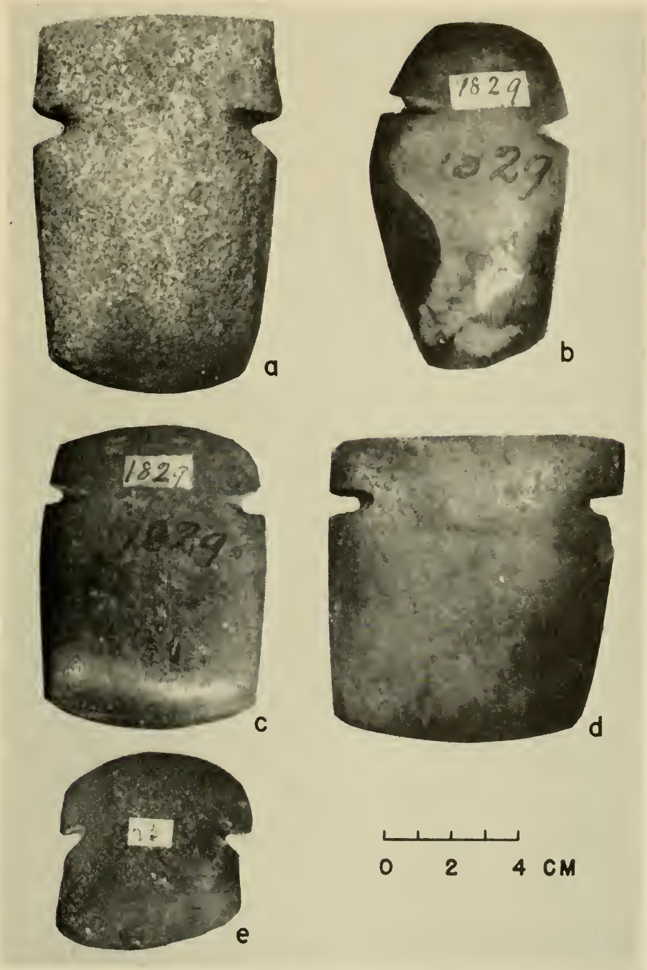
Cemetery sites of the Rupununi Phase. *a*, R–16: Upper Karakara Cemetery, showing the granite outcrop and the guide pointing to a shelf said to have formerly contained burial urns. *b*, Burial urn in situ at R–16.

a

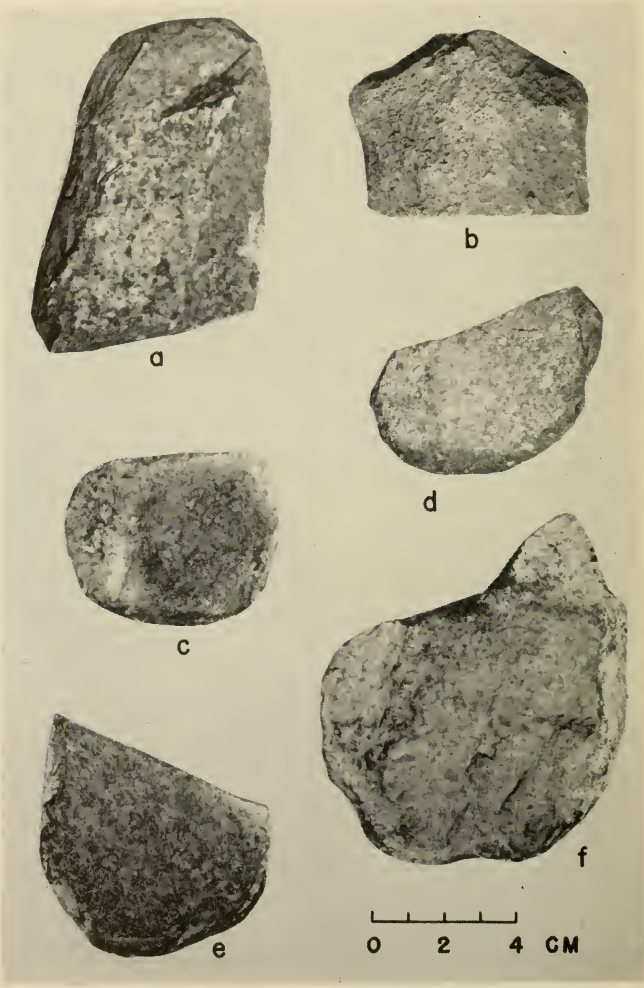
Cemetery sites of the Rupununi Phase. *a*, Looking across the savanna to Bei-tau, a forested hill where the rock shelters of R–34 are located. *b*, R–34: Bei-tau, Shelter 1, showing the slabs covering burial jar A and its lid, and five small offering vessels in situ.



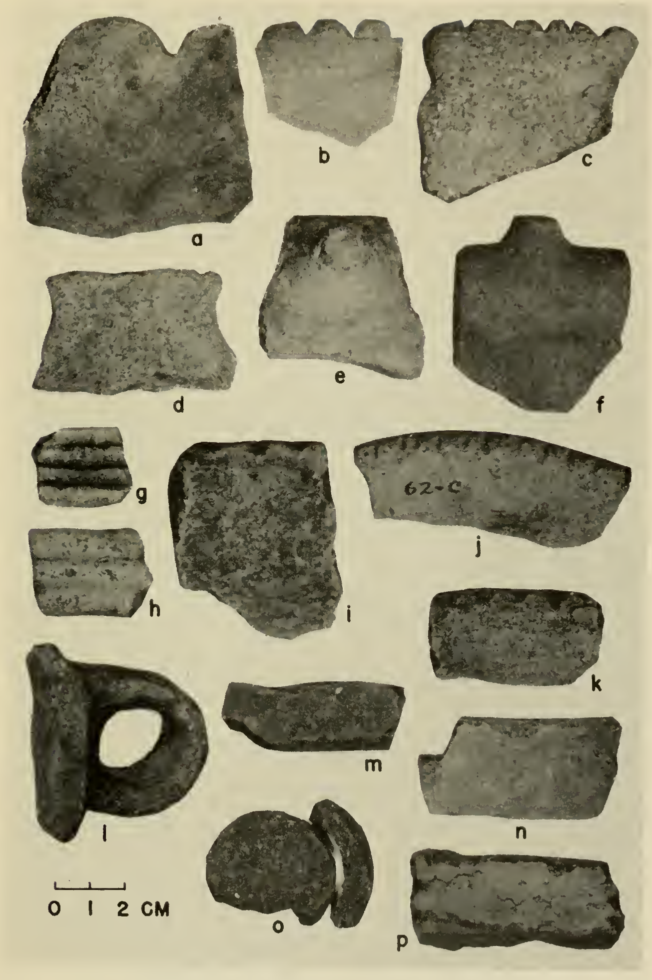
Ceremonial sites of the Rupununi Phase. A 25 cm. pointer in both pictures gives the scale. *a*, R-21: Marikanwauda. *b*, R-38: Mache-en-tau.



Stone axes of the Rupununi Phase in the collections of the British Guiana Museum, Georgetown.

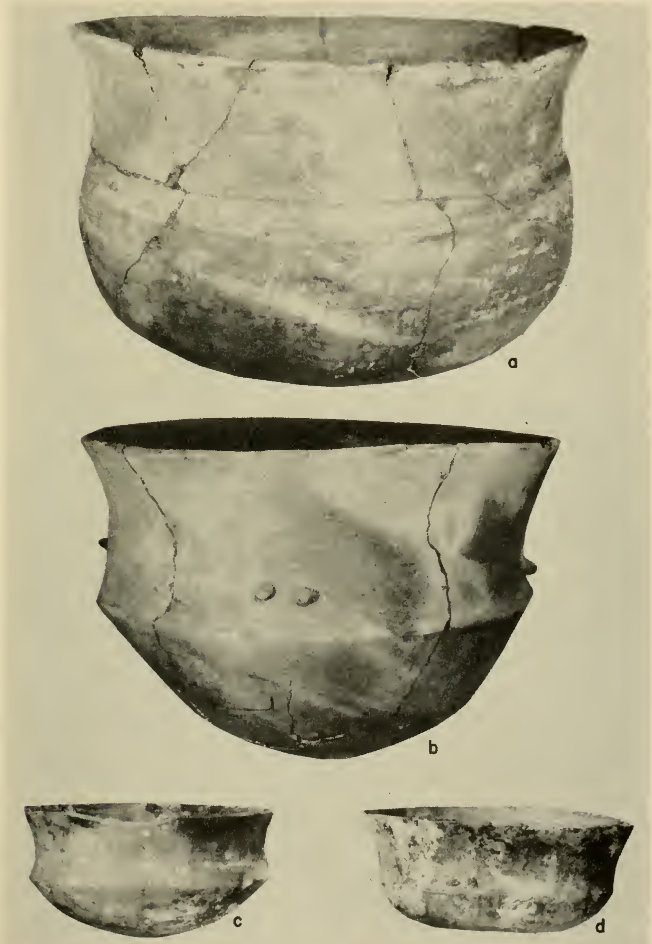


Stone hoes of the Rupununi Phase. *a–b*, Butt ends. *c–f*, Blade ends.



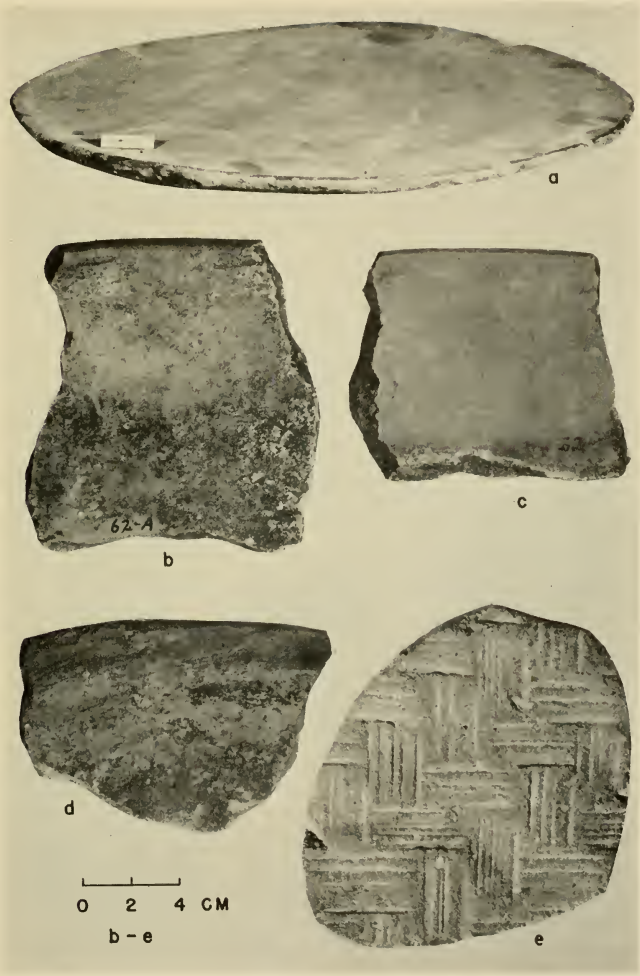
Type sherds of Kanuku and Rupununi Plain, Rupununi Phase. *a–d*, Occasional lobes along the rims of Vessel Form 1—bowls. *e–f*, Applique nubbins. *g–h*, Unerased coils. *i–k*, Occasional decoration of incised or fingertip punctate rims. *l*, Loop handle. *m–p*, Sherds showing coiled construction.

Kanuku Plain vessels from Rupununi Phase cemetery sites. *a*, R–34, Shelter 1; Lid to Jar H, Vessel Form 2a, height 36 cm. *b*, R–34, Shelter 1; Burial Jar H, Vessel Form 2a, height 27.5–30.5 cm. *c*, R–1; Burial Jar 1, Vessel Form 3a, height 33–34 cm.

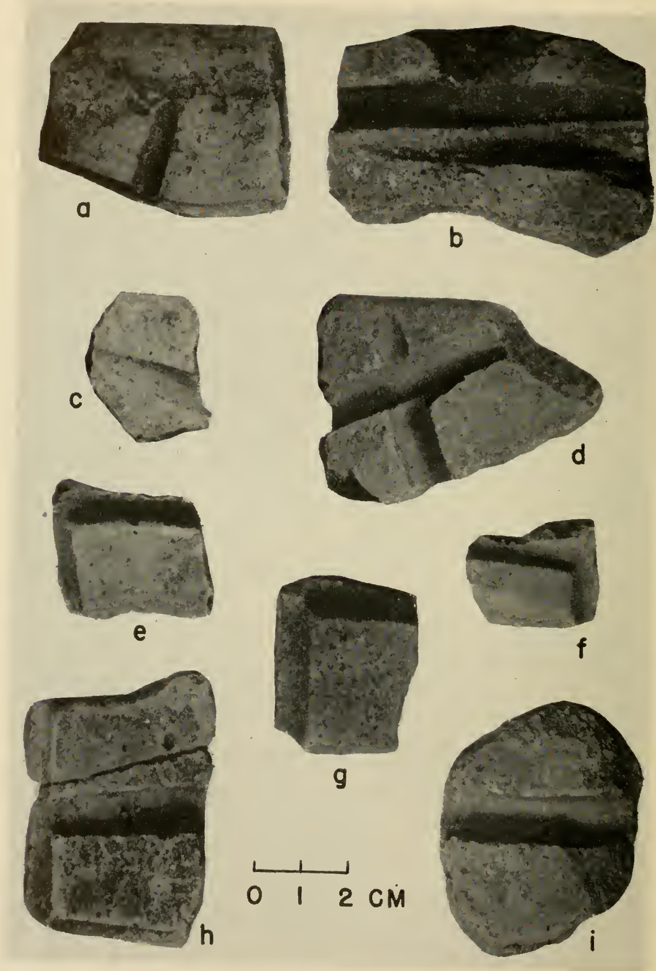


Rupununi Plain and Kanuku Plain vessels from Rupununi Phase cemetery sites. *a*, Tirka; Rupununi Plain, Vessel Form 3a, height 29 cm. (University Museum, Philadelphia, Cat. No. SA 2444). *b*, R–14; Kanuku Plain, Vessel Form 3b, height 43–48 cm. *c*, R–35, Vessel E; Rupununi Plain, Vessel Form 3c, height 11 cm. *d*, R–35, Vessel G; Rupununi Plain, Vessel Form 3c, height 10 cm.

Rupununi Plain and Kanuku Plain vessels from Rupununi Phase sites. *a*, R–21; Kanuku Plain, Vessel Form 1b, diameter 28–30 cm. *b*, R–35, Vessel F; Rupununi Plain, Vessel Form 1, diameter 23.5–24.5 cm. *c–d*, Wapisiana Vessels of Form 5c in the University Museum, Philadelphia; both Cat. No. SA 276, measuring 19.5 cm. and 23.5 in diameter respectively. *e*, R–33; Kanuku Plain, Vessel Form 6a, height 22 cm. *f*, R–33; Kanuku Plain, Vessel Form 6b, height 22.5 cm.



Griddles from the Rupununi Phase. *a*, Complete specimen made by the Wapisiana Indians in the University Museum, Philadelphia, Cat. No. SA 271, measuring 70–71 cm. in diameter. *b–d*, Rim sherds from habitation sites. *d*, Roughened exterior. *e*, Exterior with a mat impression.



Shaft polishers from habitation sites of the Rupununi Phase. *a–h*, Sherds of Kanuku Plain and Rupununi Plain. *i*, Stone.