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## THE PINATUBO NEGRITOS THEIR USEFUL PLANTS AND MATERIAL CULTURE

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EIGHTEEN PLATES AND FIVE TEXT FIGURES

### INTRODUCTION

*The problems and methods.*—One of the most challenging problems in Philippine ethnology is the search for those elements of culture of the Philippine pygmies—tools, language, beliefs, and attitudes—which might be held in common by the widely scattered Negrito groups, distinct from other Philippine people, and which might define basic elements of an earlier Negrito culture or cultures.<sup>1</sup>

The difficulties of this type of inquiry are manifold, for the Negritos, like other Philippine ethnic groups, have recently

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<sup>1</sup> The foundation of this study is a collection made by the writer in 1947-48 of approximately five hundred (500) plants used by the Pinatubo Negritos in their everyday life activities. This study would not have been possible without the fullest cooperation of Dr. Eduardo Quisumbing, Director, Philippine National Museum, and Dr. E. D. Merrill, Professor Emeritus, Harvard University, who gave freely of their time in establishing the binomial determination of each plant, as well as, Dr. Edwin B. Copeland who identified all of the ferns. In addition to the full support of this study by the National Museum, aid was received through Professor H. H. Bartlett, Director, Botanical Gardens, University of Michigan, with my appointment as one-third time collaborator in Philippine research. Professor H. Otley Beyer, as always, has guided my field work with his

undergone tremendous cultural change, and it is necessary, in part, to reconstruct their past cultural activities through statements of the oldest informants. In addition, the Philippine pygmies have borrowed extensively from the culture of the surrounding people—in the case of the Pinatubo pygmies, the Sambal people—and it is difficult to define which elements of their culture or cultures might be unique without a tremendous body of readily available comparative data.<sup>2</sup> Unfortunately, very little research has been completed among the Philippine Negritos. Most of the groups have never been studied thoroughly, and consequently few detailed and critical papers are available for comparative purposes.<sup>3</sup>

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tremendous knowledge of and experience in Philippine ethnology. I am also in debt to Dr. Fred Eggan and Dr. Karl Pelzer, visiting Folbright professors, and Harold Conklin, for criticisms and suggestions. The field work among the Pinatubo pygmies, which lasted for more than one year, was greatly facilitated through the help of Mr. Domiciano Darum, Principal of the Villar Settlement Farm School for the Negritos, and by the help of many other provincial officials. Mr. Hospicio Doble of Botolan, Zambales, an able lay historian, aided me continually by pointing out the similarities or differences between the cultures of the Sambal lowlanders, and the Pinatubo Negritos. Finally, I must thank my many Negrito friends, particularly, Emilio Balintay, Jacinto Balintay, Magno Balintay, Inong Balintay, Salvador Bolunhigan, Ciriaco Dolandolan and his father Atilano, and numerous others, who willingly aided me in the field work.

<sup>2</sup>The best general reference concerning the distribution and population of Negrito groups in the Philippine is still H. Otley Beyer's, *Population of the Philippine Islands in 1916* 56-60. Father Morice Vanoverbergh in the *Negritos of Eastern Luzon* (1938) has reviewed Beyer's data as to the distribution and population of the Negritos of Luzon, but has completely ignored the "Dumagat" problem by calling all of the "Negroid" types on the east coast of Luzon, Negritos. I pursued general ethnographic investigation among the Dumagat groups on Polillo Island for five months, 1948-49, and during my work among the Ipagi Egongot, 1948, contacted numerous Dumagat groups in the Baler and Casiguran areas of Quezon Province. I have also reached a tentative conclusion, earlier stated by Beyer in the citation above, that the Dumagat, at least specific groups, are not pygmy "Negroids" (that is, Negritos), but remnants of a taller, "Papuan-like," sea-migrating "Negroid," and represent a racial intrusion into the Philippines distinct from the pygmies. This problem is posed herein not to stimulate controversy, but to illustrate how very little systematic anthropological research has been accomplished among the Philippine "Negroid" groups, and to plea for a greater interest on the part of ethnographers in these challenging Philippine anthropological problems.

<sup>3</sup>Heine-Goldern, Robert. Research on Southeast Asia: Problems and suggestions. *American Anthropologist*, n. s. 48 (1946) 162.

The great changes which have occurred in the ways-of-life of many of the Philippine pygmies can be quickly seen by examining their present economic behavior. The Negritos of the Zambales range, Luzon, with whom I have worked—including the pygmies of Bataan, Pampanga, Tarlac, and Zambales provinces—are today all shifting cultivators,<sup>4</sup> tilling and planting the soil with dibbles and/or bolos into small gardens and "kaingins," or in a very few instances, are settled cultivators. All derive their basic subsistence from three introduced New World crops: the sweet potato, the cassava, and corn! Moreover, other phases of their culture show many evidences of recent acculturation—the use of manufactured cloth, lowland tools, the invasion of Christian ideology—which all tend to disguise their older habits, and their former dependency upon nature for the fulfilment of wants. Despite this situation, the Pinatubo Negritos of Zambales retain an amazingly intimate knowledge of useful plants. The past war (1941-1945) helped to stimulate a revival of the uses of vegetation, for it was difficult, almost impossible, for them to obtain lowland<sup>5</sup> merchandise, and in a few instances even provoked new uses for plants.

This persistent use of plants by the Pinatubo Negritos suggest the basic problem attacked in this primarily ethnobotanical study, namely: *what are/were the plants in the environment of the Pinatubo pygmies which could have yielded the necessities and wants of life—food, tools, clothing, medicines, shelter, etc.—when recently introduced plants (as well as tools, ideas, etc.) are abstracted?* A description of the uses of these plants in most of their life activities will add considerably to our knowledge of what the behavior of the Pinatubo Negritos was like (as well as that of other pygmy groups living under similar floristic conditions), when they were exclusively hunters and food gatherers, and survived by means of an extensive use of native vegetation. By using this methodology, diagnostic elements of Negrito culture(s) might be illuminated.

<sup>4</sup>Cf., Pelzer, Karl J. Pioneer settlement in the Asiatic tropics. Ameri. Geog. Soc. N. Y. (1945) 3-9.

<sup>5</sup>The term "lowland" is used herein to define generally the people and cultures of the Christian Filipino surrounding the Pinatubo Negritos—the Sambal and Ilokano to the west, the Tagalog to the south, and the Pampangan to the east—who are all settled agriculturists inhabiting the coastal areas and non-mountainous, lowland regions, and who have been more influenced by Spanish and American cultures.

*Historical-functional descriptions.*—The ethnobotanical data in the body of this monograph, as well as the data on the material culture, has been arranged according to the use of the many plants by the Pinatubo Negritos, for example: wild food plants, plants used in making bark cloth, and so forth. This arrangement was necessary in order to give an organic description of the uses and meanings of the plants to the Negritos. It is not sufficient to merely state that a particular plant is burned under the dwelling to drive away the malign spirits without first discussing, even briefly, their belief in spirits. In a number of instances, the material is arranged entirely according to the conceptualizations of the Pinatubo pygmies, as in the discussion of medicinal plants and practices. The Negritos recognize types of sickness which are accounted for in their theories of disease and beliefs, and it would be highly artificial, almost impossible, to categorize and describe these sicknesses in terms of Western medical theories of disease and nomenclature. For example, a Negrito may be *timbf*, an illness caused by having been struck by thunder, and may employ specific medicinal plants to effect a cure. These medicinal plants are enumerated, and their use described, under the sub-subject, *timbf*.

Utilizing the ethnobotanical evidences, comparative ethnographic data, and statements of the oldest informants, each subject is treated historically (temporally) in an attempt to abstract those elements of culture which are obviously borrowed, that is, recently acquired and which do not appear to be functionally a part of their traditional behavior. Necessarily, the introduced flora is treated first. By means of this temporal-functional treatment, a clearer picture is formed of the older trait-complexes of the Pinatubo Negritos. Modern forces of social change—tools, ideas, etc.—are also included in the discussions in order to describe how their culture is being continually reshaped, and to illuminate the present patterns of cultural resistance. The overall organization of this paper has, of course, been greatly influenced by the plant collection *per se*. Where important data on material culture or institutions have been omitted, or treated lightly, it is due to the fact that the plants related to these particular activities were not collected and identified.

The body of this monograph also includes some phenological data—the seasonal appearance of important fruits, tubers, etc.—arranged by the pygmies' lunar calendar in order to give a year-'round picture of available plant foods.

*Comparative study of plant names.*—All Philippine people employ a large number of plants for everyday needs, and all have specific names<sup>1</sup> for these plants, or local descriptive plant names coined by this or that group. In many instances when the plant names of a number of dialects are compared, they have a surprising generic similarity. Utilizing the data available, the writer has attempted to find cognates for the more than six hundred plant names employed by the Pinatubo Negritos with other Philippine dialects. The local plant names used in this comparative analysis have been derived largely from Merrill's, An enumeration of Philippine flowering plants,<sup>2</sup> and unless otherwise noted, are from this source. Other plant names recorded in the Sambal of the Christian lowlanders of the Municipality of Botolan, Zambales, in the Ipági Egóngot (Ilongot) dialect of Quezon Province, and in the Dumagat and Tagalog dialects of Polillo Island, Quezon Province—most of which are not found in Merrill's work—were obtained by the writer while pursuing ethnographic and ethnobotanical investigations among these people.

Cognates discovered for plant names used by the Pinatubo pygmies are introduced when a particular plant is first discussed, and are not repeated when the same plant appears again in the manuscript under a different use. The following abbreviations are used throughout this study for the many Philippine dialects cited, and have been derived, with some modifications, from abbreviations also used by Merrill<sup>3</sup>:

Ap.	Apáyao	Iv.	Ivatán
Bag.	Bagóbo	Klg.	Kalinga
Bik.	Bíkol	Lan.	Lánao
Bis.	Bisáya	Mag.	Magindanáo
Ak.-Bis.	Aklán Bisáya	Mand.	Mandáya
C.-Bis.	Cebu Bisáya	Mbo.	Manóbo
H.-Bis.	Hiligáynon Bisáya	Pang.	Pangasinán
P.-Bis.	Panáy Bisáya	Pamp.	Pampángan
S.-L.-Bis.	Samar-Leyte Bisáya	Sbl.	Sambál
Bon.	Bontók	Bot.-Sbl.	Botólan-Sambál

<sup>1</sup> By a "specific" plant name, I mean a name which has no derived meaning to the people, is apparently not coined, and is only the name of a plant.

<sup>2</sup> Merrill, E. D. An enumeration of Philippine flowering plants. Manila, Bureau of Science (1922-26) 4 vols. Unfortunately, as Merrill notes, the Negrito plant names given in these volumes have little comparative value, and were not utilized in this study, for the specific groups from which these plant names were obtained were not known to Merrill, and could not be included in the enumeration.

<sup>3</sup> *Ibid.*, pp. 28-29.

D.-Neg.	Negrto (Dinalupihan area, Bataan)	Iba-Sbl.	Iba-Sambál
Dum.	Dumágat (Polillo Is.)	Pint.-Sbl.	Pintábo-Sambál (Negrito)
Egn.	Ipági Egóngot	Sp.	Spanish (corrupted)
Gad.	Gaddáng	Sul.	Sála
Gad.	Gaddáng	Sub.	Subánon
Han.	Hanunóo (Mangyan)	Tag.	Tagalog
Iba.	Ibanág	P.-Tag.	Tagalog (Polillo Is.)
If.	Ifugáo	Tagb.	Tagbánuwa
Ik.	Ilóko	Ting.	Tinggián
Ig.	Igorot		

The plant names used by the Pinatubo Negritos which I have been unable to relate are set forth in Appendix I.

The etymology of many other important terms, such as "arrow," employed by the Pinatubo Negritos, has also been traced, and this comparative data is set forth in footnotes. We shall see that a number of highly interesting words employed by these pygmies have their origin with plant names found in other dialects. As well as in relationships which are suggested by the physical characteristics of particular plants.

*Comparative study of plant uses.*—Everywhere in the Philippines particular plants have specific uses; for example, the widespread use of the rhizomes of some terrestrial orchids for paste, or the application of the leaves of certain trees to the forehead and temples as a poultice for headaches. Undoubtedly, specific uses for plants—the plants also having specific names—were diffused throughout the Philippines accompanying waves of cultural intrusions. This, as well as prolonged cultural contacts, explains the widespread similarities of plant names in the Philippines, which though spoken in widely scattered areas, have only minor phonetic variations.<sup>2</sup> Drawing heavily upon Brown's useful plants of the Philippines, and upon personal conversations with Professor M. D. Sulit, botanist of the Philippine National Museum, who has a vast knowledge of Philippine plants and their uses, the writer has related the usages of some of the plants employed by the Pinatubo Negritos

<sup>2</sup> Cf., Bartlett, H. H. The geographic distribution, migration, and dialectical mutation of certain plant names in the Philippines and Netherlands India, with special reference to the materia medica of a Mangyan medicinal. Proceedings of the Sixth Pacific Science Congress 4 (1940) 86 ff.

with other Philippine people.<sup>10</sup> It is very likely that some of the plants utilized by the Pinatubo pygmies, the methods of use, as well as the absence of use of very common plants, are characteristic of Philippine pygmy groups. However, the specific definition of these culture traits as Negrito in origin, as suggested by this study, must await for more thorough comparative studies when additional data are available.

*Appendices.*—In Appendix I there appears an alphabetized list of the plant names with their binomial determinations used by the Pinatubo Negritos which I have been unable to relate to plant names found in other dialects in the Philippines. These unrelated names form only about 12 per cent of all plant names employed by the Pinatubo pygmies. These plant names are not, insofar as I can determine, autochthonous terms, that is, locally coined plant names, and deserve further comparison when additional ethnobotanical data are available.

In addition to having an amazing knowledge of plants and their uses, the Pinatubo pygmies employ nearly one hundred terms in describing the parts and characteristics of plants. I have also attempted to obtain cognates for these words using various other Philippine dialects for comparison, that is, in instances in which the words are not the same as in Botolan-Sambal. A few of these terms have not been related, and when more data are on hand, warrant further comparative study. This enumeration of "botanical nomenclature" is set forth in appendix II.

A comparison of the hundreds of other Negrito terms included herein—an inquiry into their historical relationships—will be set forth in dictionary form in a future study.

The Index to this volume of the Philippine Journal of Science will include all of the more than six hundred plant names employed by the Pinatubo Negritos, as well as the scientific names of these plants, and will greatly facilitate the use of this monograph for comparative purposes.

<sup>10</sup> Brown, W. H. *Useful plants of the Philippines*. Manila, Dept. Agric. and Nat. Res. Tech. Bull. No. 10 (1941-46) 3 vols. Unfortunately, Brown and other men who have worked in the field of Philippine ethnobotany have not distinguished which group or groups of people use a specific plant, for always they were concerned with the commercial or economic values of the plant, and not its ethnographic importance.

It must not be assumed from the above discussion of the problems and methods that the goal of this manuscript was a comparative study of the ethnobotany and material culture of the Philippine pygmies. This field is still virgin, and such a project is presently impossible. Rather, in addition to the objectives noted above, it is the aim of this monograph to record specific ethnobotanical and ethnographic data which can be drawn upon by others who in the future will do ethnological synthesis and to salvage valuable anthropological data from a pygmy group which is fast losing its cultural identity.

#### THE PHONETIC KEY

The Pinatubo Negritos speak a dialectic of Sambal.<sup>11</sup> In fact, their language is a sub-dialect of Botolan-Sambal which, except for the pygmy groups in the Zambales Range, is largely spoken by the Christian lowlanders within the Municipality of Botolan, Zambales. To the north of Botolan, principally in the Municipalities of Iba, Santa Cruz, and Bolinao, other distinct variations of Sambal occur, and immediately to the south in the Municipality of Cabangan, a slight difference exists. At one time, the "Botolan-Sambal" extended throughout southern Zambales and Bataan, but now survives in these areas only among the various Negrito groups. The southern part of Zambales, from the towns of San Felipe to San Marcelino (see map), is at present composed largely of Ilóko and in the extreme south of Zambales, as well, as in Bataan, Tagalog speakers predominate.

All of the pygmies in the southern portion of the Zambales Range with whom I am familiar—including the Negritos of Bataan, the Negritos in the Floridablanca and Fort Stotsenburg areas of Pampanga, and the Negritos in the Bambang<sup>12</sup> area of Tarlac—speak slight variations of Botolan-Sambal. Most individuals in these various Negrito groups also speak other dialects, depending upon the intensity of their personal contacts with their Christian neighbors. Thus, in addition to

<sup>11</sup> Sambal is the proper term for the language, as well as the people, of Sambal (Zambales), and the former term is used in this monograph. There is no voiced sibilant in Sambal; however, the Spanish orthography of "Zambales" is politically established and a correction at present to Sambal would only lead to confusion.

<sup>12</sup> Many place names throughout the Philippines are the names for common plants, as in this instance, bambas [*Danar cannaefolius* (Forst. f.) K. Schum.].



speaking forms of Botolan-Sambal, the Negritos of Bataan now speak Tagalog, the Negritos of Pampanga, Kapampangan and/or Tagalog, and the Negritos in the San Marcelino Municipality of southern Zambales, Ilóko. In the Pinatubo area, particularly among the men who frequently travel great distances, it is not unusual to encounter individuals who speak Ilóko and/or Kapampangan, in addition to their own dialect. However, very few of the Pinatubo pygmies know Tagalog, and many individuals among some of the more remote groups know only their own variation of Botolan-Sambal. The language pattern in the province of Zambales is very complex.

The orthography used herein is simplified following Tagalog, the Philippine National Language. Initial glottal stops and glottal stops between vowel sequences are not written. Actually there are no words in Pinatubo Sambal which begin with a vowel and there are no vowel clusters. Due to the limitations of Pi-Matrices, all of the symbols of The International Phonetic Alphabet could not be followed. The variations from this system, however, are illustrated below.

## I. Vowels:

	English examples	Sambal	examples
a	father	áwak	(waist)
i	machine	dila'	(tongue)
l	sit	lanfa	(water)
u	rude	lápah	(face)
o	hope	poktó	(abdomen)
ü—a mean-mid, central, unrounded vowel in which the lips are spread and drawn back; not found in English		lúdy	(neck)
e—this sound appears only in loan terms, particularly, in words from Spanish as Santa Fe		pisté	(plague)

## II. Diphthongs:

ay	aisle	pílay	(fame)
aw	how	yaw	(arrow)
ey	boy	ungáy	(mucus)
iw	few	kináo	(vine)

## III. Consonants:

b, d, k, l, m, n, p, r, s, t, w, y—as in English; the sibilant appears only in recent loan words which have not as yet shifted to /h/

<i>g</i>	goat	<i>gabót</i>	(liar)
<i>ng</i> —as in <i>singer</i> ; the sound as in “finger” is recorded as / <i>ngg</i> /; the Spanish / <i>ñg</i> / is superfluous		<i>bángil</i>	(eye tooth)
<i>h</i> —initially as in the English “halt”		<i>ipánggo</i>	(to wrap)
<i>č</i> —as in the English “church”; heard only among specific pygmy groups where it replaces a / <i>t</i> /		<i>hábot</i>	(hair)
<i>j</i> —as in the English “jar”; a relatively rare sound among the Pinatubo pygmies		<i>gihigth</i>	(a tree)
<i>š</i> —as in the English “shot”; a rare sound, and found only in loan words		<i>gunčing</i>	(scissors)
		<i>buhungá-jong</i>	(flute)
		<i>akáša</i>	(a tree)

## IV. Diacritical Marks: (“v” = vowel; “c” = consonant)

ˊ—stress; over first vowel of the accented syllable	<i>balakáng</i>	(hip)
vˊ—glottal stop following a vowel; indicated by a raised comma; a consonant in value	<i>nókaˊ</i>	(abscess)
c—glottal stop or voice hiatus following a consonant; indicated by a hyphen	<i>pag-óng</i>	(turtle)
- a hyphen also used when compounding word base elements (common in plant names)	<i>állo-állo</i>	(daily)
v:—unusual vowel length; indicated by a colon	<i>tá:k</i>	(ear)
cˊc—weakened vowel; indicated by a raised character	<i>damˊwag</i>	(water buffalo)

## HABITAT OF THE PINATUBO NEGRITOS

The pygmies living on the western and northwestern lower slopes of Mt. Pinatubo (5,284'), one of the highest and most striking mountains in the entire Zambales Range, call themselves *Ayta* or *Páan Pinatúbó Ayta*, that is, the “people (*áyta*) living on the thigh (*páa*) of Mt. Pinatubo.” In this monograph, as noted, they are referred to as the Pinatubo Negritos.<sup>14</sup> Considerable racial mixture has occurred within the Pinatubo area between the Sambal—the latter, according to conversations I have had with Professor Beyer, are basically “Indonesian A”—and the pygmies. Many individuals, culturally identified with the Negritos, vary considerably from the pygmy type (see Plate 3, figs. 1 and 3). However, the Pinatubo population still maintains to a large extent the morphological charac-

<sup>14</sup> The term *Pinatúbó* has undoubtedly been derived from the word-base *tábo*, meaning in general, “grow” or “originated from,” for as the Pinatubo pygmies remark, all of the rivers which are necessary for life and growth have their sources on Mt. Pinatubo.

teristics of the Asiatic Negrito; woolly hair, very short in stature, a low-bridged, concave nose with flaring alae, nostrils frontally visible, wide-set eyes in a round face, dark pigmentation of eyes and hair, and moderate to very dark brown, skin color.

Within the Pinatubo area, that is, on the western and north-western talus slopes of Mt. Pinatubo, there are, roughly speaking, two groups of Negritos: (1) "deep," more isolated, groups living higher on the slopes of Mt. Pinatubo, but never higher than 1,500', and (2) more acculturated groups living on the lowest slopes in the grasslands and secondary forest areas. The location of their "villages," as well as the area of intensive ethnographic and ethnobotanical investigation, is shown on the following map (Plate 1).

The deeper Negritos live adjacent to the primary forests, and through the practice of burning to clear the slopes for planting, as well as for hunting, are continually causing the forest lines to recede. Even among these deeper Negritos, it must be emphasized, not a single group could be called true forest dwellers!

The more acculturated pygmies—typified by the groups in and around Villar—live on the many finger-like, grass table lands which have been formed by the numerous streams, all having their sources on Mt. Pinatubo, slashing down through the lower elevations (see Plate 3, figs. 1, 2, and 3). The only *Dipterocarp* forests surviving in this latter area are found in the deep ravines. Undoubtedly the whole region was once heavily forested, but due to the continual burning by the Negritos, the tough weeds and grasses—particularly, *yábot*, *Imperata cylindrica* (Linn.) Beauv. and *Imperata exaltata* Brongn., which have deep-seated perennial rhizomes, and *táib*, *Saccharum spontaneum* Linn. subsp. *indicum* Hack.—have invaded the plateaus, and have become dominant. It is interesting to note, as Merrill has shown for other areas of the Philippines, that most of the common weeds on the lowest slopes of Mt. Pinatubo have been accidentally introduced from the New World by man.<sup>15</sup> As we shall see later, most of these exotic weeds are now useful to the pygmies!

Second-growth forests are found on the tips of the table lands, and on many of the ravine slopes which have not been

<sup>15</sup> Merrill, E. D. Notes on the flora of Manila with special reference to the introduced elements. *Philipp. Jour. Sci.* § C 7 (1912) 145.

subject to recurrent burning.<sup>18</sup> Fire resistant trees, such as *banayuyu*, *Antidesma ghaesembilla* Gaertn., and *kalibángbang*, *Bauhinia malabarica* Roxb., are scattered throughout the area. Characteristic of the secondary growth forests are the following small trees: *Upak*, *Laportea meyeniana* (Walp.) Warb., which has leaves with numerous stinging hairs, the useful *anónang*, *Cordia dichotoma* Forst., *dyhIp*, *Antidesma bunius* (Linn.) Spreng., *binúnga'*, *Macaranga tanarius* (Linn.) Muell.-Arg., *dalínót*, *Pipturus arborescens* (Link.) C. B. Rob., and others. The common guava of American origin, *Psidium guajava* Linn., called *bayába* by the Negritos, is so very common that it appears to be a part of the native flora. Conspicuous everywhere are many species of the wild fig: *awili'*, *Ficus hawili* Blco., *áymIt*, *Ficus minahassæ* (Teyssm. and De Vr.) Miq., *túbóy*, *Ficus nota* (Blco.) Merr., *tiplí'*, *Ficus odorata* (Blco.) Merr., *kayáhan*, *Ficus variegata*, and others. This common genus, as we shall see later, is of great importance to the Pinatubo pygmies.

The most characteristic flora of the entire Pinatubo area is the banana which occurs in tremendous stands; the wild varieties of *Musa errans* (Blco.) Teodoro, and the semicultivated varieties of *Musa sapientum* Linn. (see Plate 2, fig. 1). Huge clumps of bamboo, *kawáyan-mantúg*, *Bambusa spinosa* Blm., and *kawáyan-kiling*, *Bambusa vulgaris* Schrad., which are extremely useful to the Negritos, dot the rims of the plateaus, and impregnable thickets of smaller, climbing bamboos—as well as many rattans—are found on most slopes. At lower altitudes in the stream beds, the conifer-like *agóho*, *Casuarina equisetifolia* Linn., the shrub *liáhin-laním*, *Homonoia riparia* Lour., and the tall grasses *tambó'*, *Phragmites vulgaris* (Lam.) Trin., and *Phragmites karka* (Retz.) Trin., are very common.

In general, as is clearly brought forth in the body of this monograph, the plants utilized by the Pinatubo Negritos are found at low and medium altitudes, and the plants which are found in the original high tropical forests are relatively unknown to them. This would suggest that their former habitat, as now, was at low or still lower altitudes in open areas adjacent to the primeval forests!

It is significant to note that the environment of the Pinatubo Negritos is not an immutable, natural phenomenon but is, in

<sup>18</sup> Cf., Brown, W. H. and D. M. Mathews. Philippine dipterocarp forests. Philip. Jour. Sci. § A 9 (1914) 413, for discussions of Philippine secondary growth forests such as are found in the Pinatubo area.

part, man made, and has been altered considerably. Insofar as possible, attempts have been made in this monograph to keep the ecological-historical factors in mind, for the present threshold of Negrito culture is the product of many environmental adjustments.

A BRIEF, INTRODUCTORY DISCUSSION OF THE CULTURE  
OF THE PINATUBO NEGritos

Basically the culture of all of the scattered pygmy groups in the Pinatubo area is the same, and they are closely related—culturally and linguistically—to the Sambal population in the Municipality of Botolan, Zambales.<sup>12</sup> Nevertheless, cultural differences between the pygmies and the lowland Sambal—as well as between other surrounding Christian groups—do exist, and a few of these differences related to ethnobotany are discussed here, and later in the body of this manuscript under specific topics.

Even though the Negritos give the appearance of being settled cultivators, they rarely live in a specific area for more than one year. This is determined, in part, by the nature of their planting activities, the "kaingin" system. The pygmies find a steep slope relatively free of large trees and tough grasses,<sup>13</sup> clear the heavy growth with bolos, and then burn the slope. Of course, soil depletion takes place quickly, which they realize, but not with the rapidity with which they move. Frequently there may be good slopes for planting near their old living sites, which could be used without shifting their dwellings, but the pygmy groups may move many kilometers away into an entirely new area.

In some instances, the shift to a new area has been stimulated by the presence of frequent sickness in the old site, and if a

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<sup>12</sup> Another monograph is being prepared by the writer which will treat in detail the contemporary institutions of the Pinatubo pygmies, as well as a dictionary and comparative study of their dialect.

<sup>13</sup> Where the data presented in this manuscript do not illuminate "real" Negrito culture, they do give a valuable picture of older Sambal institutions. Under the impact of European civilizations, much of the indigenous Sambal culture has disappeared, but has survived in modified form among the more isolated Pinatubo pygmies. We know even less about the Sambal than the Zambales Negritos.

<sup>14</sup> Some of the Pinatubo Negritos are prepared to be settled agriculturists, but the absence and difficulty of procuring the water buffalo makes it almost impossible for them to work the toughly grassed table lands which cannot be effectively cleared by burning.

death occurred, the dwelling will usually (always in the past) be abandoned immediately. When this occurs, the clearings may also be abandoned, but normally the Negrito will return to harvest the crops which have not been destroyed by the birds and animals. Specific areas may become uninhabitable through the invasion of an evil spirit or spirits. One extensive region on the lower and eastern slopes of Mt. Liwitan, formerly good for clearings, hunting, and for gathering forest products, is now the sole property of the huge and evil spirit, *tulúng* (*tuwúng* in Bot.-Sbl.).<sup>20</sup> A few years ago a group of Negritos from Villar had been gathering rattan in this area, when they noticed that many of these plants, and even large trees, had been violently torn from the ground. Later, they heard loud, strange noises, and fled in terror. Today, no Negrito would wittingly enter this region.

Particular slopes on Mt. Pinatubo are very good for clearings but are the property of powerful, though usually good, spirits. It is from these areas that the Negrito mediums and *baliyan* attract and obtain their personal tutelaries. The pygmies may travel in these areas, but the whole natural environment is tabu. Not a single object—a plant, stone, bird, animal, etc.—can be removed or destroyed! Needless to say, I made no ethnobotanical collections in these restricted regions.

Frequently, the mobility of the Pinatubo pygmies appears to be the product of an attitude; a desire to move and keep moving. This traditional feeling appears in their few songs and in their seeming fear of the modern responsibilities of citizenship, taxation, and governmental controls. Numerous statements that I have heard clearly expressed as a general attitude their dislike for really permanent settlements. Certainly, their continual movement is not only, or even primarily, a result of their economic activities. Rather, many social forces, in addition to their economic behavior, have produced the semi-sedentary habits of the Pinatubo pygmies.<sup>21</sup> This persistent mobility markedly distinguishes the Pinatubo Negrito from the settled lowlanders.

<sup>20</sup> This spirit is usually described as being horse-like, but having clawed feet, long hair, and very large testicles. Negritos encountering the *tulúng* disappear, for they are eaten.

<sup>21</sup> Other marginal people, such as the Ipági Egóngot (Pengot) of Quezon Province, are also shifting cultivators employing practically the same tools and plants as the Pinatubo Negrito in their economic activities, but they lead a sedentary life, i. e., they do not shift their villages.

Another characteristic of Negrito life, a characteristic which strikingly demarcates them from the surrounding Christian lowlanders, is their inexhaustible knowledge of the plant and animal kingdoms. This lore includes not only a specific recognition of a phenomenal number of plants, birds, animals, and insects, but also includes a knowledge of the habits and behavior of each. This inclusive knowledge of nature is, of course, a product of their way-of-life; continual hunting, mobility, dependency upon vegetation, as well as a survival of their historical associations. The Negrito is an intrinsic part of his environment, and what is still more important, continually studies his surroundings. Many times I have seen a Negrito, who, when not being certain of the identification of a particular plant, will taste the fruit, smell the leaves, break and examine the stem, comment upon its habitat, and only after all of this, pronounce whether he did nor did not know the plant.

In addition, the intimate familiarity of the Negrito with nature is the result of a thorough and sensitive ecological awareness. Many plants have no direct use or value in themselves, but are important to the Negritos because of the relationships of the plant with the animal and insect world. The fruits of some trees are only eaten by birds, but are still very important to the pygmies, for it is in or near these that bird blinds are built. These particular plants have vernacular names, and meaning to the Negrito, due primarily to this plant-bird association. Specific grasses have local descriptive names only because the pygmies know that they are being eaten by the deer and wild pigs; for example, *dasímo-uwiha*, *Eragrostis amabilis* (Linn.) W. and A., the "grass of the deer." One weed, *lámon-pinatubo*, *Lindernia* sp., which is found along the edges of streams, has no use but has the descriptive name, "Pintúbo-grass," for the Negrito believes that it originally came from the higher slopes of Mt. Pinatubo, and was carried by the streams and scattered throughout the entire Pinatubo area.

The acute observation of the pygmies and their awareness of the interrelationships between the plant and animal life giving them an ecological picture of their environment, is strikingly pointed out by their discussions of the living habits of bats. The *tídidín* lives on the dry leaves of palms, the *dikidik* on the underside of the leaves of the wild banana, the *litlit* in bamboo clumps, the *kolumbóy* in holes in trees, the *konanabá* in dark thickets, and so forth. In this manner, the Pinatubo Negrito can distinguish the habits of more than

15 species of bats. Of course, the classification of bats, as well as of insects, birds, animals, fish, and plants, is determined primarily by their actual physical differences and/or similarities.

Most Negrito men can with ease enumerate the specific or descriptive names of at least 450 plants, 75 birds, most of the snakes, fish, insects, and animals, and of even 20 species of ants.<sup>22</sup> Moreover, each Negrito man can give a description of the colors, habits, foods, calls, etc., of all of the animal, insect, and bird life known to him. An unusually intelligent and observant individual, such as my close friend *Baktyô'*, can give even more natural history information, and the botanical knowledge of the *mananâmbal*, the "medicine men and women" who use plants constantly in their practice, is truly astounding.<sup>23</sup>

The scattered villages of the Pinatubo Negritos rarely contain more than three or four households totalling 20 to 40 individuals, and there is no community life such as is found among the lowland people (see Plate 4, fig. 1). It is this factor which makes the study of Negrito groups relatively difficult. Life-cycle activities and important rituals may occur in widely separated places; for example, I would receive a report that a marriage was to take place, but after a hurried day's hike I would arrive too late to witness the ceremony. There is no overall political organization or even strong leadership, and each village or extended family is an independent communal grouping. Important decisions are made by the elder members of each family grouping. This factor alone has greatly handicapped attempts by the Philippine government to control and educate these people.

<sup>22</sup> Fourteen of the twenty ants, called generically *dya'*, and having specific or descriptive names, were identified by Professor J. W. Chapman of Silliman University, Dumaguete, Negros, from a collection made by the writer at Villar, Zambales: *antik* (*Odontomachus infandus* Fr. Smith); *alilipak* (*Solenopsis geminata* var. *rufa* Jerdon); *alidâkdak* (*Odontomachus haematoda* Linne); *bukâtot* (*Polyrhachis* (*Myrmophila*) *argentea* Emery); *kalibôyboy* (*Diacamma rugosum* subsp. *geometricum* Fr. Smith, and *Diacamma rugosum* subsp. *vagans* Fr. Smith); *kayâman-yâman* [*Paratrechina* (*Paratrechina*) *longicornis* Latreille]; *hâbok* (*Ecophylla smaragdina* Fabricius); *hikid-hikid* (*Crematogaster* sp.); *galânggahing* (*Anoplolepis longipes* Jerdon); *galânggahing-nangitit* (*Iridomyrmex anceps* Roger); *mangân-pulôt* (*Camponotus* sp.); *meluntân-bânga'* (*Polyrhachis* (*Myrma*) *murina* Emery); *piikin-lamidan* [*Leptogenys* (*Lothpelta*) *dinamita* var. *opacinedis* Emery]; and *tamâmo* [*Polyrhachis* (*Myrmophila*) *dives* Fr. Smith]. The larva of the *hâbok* is eaten.

<sup>23</sup> *Mananâmbal* is from *tâmbal*, "medicine" with an occupational prefix. *Tâmbalan* in Leyte-Bisayan also means "medicine man" or "herbolario."



Each village has some individuality in the types of dwellings, staple foods, and degrees of cultural change. For example, in the Yamót area (see Plate 1) the villages obtain their entire water supply from trees and vines, particularly, the wild fig *túbóy*, *Ficus nota* (Blco.) Merr. A cut is made in the trunk of this tree, and a long bamboo tube, the *láhob*,<sup>24</sup> is propped against the tree with the lip of the tube just below the cut (see Plate 2, fig. 2). A large leaf is placed above the cut and the mouth of the tube to keep out foreign matter. The water from the tree drips into the tube, and when the tube is filled, it is removed and utilized. These cuts are enlarged at intervals to maintain a steady flow of pure, fresh water. A few trees prepared in this manner will give sufficient water for an entire village, that is, for cooking, and drinking, for a Negrito will rarely take a bath. It is a widespread belief among the Pinatubo pygmies that bathing causes sickness, and that dirt protects the body. The Yamót area is relatively high on the middle slopes of Mt. Pinatubo, and there are no handy springs or streams. It would be almost impossible for the Negritos to live in this region, if it were not for the presence of these specific plants yielding water. It is conditions such as these which often give marked individuality to the various Negrito villages.

As noted, a detailed description of the social organization and institutional characteristics of the Pinatubo Negrito will appear elsewhere; nevertheless, a few general remarks about marriage are specifically included here, because this institution has its functional relationships in nearly all spheres of Negrito life and is an important structural factor. The Pinatubo pygmies still practice some polygamy (plurality of wives) if a man can accumulate sufficient *bandí*, that is, the "bride price." Marriages are contracted between the parents or guardians, usually when the children are young (even in the womb), and the payment to the parents and relatives of the girl is traditionally established for any type of situation which may arise; for example, if one of the party dies, if the contract is broken, and so forth. Failure on the part of the young man and his family to satisfy the requirements of the bride price and the elopement of a boy with a girl who has already been

<sup>24</sup> Among the Bataan and Pampangan Negrito, this water tube is called *payung*, but among the Pinatubo Negrito this term, or *tabábáb*, designates a shorter water tube. In lowland Zambales, the word *láhob* is not known, and the term *bayungyung* used for bamboo water tubes.

contracted with another boy, are the principal causes of trouble between the Negrito families and groups. The accumulation of the *bandí*, usually arrows, bows, bolos, cloth, homemade shotguns, and money, is the primary concern of the young man, his family, and relatives, and the orphan, or any individual who through selfishness, has antagonized his kin, faces many difficulties. Cousin marriages are usual, and first cousins can be married when a simple ritual has been accomplished to "separate the blood." Divorce is established when the *bandí* has been returned, that is, should the woman be in error, or by mere physical separation and forfeiture of the bride price, should the man be in error.

#### A FOLK TALE: "THE ORIGIN OF POISONOUS PLANTS"

The Pinatubo pygmies live for the present, and there is little concern with the past or future. This may to some extent explain the dirth of folk tales among them; however, a few plants have associated stories which explain their peculiar properties (e. g., the "pitcher plants," *Nepenthes* spp.). These specific tales are set forth in the body of the manuscript in the discussion of the plants concerned. In addition, I obtained one story which explains why important plants are now poisonous, full of seeds, etc., but which may be used for food if properly prepared. The story is important to this study, for it notes that the Pinatubo Negritos have a traditional belief that they were once exclusively food gatherers and hunters. The tale was recorded and is set forth in Pinatubo-Sambal and the English translation is free.

*Hin ány paná'ón kay táo ay áhl'*  
*nín ampanandman alwán bíláng*  
*hapdúg. Ayn hílan tandá' na alwán*  
*mangáho ya ayn nín ambawánin.*

*Kaganawán la ay anpahimáa tandá*  
*ha lálí' ta hapáy kalót. Ya maddi*  
*nín kabíyayáín ay ayn makahida'.*

*Nu mangáho kíláy na pagpaibatán*  
*nín manlík nín náúto' ya amúkaw.*  
*Hay amúkaw ay ayn but-ó, baktá*  
*nangán nu náúto'. Nu náílú ay*  
*ialáng.*

In the first times, the people were not planting, not like now. They knew only how to hunt, and they had no provisions (that is, they had no sweet potatoes or corn to carry with them as they hunted).

They were all depending upon the forest while hunting for the *kalót* (*Dioscorea hispida* Dennst.). It could be eaten then without preparation, for it would not destroy.

When they were hunting, they also looked for the ripe wild banana (the *amúkaw*). The wild banana had no seeds then, and if ripe, just eaten. If green, it was roasted.

Aghiláy na nin makadhadho nin pangaláng la nin liwát, kalót, buk-yót, dawityan. Agláy nan tandá' ya pangáho la nin kaganawán ta pagbukáybukáy lay na. Nu makatumpák hilá nin búngan káya ay kakolán-dawitán lay napón. Hay babái ay mamót ha pón ta mangán.

Makataplí ha makó hilán mangáho ay habaytáy nay gawá' lan állo-állo!

Hiná tandadn ya gawá' la ay namaháng ya pinagkapuén la ta ha ayn hiláy na nin angkagawá'. Nu alawán mangán búngat ha pangahó-wan.

Hapásug impakitutól na ha anito ya nu mangyáddi ay pagkatutól na hi épen namalyáddi ta hubágin ya kaganawán nin angkákabiyay ha lálí' ta inán makatandá' ya táo-táo nu magtrabáho.

Hapásug nin natandaán ni épen namalyáddi ay habaytáy bay ya ginawá' na ya hinábog nay kaganawán!

Hiláy táo-táo ay aghilá ampintáo nin hinábog ya tanáman. Hapásug búngat lan kinwáy kalót ta inúbangoy. Anyáman nangyáddi kollá andá matuán táo ay katugikán nin sanháka, baná ha aghilá nin ampintáo ha in-balita kollá. Hapásug matn nan ampikamati nin nallo'. Hilá ay inámpulingán aná nin maúbo nin mati ya táo.

Hapásug hin natandaán la ya kaganawán ay ampakaláson ay aghiláy na nin nagomán nin nangán nin kalót, buk-yót, bay kanáyon na angkákabiyay ná aglá tandá' gawán. Hapásug habaytáy nay pinangibatán nin sagtrabáho hilá bay nagnákim anggá hapásug.

They did not hunt continuously, because, they were always roasting the liwát,<sup>2</sup> the kalót, buk-yót, and dawityan (*Dioscorea* spp.). They did not hunt well, for they were always satisfied. If they (the men) found the fruit of trees, they would climb from branch to branch. The women would merely pick (the fruit) from under the trees to eat.

Every time they went to hunt, their daily activities were like this!

When their leader understood what they were doing, he was angry, for now they were only eating while at the hunting place.

Then their leader talked to the spirits to see if they would talk to namalyáddi (the most powerful spirit) to see if he would change all of the products of the forest, and the people would learn how to work (and hunt properly).

Now namalyáddi understood, and that is what he did. He changed all of the forest products!

The people did not believe that the plants had been changed. They still gathered the kalót, and cooked it in the bamboo cooking tube. What happened to the children and the old people was that they began to vomit, because they did not believe what they had been told. Now, they began to die of the poisonous plants. Nearly all of the people were dead.

Then the people understood that all of the forest products were poisonous, and they did not eat the kalót, buk-yót, and other products until they had learned how to prepare them. Now, (the people) began to work, and they have good attitudes until today.

<sup>2</sup> The liwát, or illo' as it is more commonly called, is merely the escape variety of *Phaseolus lunatus* which becomes poisonous. This plant, contrary to the Negrito's belief, was introduced by the Spaniards into the Philippines from Mexico!

## THE USEFUL PLANTS

ARRANGED AND DISCUSSED BY THEIR ORDER OF HISTORICAL  
APPEARANCE AND FUNCTION

The exotic flora, that is, plants which were introduced into the Philippines by man, are discussed initially in the following ethnobotanical treatment. By eliminating the exotic flora, the body of this study will contain only those plants which are native, the indigenous or endemic flora, which could have been utilized by the Negritos when they first reached the Archipelago. This assumes, and there is no evidence to prove otherwise, that the Negritos were primitive food gatherers, hunters, and fishermen when they entered the Islands, and that they were not responsible for the introduction of the important economic plants.<sup>26</sup>

Plants of American (New World) origin are discussed first followed by the plants of historical introduction, other than from the New World, which were either purposely or accidentally disseminated by man. Finally, those plants which are believed to be of prehistoric introduction are treated at length. These latter plants are discussed under two categories; the food plants, and the non-food plants. With all of the above plants abstracted, there remains only those useful plants which are native to the Philippines, and which could have provided the Pinatubo pygmies, as well as other pygmy groups living in a similar environment under similar floristic conditions, with a greater part of their necessities and wants during the long prehistoric period.

## PLANTS OF AMERICAN ORIGIN

It is noteworthy that plants of American origin, though not great in number, have had tremendous influence upon the present behavior of the Pinatubo pygmies. Some fifty New World plants were found in the Pinatubo area, and all but four of

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<sup>26</sup> Authority for distinguishing the exotic flora, and whether a particular plant was of prehistoric or historic introduction, was obtained almost wholly from Merrill's monumental works; principally, *Notes on the flora of Manila with special reference to the introduced elements*. Philip. Jour. Sci. § C 7 (1912) 172 ff., and *An enumeration of Philippine flowering plants*. Manila, Bureau of Science (1922-26) 4 vols.

these are used in one manner or another by the Negrito.<sup>27</sup> The following descriptions of the uses of these exotic plants do not give us a picture of pre-Spanish Negrito life; however, they do show the changes which have occurred in the culture of the Pinatubo pygmies through the influence of recently introduced American plants, particularly the crops; and the enumeration of American plants is necessary in order to isolate those useful plants which are native (endemic or indigenous).

*Kamóti. Ipomoea batatas* (Linn.) Poir.

The sweet potato, still carrying the Nahuatl name, is today the single most important Negrito food. As the plant is very hardy, it is well adapted to the pygmies' semisedentary life and crude gardening techniques. The sweet potato may be planted and harvested during every month of the year, and the Pinatubo pygmies recognize at least nine (9) varieties: (1) *magbabaúhok*, (2) *inimpi*, (3) *bulukudúk*, (4) *lagúma*, (5) *kastila*, (6) *kítáng*, (7) *iniklóg*, (8) *púrak*, and (9) *kapangpangan*. The names of these varieties are for the most part place names, and apparently denote the areas from which the varieties originated. The sweet potato is planted by tops, *agwáy*, one hand-spread apart, that is, *mikáy dingan*, and three tops are placed in each hole. The yearly subsistence value of this single food is approximately 53 per cent of their total food supply.<sup>28</sup>

In addition to the great importance of the tuber as a food, the young leaves of the sweet potato are a common vegetable. One variety of the sweet potato has a reddish-brown tuber and is said to be an effective medicine for dysentery. The tuber is merely eaten after boiling or roasting. It is very interesting to note, according to the Negritos, that an effective poison

<sup>27</sup> In 1912, Merrill noted that at least 178 species of plants had been introduced either purposely or accidentally from the New World. Over 100 of these were apparently brought between the years of 1512 and 1815 from Mexico by the Spaniards on the annual galleons. Undoubtedly, the number of American plants in the Philippines today is much larger. Merrill, E. D. Notes on the flora of Manila with special reference to the introduced elements. Philip. Jour. Sci. §C 7 (1912) 172 ff.

<sup>28</sup> Even among the Ifugao, who are famous for their rice culture, the sweet potato forms approximately 42 per cent of their annual subsistence. Barton, R. F. Ifugao economics. University of California Press (1922) 398 pp. Among many mountain people in the Philippines, the sweet potato is now the most important food.

for stupifying the shrimp living in the small streams and creeks can be made from the leaves of the sweet potato! A large number of leaves are pounded, placed in a small basket, and the basket agitated in the water to distribute the poison. I know of no other Philippine people utilizing the leaves of the introduced *Ipomoea batatas* in this manner.<sup>29</sup>

The sweet potato is wholly secular in use and meaning to the Pinatubo Negrito. Offerings which are made to the spirits following the rice and corn harvests are not performed for the sweet potato. It is not even offered as a food for the spirits during important ceremonies.

*Maih. Zea mays* Linn.

Although the Negritos obtain only one crop of corn during the year, it is the primary staple during *buwán dal-áha* and *buwán kilay* (approximately June and July).<sup>30</sup> The Pinatubo pygmies distinguish at least six (6) varieties of corn principally by the size of the ears and the colors of the kernels: (1) *kátaban*, (2) *módos*—not to be confused with the American cassava, *Manihot utilissima* Pohl, which is also called *módos* by the pygmies—(3) *tinipil'*, (4) *bukóy*, (5) *niyumbáng*—which is also the name of an arrow—and, (6) *maralikít* (see Plate 4, fig. 3). Like the sweet potato, the corn is either boiled or roasted, and in addition, a "corn bread" called *binángoy*—among the deeper Pinatubo Negrito, *Mangyangúl*—is made by baking the pounded kernels in a green bamboo tube.

Corn also has a number of other uses. The tassels of the ear, the latter with the kernels removed, is made into a doll for children, the *aná-k-anák* (from *aná-k*, "child"). The tassels are also soaked in water, and the decoction ingested when it

<sup>29</sup> With regards to the continual controversy concerning the origin of the sweet potato, Merrill states: "I have found no references that lead me to believe that the sweet potato reached any part of Papuasias, Malaysia or tropical Asia before the arrival of the Europeans." Merrill, E. D. Further notes on tobacco in New Guinea. *American Anthropologist* 43 (1946) 22-30.

<sup>30</sup> The Pinatubo Negrito employ a 13 month (*buwán*) lunar calendar. This calendar was undoubtedly of Sambal origin, but has survived among the isolated pygmies whereas the Christian Sambal now use the Gregorian calendar and Spanish names for the months. Beginning roughly with the period which we call January, the months are: (1) *panángoy*, (2) *yági*, (3) *pangitang* or *lanitak*, (4) *nangá* or *palikik*, (5) *bo'*, (6) *tulóng*, (7) *daldáha*, (8) *kilay*, (9) *kakúwan*, (10) *lawa-lawa*, (11) *báih*, (12) *márok*, and (13) *kulikit*.

is difficult to urinate. The dried, red kernels are strung to form a necklace, and worn as a cure and protection against *gukátung*, "chickenpox" or "smallpox."

The Pinatubo pygmies believe that the various species of the small, burrowing blind snakes bite and that they are poisonous. Loveridge points out that this is a common and erroneous belief among the people in the Pacific World probably due to the prick which can be obtained from the spine-like, short tail of these snakes.<sup>21</sup> Nevertheless, one dark species called *tatanim-lúpa* is believed to be very dangerous, and the Negritos state that if a person is bitten, various parts of the body become black. The roots of corn are chewed, and the masticate is rubbed on the darkened areas of the body believed to have been caused by the "bite" of this snake.

A number of beliefs are encountered concerning planting and harvesting corn, as well as rice. An offering, *pátay*, is made to the spirits when the first corn is harvested, and before any is eaten by the pygmies. They cut off a small tree on the edge of the clearing, and on top of the stump place a roasted ear and some tobacco. Then a Negrito shouts: "All of you (that is, the spirits) come and share our harvest." If this is not done, they believe that the spirits will in anger destroy the next crop.<sup>22</sup> To prevent the crop from being stolen, the woman first plants some seeds in the corner of the field with closed eyes believing that a thief will not be able to see the mature ears.

The corn is planted one pace apart, that is, *miháy kúrang*, and either two or three seeds are placed in each hole. The planting seeds are kept in bamboo tubes with stoppers, *hüng-hüng*, made out of tobacco leaves in order to keep out the borers.

#### *Módos. Manihot utilissima* Pohl.

The two varieties of cassava which the Negritos recognize are planted from March through September, and the edible root is available in small quantities throughout the year. The cultivated cassava is not poisonous unless, according to the pyg-

<sup>21</sup> Loveridge, A. Reptiles of the Pacific world. Infantry Journal (1945) 105.

<sup>22</sup> Crop offerings, *pátay*, are much more common among the lowland Sambal and among the Ilokano in Zambales, and are built around the rice harvest. It is apparent that this custom among the Negrito has been recently borrowed, and transferred to this exotic crop.

mies, left in the ground for a very long period of time. The Negritos also recognize one variety of spontaneous cassava which they call *kamótin-káyu*, the "potato tree." They state that this escape variety is very poisonous, and even if washed as they treat the wild, poisonous tuber *kalót*, *Dioscorea hispida* Dennst., cannot be eaten. The coastal Sambal call the cassava *kamótin-móros*, and both groups believe that the plant was introduced into Zambales by the Moro fishermen and traders; hence, the local name.

If a Negrito has been accidentally poisoned by eating the spontaneous variety, or by a cultivated variety which has been left in the ground too long, the leaf of the latter is plastered against the forehead to effect a cure.

*Tabáko. Nicotiana tabacum* Linn.

The more settled groups of the Pinatubo Negrito grow considerable quantities of tobacco, and all of the pygmies are heavy smokers. It is commonplace to see even six-year-old boys and girls smoking large, green-leafed cigars.<sup>22</sup> Prior to the past war, the Negrito sold and traded their tobacco into the lowlands for cloth, salt, metal, and other merchandise. Tobacco was one of their principal sources of income.

The tobacco is planted during *bucán láwa-láwa* in small clearings around the bases of trees, principally, the banana. After about one month, when the plants are at least 10 cm high, they are transplanted to medium sized open clearings which have not been burned over. The small plants are protected with coverings made from the fresh bark of the banana stalk. This box-like, protective covering is called *guák*. After harvesting, the tobacco leaves are either dried in the sun—always, when the Negrito needs tobacco immediately—or preferably, when the leaves are to be traded into town, in a wall-less, shed-like structure called the *damáda* (*ramada* Sp.). The tobacco fields are sometimes smudged to make the leaves *mabayáni*, that is, "brave" (we would call it "strong"). The sliced tubers of the poisonous *kalót*, *Dioscorea hispida* Dennst., and the long green leaves of *panóypoy*, *Kolouratia elegans* Presl., are inserted into a cone-like torch made of dried strips

<sup>22</sup> The native cigar is usually called *opék* by the Negrito, but the lowland Sambal terms *abánué* and *lampóng*—the latter being a very large cigar—are also heard. Stubs of partly smoked cigars are called *pákkik*; the *upós* in Tagalog.



of wood. After igniting the torch, the Negrito walks through the field smudging the plants.<sup>24</sup>

At least three medicinal uses are encountered for tobacco. The leaves are placed as a poultice on the enlarged stomachs of children when this condition is accompanied by a very bad smelling waste matter. This sickness is called *magtataká'* (from *taká'*, "waste matter") by the Negrito, but *impátso* by the Sambal in Botolan. The green tobacco leaf is also used as a poultice for boils. In addition, irritations produced by the forest leeches, the *limátik*, are treated by rubbing a mash of the chewed leaves on the inflamed areas.

Tobacco as well as native wines<sup>25</sup> and red cloth—all recently obtained cultural items—are the commonest gifts to the spirits. A rolled tobacco leaf tied with a strip of red cloth is placed with the wine and/or red cloth on a shelf in the corner of the dwelling, as a gift to the spirit(s).

Since the introduction into the Pinatubo area and its subsequent use by the pygmies, a number of native plants have become to be utilized as tobacco substitutes during times of extreme shortages, and one of these was only discovered during the past war. These tobacco substitutes are:

*Alob-álob. Bridelia stipularis* (Linn.) Blume

The dried leaves of this woody vine, according to informants, are commonly used as a tobacco substitute.

*Lubnáy. Calamus* sp.

When there is no tobacco available, the dried stem of this rattan is smoked.

*Labtáng. Anamirta cocculus* (Linn.) W. and A.

Informants also stated that the dried leaves of this vine make a good tobacco substitute.

<sup>24</sup> With regards to the introduction of tobacco into the Philippines, Beyer states: "It is also believed that tobacco (introduced by the Portuguese into the Moluccas probably prior to 1520) reached Mindanao from Ternate before 1530, and was known in Luzon before 1550. It is also believed that it may have been planted in the Sarangani Islands by the Villalobos Expedition, during their 5 months stay there in 1543." Beyer, H. O. Outline review of Philippine Archaeology by islands and provinces. Philip. Jour. Sci. 77 (1947) 351.

<sup>25</sup> I have not seen intoxicants being made by the Pinatubo pygmies, although informants stated that it was made prior to the war by some of the Negrito groups from sugar cane. Moreover, I have not seen a single Negrito drink native wines except upon ceremonial occasions, or when lowlanders were present and had furnished the stimulant.

*Lábi-lábi. Dioscorea cumingii* Prain and Burkill

The dried leaves of this plant, which is also prized for its edible tuber, are sometimes used as a substitute for tobacco.

*Taguktók. Spatoglottis plicata* Blume

The dried leaves of this common terrestrial orchid are smoked when no tobacco is available. My pygmy friends state that the use of this plant only began during the Japanese occupation from purposeful experimentation, for during this period it was almost impossible for the Negritos to either grow tobacco, or to obtain it in trade from the lowlanders.

*Minor useful plants of American origin.*—In addition to the four exotic plants described above, which are of great importance to the contemporary pygmies, at least forty-six other plants of American origin were found in the Pinatubo environment, and all but four of these latter are useful in one way or another.

The presence of a number of the New World plants in the Pinatubo area can be attributed directly to the recent activities of lowland teachers who have taught at the Settlement Farm School for the Negritos, for these plants are confined largely to the Villar area. During the Spanish occupation, recalcitrant coastal Sambal fled to the territory of the Negritos in order to escape punishment, and settled there.<sup>26</sup> This would also, in part, account for a sizable number of American plants which are widely distributed in the surrounding lowland areas, but which now have limited distribution in the Pinatubo area.

In general, the plants of New World origin, particularly weeds, are confined to the grass lands, and utilized principally by the Negritos on the lowest slopes of Mt. Pinatubo. This is to be expected, for as Merrill has pointed out,<sup>27</sup> the "kaingin"

<sup>26</sup> Doble, Hospicio. Synopsis of Memorial Events, Botolan, Zambales. This poem, in the Sambal dialect of Botolan, was written by Mr. Doble in 1928, and contains a description of the significant events in the growth of the Municipality of Botolan for the past 150 years. The data was obtained from the municipal records which have since been destroyed by termites. The poem tells how the Sambal killed a priest, before 1803, and fearing retaliation fled to the mountains, and formed a village called Alhambra in the very heart of the Negritos' territory. Typewritten copies of the original, sixteen pages, can be found in the files of the National Museum.

<sup>27</sup> Merrill, E. D. Notes on the flora of Manila with special reference to the introduced elements. Philip. Jour. Sci. § C 7 (1912) 208.

practice prepared the new environment for the invasion of exotic flora.

*Abokádo. Persea americana* Mill.

In addition to eating the fruit of the alligator pear, the Negritos boil the leaves and ingest the decoction for abdominal pains and dysentery. This small tree is found principally in the vicinity of Villar where it has been planted by teachers. Today, all of the pygmies are familiar with the avocado and have even initiated the planting of a few near Ugik (see Map).

*Akwiti. Bixa orellana* Linn.

The seeds of this small tree are squeezed into water and the water is then poured over meat giving it an orange color, and according to the pygmies, a more delicious taste. This practice, which is common among other Philippine people, is confined almost entirely to the more acculturated Negritos. The local name is related to the names for this plant in other Philippine dialects, for example, *atsuwéte* (Tag.), and according to Zingg, all were originally derived from the Mexican term, *achiote*.<sup>38</sup>

*Anták. Phaseolus lunatus* Linn.

The lima bean is commonly cultivated for its food value by many of the more developed Negrito groups in the Pinatubo area. The *ilo'* is a poisonous, escape variety of *Phaseolus lunatus*, and is very common throughout the entire region. The active principle is hydrocyanic acid. In the latter part of 1944, and early 1945, hundreds of Japanese soldiers fled to the slopes of Mt. Pinatubo to hide. After consuming the cultivated plants found in the clearings of the Negritos, they turned to wild and semicultivated foods. Subsequently, according to the Negritos, many of them died from eating the escape variety of the lima bean. However, the beans are edible, if properly prepared, as done by the pygmies. The beans are shelled, or the pods chopped up, and then placed in a basket in running water for at least one whole night. In addition, the water in which the beans are cooked is changed two or three times.

The leaf of the *ilo'* is pounded to obtain a mash which is rubbed, beginning at the feet, over the whole body of a person

<sup>38</sup>Zingg, R. American plants in Philippine ethnobotany. *Philip. Jour. Sci.* 64 (1934) 266.

who has been attacked by thunder. The nature and cause of this sickness is described below under Medicinal plants and practices in the section entitled *timbi'*. The plant names *anták* and *tilo'* are also used by the lowland Sambal living in the Municipality of Botolan, and according to Merrill, *Phaseolus lunatus* is called *hamtak* in Bikol, and *anta* in Ibanag. The plant name *tilo'* is unquestionably autochthonous, derived from the fact that this plant is poisonous, and when eaten produces dizziness, for *ilo'* means "dizzy" in Sambal.

*Akása. Samanea saman* (Jacq.) Merr.

Small sections of the bark of this large tree are boiled in water, and the brew ingested for stomach-aches. The "rain tree" is confined largely to the Villar area where it was planted around the school site as a shade tree, but in other areas it is apparently spontaneous. Merrill notes that this tree was introduced into the Philippines about 1860.

*Ayá'-kabáyo. Amaranthus viridis* Linn.

*Ayá'-mantúg. Amaranthus spinosus* Linn.

The tender tops of the leaves and stems of these two spontaneous plants make an excellent vegetable. The thorns are merely removed from the *ayá'-mantúg* which, according to the Negritos, is the "true" form. The other plant is the "horse's *ayá'*." Cognates for these plant names, according to Professor R. Galang of the National Museum, are found in Kapampangan; *A. spinosus* is *ayang-lalaki*, and *A. viridis* is *ayang-babái*. The Pinatubo Negritos and the Sambal also call *A. spinosus*, *tiliti*, and this latter plant name appears in Bisaya as *tilitis*, and in Tagalog and Bikol as *kilitis* or *kulitis*. Merrill notes that these plants are certainly introduced, and Brown states that they may be of American origin, and that the local names are related to an Aztec plant name.<sup>29</sup>

*Balingbing. Averrhoa carambola* Linn.

The somewhat sour fruit of this tree is eaten. The tree is confined almost wholly to the Villar area. The plant name, *balingbing*, also appears in Sambal, Tagalog, Bikol, and in other dialects.

<sup>29</sup> Brown, W. H. Useful plants of the Philippines 1 (1943) 513.

*Bayába. Psidium guajava* Linn.

The roots of this very common small tree are chewed and the saliva swallowed when a Negrito has dysentery or is becoming too thin. In addition, the dry bark which is peeling from the bole of the tree is boiled in two bowls of water until there is a residue of one bowl left. This brew is ingested for stomach-aches. The young leaves are also useful. They are chewed, and the mash is spit onto wounds to stop bleeding. The ripe fruit is eaten, and the green fruit is made into necklaces and worn as protection against evil spirits. The guava is a common medicine for many ailments throughout the Philippines.

The pygmies do not cultivate this American tree, but it is spontaneous throughout the entire Pinatubo area at low and medium altitudes. *Psidium guajava* is called *bayábas* in Tagalog, Ilóko, Cebu-Bisaya, and *bagábas* by the Igorot.

*Búka-búka or kapistulá. Cassia alata* Linn.

The leaves of this shrub are pounded to obtain a juice which is vigorously rubbed on areas of the body afflicted with a skin disease. This plant is spontaneous, and the plant names used by the Negritos are the same among the lowland Sambal. *Cassia alata* is widely used in the Philippines as an antitherpetic.

*Bukó-bukó. Blechnum pyramidatum* (Lam.) Urb.

This naturalized hairy herb is used for pig food by the more acculturated Negritos who raise domesticated pigs, and by the deeper groups when they have captured young wild pigs.<sup>10</sup> A native herb, *Ruellia repens* Linn., has the same use, and is also called *bukó-bukó*. These two herbs look somewhat alike, and belong to the same family *Acanthaceae*. Due to the similarities of these two plants, the local name for the indigenous species

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<sup>10</sup> Young wild pigs are a favorite and pampered pet among the Negritos in the Zambales Range, and sometimes the women suckle them. Furthermore, if the small wild pigs can be kept alive, the family will enjoy a feast. The Pinatubo Negritos employ a sizable number of specific terms to describe the pigs, their habits, calls, etc. In general, the wild pig is called *búboy-dibót*, the "grass pig"; suckling pigs, *báyák*; an old female with large teats, *tuák* or *péñudáan*; an old male with large tusks, *maáwa*; and a very old male or female, *piáa* (*pira*, Bot-Sbl.). The sound of the pig is called *timáyag* or *wak* (in Botolan, *wóik*); their tracks, *háyut*; and their trails, *kábang*.

was undoubtedly transferred to the New World plant, when it had invaded the grasslands and had become established. No cognates were found for this plant name.

*Kakamóti. Ipomoea triloba* Linn.

The small specialized underground part of this spontaneous vine may be eaten raw. It is interesting to note that the local name for this plant suggests floristic relationships with the sweet potato, the *kamóti*. In fact, there is, for the two plants belong to the same genus, *Ipomoea*. One Ilokano group has also recognized the fundamental similarities of these two plants, for they call *Ipomoea triloba*, *kamkamóte*, and the Polillo Dumagat and Tagalog call *Ipomoea gracilis* R. Br., *kamó-kamotian*. Other ethnic groups (see the local names below) employ distinct word bases, and apparently do not conceptually relate these species of *Ipomoea*.

We shall see over and over again, as in the case of these two ground vines, that the Pinatubo Negritos, through very sharp observation, and by employing a crude classification of plants, do incidentally in many instances show true floristic relationships with their plant names.

Local names: *bangbangau* (Ilk.); *halobagbug* (Tag.); *halobagting* (Tag.); *sagikat* (Bag.); *muti-muti* (C.-Bis.).

*Kadáyum-dagi. Cosmos caudatus* HBK.

This is a common weed at low and medium altitudes in the Pinatubo area, but the plant has no use. The name means the "rats' needle."

*Kaldótátan. Ageratum conyzoides* Linn.

The leaves of this naturalized, hairy herb are rubbed on the waist and belly area, when the Negritos have gas pains. The leaves are also squeezed to obtain a juice which is placed on cuts. The juice may or may not be heated before application. This New World plant is considered a very important medicine by the Pinatubo pygmies, and is also widely used for medicinal purposes by other Philippine people. The plant name is a local, descriptive term derived from its use to relieve gas pains, for *otát* means "break wind."

*Kamastili. Pithecolobium dulce* (Roxb.) Benth.

The powdered bark of this introduced tree is used as a fish poison. The shrimps are not affected by this poison, but accord-

ing to the Negritos, it will kill the smaller fish and stun the larger. The fruit of this tree is also eaten by the pygmies. This tree is thoroughly naturalized in the Pinatubo area. As Zingg notes, the local names in the Philippines for this plant have been derived from the Mexican terms, *huamuchil*, *guamachil*, and/or *quamuchil*.<sup>41</sup>

Quisumbing notes that *Pithecolobium ellipticum* (Blm.) Hassk., an indigenous species, is used as a fish poison in Mindanao,<sup>42</sup> but the same use for the introduced *Pithecolobium dulce*, insofar as I can determine, has not been previously reported from the Philippines. Experimentation by the Pinatubo Negritos, as well as by the Sambal who also use this plant as a fish poison, is certainly suggested.

*Kalakkah. Elephantopus scaber* Linn.

The leaves of this naturalized herb are heated, and then rubbed on the neck and throat for a bad cough. No cognates were found for this plant name. This plant is called *tanigtig* in Botolan-Sambal.

*Kalubaha. Cucurbita maxima* Duch.

This common American squash is cultivated by most of the Pinatubo Negrito groups, and forms a minor garden crop. The young leaves are also a common green. In addition, the leaves of this squash are used as a medicine. The leaves are rubbed with salt, and are then plastered on the back for chills and fevers.

Local names: *kalabasa* (Tag.); *kulabasa* (Pamp.);  
*kumbasa* (Bon.); *kalabasi* (Sul.).

*Kalumpdy. Paspalum conjugatum* Berg.

This naturalized plant is used as an animal food by the more acculturated Negritos. According to Merrill, this plant is called *kulapi* in Tagalog.

*Kamah-balang. Pachyrrhizus erosus* (Linn.) Urb.

The yam bean, a native of tropical America, is widely naturalized in the Pinatubo area, particularly, along the banks of streams. The fleshy, turnip-shaped roots, after being peeled,

<sup>41</sup> Zingg, R. American plants in Philippine ethnobotany. *Philipp. Jour. Sci.* 64 (1934) 251.

<sup>42</sup> Quisumbing, E. Philippine plants used for arrow and fish poisons. *Philipp. Jour. Sci.* 77 (1947) 152.

are roasted or boiled. The plant is also cultivated by some of the pygmy groups, and is called merely *kamák*. As we have noted, *bálang* means "no permanent place," and denotes the escape variety.

Local names: *sinkamas* (Tag. and Bot.-Sbl.); *kamas* (Ilk.); *sikamas* (Pamp.).

*Kamátih. Lycopersicum esculentum* Mill.

Among some of the Negrito groups in the Pinatubo area, the tomato is semicultivated. More common, however, are the wild forms which have very small fruit, and which are called the *kamátin-bálang*. This plant is called *kamátis* in Botolan-Sambal, Tagalog, Bikol, Iloko, and in other dialects.

*Kasóy* or *malúko. Anacardium occidentale* Linn.

The cashew is cultivated by some groups of pygmies on the lowest slopes of Mt. Pinatubo and is apparently naturalized in other areas. In addition to eating the flesh of the fruit, and roasting the seeds for food, the pygmies use the skin of the seeds as a medicine. The skin is plastered on the head in three places, both temples and the forehead, and is believed to be an effective cure for headaches. The plant name *kasóy* is widespread in the Philippines, and Zingg believes that it is "... derived from an unknown American word."<sup>43</sup> No cognates were found for the plant name, *malúko*, which is heard among the deeper Negritos.

*Kiniw-állo. Desmodium scorpiurus* (Sw.) Desv.

Translated into English, this autochthonous plant name means the "sun vine." The pygmies could give no explanation for this descriptive name, and the plant has no use.

*Kolót-mantúg. Triumfetta bartramia* Linn.

The bast of this widely distributed, hairy annual is used for cordage. In addition, the stem is tied around both big toes and thumbs when a Negrito has a stomach-ache. *Mantúg* means "true," and in the plant classification system of the Pinatubo Negritos, this plant is the "true *kolót*." They believe that it is related to *kolót-damucág*, *Urena lobata* Linn., the "carabao's *kolót*," which is a pantropic plant that looks somewhat like

<sup>43</sup> Zingg, *Op. cit.*, p. 267.



*Triumfetta bartramia*, and which has the same use. Among some other ethnic groups in the Philippines, the same relationship is established, as can be seen by examining the local names:

*Kolót-mantúg*  
*Triumfetta bartramia* Linn.

*Kolót-damwág*  
*Urena lobata* Linn.

Local names: *kolótang-bilóg* (Tag.); Local names: *kulotan* (Tag., Bia.);  
*kollokolot* (Ilk.); *kollokolot* (Ilk.);  
*kulukulutan* (Pang.) *kulit* (Pang.)

With the exception of the Tagalog names, the other ethnic groups have not attempted to distinguish these two plants by the use of descriptive terms (e. g., *mantúg*, "true *damwág*, "water buffalo") which gives almost a binomial appearance to many plant names of the Pinatubo Negritos. In this particular instance the plants belong to two different families, one plant native and the other recently introduced, and the Negritos's classification does not conform to the Linnaean system. However, in many instances it does, and it is significant to note again the Negrito's systematic use of a classificatory system.

*Düdüngóy. Mimosa pudica* Linn.

The leaves of this sensitive, half-woody herb are pounded, and then are rubbed on the enlarged abdomens of children. This plant name is derived from the word "shame," *düdüngóy* (*rüdüngóy*, Bot.-Sbl.), and denotes the sensitive nature of the leaves. In other Philippine dialects the local names for this sensitive plant are derived in the same manner (e.g., in Tag., *makahiyá*, from *hiyá*, "shame").

*Dikót-ni-Talí. Parosela glandulosa* (Blco.) Merr.

The whole plant is rubbed on the small of the back to remove the aching accompanying malaria. According to the Negrito, *Talí* is the nickname for *Katalina* (sp.); hence, the name of the plant means, the "grass of *Talí*."

*Dila'-dila'-báka. Elephantopus* sp.

The leaves of this naturalized herb are pounded and then applied as a poultice to wounds. The pounded leaves of this plant are also used when a Negrito has been attacked by thunder. Beginning at the feet, the leaves are rubbed over the entire body of the person. The local name means "cow's tongue," and describes rather accurately the shape of the leaf. *Elephantopus* species are also called *dila-dila* in Tagalog.

*Gudulyó'. Chenopodium ambrosioides* Linn.

This herb is semicultivated, and commonly found around the dwellings of the more acculturated Negrito. It is prized as a malaria medicine. The leaves are merely crushed, and then rubbed on the small of the back. No cognates found.

Local names: *adlabón* (Ig.); *libug* (If.); *aposotis*, *alpasote*, *alpasotis*, *pasotis* in Tag., Bis., and Ilk., and according to Merrill, "... all corruptions of the Mexican *apoth.*"

*Hógat. Elephantopus spicatus* Aubl.

This naturalized herb has the same use as *díla'-díla'-báka*, *Elephantopus* sp., which is described above. No cognates found.

*Labanús. Anona muricata* Linn.

The sour sop is cultivated by the Negritos living on the lowest slopes of Mt. Pinatubo, and who live a more sedentary life. The mature fruit is eaten raw, and the green fruit is cooked as a vegetable. Two medicinal uses were also encountered for this plant. The leaves are boiled in water, and the brew is used to wash ulcers and wounds. The green bark from the trunk is rubbed and pasted on wounds to stop bleeding.

Local names: *labanus* (Sul.); *labanos* (Bis.); In Central Luzon, corruptions of the Spanish name *guanábano* are most commonly encountered.

*Láda-bálang* or *tángal. Capsicum frutescens* Linn.

The small chili pepper is thoroughly naturalized in the pygmies' territory as is indicated by the Negrito term *bálang*, meaning in this case, "no permanent place." The fruit is sometimes employed as a condiment, *pangapák*. However, the pygmies do not favor hot food, and the most frequent use of the plant is as a medicant. The leaf is pounded, mixed with lime, and applied to swollen parts of the body. The local name, *tángal*, is descriptive denoting the erect position of the fruit, and this name also appears in Botolan-Sambal. The plant names *lára* and *láda* are commonly encountered in the Philippines for this plant, or *C. annuum*.

*Láda-bakí. Capsicum annuum* Linn.

The bell pepper is commonly cultivated for its food value by the pygmies in the Villar area, particularly, to be cooked with fish dishes. The local name indicates that *C. annuum* is cul-

tivated by the use of the term *bali*, "house," and distinguishes it from *C. frutescens* which is *bálang*, or as we would say, "wild."

*Lasóna-songsong. Eleutherine palmifolia* (Linn.) Merr.

The specialized underground part of this plant is roasted, pounded to obtain a powder, and the powder then rubbed on the belly area for abdominal pains. The Negritos state that this is a specific plant name, and has no meaning; however, the plant name is obviously borrowed as can be seen by examining surrounding dialects, and their uses of the term *songsong*. For example, in Tagalog a garlic is called *bawang-songsong*, and two types of citrus, *súhang-songsong* and *daranghitang-songsong*. In each instance, the Tagalog means that this is the Chinese variety, and in the same manner, the Negrito term, *lasóna-songsong*, would mean "Chinese onion." Manuel<sup>4</sup> has pointed out that *sungsong* is derived from the Chinese words: "sun (favorable) -hong (wind), favorable wind to sail or navigate.

*Liha. Centrosema plumieri* (Turp.) Benth.

This naturalized plant of American origin has a specific name, but no use. The plant is probably applied also to an indigenous plant which was not collected. No cognates were found for this plant name.

*Mádiri-kakaw. Gliricidia sepium* (Jacq.) Steud.

The leaf of this tree is merely rubbed on the body, or is burned, and the smoke is inhaled by a Negrito who believes that he has been attacked by evil spirits. The same method of use is followed when a pygmy is suffering from a thunder attack. The local name is Spanish-Mexican in origin.

*Magugudulyó'. Scoparia dulcis* Linn.

The leaves of this ubiquitous weed are pounded, and then held against the stomach with a cloth binding for a stomach-ache. The construction of the local name, as well as the statements of informants, denote that the Negritos believe that this plant is similar to *gudulyó'*, *Chenopodium ambrosioides* Linn., which also came from the New World.

<sup>4</sup> Manuel, E. A. Chinese elements in the Tagalog language. Filipiniana Publications. Manila, Filipiniana (Research Society) (1948) 87.

*Ólmút-ólmút* or *balbalkót*. *Passiflora fastida* Linn.

The fruit of this naturalized ground vine is sweet and edible. No cognates were found for this plant name, and it is obviously derived locally from the hairy appearance of the filaments of flowers, for *ólmút* means "public hair" in Sambal. No derivation was found for the plant name *balbalkót*.

*Pánti-pánti*. *Hyptis capitata* Jacq.*Hyptis brevipes* Poir.

The aromatic leaves of either of these two naturalized plants are inserted in the nostrils when the Negrito has a headache or is dizzy. The leaves may also be plastered against the forehead for headaches. The name for species of these same plants in Tagalog and Bikol is *pansi-pansi*.

*Ngúhó'-dagi*. *Synedrella nodiflora* (Linn.) Gaertn.

This naturalized herb of American origin has no use, and the local plant name means the "rat's snout." A small, native, rather hardwood tree, *Ligustrum pubinerve* Binn., has the same name.

*Papáya'*. *Carica papaya* Linn.

In the Pinatubo area, the papaw is both cultivated and spontaneous. The latter have smaller, less desirable fruit. The green fruit is a common cooked vegetable, and the ripe fruit is eaten raw. The cooked, green fruit is also widely used as food for domesticated pigs. The leaves are applied as a poultice to the sides of the body when a Negrito is *dínánanángin*; a "sickness of the wind." This illness is described in the section dealing with Medicinal plants and practices.

*Pías*. *Averrhoa bilimbi* Linn.

The fruit of this semicultivated tree is considered a delicacy by the Pinatubo pygmies. The tree is confined largely to the Villar area. In addition, the leaves are boiled in water, and the brew used to bathe a baby that has chills or fever.

Local names: *pias* (Bot-Sbl.); *kamfas* (Tag.)

*Pínya'*. *Ananas comosus* (Linn.) Merr.

Both cultivated and escape varieties of the pineapple, the latter in very large numbers, are found in the Pinatubo area. During *buwán láwa-láwa* and *buwán báih*, the pygmies harvest great quantities of the fruit for local consumption from the

naturalized plants. Besides utilizing the fruit as a food, the Negrito believes that it is an effective vermifuge.

Among the lowland Sambal in the Botolan area, the leaf of the *pinya*<sup>4</sup> is considered an important aid for a difficult childbirth. The leaves are soaked in water until the water becomes yellowish, and the brew is then ingested by the woman. In addition, the mashed leaves are mixed with salt, and plastered on the woman's belly.

*Sagó. Maranta arundinacea* Linn.

The arrowroot is cultivated in small quantities by a number of the Pinatubo Negrito groups for its edible starchy rhizome. The local name for this plant, which is also found in Bikol and Iloko as *sagú*, has undoubtedly been derived from the use of the rhizomes as a starchy food. *Metroxylon sagu* Rottb., the "sago palm," has a starchy pith which is prepared and eaten throughout Malaysia, and *Metroxylon rumphii* Mart., which has the same use, is called *ságo* in Tagalog.

*Maranta arundinacea* is called *aradó* in Botolan-Sambal, and *ararú* in Tagalog, and both terms appear to have been derived from the English word, "arrowroot."

*Sampága. Quamoclit pennata* (Desr.) Bojer

The fine, feathery-like leaves of this spontaneous vine can be cooked as a vegetable. In addition, the red, star-shaped flowers are sometimes worn by the Negrito women in holes in their ear-lobes. *Jasminum sambac* (Linn.) Ait., is called *sampága* in Tagalog, or more commonly *sampagita* (*sampaguíta*). As pointed out by Zaide (though crudely, for he persists in using Spanish orthography),<sup>45</sup> it is possible that this plant name was derived from the terms *sumpá' kitá*, "you and I pledge," said as Filipino lovers exchanged necklaces made from the flowers of *Jasminum sambac*.

*Tümtüm. Hyptis suaveolens* Poir.

Although this plant is of American origin, it is one of the most important medicines of the Pinatubo Negrito, and has many uses. The roots are boiled in water, and the decoction ingested for a stomach-ache. This brew may also be ingested for dysentery, or the roots merely chewed, and the saliva

<sup>45</sup> Zaide, "Sampaguíta, Philippine national flower and narra, Philippine national tree." Philippine history and civilization. Philippine Associated Publishers (1939) 11-14.

swallowed for dysentery. The Negritos further state that the leaves of this plant are used for toilet paper when a pygmy has loose bowels. An infant's disease called *taón*—this disease is described below in the section dealing with Medicinal plants and practices—is treated with this plant. The leaves are squeezed to get the juice which is mixed with mother's milk, and then fed to the child. No cognates were found.

*Takumbáw. Jatropha curcas* Linn.

The physic nut is extensively naturalized in the Pinatubo area at low and medium altitudes. Although this plant is of relatively recent introduction, it is used in many ways. Among the sedentary Negritos, and in the Zambales lowlands, it is planted for hedges.<sup>46</sup> The Negritos roast, and eat the seeds for a laxative. The juice from the leaf is placed on a piece of black cloth, and touched to a baby's tongue for *agihap*, that is, an inflamed tongue accompanying breast feeding. In addition, the peeled seeds are placed in a small bamboo tube, and when the tube is ignited, the oil contained in the seeds makes an effective lamp.

Local names: *takumbáw* (Bot.-Sbl.); *tagumbaw* (Ilk.) It is possible that this plant name is locally derived from the Sambal word for "twin," *lumbáw*, for the fruits are commonly born in pairs.

*Čiko. Achras sapota* Linn.

A few cultivated sapodilla are found in the Villar area, and in the villages of other sedentary Negrito groups. As elsewhere in the Philippines, the fruit is highly prized. The local name is derived from the Mexican word, *chico*.

*Utóng or káling. Phaseolus vulgaris* Linn.

The kidney bean is cultivated extensively by the more settled Negritos and escape varieties are common. The latter, according to the Negritos, are poisonous, and are called *tagubáy*.

Local names: *otong* (Ilk.); *kikilang* (Bon.) for *P. lunatus* Linn.

COMPARATIVE USES, AND THE ETYMOLOGY OF NAMES,  
FOR PLANTS OF AMERICAN ORIGIN

It is interesting to note that some of the uses of the American plants by the Pinatubo Negritos—that is, uses other than for

<sup>46</sup>The Tagalog also plant *Jatropha curcas* for hedges, and include this function in the vernacular name, *tábang-bákod*, meaning "poison fence."

food—correspond exactly with usages found among the Mexicans and American Indians. Zingg notes that a decoction of the bark of *Psidium guajava* is taken internally by the Mexicans for stomach-ache.<sup>47</sup> An identical usage is encountered among the Pinatubo pygmies. *Jatropha curcas*, the physic nut, is used in Mexico as a laxative, and for hedges. These uses are also found among the Pinatubo Negritos, the Sambal, and among many other Philippine ethnic groups. It would be valuable and interesting, as a future study, to systematically compare the uses of New World plants by the Pinatubo Negritos (which have been set forth herein) with the ethnobotany of Mexican and Indian groups. A comparative study might clarify whether some plants, having only minor uses, were purposely or accidentally introduced into the Philippines, particularly, if uses were found which were commonly known in the New World, but unknown for other native Philippine flora.

In most instances uses for native plants, which had already been established or previously borrowed by the Negritos, were transferred to the plants from the New World. *Iilo'*, the escape variety of *Phaseolus lunatus* is only one of many plants, the others being indigenous, which is used as a medicine for thunder attacks. The skin of the *kasóy* seed (*Anacardium occidentale*), the leaves of the *papáya* (*Carica papaya*), *láda-bálang* (*Cap-sicum frutescens*), and of the common squash (*Cucurbita maxima*), are all used as a poultice on the forehead and/or temples for a headache. This latter medicinal practice is extremely widespread in the Philippines, and was long in vogue before New World contacts existed.

The plant names used by the Pinatubo pygmies for the flora of American origin have been derived in a number of ways: (1) local, descriptive plant names coined by the Pinatubo Negrito, for example, *kinio-alló*, *Desmodium scorpiurus* (Sw.) Desv., the "sun vine"; (2) plant names of Mexican or Indian origin which accompanied the exotic plants, for example, the *kamóti*, *Ipomoea batatas* (Linn.) Poir.; and (3) names of native plants which have been transferred to the recently introduced American plants, when there were some floristic similarities between the plants, for example, the *kolót*. In this connection, Professor Beyer has pointed out in conversations how the sweet potato frequently does not carry the American

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<sup>47</sup> Zingg, R. American plants in Philippine ethnobotany. *Philipp. Jour. Sci.* 64 (1934) 245.

Indian name in marginal areas, the name having been lost in the process of diffusion, but takes the name of native or pre-historically introduced yams; for example, *Ipomoea batatas* is called *lapni* by the Ifugao, and *tugi* by the Bontok. These latter plant names appear in these dialects and in other Philippine dialects for species of wild yams.

In a few instances, specific plant names were found for the American flora, that is, plant names having no descriptive derivation, but defining only a particular plant; for example, *bukó-bukó* (*Blechnum brownii* Juss.), *kalahkáh* (*Elephantopus scaber* Linn.), *hógat* (*Elephantopus spicatus* Aubl.), *liha* [*Centrosema plumieri* (Turp.) Benth.], and *túmtám* (*Hyptis suaveolens* Poir.). Moreover, cognates for these five specific names were not found in other Philippine dialects. I strongly suspect that these names for American plants are also applied to native species, but because the native plants were not also collected, the relationship was not established. These are either local descriptive names which have lost their original meaning, or borrowed terms which have been thoroughly disguised through linguistic mutation.

The rapidity with which the American plants have invaded and have been adapted to Philippine cultures, as in the case of the Pinatubo pygmies, is truly amazing. A plant such as *túmtám*, *Hyptis suaveolens*—which we have already seen as one of the most important Negrito medicines—was accidentally (?) introduced from the New World by man, spread through natural agencies (again probably with the help of man) from the point or points of introduction, found a suitable habitat (which had been prepared by man), and became established to the extent that the plant is now characteristic of the Pinatubo flora at low and medium altitudes. Finally, this naturalized plant was utilized by the Negrito, received a specific name, and has become apart of their traditional behavior.

The speed with which the exotic flora is utilized, such as *túmtám*, is undoubtedly influenced by the presence or absence of physical characteristics of the plants which do, or do not, meet established local prerequisites determining uses. For example, plants having bitter leaves or stems are commonly used in the Philippines for stomach disorders. If an introduced plant is found to have this characteristic, it will be quickly utilized. The fact that many Philippine groups, such as the Pinatubo Negritos, constantly experiment with plants



hastens the process of the recognition of the potential usefulness, as defined by the culture, of the introduced flora.

PLANTS OF PURPOSEFUL HISTORICAL INTRODUCTION INTO THE  
PHILIPPINES (OTHER THAN FROM THE NEW WORLD)

In order to establish the identity of the native flora which provided the Pinatubo pygmies with the necessities and wants of life during the prehistoric times in the Philippines, it is now necessary to enumerate those plants which, though useful at present, are known to have been of purposeful historical introduction from other lands. Unlike the plants of American origin, the plants of recent historical introduction from other countries have had little influence upon Negrito life. With the exception of the New World plants, all important economic plants utilized by the Pinatubo Negritos and by the Filipinos in general, had been introduced prior to the first European contacts accompanying waves of prehistoric cultural intrusions. Of the cultivated and spontaneous plants, which according to Merrill, were certainly "... introduced by the Spaniards from Europe, or from various neighboring countries in the East,"<sup>48</sup> only four were found in my ethnobotanical collection from the Pinatubo area:

*Kanila. Cinnamomum zeylanicum* Blm.

The bark of this tree is scraped to obtain a powder which is mixed with saliva to form a paste. The paste is then applied to three points on the head; the glabella, and both front temporals. A strip of cloth may be wrapped around the forehead to hold the paste in place. According to Merrill, this tree was introduced from India or Ceylon, and the local name is Spanish in origin, *canéla*. It is significant to note that the two plants used in this manner, that is, as an application of paste to the forehead and temples, are both introduced. As noted, the other plant is the American *kasóy*, *Anacardium occidentale*. As no native plants were found which are used in this same fashion, it would indicate that this specific method of treating headaches was also recently introduced.

*Dikót-ni-iná-Santa-María. Artemisia vulgaris* Linn.

This half-woody herb which was introduced into the Philippines from Europe is a common medicine among the Pinatubo

<sup>48</sup> Merrill, E. D. Notes on the flora of Manila with special reference to the introduced elements. Philip. Jour. Sci. §C 7 (1912) 194.

pygmies. The leaves are plastered against the forehead for headaches. The local plant name, partly of Spanish origin, means "mother Saint Mary's grass."

*Gomamila. Hibiscus rosasinensis* Linn.

The flower bud of this widespread, cultivated, and ornamental bush (a native of the Old World) is pounded, and the mash is placed on boils. In Manila today, it is common to see the buds of this plant being gathered from hedges of *Hibiscus rosasinensis* Linn., along the streets. The buds are mashed with salt and sold in the various markets as a medicant for boils.

Local names: *gomamila* (Tag., Bis., Pamp.)

*Sampalok. Tamarindus indica* Linn.

This tree has been cultivated by the Negrios in the immediate vicinity of Villar for its edible fruit, and in other areas, it is spontaneous. According to Merrill, the tree is very probably a native of tropical Africa.<sup>49</sup> A few of the Pinatubo Negrito groups also call this same tree *wipit*.

Local names: *sampalok* (Tag., Pamp., C. Bis.)

USEFUL PLANTS ACCIDENTALLY DESSIMINATED BY MAN DURING  
THE HISTORIC AND/OR PREHISTORIC PERIOD

A sizable number of plants have been inadvertently introduced into the Philippines by man within the historic period, or possibly earlier. As Merrill has pointed out, these plants are certainly not a part of the native flora, as their distribution in the Philippines would indicate.<sup>50</sup> Furthermore, it is reasonable to assume that most of these have been introduced within the historic period because of the intensified cultural contacts. The following plants found in the Pinatubo environment, and used in one way or another by the pygmies fall into this category:

*Anták-dho. Tridax procumbens* Linn.

The leaves of this plant are cooked as a vegetable. The plant is not included in Merrill's Enumeration of Philippine flora, and is apparently of very recent introduction. The Negrito name means the "dog's bean."

<sup>49</sup> Merrill, E. D. An enumeration of Philippine flowering plants 2 (1925). 256.

<sup>50</sup> Merrill, *Op. cit.*, pp. 195-6.

*Bádah. Andropogon aciculatus Retz.*

This very common, small grass which has annoying spikelets that stick to clothing, has no use, but has a specific name. In the Sambal of the Municipality of Botolan, this grass is called *bárah*, and in the Sambal of Iba, *mananahí*.

*Bukó-bukón-lanfm. Eclipta alba (Linn.) Hassk.*

The roots of this ubiquitous weed are pounded to obtain a juice for the prick of the severe stinging, scorpion fish, *napó*, *Gymnapistes niger* Cuv. and Val. One informant called this plant *lamón-lanfm*, "water grass," and both names denote by the term *lanfm*, "water," the habitat of this weed.<sup>51</sup>

*Kolót-damwág. Urena lobata Linn.*

The bark of this erect shrub yields fibers which are rolled into cordage. In addition, the roots of this plant are boiled, and the brew ingested for stomach-aches, or the bark is merely worn as an arm band for the same sickness.

The Poillo Dumagat call this same plant *kolótan*, and the roots are boiled in water and the decoction ingested for malaria. Bal notes that *Urena lobata* is commonly used for cordage in the State of Orissa, India.<sup>52</sup>

*Kopit-kopit. Desmodium pulchellum (Linn.) Benth.*

This plant is commonly burned under or around the Negritos' dwellings to drive away the evil spirits, particularly, the *kólám* and *jabló*. This usage is discussed in detail below in the section dealing with Plants and the belief in spirits. *Kopit-kopit-lalí*, *lalí* means "forest," and differentiates the habitat of the one *Desmodium velutinum* (Willd.) DC., also accidentally introduced, has no use, but the local plant name shows again the incidental accuracy of the Negritos' botanical classification. The word *kopit-kopit* from the other. As Professor Sulit has pointed out in conversations, the protective bract covering the seed of *Desmodium pulchellum* gives a pinching-like appearance to the fruit, and this has probably stimulated the plant name for this species, as well as for other plants which have the same

<sup>51</sup> Among the lowland Sambal, "water" is pronounced *lanfm*. This pronunciation is also encountered among the Pinatubo Negritos, but *lanfm* is more frequently heard.

<sup>52</sup> Bal, S. N. Useful plants of Mayurbhanj State in Orissa. Records of the Botanical Survey of India 6 (1942) 93.

characteristics. *Sipit*, *hipit*, *ipit* are common terms in Philippine dialects for "pinch."

*Handáyong-a-lilinaw* or *lilinaw-naudit*. *Emilia sonchifolia* (Linn.) DC.

The leaves of this pantropic weed are crushed, and the juice is used to wash sore eyes. Some of the Pinatubo Negrito groups merely use this eye-wash to make their eyes clear. The word base *linaw* means "clear" in Sambal and Tagalog (*lino* in Kapampangan), and I strongly suspect that this plant name has been derived from the use of the plant as an eyewash.<sup>53</sup> In addition, the reduplication of the first syllable of the word base, in this instance *li*, is commonly employed by the Pinatubo Negrito when coining plant names. However, the pygmies now consider this a specific plant name, and offer no explanation of its etymology. *Naudit* means "red," hence, this is the "red *lilinaw*," being differentiated from the "white *lilinaw*" with the use of color terms. The latter plant was not collected.

Local names: *tagulénaw* (Pol.-Dum.); *tagulínaw* (Pol.-Tag.)

Hawáan. *Euphorbia hirta* Linn.

The roots of this pantropic plant are soaked in water and the brew ingested for headaches. The decoction is also drunk for sun or heat exhaustion, particularly, when accompanied by a violent headache. In addition, the roots are boiled in water, and the brew used as a mouthwash for toothaches. *Euphorbia hirta* is a common medicine in the Philippines, and the whole plant, according to Bal, is somewhat a stimulant and narcotic.<sup>54</sup>

Local names: *sisiokan* (Pamp.)

Hayápuk. *Eleusine indica* (Linn.) Gaertn.

The roots and leaves of this common "yard weed" are burned to smudge the body of a person who has suffered a relapse following any type of illness. The patient also inhales the fumes. No cognates were found.

*Hikhik-luwaló*. *Desmodium triflorum* (Linn.) DC.

The stem and leaves of a large number of these small herbs are pounded, and then squeezed to obtain a juice for wounds.

<sup>53</sup> As noted by Bal, in India the juice from the leaves of this plant is dropped into sore eyes. *Ibid.*, p. 39.

<sup>54</sup> Bal. *Ibid.*, p. 41.

The local plant name has been derived from the small, round leaves of this plant which look like "scales," *kikkik*. In Tagalog, *Desmodium* spp., are called *kaliskis-dalág*; the "mud fish scales."

*Lánah. Rottboellia exaltata* Linn.

The leaves of this grass have two uses. They are merely rubbed on the back to remove the aching accompanying malaria, or are used in the same fashion when a person has been attacked by a malign spirit. No cognates were found.

*Lihik-kihik. Crotalaria linifolia* Linn.

*Crotalaria acicularis* Ham.

*Crotalaria albida* Heyne.

*Phyllanthus simplex* Petz.

Four different specimens of *lihik-kihik* were collected, and it is interesting to note that three belong to the same genus. All of these weeds, including *Phyllanthus simplex*, which though having the same local name belongs to a different plant family, have the same use. A large number of the leaves are pounded, then placed in a banana leaf, and the juice dripped into sore eyes. No cognates were found.

*Lingí. Sida acuta* Burm. f.

The leaves of this pantropic weed, undoubtedly disseminated by man, are pounded, mixed with salt, and the mash placed on boils. In addition, the roots of this plant are boiled in water, and the decoction used as a mouthwash for toothaches. No cognates were found.

*Lilínaw-láwak. Crotalaria ferruginea* Grah.

The leaves of this plant are merely squeezed to obtain a juice used for washing sore eyes. *Láwak* means an "open, uncultivated, grass field," and this term is used to differentiate this plant from *lilínaw-naudit*, *Emilia sonchifolia* (Linn.) DC., the "red *lilínaw*."

*Malabawígan-mayámo. Cissampelos pareira* Linn.

The bitter roots of this climbing vine are chewed and then swallowed for abdominal pains and dysentery. The local name means "like the small *bawígan* (*Dioscorea esculenta*)."

Two other plants are also called *malabawígan*; the useful *malabawígan-malháy*, *Pericampylus glaucus* (Lam.) Merr., the "large plant like the *bawígan*," and the non-useful *malabawígan*-

*nakumūd*, *Stephana japonica* (Thunb.) Miers, the "brittle plant like the *bawūgan*."

*Malakohyāwan*. *Cyathula prostrata* (Linn.) Blm.

The stem and leaves of this herb are rubbed on the waist and belly areas to remove "gas pains," the *butāng*. It is noteworthy that the only two plants used to treat permentation are exotic; *kaldotūtuan*, *Ageratum conyzoides* Linn., an American plant, and the above plant which was accidentally introduced into the Philippines by man. Although this plant name is obviously descriptive, I did not obtain the meaning of *kohyāwan*.

*Tāmbalangán*. *Anisomeles indica* (Linn.) O. Ktze.

The leaves of this spontaneous plant, which according to Merrill was accidentally introduced, are merely smelled by the pygmies when they have an unquenchable thirst; a condition called *angán*. Then, in the words of an informant: "The thirst will depart."

*Tagatúhi*. *Abelmoschus moschatus* Medic.

The seeds obtained from the pods of this erect herb are strung to form a necklace and worn by the women and children to frighten away the malign spirits. No cognates were found.

*Tulin-bakólaw*. *Centella asiatica* (Linn.) Urban

The stem of this herb is worn as a necklace for colds and for coughing. The name of this plant would indicate that the Pinatubo pygmies borrowed the plant name from the lowland Sambal. In Botolan-Sambal, the plant name means "monkey's ear," and the pygmies recognize the derivation. However, the Pinatubo-Sambal term for "ear," is *tū:k* which in the lowlands means "deaf." In addition, *bakólaw*, a Sambal term for "monkey," is more commonly heard in the lowlands than in the mountains among the pygmies.

*Untik*. *Solanum nigrum* Linn.

Depigmented areas of the body, called the *labāng*, are rubbed with the pounded leaves of this cosmopolitan weed. In addition, the leaves of this plant are pounded, and then rubbed over the entire body of a person who has been attacked by thunder.

## CULTIVATED FOOD PLANTS OF PREHISTORIC INTRODUCTION

Professor H. Otley Beyer denotes six distinct cultural horizons as comprising the prehistoric period in the Philippines, as well as the major invasions into the archipelago, and establishes incidentally a chronology of the introduction of important cultivated food plants.<sup>55</sup> The first period which began at least 250,000 years ago, and which is represented by paleolithic archaeological material,<sup>56</sup> was apparently that of a food gathering and hunting folk who had immigrated by land.

The second period, about 15,000 to 20,000 years ago, marked the first invasions of the pygmy types which are still represented in the Philippine population by the scattered Negritos and the "Australoid-Sakai" groups. Beyer suggests that these pygmies "... practiced a crude kind of dry agriculture in forest clearings,"<sup>57</sup> and as we shall see later, there is some ethnobotanical evidence to support this view. Of course, the pygmy groups were primarily food gatherers, hunters, and fishermen, and, technologically speaking, their culture was very primitive.

The third period marked the first intrusion of seafaring people having an early Neolithic culture, and the first introduction of important cultivated foods, principally, according to Beyer, millet and yams.<sup>58</sup> The immigrants during the third period came from the north about 5,000 to 6,000 years ago.

The fourth period, beginning about 1500 B.C., and lasting until about 500 B.C., marked the first extensive introduction of important cultivated crops.

They (the immigrants during the fourth period) practiced extensive dry agriculture, and introduced upland rice, taro (gabi), new varieties of cultivated yams and other valuable food crops.<sup>59</sup>

The people during the fourth period, which Beyer calls the "Indonesian B" or Late Neolithic people, came from Indo-China and the south China coast.

The fifth period, which Beyer treats as a continuation of the fourth, marked the introduction to the Philippines of irrigated rice culture and terracing.

<sup>55</sup> Beyer, H. Otley and Jaime C. de Veyra. *Philippine Saga: a Pictorial History of the Archipelago Since Time Began*. Manila. (1947) 2.

<sup>56</sup> Beyer, H. Otley. *Philippine and East Asian Archaeology, and its relation to the origin of the Pacific Islands population*. National Research Council of the Philippines, Bull. No. 29 (1948) 6-12.

<sup>57</sup> *Op. Cit.*, p. 2.

<sup>58</sup> "I did not encounter the Indian millet, *Setaria italica* (Linn.) Beauv., in Zambales, but it is widely cultivated in Mountain Province.

<sup>59</sup> Beyer, H. Otley and Jaime C. de Veyra. *Op. cit.*, p. 2.

Finally, during the sixth period (approximately 300 B.C. to 200 B.C.), the Iron Age groups of Malays coming from the south introduced the water buffalo, developed rice culture, "... cultivated or utilized many fruit trees and fiber plants, as well as ornamental plants, spices, medicinal plants and other agricultural products bespeaking of an advanced civilization."<sup>60</sup>

With reference to useful plants introduced into the Philippines, Merrill much earlier stated:

Manifestly the aboriginal inhabitants of the Philippines must have reached the Archipelago from some other country, and it is certain that in the thousands of years that have elapsed since many first reached the Islands, very many plants have been introduced, some purposely, some inadvertently, by the early invaders and their later successors from Malaya. If we exclude the abaca plant (*Musa textilis* Née) and the various trees yielding timbers, gums, and resins, a few palms, some bamboos, the rattans, etc., it will be found that practically all the species now found in the Archipelago that are of the greatest importance in the economy of the native, whether for food, for condiments, for clothing, for dyes, for ornamental purposes, and very many for medicinal purposes, have originated outside of the Philippines, and have purposely been introduced at one time or another. Not a single important food plant or fruit tree has originated in the Archipelago, but all have been introduced.<sup>61</sup>

Thus, from the cultural intrusions into the Philippines during the prehistoric period, and with the addition of plants from the New World which were discussed above, the present character of Philippine economic and agricultural practices was formed. Of the important food plants which were introduced during the prehistoric period, the Pinatubo Negritos now utilize at least twelve, and of the fruit trees, at least nine. Some of these plants of prehistoric introduction (which are described in detail below), such as *tái*, *Colocasia esculenta* (Linn.) Schott., are well adjusted to the semi-sedentary life of the pygmies, and have undoubtedly been utilized by them for a long time. Other crops, such as upland rice, demanding constant care, are today grown only by the more acculturated Negritos, and are obviously of very recent introduction to the pygmies.

#### GARDEN AND KALINGIN CROPS OF PREHISTORIC INTRODUCTION

##### *Anták. Vigna sinensis* (Linn.) Savi

The cow pea is cultivated primarily by the Negritos living on the lowest slopes of Mt. Pinatubo and is not an important

<sup>60</sup> Beyer, H. Otley and Jaime C. de Veyra. *Op. cit.*, p. 2.

<sup>61</sup> Merrill, E. D. Notes on the flora of Manila with special reference to the introduced elements. *Philip. Jour. Sci.* 7 (1912) 169.



food. The Pinatubo pygmies do not differentiate the various species of beans, but call all *anták*, which in addition to their distribution, would indicate that the beans are of very recent introduction to the pygmies. *Vigna sinensis* is a native of tropical Asia. The Sambal living in the municipalities of Botolan and Iba also call this plant *anták*.

*Bangyád. Andropogon citratus* DC.

The lemon grass is encountered in the vicinity of Villar, and in other pygmy communities closest to the lowlands. Like elsewhere in the Philippines, the stem, rootstock, and young leaves are used for flavoring food. The plant is a native of tropical Asia, and its limited distribution in the Pinatubo area would suggest that it has been acquired only recently by the Negritos. *Andropogon citratus* is called *tanglád* in Tagalog, Bikol, and some Bisayan dialects.

I did not encounter the "milo maize," *Andropogon sorghum* (Linn.) Brot., also a prehistorically introduced food plant, among the Pinatubo pygmies. Even *Andropogon aciculatus* Retz., which we have noted as having no use among the Negritos, is used as a famine food by the surrounding lowland groups. As Professor Sulit has pointed out in conversation, a blanket is dragged over the ground to collect the spikelets. These are then pounded, like rice, to obtain the "grains."

*Baúgan* or *bawúgan. Dioscorea esculenta* (Lour.) Burkill

The goa yam is widely cultivated by all of the Pinatubo pygmy groups and is one of the most important tuberous foods of prehistoric introduction throughout the Philippines. An escape variety, called *kopástak* by the Pinatubo Negritos, is also used for food. The tubers of the goa yam are mature beginning in *buwán manok*, and are harvested through *buwán panúngoy*. The plant is hardy, requires little care, and is well adapted to the living habits of the Pinatubo pygmies.

In addition to its importance as a food, the goa yam is also used as a medicine for swollen fingers and toes. The raw tuber is scraped, and the shavings are applied to the swollen areas. This type of swelling is called *báhP* by the Negritos. No cognates were found for this plant name.

*Kabatítí. Luffa cylindrica* (Linn.) M. Roem.

This member of the squash family is cultivated rather extensively by the more settled Negritos, and an escape variety is also found. The edible fruit is prized by the pygmies.

Local names: *kabatítí* (Bon., Ilk.)

*Kondól. Benincasa hispida* (Thunb.) Cogn.

The wax gourd, which was purposely introduced into the Philippines from India during the prehistoric period, is also cultivated by the more sedentary Pinatubo pygmies. However, this gourd could not be considered even an important minor food, and is undoubtedly of very recent introduction to the Negritos.

The juice from this gourd is also used as an eye wash for any type of eye inflammation.

Local names: *kondól* (Iv., Tag.)

*Háa. Musa paradisiaca* Linn.<sup>62</sup>

*Musa sapientum* Linn.

The Pinatubo Negritos cultivate and semicultivate at least seventeen varieties of bananas, and, in addition, utilize at least four wild varieties. The latter are discussed below in the section dealing with Wild food plants. According to Merrill, *Musa paradisiaca* was purposely introduced into the Archipelago during prehistoric times, but *Musa sapientum* is possibly indigenous. Nevertheless, the latter for functional reasons is discussed in this section.

The cultivated and semi-cultivated varieties of bananas are one of the Pinatubo Negrito's most important sources of food, and among a number of the pygmy groups, particularly those in the Bakláy area, the banana and the sweet potato are the two primary staples. In general, the larger stands of bananas are found in the deeper, more marginal areas, a condition which is undoubtedly due to the fact that the habitat there is more suitable.

The following twelve varieties of bananas, *Musa sapientum* Linn., are either boiled or roasted before eating, and as a class are of inferior quality: (1) *balátay*, (2) *botnúk*, (3) *bulág*, (4) *kayáw*, (5) *kinhíl*, (6) *habá'*, (7) *hillangan*, (8) *hokhók*, (9) *lalagúna*, (10) *obóg*, (11) *tábia'* or *matábia'*, and (12) *túol*.<sup>63</sup> Five cultivated varieties of *Musa sapientum* Linn. are

<sup>62</sup> Banana suckers, and young plants to be transplanted, are called *sáa* in Bolnan-Sambal. I have noted many times that names for varieties and classes of a particular cultivated plant become the general name for the same plant in another dialect.

<sup>63</sup> Some of the names employed by the Negrito for the varieties of bananas also appear in Tagalog: *balátay*, *bulág*, *lalaguna*, *matábiya*, and *sabá'*. Cf., Webster, Food Plants of the Philippines (1924) 35-38; Teodoro, Philip. Jour. Sci. § C 10 (1915) 379-421; Quisumbing, Philip. Agric. Rev. 12 (1919) 1-90, for an extensive list of names for varieties of bananas.

of excellent eating quality, and are commonly carried into the lowlands to exchange for red and blue cloth, knives, and other store goods, or merely sold. These are (1) *bungálan*, (2) *lakátan*, (3) *tampáing*, (4) *daráya'*, and (5) *botólan-bali*. The names of these last five varieties are also encountered in surrounding dialects.

In addition to their value as food, the bananas (including the wild species (*Musa errans* and varieties) have countless other uses. The roots of the *lakátan*, *Musa sapientum* L. var. *lacatan* (Blanco) Teodoro are boiled in water, and the brew drunk by women to stimulate pregnancy. Neither the Negrito men nor the women will eat the double banana, for it is believed that this will cause the wife to have twins. There appears to be no traditional fear or objection among the Negritos against twin *per se* except that it is usually a difficult and dangerous childbirth for the woman. As even a cursory glance at the literature will show, this is a widespread belief among the Malayan people.<sup>64</sup>

The large leaves of the banana are used as rain covers, the *tulóng*, for the walling and roofing of the cruder types of dwellings, and are the most common eating plates. Drinking cups, *kúkong*, for scooping water out of springs are made of the folded leaf. The sheath from the stalk is used for making thread, head straps for the women's pack baskets, for the walling and roofing of dwellings and, as we have seen, as covers for the tobacco seedlings. The flower buds, *páho'*, provide an excellent cooked dish. Uses of bananas are innumerable.

In Botolan-Sambal, the generic term for banana is also *háa*, but in Iba-Sambal, only six kilometers to the north, *batág*. This latter term also appears in Bikol.

#### *Páli. Oryza sativa* Linn.

The Negritos recognize and have grown at least nineteen varieties of upland or dry rice: (1) *inabaká'*, (2) *kinumpánya*, (3) *kalibu*, (4) *dinuwág*, (5) *kinabibi*, (6) *doldro*, (7) *kabalán* (all of these varieties, one to seven, have an odor due to the presence of essential oils), (8) *binitá'un*, (9) *salumánay*, (10) *batuliniw*, (11) *makatló*, (12) *marali*, (13) *kiri-kiri* (this rice has the smallest grain), (14) *bukil* (the variety with the largest

<sup>64</sup> "Neither the husband nor wife, during the latter's pregnancy may pick or touch a deformed or double banana lest twins be born. This applies generally only to a first pregnancy." Keith, H. G. A few Ulun-no-Bokan (Murut) taboos. *Journal of the Malayan Branch of the Royal Asiatic Society* 14 pt. 3 (1936) 328.

grain), (15) *binundók*, (16) *hanglág*, (17) *dusól*, (18) *kinatána* (a sticky variety), and (19) *inarupí*.<sup>42</sup> Although this list of varieties might appear sizable, it is not. The lowland, rice-growing Sambal in the Municipality of Botolan recognize and can enumerate more than fifty local varieties of wet and dry rice.

The Pinatubo Negritos are not successful rice farmers, and the yield from their crops are both poor and uncertain. The deeper Negritos do not cultivate rice—for example, the Negritos in the Bakláy area—and nowhere do the pygmies depend upon this crop. Rice is frequently planted with corn in the same or adjoining clearing, so that should the rice crop fail, the corn (and the ever available sweet potato) can be eaten. Rice is of relatively late prehistoric introduction to the Philippines, and I believe, of very recent historical introduction to the Pinatubo pygmies. William Allan Reed who travelled through the territory of the Zambales Negritos some 45 years ago noted that the pygmy “. . . does not plant rice to any extent.”<sup>43</sup>

The Negritos eat far more rice than they grow, for many now work in the lowlands during harvest times, and are paid by the day with unhusked rice. Rice is usually a highly desired food. However, the more acculturated Negritos characterize the deeper Negritos as being very unhappy when only rice is the available staple, and when tuber crops (particularly, the sweet potato) are wholly lacking.

As noted, rice in the field is called *páli* (*páli*, Bot.-Sbl.), husked rice, *büyá* (*boyá*, Bot.-Sbl.), and cooked or boiled rice, *kaññ* (*kanñ*, Bot.-Sbl.).

*Patóla. Luffa acutangula* (Linn.) Roxb.

The dishcloth gourd, like other members of the squash family, is only a minor garden crop. Its cultivation is confined largely

<sup>42</sup> The plant names *inabáka*, *kinumpánya*, *kinabibi*, *kabalán*, *binundók*, and *dusól* are also found in Tagalog for varieties of upland rice. In addition, *dokeño* in Pinatubo-Sambal appears as *dorádo* in Tagalog (r-l-d shift), and *marlí* as *dumallí* (metathesis). *Hanglág* appears in Tagalog as *sanglág* which defines a delicacy made of cooked, sticky rice mixed with sugar and coconut milk. Note that many of the Negrito names for the varieties of rice include the sounds s and r indicating that these names have been borrowed rather recently, and have not yet shifted to h and d respectively which are the complimentary sounds in the Pinatubo dialect.

<sup>43</sup> Reed, W. A. *Negritos of Zambales*. Manila, Bureau of Printing (1904) 42.

to the Negrito groups on the lowest slopes of Mt. Pinatubo, and it is unquestionably of recent introduction to the Pygmies. The local name is commonly applied in the Philippines to this species, or to *Luffa cylindrica*, and is derived from the Sanskrit, *patola*.

*Tátú'. Colocasia esculentum* (Linn.) Schott.

The taro or *gabe*, and the *úbi*, *Dioscorea alata* Linn., are the two most important food plants of early prehistoric introduction into the Philippines, and were very likely utilized by the Pinatubo Negritos during the late proto-historic period. The Pinatubo pygmies recognize at least twenty-two varieties of *Colocasia esculentum* which they group into two classes; the *tátú'* carrying the generic name, and the *lukó*. In the group classified as *tátú'* are the following: (1) *pinípucáán*, (2) *udakítan*, (3) *matápog*, (4) *maghábong*, (5) *binayába*, (6) *binangúnan*, (7) *kinawáyáan*, (8) *batlingan* (two types of this variety are also recognized), (9) *inuldílt*, (10) *maralí*, (11) *binató'*, (12) *taká'-manók*, (13) *inalló*, (14) *layóhan*, (15) *binalítí*, (16) *kinamalingaw*, and (17) *kinamalítik*. The *lukó*, which is differentiated by its darker stems and many suckers, includes at least five varieties: (1) *hudió*, (2) *inambalúgan*, (3) *lupíng*, (4) *bigá'*, and (5) *talampákan*.

Like the tuber crops, the taro is hardy and requires little care. The Negritos usually plant the taro along the streams in still, shallow pools of water, or in damp areas, and then ignore the growing plant until it is ready to be utilized. Frequently, the Negrito groups may be living at considerable distances from the areas in which the taro had been planted. The utilization of this plant does not inhibit their semisedentary habits. The primary danger to the taro is swollen rivers and floods; accordingly, the taro is planted along the rivers after the rainy season during *buwán kalúwan* and *buwán láwa-láwa*. Some dry taro is planted in the clearings, just before the rainy season, and while the wet taro (that is, the taro planted along the rivers) is being harvested. This is during the months of *buwán palíkik* and *buwán bo:'*.

Escape varieties of the cultivated taro, called *batlingan* or *tátú'-batlingan*, are common in the Pinatubo area, and these are utilized for food in the same manner as are the domesticated plants. The young leaves, called *lápa*, and the peeled stems are cooked as a vegetable. The fleshy underground parts are peeled, cut into sections, and boiled. In addition, one variety called

*binatô'*, is used as a medicine for *dáko'*. This term describes the condition following childbirth in which the woman is having difficulty with the discharge of the afterbirth. The woman merely eats boiled mixture of the leaves and the fleshy underground parts.

The Pinatubo Negrito name for *Colocasia esculentum* is quite obviously related to the common Polynesian term, *taro*. Among the Tagbanuwa of Palawan, *talús* is the generic name for taro.

*Talón. Solanum melongena* Linn.

The pantropic eggplant, originally a native of India, is cultivated largely by the pygmies on the lowest slopes of Mt. Pinatubo (the groups nearest to the lowlands) and it is only a minor food product. I doubt, judging from the distribution and importance of the eggplant in the Pinatubo area, that it has ever been widely used by the pygmies. *Solanum melongena* is commonly known in the Philippines as *talong*, and among the sedentary cultivators is an important vegetable.

*Úbi. Dioscorea alata* Linn.

This yam is also a very important plant to the Pinatubo pygmies, and is extensively planted along the edges of the sweet potato clearings. The Negritos recognize at least twenty varieties, their identifications depending upon differences in the colors and sizes of the tubers and minor variations in the shapes of the leaves: (1) *badák*, (2) *balakhúw*, (3) *bisáya'*, (4) *bitangáw*, (5) *binanabá*, (6) *káhoy*, (7) *kagónaw*, (8) *kandála'*, (9) *kaláihan*, (10) *duláng*, (11) *duwíyan*, (12) *hinandág*, (13) *inagtáy-pahínga'*, (14) *ólum-baki'*, (15) *man-gópia'*, (16) *pinuyáwan*, (17) *taál*, (18) *tungáy*, (19) *úbin-kamána*, and (20) *wanáy*.

The tubers of the *úbi* are a primary food beginning in November through March, and are highly esteemed by the pygmies. The tubers are merely peeled, sliced, and boiled in water. One variety, the *taál*, is eaten—in addition to its value as a food—when a Negrito is spitting blood.

The local plant name, *úbi*, is encountered in most Philippine dialects.

*Úngot-úngot bali. Momordica charantia* Linn.

The young tops and fruit of this cultivated vine are used as a vegetable and are commonly cooked with fish dishes. Wild

forms of *Momordica charantia* are found in the Pinatubo area and are called merely *ángot-ángot*. As noted above, the term *balí*, the general word for "house," denotes that the one variety is cultivated.

The bitter leaf of this plant is also used as a medicine. It is touched to the lips of newly born babies as a protection against *taón* (see discussion of this sickness under Medicinal plants and practices). *Momordica charantia* is called *apalyát*, by some of the Pinatubo Negrito groups, a common name for this plant throughout the Philippines. *Úngot* is the Sambal word for the coconut palm, *Cocos nucifera* Linn.

#### CULTIVATED, SEMICULTIVATED, AND SPONTANEOUS FRUIT TREES OF PREHISTORIC INTRODUCTION

The following fruit trees, with the exception of the jackfruit, the santol, and the mango, are confined largely to the Villar area, to other Negrito settlements closest to the lowlands, and to the ranch sites of lowlanders who have in the past settled in the Pinatubo area. Although all of the following trees are well known to even the deepest Negritos, it is doubtful if the presence of any, except the jackfruit and mango, can be attributed to the purposeful planting activities of the Pinatubo pygmies. Aborigiculture is not compatible with even the present semisedentary life of the Pinatubo pygmies.

Seven species of citrus are known to the Negritos and have local names, but all (except *Citrus hystrix* DC.) are of very recent introduction into the Pinatubo area, and are not native to the Philippines. The fruits of all are eaten, but those with a sour fruit, such as *Citrus microcarpa* Bunge and *Citrus aurantifolia* (Christn.) Swingle, are usually eaten only by the children. These later two are commonly employed by the lowland people as a food accessory, but this usage is not commonly found among the Negritos.

*Kalamansing. Citrus microcarpa* Bunge.

Local names: *kalamansi* (Tag.); *kalamunding* (Pamp.)

*Dalandán. Citrus aurantifolia* Linn.

Local names: *dalandán* (Tag.)

*Dalanghita. Citrus nobilis* Lour.

Local names: *dalanghita* (Tag.); *darangita* (Ilk.)

*Daláyap. Citrus aurantifolia* (Christn.) Swingle

Local names: *dáyap* (Tag.); *dáláyap* (Ilk.)

*Higada. Citrus medica* Linn.

Local names: *sídris* (Tag.); *cidro* (Sp.)

*Suhá. Citrus maxima* (Burm.) Merr.

Local names: *suxha* (Tag.); *sua* (Ilk.)

*Makátba. Citrus hystrix* DC.

According to Merrill, the *Citrus hystrix* is the only citrus in the Philippines which is apparently native. Moreover, this is the only citrus for which I could not readily find a cognate except in Botolan-Sambal, *malátbas*.

*Katóh. Sandoricum katjape* (Burm. f.) Merr.

The "santol" tree is thoroughly naturalized in the Pinatubo area at relatively low altitudes, and large numbers of the ripe fruit are gathered by the Negritos in July and August. The green fruit, which is quite sour, is cooked with fish dishes. There is no knowledge among the Pinatubo pygmies of ever having planted this fruit tree, and it has apparently been dispersed through natural agencies.

*Manggó. Mangifera indica* Linn.

The mango has been planted by the pygmies throughout the Pinatubo area, and large trees, now remote from living sites, are quite common. The fruit, as elsewhere in the Philippines, is highly prized. The Pinatubo Negritos also recognize one variety of this tree, the *píko*, which has a smaller, less delicious fruit. These two plant names are found throughout the Philippines. According to Merrill, the mango is of Indo-Malayan origin and may even be of historic introduction into the Archipelago.

*Rímas. Artocarpus altilis* (Parkins.) Fash.

The breadfruit is sometimes found in association with the living sites of the more settled Negritos, and the fruit makes an excellent cooked vegetable. According to informants, the tree has appeared in the Pinatubo area only very recently. *Artocarpus communis* is called *rímas* in many Philippine dialects.

*Yanká'. Artocarpus heterophyllus* Lam.

The jackfruit is an important fruit tree and has rather an extensive distribution in the Pinatubo area today, both cultivated and wild. The mature fruit is very large, the largest of any known plant, and the flesh is delicious. In addition, the numerous seeds are edible, after being roasted or boiled. According to Merrill, this tree is of Malayan or tropical Asiatic



origin and was introduced into the Philippines by man during prehistoric times. *Lanká'* and *nanká'* are the local names for this tree throughout the Philippines.

#### RESPONSIBILITY IN THE PRODUCTION OF CULTIVATED FOOD PLANTS

The work of planing, maintaining, and harvesting the kaingin and garden crops falls largely on the Negrito women, including the old and the young. The Negrito men help in the heavy labor of making the clearings, and the older or infirmed men may continue to work with the women in the maintenance of the clearings. The occupations of the active men, the young and the middle-aged, are hunting, fishing, craft activities, and constant visiting. Even in food gathering activities, such as obtaining edible shells and shrimps in the rivers, and vegetables and fruits in the nearby forest, it is the women who also bear the brunt of the responsibility.

The Negrito men travel constantly throughout the entire Pinatubo area to visit, to recount tales of hunting and of the past war, and to discuss marriage and the problems facing their families. The women folk generally remain at their villages working the clearings and protecting the crops. This is also in consonance with the women's function of childbirth and responsibilities of child-rearing. The boys and young men possess a singular freedom. They will invariably be found along the rivers fishing, in the forests shooting birds, or merely accompanying the older men to visit relatives and friends. In fishing activities, the young men and boys make a marked contribution to the family larder. These patterns of responsibilities have created many problems for the teachers and administrators of the government school at Villar. As a group, the older people are entirely unsympathetic with the government's educational program, and like other Negrito groups in the Philippines, ask only to be left alone. They argue that the young girls are needed in the home to help in planting, maintaining, and harvesting the kaingin crops. The young boys, leading a life almost wholly unrestrained, find studying the arts of the chase far more exciting and meaningful than studying functionless arithmetic. When, for example, the migratory, Gray-faced Buzzard (*Buteo indicus*), called *tikwá'*<sup>67</sup> by the pygmies is present in large numbers in the Pinatubo area during the months of September, October,

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<sup>67</sup> *Tikwá'* (Tag.)

and November, it is almost impossible to keep the boys and young men in school. All become involved in making bows, arrows, and blinds for hunting these birds.

Among the Negritos living closest to the lowlands who have adopted Sambal values, this division of labor is not as marked. However, at least theoretically, the production of cultivated foods is woman's work. Polygamy is not widespread today, as it has been in the past, and I have heard a number of men remark with regret and without jest, that having more than one wife was very advantageous, for the family would then have more food.

#### THE WILD FOOD PLANTS

The Pinatubo pygmies still utilize a sizable number and variety of uncultivated foods, specialized underground parts of plants, edible leaves and leaf tops, fruits, seeds, and so forth. They traditionally retain a still greater knowledge of the sources of wild foods, but their relative importance has been greatly diminished by the present cultivation of introduced plants. The following discussion of the wild food plants will give us a picture of the possible plant foods used by the Negritos during the prehistoric period.

A number of plants which have other more important uses are still, and have been to a much greater extent in the past, utilized for food. A common food in this category is the *labing*, that is, the edible growing tips of bamboo. The skin is removed, and the tips cubed and boiled. The young shoots of many rattans, the *palahán*, are also prepared and eaten in the same fashion. The tender growing part of palms within the terminal crown of leaves, the *ábol*, yields a delicious, though rarely used, dish. This "palm cabbage" is usually sliced and boiled, but can also be eaten raw.

An edible starch, the *yádo*,<sup>48</sup> is obtained from two species of palms common in the Pinatubo area; the *ágúh*, *Caryota cumingii* Lodd., and the *idák*, *Arenga pinnata* (Wurmb.) Merr. The palms are felled, split into half, and the pithy interiors scooped out with a bamboo scraper. After being pounded, the pith is placed in a cloth, and water poured over the cloth. Then the cloth is wrung, and the liquid starch

<sup>48</sup> The Polillo Dumaguete call *Caryota cumingii* Lodd., as well as the starchy pith obtained from the palm, *yádo* (*pagáhan*, Pol.-Tag.). The Dumaguets still utilize this food extensively, and boat-like, half sections of the used trunks of this palm are seen everywhere.

caught in a receptacle. This is repeated with the mass of the pith until all of the starch has been obtained. Finally, the water in the receptacle is poured off, and the starchy residue placed in a bamboo tube and cooked. The pith from the younger palms may also be eaten raw and even in this state is tasty.

The flower buds of the wild bananas are an ever handy source of food. The buds are peeled, sliced, and boiled. The buds of the cultivated and semicultivated varieties are invariably bitter, but these can also be eaten, if mashed (with or without salt) and washed a number of times. The Negritos in the Zambales Range obtain some income by trading large numbers of the flower buds of the wild bananas into the low-land towns.

The Pinatubo Negritos recognize, and have specific or descriptive local names, for at least forty-five types of edible ground mushrooms and ear-fungi. Unfortunately, these were not collected. The eleven most important ground mushrooms are: (1) *balhik*, (2) *k'wát-áday*, (*k'wát* is the generic term for all "mushrooms"), (3) *k'wát-amúkaw*, (4) *k'wát-bádah*, (5) *k'wát-karáyan*, (6) *k'wát-bíta'*, (7) *k'wát-tabakónaw*, (8) *k'wát-yábot*, (9) *lahálak*, (10) *malakamáy*,<sup>20</sup> and (11) *óng*. One or more of these mushrooms is found in large numbers from June through October, and is an important additional source of wild food. The mushroom which grows around the bases of the stalks of the wild bananas, the *k'wát-amúkaw*, is large as well as plentiful, and even a few will provide an excellent meal.

The ear-fungi are obtained from specific trees which are, in part, important and meaningful to the Negritos due to this relationship. The pygmies can name with ease all of the trees which are hosts to the edible fungi. The most important and desired ear-fungus, *klklitán*, is found in sizable numbers on the trunks of the following trees: *anggagal'*, *Gomphandra luzoniensis* (Merr.) Merr., *ayangilan*, *Canarium odoratum* (Lam.) Baill., and *bandy-banáyin*, *Radermachera pinnata* (Blco.) Seem. All other types of ear-fungi are merely called *k'wát* (which we have seen is the generic term for mush-

<sup>20</sup> The name *malakamáy* has unquestionably been borrowed by the Pinatubo Negritos, and very possibly from the neighboring Tagalog. In Tagalog this word means "like the hand (*kamáy*)," but the term *kamáy* has no meaning to the pygmies. Their word for hand is *gamít*.

rooms, plus the name of the tree-host. For example, the ear-fungus commonly found on the wild fig *awili*, *Ficus hawili* Bico., is called *kawát-awili*. The following trees are other important hosts of edible ear-fungi, and the fungus found on each is named in the same manner: *áymit*, *Ficus minahassæ* (Teysm. and De Vr.) Miq.; *pangkó*, *Aralia bipinnata* Bico.; *túbáy*, *Ficus nota* (Bico.) Merr.; and *títíphán*, *Ficus barnesi* Merr.

The names for most of the ground mushrooms (discussed above) are also derived in this same manner, that is, by denoting the plant-host on or near which they are found, for example, the *kawát-kawáyan*. *Kawáyan* is the general term for large bamboos and this mushroom is found in bamboo clumps.

Many poisonous varieties of mushrooms and ear-fungi are also found in the Pinatubo environment, and the pygmies traditionally recognize these dangerous types. The non-edible mushrooms and ear-fungi are invariably called *kawát-anito*, that is, the "mushrooms and ear-fungi of the spirits."

#### SPECIALIZED UNDERGROUND PARTS OF PLANTS USED FOR FOOD

Plants having specialized underground parts—tubers, corms, rhizomes, etc.—were undoubtedly one of the most important sources of wild, native food during prehistoric times. These specialized underground parts are all called *lamán*.

##### *Bakalang. Dioscorea* sp.<sup>70</sup>

The tuber of this vine is mature beginning in *buwán báik* (approximately October), and is gathered until *buwán pakikik* (approximately April). The tubers are either boiled in water or merely roasted in the fire. No cognates were found for this plant name.

##### *Bukyót. Dioscorea bulbifera* Linn.

The large aerial fruit of this vine is apparently poisonous, and the pygmies do not normally use it for food. Nevertheless, informants reported that it could be eaten. One informant stated that if the fruit was merely peeled, roasted, and eaten while still hot, that it was not poisonous. Other informants stated that if the fruit was sliced and washed (see the discussion below of the preparation of *kalót*) that it could be eaten. The specialized underground part is also said to be poisonous. The confusion about the use of this plant, and

<sup>70</sup> Unfortunately, when this manuscript was written, none of Burkill's classic studies of the genus *Dioscorea* were available.

the statements of the Negritos, lead me to believe that it was only employed during periods of extreme food shortage, and even then with trepidation.

Though the plant is not an important food, it is widely used as a medicine by the Pinatubo pygmies (see discussion of *yilkyúk* under Medicinal plants and practices).

*Butót. Dioscorea filiformis* Blm.

Though relatively small, the tuber of this wild yam, is highly prized. The Negritos classify this plant as a small *dunuyan*; the latter is *Dioscorea divaricata* Blco. Harold Conklin found that the Tagbánuwa of Palawan and the Hanunó-Mangyan of Mindoro call *Dioscorea esculenta* (Lour.) Burkill, *burót*, and the Tagbanuwa also call a species of wild yam *buntóg*.

*Kabwáng. Dioscorea pentaphylla* Linn.

This wild yam is also an excellent food and matures during the months of October, November, and December. The large, starchy tubers are merely roasted, or sliced and boiled. This yam is commonly called *lima-lima* by other ethnic groups in Luzon, because of the palmate arrangement of the leaflets. No cognates were found.

*Kalót. Dioscorea hispida* Dennst.

The rather shallow, large tubers of this prickly climber are very poisonous (containing a poisonous alkaloid called *dioscorine*) if merely boiled, or roasted, and eaten. However, if the tubers are properly prepared, they make an excellent food. The Pinatubo pygmies prepare this wild yam in one of two ways: (1) First, the tuber is peeled, cut into small pieces and salted, and then placed in a basket and washed in running water for approximately three days. Following this treatment it may be cooked and eaten. (2) The skin is removed, and the tuber is sliced as noted above. It is then washed for a short time in cold water. After washing, the tubers are boiled until the slices become yellow. This water is poured off, and the slices are reboiled. When this process has been repeated at least three times, the tubers may be eaten.

This wild yam is also called *kalót* by the Dinalupihan area Negrito of Bataan, and prepared for eating in essentially the same fashion.

Local names: *kolót* (Bis.); *kalút* (Tag., Pamp.); *karót* (Ilk.); *namí* (Tag.)

*Kamókik. Dioscorea pentaphylla* Linn. (probably var., *palmata*).

This tuber is sometimes cultivated by the Pinatubo Negritos, but as we have noted, it is more commonly wild and called *kabwáng*. *Dioscorea pentaphylla* is not commonly under cultivation in the Philippines, but according to Burkill it is cultivated in northern India, the Malay Peninsula, Java, Amboina, and Fiji.<sup>71</sup> *Kabwáng* and *kamókik* have both been identified as *Dioscorea pentaphylla* Linn., but my Negrito friends insist that the two plants are different, hence, the distinct names. The fact that this yam is cultivated to a limited extent by the pygmies would produce a variation which, according to Burkill, appears in the Philippines as the variety *palmata*.

The large, starchy tubers are merely roasted or boiled. No cognates were found for this plant name, but it may be derived from the name for the introduced sweet potato, *kamóti*.

*Kamóti-páyo'. Gonostegia reptans* C. B. Rob.  
*Pouzolzia zeylanica* (Linn.) Benn.

These two vines have small, specialized underground parts which are edible even raw, and both have wide distribution in the Pinatubo area. The local Negrito name means the "sweet potato of the quail,"<sup>72</sup> and denotes the superficial similarities of these plants, tubers, leaves, and flowers to *Ipomoea batatas*. *Gonostegia reptans* and *Pouzolzia zeylanica* belong to the same family Urticaceae, and are somewhat similar phylogenetically, which would account for the Negritos identifying these two distinct species as a single plant.

*Duwíyan. Dioscorea divaricata* Blco.

This endemic vine has a long (sometimes nearly two meters), slender, edible tuber which grows very deep into the ground. It is considered by the Pinatubo pygmies as the most important of the wild yams, and they all look forward with great anticipation to the maturation of this yam in large numbers during the months of November and December. Huge holes in the ground where these tubers have been obtained are common in

<sup>71</sup> Brown, W. H. Useful plants of the Philippines 1 (1943) 402-403, has quotations from Burkill's study of the *Dioscorea*.

<sup>72</sup> The Button-Quail, *Turnix* spp., are called *páyo'* by the Pinatubo Negritos, and are very common in the grasslands.

the Pinatubo area, and present considerable danger at night, when hiking or hunting. All tubers are dug by means of the digging sticks or bolos, and in the case of the *duwiyan*, it may take the better part of one day.

Local names: *dulian*, *durian* (Illk.); *dayan* (Pang.); *bulóy* (D.-Neg.)

*Lábi-lábi. Dioscorea cumingii* Prain. and Burkill

The large tuber of this plant is merely roasted or boiled, and the Negritos consider it to be one of the best of the wild yams. The plant name is probably derived from *úbi*, a widespread name for the cultivated *Dioscorea alata*.

*Ūbin-búkil. Dioscorea* sp.

According to the pygmies, a delicious tuber is obtained from this vine during the *kaingitan*, the dry season. This plant name means the *úbi* of the mountains. The combining form for mountain, is *búkil*, the free form is *búkil*.

Escape varieties of the *Dioscorea*, prehistorically introduced into the Philippines, are also common in the Pinatubo area and a present source of food for the pygmies. *Kopástak* is the Negritos' name for the escape variety of the very important goa yam, *baúgan*, *Dioscorea esculenta* (Lour.) Burkill. The tuber of this yam is available in sizable quantities during the early part of the dry season (approximately January and February). *Mapiyá'* is the Pinatubo term for the escape variety of the cultivated *úbi*, *Dioscorea alata* Linn. Both of these plants are thoroughly naturalized in the Pinatubo area.

*Importance of the Dioscorea.*—Undoubtedly, the tubers of the various wild yams (at least nine wild species and varieties) were one of the most important sources of food for the Pinatubo pygmies, and for other food gathering groups, during the prehistoric period. However, these tubers are seasonal in appearance, occurring during the latter part of the wet season and the beginning of the dry season, and could not have provided the basic subsistence throughout the year as does the sweet potato today. These wild yams still have great meaning to the Pinatubo Negrito despite the fact that they contribute less than 5 per cent to their present annual subsistence. Many times while traveling from village to village, or collecting plants, I have seen my Negrito companions become very excited upon finding a new location of a wild yam. By the time that the tubers are mature and can be gathered, all of the plants have

been spotted. Mr. Domiciano Darum, principal of the Villar Settlement Farm School for the Negritos, has pointed out that during times of extreme food shortage in the lowlands, for example, the failure of a rice crop, the Sambal pay the Negritos to gather these edible tubers.

Important rituals, such as the "fiesta of the spirits," the *iwi*, invariably, take place during December or January. The primary reason for this is the abundance of food, for a ceremony will attract large numbers of pygmies with healthy appetites and will last as long as the hosts can provide food. At present, food is abundant during these months because it follows the rice harvest, and as we have noted many of the Negritos work in the lowlands during the harvesting period, and are paid in rice. In addition, the sweet potato crop is usually large during this time of the year.

It is very likely, as tradition suggests, that this same ceremonial period was found during pre-Spanish times, for the important yams—both wild and cultivated species—mature during these months. Moreover, other wild foods are plentiful, hunting is good, and the rivers are clear, or beginning to clear, for fishing. The availability of wild food plants must have been an important factor in the past in determining the time of rituals, particularly, among people like the Negritos who live on a subsistence level. When it is remembered that the Pinatubo pygmies rarely store food, even today, this phenological relationship with rituals is even more forcefully suggested.

*Bagúng*. *Amorphophallus* sp.

*Lagyában*. *Tacca leontopetaloides* (Linn.) O. Ktze.

The tuber of *lagyában* contains a bitter principle, the corm of *bagúng*, stinging crystals, and these two plants are only eaten during periods of marked food shortage. The specialized underground parts of both are peeled, mashed, soaked in cold water, the water changed at least three times, and are finally cooked in a bamboo tube. In addition, the peeled stem of the *bagúng* makes an excellent cooked vegetable. No cognates were found for these two plant names.

#### EDIBLE LEAVES, LEAF TOPS AND FLOWERS

If the Pinatubo pygmies desire a vegetable, a large number of wild plants are readily available which yield edible leaves, leaf tops, and/or flowers. These may be boiled as a vegetable, or in the case of specific leaves (and fruits, as we shall see



later), added to fish and meat stews to provide a seasoning. A sizable number of plants are used to make fish and meat dishes sourish. These are called the *pag-áhūm*, and are enumerated below. The leaves of a few plants are added to the same dishes to give them an acrid taste, the *paghuplák* or *paghapf*, and the leaves of a very few plants, the *pagpay-ít*, to give the dishes a bitter taste. These latter leaves and leaf tops are never eaten alone, that is as a vegetable, but are only food accessories. This is a common practice among most Philippine groups; Christian and Non-Christian.

PLANTS USED FOR A VEGETABLE, THE *GáLAY*

*Babáyan*. *Allseanthus luzonicus* var. *glaber* (Warb.) Merr.

The young leaves, as well as the flowers and fruit of this tree, are cooked as a vegetable. This tree is also called *babáyan* in the Tagalog areas and among the lowland Sambal.

*Balúbad*. *Ficus pseudopalma* Bico.

The young leaves of this small tree are cooked merely as a vegetable or cooked mixed with *bag-óng*. The latter is a preservation made of salt and small shrimp or fish. The plant name *balúbad* appears in Tagalog for species of *Anacardium*.

*Bulók-bulókūn*. *Deeringia polysperma* (Roxb.) Moq.

The young leaves of this vine are a commonly cooked vegetable. The Sambal in the Municipality of Botolan also call this plant *bulók-bulókūn*.

*Kalantipay*. *Entada parvifolia* Merr.

When boiled, the *tadúk*, that is, the leaf tops or young leaves of this plant make an excellent vegetable. In Botolan-Sambal, this vine is called *kuripátung*, and has the same usage.

*Katín-ay*. *Kleinhovia hospita* Linn.

When cooked, the young leaf tops of this tree are edible. No cognates were found for this plant name.

*Dangóy*. *Grewia multiflora* Juss.

The young leaves of this shrub or small tree are also edible. This plant is called *danglín* in Tagalog and Ilokano, *dangloy* in Ibanag, and according to Merrill, *dongloi* in Sambal.

*Liúhin-lanfm. Homonoia riparia* Lour.

The young leaf tops of this shrub, which is abundant along the rivers (hence, *lanfm*, "water"), are used as a vegetable. *Liúhin* is also the name of a small tree growing in the forest, *Ardisia pyramidalis* (Cav.) Pers., and the same plant name is known to the Sambal.

*Pakó'. Athyrium esculentum* (Retz.) Copel.

The unfolded fronds of this fern make an excellent and popular vegetable. This fern is commonly sold as a vegetable in the markets throughout the Philippines. The plant name, *pakó'*, is encountered everywhere in the Philippines, defining ferns in general.

*Pakó'-buáya. Ceratopteris thalictroides* Brogn.

The whole of this stout, aquatic fern, common along the edges of small streams, is a fine green. The local plant name is descriptive meaning the "crocodile's fern," and denotes the habitat of this plant.

*Sáber-nólcum. Telosma procumbens* (Blco.) Merr.

The flowers and coverings of the immature fruit of this woody vine is one of the most widely cooked greens among the Pinatubo pygmies. No cognates were found for this plant name, but the appearance of the sibilant would indicate that the plant name was borrowed recently.

*Saláyot-mantúg. Corchorus acutangulus* Lam.

The young leaves of this half-woody annual provide a good leafy vegetable. The Pinatubo Negritos call a number of plants *saláyot* (a common plant name in the Philippines), but classify this one as the *mantúg*, "true," form. *Melochia concatenata* Linn., is called *saláyot-damwág*, the "carabao's *saláyot*," but unlike the "true" *saláyot*, has no use.

*Tagálbag-dikót. Portulaca oleracea* Linn.

All but the roots of this common weed, the "purslane," make a good vegetable. This plant name is autochthonous meaning "the grass with fruit which the birds do not eat."

*Túkod-túkod. Helminthostachys zeylanica* (L.) Hook.

The tender fronds and stem of this fern make a good green and can be eaten raw as well as cooked. The single, erect stem of this plant has undoubtedly provoked the local names,

for example, *tukod-lángit* in Tagalog, the "cane (*tukod*) of the sky (*lángit*).<sup>72</sup> It would appear that the local name *tukod-tukod* had been borrowed by the pygmies, for *ilkin* is "cane" in Sambal. This fern is used extensively in the Philippines as a food.

It is noteworthy that ferns are a common and important source of vegetables among the Pinatubo pygmies and among other ethnic groups in the Philippines.<sup>73</sup>

#### THE PAG-ÁRUM

The leaves of the following plants are cooked, as we have noted, with fish and meat dishes to give them a sour taste, or to remove the *langhit*, "fish odor," from the dishes:

*Balináknak*. *Embelia* sp. (probably *philippinensis* A. DC.)

(woody vine) Local names: *balako-o* (Ig.); no other cognates were found.

*Bulináy*. *Antidesma pentandrum* (Blco.) Merr.

(tree) Local names: *bulináy* (Bot.-Sbl.); *bignay-pugo* (Tag.); *burnay-kalabaw* (Tag.)

*Dalanáp*. *Tetrastigma* sp.

(vine) The fruit is also edible. No cognates were found and this plant name is not known to the lowland Sambal.

*Kalibangbáng*.<sup>74</sup> *Bauhinia malabarica* Roxb.

(tree) Local names: *alibangbang* (Tag.); *kalibangbang* (Ilok.); *kalibanbang* (Tag. and Pang.)

<sup>72</sup> Cf., Quisumbing, E. Orchid companions—ferns. *Philip. Orchid Review* 3 (1950) 26, for a discussion of ferns used as food.

<sup>73</sup> An etymological analysis of the plant name *kalibangbang* vividly demonstrates a thesis which will be discussed at length elsewhere, that is, that plant names in the Philippines are mostly local descriptive terms, coined by this or that group of people, which when borrowed and diffused, lose their meaning, and become specific terms. The Pinatubo Negritos consider the plant name *kalibangbang* a specific term stating that it has no meaning. However, the retuse leaves of *Bauhinia* spp., particularly when folded, closely resemble the wings of a butterfly, and butterflies are called *kalibangbang* or *kulibangbang* (Bik.), *alibangbang* (Bis.), *salibangbang* (Pol.-Dum.), and similar variants in other dialects! In Sambal and Tagalog, the butterfly is called *palápala* and *parápapo* respectively, and it is obvious that this plant name was not coined by the Sambal or the Tagalog, but borrowed.

*Damíni. Begonia* spp.

(herb) Species of *Begonia* are commonly employed throughout the Philippines for souring fish dishes. No cognates were found for this plant name. The Negritos in the Fort Stotsenberg area on the eastern side of Mt. Pinatubo call *Begonia* spp., *pingál*; the Polillo-Dumagat, *kumambí*, and the Polillo-Tagalog, *balangábang*.

*Dulimán. Stenochlaena palustris* (Burm.) Bedd.

(fern-vine) Local name: *dilimán* (Tag.)

*Lanatinát. Tetrastigma* sp.

(vine) Local name: *barinatnat* (Ilk.)

## THE PAGPAY-ÍT

The leaves of the following plants are cooked with fish and meat dishes to give them a bitter taste:

*Papay-ít. Mollugo oppositifolia* Linn.

(herb) This plant name is derived from the term *paít* or *pay-ít* which is a common word-base for "bitter" in many Philippine dialects.

*Untik. Solanum nigrum* Linn.

(weed) This plant was probably accidentally introduced into the Philippines by man during the prehistoric or early historic period, but is included in the discussion here for functional reasons.

## THE PAGHUPLÁK OR PAGHAPÍ

The leaves of this plant (unfortunately, the only one with this usage collected) are cooked with meat or fish dishes to give them an acrid taste:

*Tábtub-úlo. Illigera luzonensis* (Presl.) Merr.

(vine) This is a descriptive local name meaning "head cover."

## WILD PLANTS WITH EDIBLE FRUITS

Fruits which are rarely utilized, and which are frequently unknown to the more sedentary Philippine people, are commonly eaten by the Pinatubo pygmies. Probably, not a single edible fruit in the Pinatubo environment is unknown to the Negritos, for as we have seen, they actually test the food potentialities of the plants in their territory. The recognition of all potential sources of food has meant (and still does to a limited extent) the difference between living, even if merely on a subsistence

level, and starvation. The larger edible fruits, such as the *katók*, *Sandoricum katjape* (Burm. f.) Merr., which we have seen is of prehistoric introduction but now thoroughly naturalized, the *lumbóy* or *dáhat*, *Syzygium cumini* (Linn.) Skeels; the *alopáy*, *Nephelium mutabile* Blm.; and others, are still a fairly important source of food. The women, and sometimes the young men and boys, will go considerable distances to collect these fruits for the family. On some occasions, a whole family or village group will temporarily leave their living site and clearings to gather fruits in other areas. The fruit is either consumed on the spot with game or fish which were caught on the trip, and with sweet potatoes which are always carried, or the women will transport large loads of fruit in pack baskets back to their village.

#### FRUITS USED AS A VEGETABLE

*Bálbas-bakéro*. *Momordica cochinchinensis* (Lour.) Spreng.

This vine has a very large, spiked, yellow fruit which when sliced and cooked is a tasty vegetable. The local descriptive name means the "cowboy's beard," and both words are derived from Spanish.

*Hóhon-dam<sup>w</sup>ág*. *Uvaria rufa* Blm.

The fruit of this climbing shrub is most commonly cooked as a vegetable but can also be eaten raw. When translated, the local name means the "breast of the water buffalo," and describes crudely the shape of the fruit clusters. In Tagalog, this vine is called *súsong-kalabáw* which has the same meaning.

#### SOURISH FRUITS USED TO SEASON FISH AND MEAT DISHES

*Ayhlp*. *Antidesma bunius* (Linn.) Spreng.

(tree) Local names: *áyhlp* (Bot.-Sbl.); *isip* (Pamp.)

*Kalibangbáng*. *Bauhinia malabarica* Roxb.

*Dalín*. *Flacourtia indica* (Burm. f.) Merr.

(tree) No cognates were found.

*Díngin*. *Dillenia philippinensis* Rolfe

(tree) Local names: *díngin* (Ilk.); *díngin* (Pol.-Dum.); *katmán* (Tag.). The fruit of this tree can also be eaten raw, and though somewhat sourish, is very tasty.

#### WILD FRUITS (MOSTLY SWEET) WHICH ARE EDIBLE RAW

*Ágay-ágay*. *Bridelia glabrifolia* (Muell.-Arg.) Merr.

(tree) Local name: *ágay* (Tag.)

*Aymit. Ficus minahassæ* (Teysm. and De Vr.) Miq.

(tree) Local names: *crinit* (Ting.); *ayimit* (Tag.); *pimit* (Sub.); *kasimit* (C. Bis.); *ayimft* (Pol.-Dum.)

*Alob-álob. Bridelia stipularis* (Linn.) Blm.

(vine) Local name: *luba-lub* (Tag.)

*Alopáy. Nephelium mutabile* Blm.

(tree) Local names: *halupay*, *alupay*, *alupak* (Tag.); *alupak* (P. Bis.); *halopag* (Pol.-Tag. and Dum.) for *Euphoria didyma* Blco., also having an edible fruit.

*Balákbak. Syzygium* sp.

(tree) Local names: *balákbak* (Bot.-Sbl.); *balákbak* (Ig.)

*Balikitcan or mahoplák. Grewia eriocarpa* Jesus

(small tree) Local names: *bariuan* (Ilk.); *baruan* (Ig.); No cognates were found for *mahoplák*.

*Balinháy. Buchanania arborescens* Blm.

(tree) Local names: *balinasai* (Ilk., Tag.); *balinsud* (Mang.); *balinghasai* (Tag.).

*Balliwüt. Ethretia polyantha* R. Br.

(tree) Local name: *balliwüt* (Bot.-Sabl.)

*Banayáyu. Antidesma ghaesembilla* Gaertn.

(small tree) Local names: *banayáyu* (Bot.-Sbl.); *banáyuyo* (Tag.). The taste of this fruit is somewhat acid.

*Báwa-ángot. Ixora philippinensis* Merr.

(large bush) A descriptive, locally coined plant name.

*Báwa-kabwá. Alpinia brevilabris* Presl

The fruit of this herb, appearing at ground level, is highly prized by the Pinatubo Negrítos.

*Kalyámat. Ficus bakeri* Elm.

(woody vine) No cognates were found.

*Kamíng. Semecarpus cuneiformis* Blco.

(tree) Local names: *kamíng* (Pamp., Tag.); *kamíng* (Ilk.)

*Kapurál or ótoy-ótoy. Salacia philippinensis* Merr.

(vine) Local names: *otoi-otoi* (Ig.) for *Mussaenda benguetensis* Elm; no cognates were found for *kapurál*.

*Dalakít. Amomum* sp.

The fruit of this *Zingiberaceae* also appears at ground level, and in some areas of Pinatubo it can be gathered in sizable quantities. *Daliken* appears in the Manobo and Bagobo dialects of Mindanao for *Amomum* spp. I have also seen the Polillo Dumagat gathering large quantities of this fruit. Among the Dumagat, the plant is called *apédí* or *arimungáyín*, and among the Polillo Tagalog, *bag-áng usá*, the "deer's molar."

*Dapiyan* or *alpúgan*. *Leptosolenia haenkei* Presl

(large herb) No cognates were found.

*Gihigih*. *Ficus blepharostoma* Warb.

(tree) Local names: *piapi* (Bot-Stl.); *isís* or *asis* (Tag.) *akas* (Pamp.). All of these local names are related to the idea of "rub against," for as we shall see, the leaves of this tree are commonly used for a sandpaper.

*Lumbóy* or *dúhat*. *Syzygium cumini* (Linn.) Skeels

(tree) Both of these plant names are found in many Philippine dialects.

*Malapuñing* or *palumbuyín*. *Syzygium similes* (Merr.) Merr.

(tree) *Panglongbuyen* (Ilk.) for *Eugenia* spp., but no cognates were found for the Negrito name *malapuñing*, or *puñing*.

*Magtatalóm* or *tanggátum*. *Solanum* sp.

(shrub) Local names: *malatalóng* (Tag.). The Negrito and Tagalog names mean "like the egg plant," *Solanum melongena* Linn. No cognates were found for *tanggátum*.

*Panllun* or *paninghin*. *Buchanania microphylla* Engl.

(tree) Local name: *palúin* (Tag.)

*Pandypoy*. *Kolouratia elegans* Presl.

(large herb) No cognates were found.

*Páo'-mantílg*. *Mangifera altissima* Blco.

(tree) Local name: *paho* (Tag., Bik., P. Bis.)

*Tambák*. *Alpinia haenkei* Presl.

(large herb) Local names: *talbak* (Tag.); *tapbak* (Tag.)

#### THE WILD BANANAS

The Pinatubo pygmies recognize and utilize four varieties of wild bananas, *Musa errans* (Blco.) Teodoro, which are

endemic, namely, the *amúkaw*, *botólan*, *alháng*, and the *kumbáti*. These bananas are a mass of seeds, and although they can be eaten, are important primarily for their juice, the *inúnab*. A large number of the fruits are peeled and mashed by hand into a basin made of banana leaves. Water is then added to the pulp, and it is allowed to set for a few minutes. With a cup, also made out of a banana leaf, the juice is dipped out of the basin, and has a pleasing, sweet taste. As we have noted, the flower buds of the wild banana make an excellent cooked vegetable. Unlike the domesticated varieties of the bananas, the buds of the wild plants are not bitter. The fruit of the wild banana is also used as a bait to attract birds to a blind, and the dried sheath of the stalk has many uses.

#### WILD PLANTS HAVING EDIBLE SEEDS

A sizable number of plants in the Pinatubo environment yield edible seeds which are gathered and eaten by the pygmies, but unfortunately, only the following eight plants were collected and identified:

*Akléh. Albizzia acle* (Blco.) Merr.

The seeds of this large tree are roasted and then pounded to obtain an edible meat. According to Merrill, the plant is called *aklé* (or *akli*) in Tagalog, Pampangan, and Panay Bisaya.

*Balakatán. Canarium* sp.

The nuts of this large tree are merely split and the meat obtained eaten raw. This tree is also called *balakatán* by the Botolan Sambal.

*Bangál. Sterculia foetida* Linn.

The seeds of this tree may be roasted and eaten, or merely eaten raw. If consumed in large quantities, these seeds will act as a violent purgative. The r-l-d sound shift is perfectly illustrated, when comparing Philippine plant names for *Sterculia foetida*; *bangál* (Sbl.), *bangár* (Ilk.), and *bangád* (Ibn.)

*Balinauwáto. Otophora fruticosa* (Roxb.) Blm.

The small seeds obtained from the fruit of this tree are mixed with hot coals, and toasted. This tree has the same local name in Tagalog, Pampangan, and Panay Bisaya.



*Kuliyát. Gnetum indicum* (Lour.) Merr.

The fruit of this vine is peeled and roasted, and after cooling, is pressed to obtain an edible kernel. According to Merrill, this same plant is called *koliat* in Tagalog.

*Daydáy. Dysoxylum arborescens* (Blm.) Miq.

*Dysoxylum altissimum* Merr.

According to the Negritos, the seeds from these two trees are peeled, placed in a bamboo tube without water, and roasted. This plant name is widely encountered in Philippine dialects.

*Hakít. Terminalia* sp.

The seeds of this large tree are merely split, and the meat eaten raw. Species of *Terminalia* are called *sakát* in Tagalog and Pampangan.

*Pawhápi. Anisoptera thurifera* (Blco.) Blm.

According to the Negritos, this large tree yields a seed which may be pounded and eaten raw, or toasted. This plant is called *pakuhápi* in Botolan-Sambal.

#### AN ANALYSIS OF THE PROBABLE SOURCES OF NEGrito FOODS DURING THE HISTORIC AND PREHISTORIC PERIODS

The numerous wild food plants which have been discussed above, and which only include the species identified from my field collections, show how the pygmies were once able to live without recourse to cultivation. The importance of this knowledge to the Negritos was strikingly pointed out during the past war, for it was these same plants which enabled the Pinatubo pygmies to survive while being harassed by Japanese patrols—due to the presence of many guerrilla outfits in the Zambales Range—and while unable to make clearings to plant the sweet potato, corn, and other crops.

In the following two tables, an attempt has been made to summarize the probable sources of the Negrito's foods, as well as the proportional values of each, during the recent (historic) and earlier prehistoric periods:

TABLE 1.—Annual subsistence—recent (historical).

Sweet potato ( <i>Ipomoea batatas</i> ) .....	.53
Corn ( <i>Zea mays</i> ) .....	.14
Meat .....	.08

Uncultivated foods (including tubers, vegetables, fruits, mushrooms, wild bananas, seeds, etc.) .....	.07
<i>Tââ</i> ( <i>Colocasia esculenta</i> ) .....	.05
<i>Ūbi</i> ( <i>Dioscorea alata</i> ) and <i>bañgan</i> ( <i>Dioscorea esculenta</i> ) .....	.05
Bananas (cultivated and semicultivated varieties) .....	.05
<i>Môdos</i> ( <i>Manihot utilissima</i> ) .....	.015
Cultivated vegetables and fruits .....	.01
Rice (mostly imported, but some grown by the more acculturated Negritos) .....	.005
	<hr/>
	1.000

It is seen in Table 1 that approximately 70 per cent (!) of the Pinatubo pygmies present food is derived from plants introduced during the Historic Period from the New World, and that about 53 per cent of their present annual subsistence is obtained from a single plant, the American sweet potato. For weeks, meal after meal, their only food is the boiled sweet potato, and perhaps an *ulam*, that is a meat or other food served with the main starchy dish. When the corn is being harvested, the pygmies eat day after day only the boiled or roasted ears. The dominance of these two crops has produced a tremendous change in their food habits, as well as changes in other aspects of their life. In the past, for example, the pygmies must have utilized a tremendous variety of food plants, for no one plant could have provided the basic subsistence which the sweet potato does today.

House-lot vegetable gardens are poorly developed despite the fact that most of the numerous vegetables found in the Philippines are known to the Pinatubo Negritos. At present, the pygmies have no real taste for cultivated vegetables, nor do they seek a varied diet. Of course, a large number of forest greens are available, but even these are not extensively utilized now.

Many surrounding peoples closely associated with the Pinatubo pygmies, particularly individuals who have attempted to work with the Negritos, characterize them as being singularly lazy. These critics point out that their tools are crude, talk an occupation, and note that the Negritos exert no real effort to develop their house-lot gardens and clearings. Their diet is extremely monotonous, and certainly not sufficient. Malnourishment among the children and adults is common, and the infant mortality rate is unbelievably high. The question as to why this is relatively true when, as we have noted, the Negritos have available a sizable number of cultivated plants which

could give a far better diet, and when they have seen the contrasting life of the lowland Filipinos with its many material advantages, involves examining briefly the basic attitudes and values of the pygmies, as well as the traditional forces which have produced this seeming lethargy on their part.

In the first place, the historical associations of the pygmies are entirely different from the surrounding people who have been involved in sedentary cultivation of foods, and other economic plants, for many hundreds of years. The association of the Negritos with cultivated plants must be reckoned in a few hundred years—excepting perhaps the taro and yams which did not produce a marked change in their habits—and the many attitudes which were a product of thousands of years of food gathering, hunting, and fishing have survived. I have seen Negritos hunt pigs continually, night and day, involving great personal hardships, without a single word of complaint. In contrast, a few days work in the clearings, even a few hours, will stimulate numerous remarks about the difficulties.

Secondly, the Negritos still lack the knowledge of the proper techniques of food production, the "know-how," and the yield of their crops with the exception of the sweet potato is frequently so uncertain as to be very discouraging. The Negritos do not share the philosophy that those who work the hardest reap the rewards. A good crop, for example, is more the favor of the spirits than the consequence of "mere labor." A man who is a good hunter is favored with *galing*, that is, a lucky power. Rarely is a good hunter praised for his skill, but rather, envied for his luck. Good health is a sign of harmonious relationships with the super-naturals. The individual places relatively little faith in his own mundane efforts.

Thirdly, Negrito life is basically communal. There is little chance for the development of great personal ego; hence, the relative absence of powerful leaders, master craftsmen, and culture heroes. Competition between individuals or family groups is not only lacking, but discouraged. Most of their activities are communal; for example, hunting. Following the kill, fixed shares are distributed to the participants, to the owners of the dogs and to the dogs themselves and to individuals who owned bows and arrows used in the hunt. Even if a lone hunter kills a pig, it is shared by every member of the community, and portions are sent to friends and relatives in other villages. If a family has an unusually good crop, it does not mean that this particular family will profit from an abundance of food,

but that all members of the village will have an increased larder. An excess of food within an extended family will stimulate a *talbúg*, a projected marriage, or other ceremonies, and the neighboring population will be invited. There are no provisions for storage or conservation, nor would group attitudes support such a behavior on the part of a family. It is impossible to refuse a request from a relative to share food, as a matter of fact, any personal property. Furthermore, it is dangerous to refuse a request from even a stranger. It is believed that the *mangkókólám*, a person who possesses the evil power *kólám* which causes sickness, travels from house to house asking favors, and if he (or she) is refused will manipulate the *kólám* causing the inhospitable person to become very ill.

I have witnessed a curing-séance for a woman who had the reputation of being selfish, specifically because her boys frequently caught many fish in the rivers, and she did not share them with other households in the village. She began to have violent headaches, and finally appealed to the local medium for aid. The séance was held, and she was told by the spirit-helpers of the medium that selfishness had caused her illness. If she wished to become well, she would have to change her "custom."

These attitudes greatly inhibit "modern" Negritos who through training, schooling, or association with lowland people, have adopted new values favoring a competitive life, and who seek to improve their own economic status, or that of their immediate family. This was strikingly pointed out to me in 1947, as described below, while I was living at Villar:

Mr. Domiciano Darum, principal of the Settlement Farm School, appointed two young Negrito men as teachers, for he wisely felt that he could obtain greater cooperation from the Negrito population by this move. Through personal drive, intelligence, and industriousness, these two men had worked through school, and had achieved these responsible positions. They were in a position to enjoy considerable personal profit, for themselves and for their immediate families, from their salaries. Following traditional patterns, however, their households were soon crowded with relatives who had come to live with them, and share their good fortunes. If one of the men bought clothing for himself, or for members of his immediate family, it was soon shared by members of his extended, and now larger, family. Daily requests for aid and favors were asked by all of their distant relatives and friends, and as the two teachers were known to enjoy an economic advantage, they could not refuse without creating antagonisms and without destroying the advantages for the school which had developed through their appointments. Thus, the two

teachers and their respective families obtained practically no personal economic reward. Moreover, their respective status in the Negrito community was not improved, for they were intimately identified with a program which did not receive popular support.

TABLE 2.—*Annual subsistence—prehistoric period.*

Wild food plants:

13 plants, at least, yielding edible tubers, corms, etc.	
13 plants, at least, having edible leaves and flowers utilized as a vegetable	
10 plants, at least, with flowers and leaves used to season fish and meat dishes	
2 plants, at least, having fruits utilized as a vegetable	
4 plants, at least, having fruits used to season fish and meat dishes	
24 plants, at least, yielding edible fruits (mostly sweet)	
8 plants, at least, having edible seeds or nuts	
A total of, at least, seventy-four (74) native plants utilized for food, as enumerated above, plus the fruits and flower buds of the wild bananas, mushrooms, the edible growing tips of bamboos and rattans, the "cabbage" within the terminal crown of leaves of palms, and the starch obtained from palms	50+
Meat (including the wild pigs, deer, civets, monitor lizards, pythons, bats, birds, monkeys, frogs, fish, eels, shrimps, crabs, insects, snails, ants, etc.)	50—
	<hr/> 1.00

Assuming that there has been no great relative change in the indigenous sources of plant and animal foods and based upon the Negrito's experience during the past war when they could not plant or obtain food from the lowlands and reverted to food gathering, hunting and fishing, I estimate that plants were a greater source of food than animals in the past, that is, during the period prior to the introduction of cultivated plants. In Table 2, therefore, plants should be given a relative weigh of more than 50 per cent and animal sources of food less than 50 per cent but it is impossible to establish any precise percentage relationships of the relative importance of the two sources of food.

Some of the wild food plants which are today only a potential source of food and of very minor importance due to the intrusion of exotic crops, for example, the edible growing tips of bamboo and rattans, starch obtained from the palms, etc., must have been of great importance during the prehistoric period. Furthermore, wild food plants were undoubtedly more plentiful during the prehistoric period, their sources being

relatively unchallenged by other large groups of people. I strongly suspect that lowland and coastal areas were commonly within the movements of the Zambales Negritos during early prehistoric times, for much of this area was probably uninhabited. When other expanding people, such as the Sambal, began to move into the coastal and lowland regions, the pygmies were forced into the mountains. Historical records show that the pygmies in the Zambales Range were in constant fear of slavery. The name of the province of Bataan, which has been the home of many pygmies, means "servant." Even today the movement of lowland settlers into the mountains is forcing the Negrito into more undesirable and inaccessible areas. I do not believe that the Pinatubo pygmies are survivors of "forest dwellers," but rather have been forced into the upland regions through population pressure. This thesis is supported by the ethnobotanical evidence, for as we have noted, the plants with which the pygmies are familiar are predominately from low and medium altitudes.

The large number of edible clams, as well as reef fishes, turtles, etc., found along the coast would have greatly increased the food supply of the pygmies during the early prehistoric period. Moreover, other coastal plants would have been available for food. The many techniques of trapping, hunting, and fishing which are known today but are relatively of minor importance, must also have been more fully utilized during the prehistoric period: bird blinds, snare traps, pitfalls for the wild pigs and deer, driving animals by burning as well as providing young grass on which the animals feed, diverting and drying streams to gather fish, eels, and shrimps, and many other techniques. These will be discussed thoroughly in following sections of this manuscript.

It is also very likely that during the late prehistoric period, the "proto-historic" period as defined by Beyer, that the Zambales pygmies began to cultivate specific foods. The yams, taro, better varieties of bananas, and a few vegetables, were introduced, as we have noted, beginning three or four thousand years ago accompanying waves of Neolithic culture which swept into the Philippines. Even if these cultivated plants were introduced after the pygmies settled in the Archipelago, as we are certain they were, it would not mean that the Negritos, and particularly the Pinatubo Negritos, did not use these plants until very recently. The present culture of the Pinatubo pygmies is a product of continued borrowing, and of prolonged

contact with other ethnic groups. Their language, and a greater part of their customs, are related to the Sambal, and it is almost a certainty that the Pinatubo Negritos would have borrowed and utilized any cultivated plant which could have been adjusted to a semisedentary life, as the yams, taro, and the banana can, when the advantages of these plants were first known! The diffusion of the sweet potato and corn in the Philippines during recent times is an excellent illustration of this thesis.

It is also very possible that the Negrito practiced a crude semicultivation of the wild yams, the *Dioscorea*, during the earlier prehistoric period. Today, the *kálot*, *Dioscorea hispida* the *lúbi-lúbi*, *Dioscorea cumingii*, and the *ábin-búkil*, *Dioscorea* sp., are all semicultivated. When the Negritos obtain the tubers of these wild yams, they leave a small portion with the eye so that the tuber and plant will grow again! In the case of the *kálot*, they may even transplant a portion of the tuber, which accounts for the fact that these plants are frequently found along the edges of deserted clearings.

#### NON-FOOD PLANTS OF PREHISTORIC INTRODUCTION

In addition to the food plants introduced during the prehistoric period, a number of other very important plants, useful in many other ways, were carried into the Archipelago by the prehistoric invaders. Of these, at least nine are known to and utilized by the Pinatubo pygmies:

#### *Bantákan*. *Coix lachryma-jobi* Linn.

The hard, whitish seeds of this coarse grass, commonly known as "job's tears," are one of the most common mediums for ornamental necklaces worn by the young girls and women. In addition, these seeds are sometimes worn by both the men and women, as a protection against, and cure for, cholera.

The Ipági-Egóngot of Quezon Province use the seeds of this grass as a food substitute for rice, preparing it in the same fashion as rice, but the Pinatubo Negritos are wholly unaware of the food potentiality of this plant. The Polillo Dumagat also make attractive necklaces out of the seeds of this plant, which as a matter of fact is a widespread practice among the Philippine Non-Christian groups, and the Polillo Tagalog boil the roots of this plant and drink the decoction when it is difficult to urinate.

A careful study of the geographical distribution of the use in the Philippines of the seeds of *Coix lachryma-jobi* as a food might define prehistoric cultural ties of specific ethnic groups in the Philippines with groups in Asia, as well as the direction of movements of people into the Philippines. As noted above, the Egóngot use this plant for food, but the Zambales Negritos are wholly unaware of its food potentiality. This is to be expected, for the Egóngot are believed to be "Indonesian," and to have come from the Indo-China or South China coast where this plant is extensively utilized as a food. On the contrary, the ancestors of the pygmies undoubtedly reached the Archipelago before the "job's tear" was introduced and before this plant had become spontaneous. The Negritos have never learned its basic food value and have merely utilized it for ornamental purposes as do most Philippine people.

A distributional study of the use of the exotic Indian millet, *Setaria italica* (Linn.) Beauv., which I have not seen in Zambales, might also suggest significant historical relationships.

Local names: *balantákan* (Pamp.); *buddkot* (Egn.); *tigb'* (Tag.); *kuddásan* (Dum.); *kuddásan* (Pol.-Tag.).

*Bunga'. Areca catechu* Linn.

Though the areca nut palm is rather rare in the Pinatubo area, the Negritos state that the outer hardwood of an old betel palm makes good bows. The finished bow is lighter in color than bows made of the "palma brava," and the single specimen which I have seen was very attractive.

The Pinatubo pygmies are not, as a group, betel chewers, although some individuals living adjacent to the lowlanders do chew. Rather, the young men prize white, pointed teeth, and often wash their teeth using abrasive river-sands. On the contrary, the Negritos of Bataan chew betel extensively, as do most of the surrounding lowland groups. The incised bamboo lime containers, and the small sling baskets used for holding the ingredients for betel chewing, which are common among the Bataan Negrito, are entirely absent in the Pinatubo area.

Though entirely a conjecture, I do not believe that betel chewing is a Negrito characteristic in the Philippines, and the behavior of the Pinatubo pygmies in this respect typifies the behavior of the early pygmy immigrants. As noted, the areca palm is of prehistoric introduction, and is usually cultivated



by the groups who chew betel, but cultivation of trees of any description is not typical of the pygmy groups.

*Bo'-mantûg. Gigantochloa levis* (Blco.) Merr.

*Kawáyan-mantûg. Bambusa spinosa* Roxb.

*Kawáyan-ikiling. Bambusa vulgaris* Schrad.

As pointed out by Merrill,<sup>15</sup> these three widely distributed and important bamboos are very probably of prehistoric introduction into the Philippines. Their pattern of distribution in the Pinatubo area also shows that they are exotic and have been originally planted by man at one time or another. At present, the Negritos only cultivate the *Bambusa vulgaris*, and then only to a very limited extent. Very probably, pagan Sambal have been primarily responsible for the appearance of these three bamboos in the Pinatubo area, for the Sambal still plant these bamboos extensively. In some areas where the Negritos live the supply of these bamboos is periodically exhausted, for they take approximately one year to mature and are being used constantly. It is often necessary for the Negritos to go considerable distances to gather these bamboos, until the local sources are regrown.

The molding effect of specific plants upon cultures is vividly illustrated by the almost innumerable methods in which the Pinatubo pygmies utilize bamboo. The life of the pygmies must have been very different, and more difficult, when these three bamboos were not available.

The thin walled *Gigantochloa levis* is frequently used for the walling and roofing of the dwellings, and when the house posts and floor joists are made from *Bambusa spinosa*, the whole dwelling is composed of only bamboo (see Plate 11, fig. 2). In addition, the large storage baskets called *buklót*, fences, traps, fishing poles, and the projectile points for the "belatic" types of traps, are made from *bo'-mantûg*. The three-holed, mouth flute called the *bukungjong* is also fashioned from this bamboo.

*Kawáyan-ikiling* is used principally for tying fences and parts of the house, after being carefully split and trimmed, or for making a twisted "rope."

*Kawáyan-mantûg* is the most important of all the bamboos, and has so many uses that it almost defies enumeration. Parts of the dwellings, household items, children's bows, men's combs,

<sup>15</sup> Merrill, E. D. An enumeration of Philippine flowering plants. Manila Bureau of Science 1 (1925) 94-96.

the "jew's harp," called the *kulibáw*, the zither or *tabángbáng*, a drum used in ceremonies for the spirits, the *talibúg*, a telescopic bamboo container for the strike-a-light and for other personal effects called the *bólo-bólo*, the fire-saw or *pay-úwa*, baskets, traps, cordage, and many other items are made from this bamboo.

Though as we have noted, these three bamboos are of prehistoric introduction, further treatment of their uses will appear in the following sections of this monograph along with the indigenous and endemic plants. This has been necessary because of their present functional importance, and the difficulty in abstracting for analysis their multitudinous uses.

Dialectical variants for the plant names of these three bamboos appear in most other Philippine dialects.

*Kalawág. Curcuma longa* Linn.

The rhizome of this plant, which according to Merrill is a native of India, is scraped and pounded to obtain a yellowish powder. This powder is mixed with coconut oil, *asiti*, and powdered lime, *ápoy*, and then pasted on swollen parts of the body. In addition, the juice obtained from the rhizome is rubbed on the enlarged stomachs of children. The method of coloring meat using the yellow dye obtained from the rhizome, which is extensively employed by the surrounding lowland groups, is known to the Pinatubo pygmies, but rarely utilized. Meat cooked in this manner is alleged to be more tasty. *Kalawág* or *diláw* (the later is a descriptive name meaning "yellow," and denoting the color of the rhizome) are the local names in Tagalog, and Merrill notes that *kaldúag* appears in Manobo and Bisaya.

*Hamát-mantúg. Piper betle* Linn.

The leaves of this vine, the "true" betel leaf, are wrapped to the throat and held in place by a cloth band, for a bad cough. *Hamát-baki'*, *Piper interruptum* Opiz., a native plant meaning the "monkey's betel leaf," is also used in the same fashion. *Piper betle* and *P. interruptum* are called *samát* in Tagalog, Pampangan, and in other Philippine dialects.

*Duhó'. Kaempferia galanga* Linn.

The whole of this small herb, which is sometimes cultivated by the most acculturated Negritos, is rubbed on the back of the neck, or merely smelled, for colds. According to Merrill,

this plant is of prehistoric introduction, and is called *dasó* in Tagalog, *disól* in Iloko, and *dosó* in Bontok.

*Anghili. Bryophyllum pinnatum* (Lam.) Kurz.

A medicine for body scabies is made from this plant. The leaves and stems are heated over the fire, and the juice is manually squeezed from the plant onto the infected areas. According to Merrill, this plant is called *angélica* in Spanish and is apparently the origin of this local plant name.

*Tángan-tángan. Ricinus communis* Linn.

An oil is obtained by crushing the fruit of this pantropic bush, the "castor-oil" plant, and the oil is ingested with water for constipation. This is a common usage throughout the Philippines. In addition, the leaves are rubbed with salt and plastered to the side of the body when there are sharp pains, and it is difficult to breathe. This condition is called *tagilitan* by the Pinatubo Negritos. *Tángan-tángan* is also the local name for this plant in Tagalog and in other dialects.

*Laiya. Zingiber officinale* Rosc.

The roots of the ginger are pounded to obtain a powder which is rubbed on the abdominal area for a stomach-ache. A few of the acculturated Negrito families cultivate this plant for its medicinal value, but it is usually obtained in trade from the lowland Sambal. The Pinatubo pygmies also call this plant *alomángí'*, or *naapák*. Cognates for the local name *laiya* appear in many Philippine dialects, such as, *layá* and *luyá*.

#### NATIVE PLANTS USEFUL FOR PURPOSES OTHER THAN FOOD

Despite intense cultural contacts bringing fundamental changes in their way-of-life, the Pinatubo pygmies still utilize hundreds of wild plants in everyday life activities. Even in instances in which recently acquired tools and ideas have eliminated the functional importance of particular plants, the Negritos have retained this traditional knowledge.

All plants appearing in the following discussions, unless specifically noted as being exotic, are native plants, that is, indigenous or endemic plants, and for the most part are low and medium altitudes plants having widespread distribution. It is fortunate that most of the plants utilized by the Pinatubo Negritos are of widespread distribution, for the possibilities of obtaining comparative ethnobotanical data for the same plants from other pygmy groups are enhanced.

## PLANTS USED IN MAKING BARK CLOTH

During the many months that I lived with the Pinatubo pygmies, I did not see a single individual making or wearing bark cloth. Nevertheless, it has been used in the past, and the older men and women still know which trees provide the best bast, as well as the specific method of preparing and coloring the beaten bark. Even when Reed traveled through the territory of the Zambales Negritos, manufactured cloth obtained from the lowlands was being worn by most of the pygmy groups, but he does state: "... where the wilder Negritos live the breechcloth and saya are made of the inner bark of certain trees."<sup>6</sup>

According to informants, the bark was peeled from the protected side of the tree, and the rough, outer bark stripped off to obtain the tough inner bast. This bast was then beaten with the back edge of a thick work bolo, or with a wooden bark-cloth beater, the *pamitpit*, against a smooth round stone. The pounding was continued until the desired malleability and thickness was obtained. Finally, the beaten bark was washed in the river and spread in the sun to dry.<sup>7</sup> I could not find

<sup>6</sup> Reed, W. A. *Negritos of Zambales*. Manila (1904) 37.

<sup>7</sup> Bark cloth is still being made and worn rather extensively by the Negroid Dumagat in northeast Polillo Island, and as I witnessed it being manufactured a number of times, a discussion of the process is included herein for comparative purposes. Among the Dumagat, the activity of making bark cloth is divided roughly into two phases: (1) work done at the site of the tree, and (2) completion of the work at the dwelling. The entire activity is accomplished by women.

(1) The specific tree selected for the cloth—one of at least eight species of *Ficus*, and one species of *Dysoxylum*—may first be tested by removing a small piece of the whole bark, stripping off the outer bark, and chewing the inner bark. The cross-grain of the fibers is then evaluated. If the bark is deemed satisfactory, a thin strip about one inch wide, and about a yard in length, is removed vertically down one side of the trunk. Deep cuts which completely encircle the bole of the tree are made at the ends of this vertical strip. A bolo is then inserted, at intervals, where the vertical strip has been removed, and the whole bark pried loose from the trunk. If the bole of the tree is small, or the bark desired high above the ground, the tree may be chopped down. When the whole bark has been pried from the bole of the tree, it is then necessary to remove the outer bark in order to obtain the tough inner bast. One end of the length of the bark removed is folded so that the stiff outer bark cracks along the fold. The bolo is inserted in this crack, and the outer bark peeled down a few inches until there is room to grasp the bast. With a steady pull, the bast is stripped from the outer bark, and after being carefully scraped, trimmed, and rolled, is brought to the dwelling.

a specific term for "bark cloth." It was referred to as *lamit* which is the general term for "clothing."

The barkcloth beater, according to informants, was simply a short length of round hardwood whittled at one end to form a handle. The older people state that the beaters had no longitudinal or right-angled grooves on the working surface which characterizes all other beaters which I have seen being used by other Philippine pagans, as well as the stone beaters found in Professor Beyer's archaeological collections.<sup>73</sup>

For a short period during the past war, the use of beaten bark for clothing was revived, for the pygmies were unable to trade bananas, tobacco, and forest products into the lowlands for manufactured cloth.

All but one of the plants—enumerated below—which were used by the Pinatubo pygmies for making cloth belong to the genus *Ficus*. The inner barks of the wild figs are very tough, as well as easy to obtain, and are the common medium for bark cloth among all Philippine Non-Christian groups with whom I have worked. The other plant belongs to the genus *Artocarpus* which, according to Evans, is the genus extensively utilized for cloth by the pygmy groups in the Malay Peninsula.<sup>74</sup>

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(2) At the dwelling, the fresh bark is immediately placed in the sun, and allowed to dry for approximately one hour. Then, using a smooth, round stone for an anvil, and the wooden bark cloth beater, called the *sagsag*, the bast is beaten. The beater has one set of coarse, right-angled grooves. In the process of pounding, the bast is folded continually so that all parts are actually beaten many times, and so that the thickness of the folds prevent the bast from being injured or torn by the blows. Finally, the thoroughly beaten bast is carried to the river, and rinsed, over and over, until all of the juice in the bast produced by the pounding is removed.

The cloth is colored by dipping it in different shades of mud or clay. The most attractive specimen that I saw in Polillo (now in the collection of the Philippine National Museum) was stained a deep brown with mud, and has white, geometric designs obtained by utilizing the juice of the fruit of the introduced citrus, *dáyap*, *Citrus aurantifolia* (Christn.) Swingle. The lighter colored basts are often decorated with betel nut spittle. No colored designs are added to the wrap-around skirts of the women, but the edges are attractively frilled.

<sup>73</sup> Cf., Beyer H. Otley. Philippine and East Asian archaeology, and its relation to the origin of the Pacific Islands population. (1948), figs. 20-a, 20-b, and 21 for illustrations of stone bark cloth beaters found in the Philippines.

<sup>74</sup> Evans, Ivor H. N. The Negritos of Malaya. Cambridge (1937) 71-72.

*Baliti. Ficus nuda* Miq.

(strangling fig) *Baliti* or *baléte* are common names in Philippine dialects for wild figs, usually, the strangling figs.

*Kalánat. Artocarpus blancoi* (Ehm.) Merr.

(tree) Local names: *Kalánat* (Bot.-Sbl.); *pekák* (Sawang Negritos, San Marcelino Municipality, Zambales).

*Kayáhan. Ficus variegata* Blm.

(tree) Local name: *payáhan* (Sbl.), according to Merrill.

*Gatíl. Ficus pubinervis* Blm.

(tree) No cognates found.

*Pupútut* or *tadúk-gahálaw. Ficus* sp.

(tree) Local names: According to Merrill, *pupútut* is *Ficus* *bolete* Merr., in Sambal; *tadúk-gahálaw* means the "hornbill's post."

The dried sheath from the stalk of the wild bananas, *Musa errans* (Blco.) Teodoro, in its natural state was also used for clothing, particularly, for the loin-cloths of the men. According to my informants, this dried sheath was excellent for the loin-cloths inasmuch as long strips could be obtained. As we shall see in the following discussion of Contemporary dress, specific styles of the men's loin-cloths are extremely long.

The bark and banana-sheath cloth were colored in a number of ways. The lighter colored basts were stained a reddish or bluish shade by using dyes obtained from specific plants.\* These are enumerated below. In addition, dark colors were obtained by burying the cloth in mud for a whole day and night, or by using soot. The soot for coloring the cloth was collected in rather an interesting manner, an activity called *pungápung*. A bamboo tube was held close to a smudge-fire and the soot collected on the inside of the tube. The bamboo tube was then split open, the soot scraped off the inner walls, and rubbed on the cloth.

\* Being coastal dwellers, the Polillo Damagat employ two different plants obtained from the mangrove swamps for dying bark cloth. A yellowish color is obtained from the tree *bangkida*, *Morinda citrifolia* Linn., by scraping the roots, adding powdered lime, water, and heating the concoction with the cloth in a covered receptacle. A reddish color can be obtained from the pounded bark of the tree *anhip*, *Xylocarpus granatum* Koen. The bark is pounded and allowed to soak in water. The bark cloth is then either dipped in the water several times, or allowed to set.

The following three plants were specifically used for dyeing the bark and banana-sheath cloth:

*Agoho. Casuarina equisetifolia* Linn.

The bark of this conifer-like tree was pounded and then placed in a container of water. The cloth to be colored was soaked in this water for at least two days and, according to the informants, became reddish.

*Hakft. Terminalia* sp.

The bark was scraped from the trunk of this tree, and merely rubbed on the cloth giving it a bluish color. If the cloth was then placed in the mud, it became very black.

*Tambalaw. Myristica philippensis* Lam.

The scraped bark of this tree was rubbed on the light colored bast giving it a reddish tinge. According to Merrill, this plant is called *tambalaw* or *tambau* in Tagalog.

According to the oldest Negrito informants, no designs were added to the cloth, and even today solid colors are preferred. I have not seen printed materials being used for the loin-cloths of the men, and only rarely for the wrap-around skirts of the women.

*Contemporary dress.*—As noted, the Pinatubo Negritos now utilize manufactured cloth obtained from the Chinese stores in the lowlands for the loin cloths of the men, and the wrap-around skirts and blouses of the women. In general reference, the loin cloths are called *lubáy*,<sup>51</sup> and dark blue or black are the favorite colors for everyday wear. The cloth is first passed between the legs, and then to the right or left around the body, depending upon whether an individual is right or left handed, and hooked under and over at the back. Invariably, a long "tail" is left at the rear (see Plate 5, fig. 1). The cloth going around the front of the body passes over the length going between the legs.

A number of styles of loin cloths is worn by the Negritos according to their age and status, the availability of cloth, and on specific ceremonial occasions.

The *talupina* is a short, apron-like G-string supported by a waist band, the *agkúh*. The latter is usually made of trimmed rattan (see Plate 5, fig. 3). The cloth merely runs between the legs, and under and over the belt at the front and rear.

<sup>51</sup> *Lubáy* (Bot.-Sbl.), *lubáy* (D.-Neg.), *ebáy* (Aburlin Pagans).

This type of G-string is normally worn only by the boys, when they first begin to dress, but on occasions by everyone, men and women, when there is a scarcity of cloth. I suspect that this was the basic style for everyday wear, when bark cloth was being extensively utilized by the Pinatubo pygmies, for it is also the type utilized by the Polillo Dumagat, as well as other primitive, pagan groups, who still wear bark cloth. Moreover, my Negrito informants stated that the *talupina* was a common style in the past, as it was easier to make when using bark as the medium for cloth.

The *binikndl* is an extremely long—sometimes three yards—blue or light colored loin-cloth. After running between the legs and forming the pubic covering, as described above, the cloth is wrapped many times around the waist.<sup>82</sup> Normally the entire abdomen is covered, and frequently the wrappings will reach the nipples. This style of loin cloth is worn by the young men, the dandies, when they are courting, or by older men who possess powerful personal spirits. It is distinctly a dress attire.

The *hinidul* is a shorter loin cloth, but made entirely of red cloth, and worn only on ceremonial occasions. If a pygmy is traveling to certain areas inhabited by powerful spirits, such as the higher slopes of Mt. Pinatubo, in order to attract personal tutelaries and offer his body as the host, he will wear a bright red loin cloth, as well as a red sash, the *bandá*. This indicates to the spirits that he is wise and brave, and would be a desirable host. During the curing-séances in which evil spirits are taken from the body of the patient, the mediums may wear this type of loin cloth.

*Kondiman*, "red cloth," is commonly utilized in rituals today and, as we have noted, is an important gift to the spirits. However, in 1903 when Reed was among the Zambal Negritos, he could not dispose of a bolt of red cloth.<sup>83</sup> It is hard to believe, because of its important uses today, that employment of red as a ceremonial color has invaded the Pinatubo culture in the past forty-six years. Moreover, my old informants state that the styles of loin cloths described above existed during Spanish times, and that red cloth was important then for the *hinidul*, as well as for other ceremonial purposes.

<sup>82</sup> Cf., Schebesta's *Menschen Ohne Geschichte*. Verlag St. Gabriel, Modling (1947) 57, fig. 14. The Zambal Negrito in the right front of the picture is wearing the *binikndl* type of loin cloth.

<sup>83</sup> Reed, W. A. *Negritos of Zambales*. Manila (1904) 37.



Like that of the men, the present costuming of the women is made entirely of manufactured cloth, and in addition, is identical with styles of dress found among the provincial Sambal women. Basic is the wrap-around skirt, the *inawak* (*lamit*, Bot.-Sbl.), and among the younger women, a slip-over jacket, the *kimónak* (!), which covers the breasts but leaves the midriff bare (see Plate 5, fig. 4). A longer wrap-around, called the *bahuláng*, which reaches and wraps over the breasts is also common. The older women wear only the wrap-around skirt paying little attention to the newer standards of modesty.

Informants stated that in the past G-strings, specifically the *talupina*, were also worn by the women and even at present, according to the Negritos, by the women of one pygmy group near Sawang, Zambales, an area which I did not reach. As we have noted above, future ethnological studies may very likely define the G-string, that is, a short length of cloth or bark cloth running between the legs and supported by a belt of rattan or some other material, as the older form of dress, and the loin cloth, that is, a longer piece of material which goes between the legs and then is wrapped one or many times around the waist, as a more recent attire.

#### PLANTS UTILIZED IN THE BOW AND ARROW COMPLEX

The survival of the bow and arrow among the Pinatubo Negritos, and its persistent use even today, markedly distinguishes the way-of-life of the pygmies from the surrounding lowlanders. The bow and arrow are used in nearly every life activity; hunting, fishing, trapping, dancing, games, ceremonies fighting, and is still a highly meaningful trait to the Pinatubo pygmies.

The presence of the bow and arrow among all Philippine Negritos reported, and its absence among many other Non-Christian groups, has excited much discussion. Some students argue that the Negritos were solely responsible for the appearance in the Philippines of this complex. However, from brief comparative studies that I have made with the collections of the Philippine National Museum, and from personal field observations, it would appear that more than one distinct bow and arrow complex has filtered into the Archipelago. This thesis will be discussed in a future paper, when more comparative data are on hand. At present, a detailed study of the

plants used by the Pinatubo pygmies in the bow and arrow complex, a description of all items in this complex, as well as the way in which they are made, will help greatly to clarify ethnological problems concerning the bow and arrow. For these reasons, I attempted, while in the field, to collect and prepare for identification, every plant related to the bow and arrow complex in order to set forth this ethnobotanical data from one sizable Negrito group for future comparative studies.

The role of the bow and arrow has not remained unchallenged, for in recent years many guns have been utilized by the pygmies, particularly in hunting wild pigs and deer. Most of these are homemade shotguns, the *patik*, made either locally by the more skilled Negrito smiths, or obtained from the forges of the Kapampangan near Pailig, Tarlac (see Plate 5, fig. 2). In 1945 during the liberation of Zambales, the pygmies obtained hundreds of rifles from Japanese soldiers who were killed while attempting to hide on the forested slopes of Mt. Pinatubo. However, these Japanese rifles will soon be useless, for already most of the ammunition has been consumed and it cannot be replaced.

The *patik* are highly treasured, and now are commonly demanded for bride price in place of the traditionally used bows, arrows, bolos, cloth, and other items. One of my closest Negrito friends gave ten (!) of these homemade shotguns to his parents-in-law as the bride-price, although this same friend hunts only with bow and arrow. I have a number of younger Negrito friends who have never killed a pig or deer with the bow and arrow, but who use guns exclusively. Still, when these same men are telling how they killed a pig or deer, they do not pantomime the raising of the gun to their shoulder, but the action of drawing the bow!

The use of guns has had considerable influence upon older Negrito activities, such as hunting. Formerly, hunting was a communal enterprise in which whole villages participated as either hunters or drivers. Now, a hunter may go out alone with one or two dogs. Individualism, conflicting with older group activities, has arisen. Nevertheless, the bow and arrow will continue to survive in ritual activities, though much of its practical value has been lost.

*The bows.*—The bows of the Pinatubo pygmies are simple in construction with no decorations, are very long (5½ to 6 feet), and draw between twenty and thirty pounds. They

are called *bay'*.<sup>24</sup> All adult bows are made from the outer hard wood palms, the *būyáng*, but the bows of the children are made of exotic bamboos. All items of the bow and arrow complex are made by the men or boys. Normally, the bow and arrow are utilized only by the men and boys, and as a matter of fact, I have never seen a woman shoot a bow. Nevertheless, informants state that a few women are excellent hunters with the bow and arrow.

When a Negrito has located a suitable palm, he cuts off the top to let the green wood dry. After a few days he returns, fells the palm, and with this work bolo roughs out five to ten blanks. The outer portion of the palm wood becomes the belly of the bow. Then, the crude bows may be either buried in mud to give them a deep black color, or if one is needed immediately, placed in the sun to complete the drying process. The bows placed in the mud are left there for at least two weeks, before they are also dried in the sun.

The completion of the blank at the dwelling is a complicated process involving a number of steps, and considerable work. First the blank is scraped with a bolo into the desired thickness, shape, and length (see Plate 6, fig. 2), and then the entire surface is rubbed with an abrasive stone, usually *kapulan*, a "travertine," to complete the form. The bow is then sandpapered with the dried leaves of specific plants (see Leaves used for sandpaper). Afterwards, the bow is rubbed with bamboo to give it a smooth surface and polish, and sometimes with the pounded bark of the tree *tambálaw*, *Myristica philippensis* Lam., to color the surface. The bow is completed by carving the nocks for the string, and by rubbing it with beeswax to give the surface a sheen.

The following plants are used for men's and children's bows:

*Andw. Livistona* spp.

According to the Pinatubo pygmies, the outer hardwood of this palm makes the very finest bows. The bows made of this medium frequently have a slightly concave belly (see Plate 8, fig. 7). The Negroid Dumagat of Polillo Island, and the Ipagi-Egongot of northern Quezon Province also consider

<sup>24</sup> Cognates for the Pinatubo Negrito's term for the "bow" are found in other Philippine dialects: *bā'* (Pol-Dum.), *bāyí* (Hanunoo-Mangyan), *bā'* (D-Neg.), and the Tagalog word for the outer hard wood of palms, *bāhi*.

this palm the best material for bows. Father Vanoverbergh notes that the Abulug Negritos make bows from *Livistona rotundifolia* Mart.<sup>42</sup>

The local name of this palm is possibly a contraction of the term *anahaw* which appears throughout the Philippines for species of *Livistona*. However, the Polillo Dumagat call this palm *anó*; the Egongot call it *anaw*, and it is also possible that these forms are the original terms with names, such as *anahaw*, being the result of an accretion of syllables.

*Báy'an. Memecylon* sp.

The hardwood from the bole of this tree is made into bows on rare occasions, particularly when palm woods are not available. It is apparent that this plant name has been derived from the Negrito's term for "bow," *bay'*. Merrill notes that *Memecylon lanceolatum* Blco., is called *bayen* in Sambal. No other cognates were found.

*Bánga'. Orania palindan* (Blco.) Merr.

Good bows can also be made from the outer hardwood of this palm, but it is not frequently used. *Orania palindan* is called *bánga'* in Panay Bisaya, Tagalog, Polillo-Dumagat, and in other Philippine dialects. *Bánga'*, having a different stress, is the Sambal and Tagalog term for a pottery water jar.

*Kalaihan. Aglaia* sp.

The hardwood from the trunk of this tree is carved into bows. I have not seen a single bow made of the three trees, *báy'an*, *kalaihan*, and *palikaydün*, but only of the outer hardwood of palms and bamboo. Nevertheless, the pygmies state that the wood of these trees is used on rare occasions. No cognates were found for *kalaihan*.

*Kawáyan-mantúg. Bambusa epinosa* Blm.

All children's bows are made out of strips of this large, thick-walled bamboo, and on very rare occasions, young men will use bows made from this medium. According to Merrill, this bamboo is of prehistoric introduction which probably accounts, in part, for its limited use for bows by the pygmies. In addition, it is very inferior to the outer hard wood of palms as a medium for bows.

<sup>42</sup> Vanoverbergh, Morice. Negritos of Northern Luzon. *Anthropos* (1925) 414.

*Idák. Arenga pinnata* (Wurm.) Merr.

The outer hard wood of this palm is also a good material for bows, although its use is limited. *Arenga pinnata* is called *irók* in Botolan-Sambal, and according to Merrill, *igok* in Cebu Bisaya, and *hidók* in the Bikol regions.

*Palikayúwín. Linociera ramiflora* (Roxb.) Wall.

According to the Pinatubo pygmies, bows are sometimes made out of this hard-wood tree, although as noted above, I have not seen a single specimen. No cognates were found for this plant name. The word-base appears to be *káyu*, the Sambal term for "tree."

*Takípan. Caryota cumingii* Lodd.

The outer hard wood of this palm, according to the opinions of the pygmies, yields the second best bows. This plant name is commonly encountered in the surrounding dialects for the "palma brava." The Pinatubo Negritos also call this palm *ágúh* believing that it is a different plant. The variations in the shapes of the branches probably account for this erroneous distinction.

*The arrow shafts.*—The Pinatubo pygmies distinguish more than fifty (!) types of arrows and have either specific or descriptive terms for them. The generic term for arrows is *yaw*,<sup>66</sup> and the varieties are determined primarily by the differences in the points. In this discussion, however, we shall enumerate and describe four types of arrows based upon their use, and by the types of shafts: (1) a short, light, "flight" arrow which is used for hunting pigs and deer, in fighting, or in games, (2) an extremely long arrow, usually about six

<sup>66</sup> The terms *yaw* and *yáo* are employed by all of the Negritos of the Zambales Range for "arrows" in general. Among the Pinatubo pygmies, the word is specific, and is not the plant name of a reed used for arrow shafts. However, this term has probably been derived in the past from a plant name. Garvan, in an unpublished lexical list found in Beyer's Manuscript Collection, notes that the Negritos of Inga and Baao, Camarines Sur, call arrows, *bigao*. Merrill notes that *bigao* is Bikol for *Miscanthus sinensis* Anders., and that the same plant is called *bilax* by the Ifugao and Igorot who do not functionally employ the bow and arrow. *Miscanthus japonicus* (Thunb.) Anders., also a good cane for arrow shafts, is called *bugau* in Ifugao, and *víax* in Ivatan. A reed used by the Ipagi-Egongot for arrow shafts, *Phragmites vulgaris* (Lam.) Trin., is called by them *bíyáo*, and by the Tagalog in the Bulac area, *biláo*.

feet, which is used in hunting birds and shooting fish, (3) an arrow with a shaft made from the outer hard wood of palms which is purely ceremonial in function, and (4) a heavy, stout arrow made of a large reed, or wood, which has a detachable point, or a large metal blade. This latter type of arrow is used only for hunting the wild pigs and deer.

All arrow shafts are called *alibaga*, and are frequently decorated with beautiful incised geometric patterns, the *balit* (see Plate 8, figs. 8-18). In contrast to other Philippine groups still utilizing the bow and arrow, particularly in areas south of Luzon, the arrows of the Pinarico Negritos are always fletched with three large feathers. The feathers for fletching are called *parul*.<sup>17</sup> In addition, many of the shorter, light arrows have a protective covering between the nock and the feathers, the *lopol*, made from the casing of the cocoon (see Plate 8, fig. 2). I have not seen this employed other than by the Negritos of the Zamboales Range. Variations of the "primitive release" (see Plate 8, fig. 4) are used in drawing the bows, and they are strong by pushing with the foot against the corner of the bow.<sup>18</sup>

The reeds and small bamboos used for the arrow shafts are merely trimmed, dried in the sun, and strengthened by beating and with hand pressure. The palm wood and ordinary wood shafts are rounded perfectly by scraping the shaft with a bone, and by using dried leaves for a sandpaper. The proper length of each type of arrow is obtained by individual measurements (see Plate 8, fig. 19).

#### Arrows. *Larionina* spp.

The most beautiful and valuable arrows manufactured among the Pinarico pygmies are made from the inner hard wood of this palm, or sometimes from *Indigofera*, *Chrysophyllum*, *Pe-*

<sup>17</sup> *Point* (Tag.): *palid* (D. Neg.); *palint* (Pal.-Dum.); *palit* (Cagayan-Dum.); *aluy* (Isp.). The tail and wing vanes of the following birds are commonly used for fletching by the Pinarico pygmies: the hornbill, *Halcyon* (*Phalacrocorax*?) *coromanda* and *palawan* (*Halcyon*?), the blue (*Halcyon*?) *coromanda*, the brown (*Halcyon*?) *coromanda*, the black (*Halcyon*?) *coromanda*, and a few others.

<sup>18</sup> Martin Tamarang, who says: "An *alibaga* arrow is attached to one of his bows. In order to fire it, he necessarily attached the end to one of the ends of the bow, stuck this end into the ground, bent the bow by pushing with the foot against its corner, and finally attached the loose end of the string to the free end of the bow." Negritos of Northern Luzon. *Ann. Anthrop.* 1931. 85-87.

spite the crude tools, the arrows are perfectly rounded with machine-like precision. This type of arrow, called *yulyál*, is purely ceremonial in functions, that is, it is not employed for hunting, but as gifts to spirits, for bride price, or as hereditary gifts to young male children.

*Bikaw-mantúg*. *Schizostachyum fenixii* Gamble

*Púhiw*. *Schizostachyum lumampao* (Blco.) Merr.

*Bayóg-mantúg*. *Dendrocalamus merrillianus* (Elm.) Elm?

*Baytó*, *bináhak*, *duwáman*, *gunihP*, *yábil*. *Schizostachyum* spp.

The short flight arrows are made of the above eight small bamboos which all belong, with the exception of one, to the same genus. Unfortunately, some of my bamboo specimens were sterile, and it was not possible to obtain the species of each plant.

The plant names *baytó*, *bikaw*, and *púhiw* are related to plant names for small bamboos in other Philippine dialects. No cognates were found in Merrill for *bináhak*, *duwáman*, *gunihP*, and *yábil*.

*Móa*. *Miscanthus sinensis* Anders.<sup>50</sup>

*Uyóng*. *Miscanthus floribundulus* (Labill.) Warb.

*Táib*. *Saccharum spontaneum* Linn. subsp. *indicum* Hack.

Most of the long bird and fish arrows are made of the tall cane, *móa*, but as *uyóng* and *táib* are very common grasses in the Pinatubo area and easier to secure, these latter two reeds are sometimes used for the shafts. No cognates were found in Merrill for *móa*, but *táib* appears in Tagalog and in other Luzon dialects as *talahib*.

It is interesting to note that the specific word for "arrow" in a number of Philippine dialects has apparently been derived from mutations of plant names for species of *Miscanthus*. Harold Conklin recorded the words *ugyóng* among the Hanunoo-Mangyan and Buid-Mangyan (Non-Christian groups in Min-

<sup>50</sup> Father Vanoverbergh notes that *Miscanthus sinensis* Anders., is the common medium for arrow shafts among the Abulug Negrito. (Cf., Vanoverbergh, Morice. Negritos of Northern Luzon, p. 414). In New Guinea, *Miscanthus japonicus* Anders., and wild sugar cane, are the common canes for arrow shafts. [Cf., Blackwood, Beatrice. Use of plants among the Kukukuku of southeast Central New Guinea. Proceedings of the Sixth Pacific Science Congress 4 (1940) 118-126]. Among the Polillo Damagat on the northeast coast of the Island, the only cane which is used for arrow shafts is also *Miscanthus japonicus* which they call *ayóng* (tsb-ds, Polillo-Tagalog, and *bígó*, Casiguran-Tagalog).

doro) for "arrow," and *udyóng* among the Ratagnón Mangyan; also meaning specifically, "arrow." Fr. Diego Bergano's *Vocabulario de la lengua Pampanga*, gives *uyung* as the Pampangan term for arrow.<sup>60</sup> As we have noted, *uyóng* among the Pinatubo Negritos, as well as among other Negrito groups in the Zambales Range, and *aylyóng* among the Polillo Tagalog and Dumagat groups, are all vernacular plant names for species of *Miscanthus*.

*The bow strings.*—The Pinatubo pygmies make strong and durable bow strings out of the bast of a number of vines, the hanging roots of the strangling figs, and from the inner bark obtained from the boles of specific trees. The following description of the Pinatubo Negritos making a bow string, at the village of Kawáyan, Zambales, is taken from my 1947 field notes:

The Negritos cut off a seven foot length of the whole hanging root of the tree, which was about the size of my thumb, and then split the root lengthwise into two equal halves. The hard core of the root was then removed by violently twisting each half, and the outer bark was carefully stripped off exposing the tough, white bast. We returned to the village, and there the man carefully trimmed and scraped the two long strips of bast into the desired width and thickness. Then two men, standing at each end of the seven foot lengths, pulled and while pulling, twisted together the two strips of bast. Finally, rattan was tied to each end of the new string, and it was stretched and tied between two trees (see Plate 6, fig. 1).

On other occasions, I have seen the Negritos twist the string in the manner described above, and then suspend the string from the limb of a tree with a heavy stone secured at the bottom end to keep the string taut. The rock was also secured so that it would not rotate and unravel the newly made string.

The strings for the children's bows are made out of trimmed rattan (this, or trimmed bamboo, is the medium most commonly employed by the Non-Christian groups in Mindanao), but rattan is never used for the men's bows. All bow strings, as well as the strings of musical instruments, are called *dák*.<sup>61</sup> The

<sup>60</sup> Bergano, Fr. Diego. *Vocabulario de la lengua Pampanga*. (Imprenta de Ramirez y Girauder, Manila) 1880.

<sup>61</sup> In Botolan-Sambal bow strings and the strings of musical instruments are called *dák*, and *dák* by the Negrito on the southeastern slopes of the Zambales Range in the vicinity of Floridablanca, Pampanga. Garvan, in an unpublished lexical list in Reyer's manuscript collection, notes that the Negritos of Mt. Samat, Bataan, call the bow strings *li-dák*, but among the Negritos in the Dinakupan area Bataan, I also recorded the term *dák*. Related terms for the bow string are found in other dialects: *ákpi* (Igor.), *líke* (Pal-Pum.), and *lilis* (Tag.).



bow string is made about a foot and one-half longer than the bow, and wrapped loosely around one end. Should the string break while hunting, it can be quickly spliced (*hublóng*, Pint.-Sbl., but *huldóng*, Bot.-Sbl.).

The leaves of one vine, *lingon-duh*, *Rourea volubilis* (Blco.) Merr., are rubbed on the completed string to make it durable, and the bast of *úlip*, *Cypholophus moluccanus* (Blm.) Miq., may be wrapped around the ends of the bow string where it is looped around the nocks to prevent excessive wear from friction. The bow string knot (see Plate 8, fig. 5) is identical among all pygmy groups in the Zambales Range with whom I have worked. The bow strings made by the Pintubo pygmies are, by any standards, excellent, and are greatly superior to strings made of trimmed rattan, or bamboo, which are encountered in the southern Philippines.

The inner bark for the bow strings is obtained from one of the following plants:

*Anópo*. *Conocephalus* sp.

(vine) Local names: *hanópol* (Tag.); *anapol* (Ig.); *anopal* (Bilaan); also *anópol* (Pol.-Dum.) and *hanópol* (Pol.-Tag.) for *Poklispermum suaveolens* Blm.

*Baliti*. *Ficus nuda* Miq.

*Bubálon*. *Ficus caulocarpa* (Miq.) Miq.

(tree) Local name: *bubálon* (Bot.-Sbl.)

*Kalánat*. *Artocarpus blancoi* (Elm.) Merr.

*Kalyámat*. *Ficus bakeri* Elm.

*Kamakingaw*. *Ficus subulata* Blm.

(small tree) no cognates found in Merrill.

*Malapáo'*. *Ficus payapa* Blco.

(large strangling fig) This plant name means "like (*mala*) the *páo'* (*Mangifera altissima*)."

*Pagdúh-bay'*. *Hypserpa cuspidata* (Wall.) Miers.

(vine) When translated, this local descriptive plant name means "used for the string of the bow."

*Panamhiyín*. *Ficus* sp.

(tree) No cognates were found for this plant name.

*Pupátut* or *tadúk-gahálaw*. *Ficus* sp.

*Plants yielding bast used for securing the feathers and projectile points to the shafts.*—If well made, and showing pride in the workmanship, all flight arrows have two wrap-

pieces, an inner and outer, provided to securely fasten the arrowpoints and feathers to the shaft (see Plate 6, fig. 3). The *bilbil*<sup>12</sup> is an "inner wrapping" made of tough, sinew-like barks obtained from a number of specific vines and trees. The bark employed for this purpose is scraped until it is very thin and narrow, and while still wet, wrapped around the arrow. The following plants are used specifically for the inner wrapping:

*Bulil*. *Ficus munda* Miq.

*Bubilon*. *Ficus ambucarya* (Miq.) Miq.

*Kubayab*. *Gustonia guileana* (Lour.) Merr.

*Bubinat*. *Ptychopus arborescens* (Link.) C. E. Hall.  
(Note) Local names: *salimot* (Tag.)

*Ulip*. *Cypholophus noluccanus* (Blm.) Miq.

(Note) No *cypholophus* found, but the plant name is possibly derived from its use as carings, and for wrapping; for example, *Ulip* in Tagalog is "bam," and in Pangasinan, *ulip* is "wood."

The "outer wrapping," or *apin*, is made of the carefully trimmed bark of only one vine, or of one rattan. The *apin* is wrapped directly over the *bilbil*, and has two functions: (1) to protect the inner wrapping which actually holds the feathers and points in place, and (2) to make the entire wrapping more attractive. The relationship between the two wrappings of the arrow shaft are shown in Plate 3, fig. 2. The two plants used for the outer wrapping are:

*Melastoma* or *malibodum*. *Calanthe* sp.

(Note) Local names: *malibodum* in Tagalog (*Calanthe* *epiphyseoides* Blume and *Calanthe* (Blume) for the same species.

*Undygon* *yag-yag*. *Thespesia venenata* Merr.

(Note) When translated into English, this local plant name means the "bamboo (*undygon*) of the rattan (*yag-yag*)," and describes accurately the manner in which this large vine barks.

Plants utilized in making points for the bird arrows.—For hunting birds, the *Pinatubo* *pygmaea* employs a very long arrow which has a trident-like point made of wood or bamboo. These "tridents" have three to five individual points with many small

<sup>12</sup>*Bilbil* (Pin-Iran); *bilbil* (Tag.), but the whole arrow shaft the bark is shaved is called *bilbil*; *bilbil* (Tagalog and Pangasinan) *Negros*, *bilbil* "point bark," Tagalog.

barbs (see Plate 7, fig. 6). Arrows with long shafts are used when the anticipated trajectory is upward, such as in shooting birds, for the Negritos argue that the longer shaft gives greater accuracy in an upward flight.

In the past, these same arrows were also used to shoot fish, but today the Negritos use a trident with two or three barbed metal points. In general arrows having trident-like heads are called *balangát* (the term also describes the arrowpoint), but if the tridents are made of metal, they are commonly called *halapáng*.<sup>93</sup>

The following plants yield readily workable and durable mediums from which the pygmies carve the points of the *balangát*:

*Báy'an*. *Memecylon* sp.

*Banatóh*. *Mallotus philippensis* (Lam.) Muell.-Arg.

*Kalaihan*. *Aglaia* sp.

*Kawáyan-mantíg*. *Bambusa spinosa* Blm. (introduced plant)

*Duwánan*. *Schizostachyum* sp.

*Púhiw*. *Schizostachyum lumampao* (Ble.) Merr.

*Palikayáwün*. *Linociera ramiflora* (Roxb.) Wall.

*Plants utilized in making arrows with detachable points.*—The most remarkable arrow used by the Pinatubo Negritos is the *kábát*<sup>94</sup> which has, as we have noted, a detachable point (see Plate 7, fig. 5). When this arrow strikes a pig or deer, the barbed metal point is stuck in the flesh, and the shaft detaches. The sturdy shaft is held to the point by a strong cord approximately one meter in length. As the shaft drags behind the fleeing animal, it is caught in the undergrowth, and either traps the animal, or inhibits its flight, so that it can be dispatched by the hunter with another shot.

The shafts of these arrows are usually made of *báy'an*, *Memecylon* sp., or of *púhiw*, *Schizostachyum lumampao* (Ble.) Merr. Between the shaft of the arrow and the arrowpoint (see Plate 7, fig. 5-a), there is a short length of hard wood, called the *lobúngan*, which either detaches with the arrowpoint, or detaches separately from the arrowpoint and the shaft. Only

<sup>93</sup> Harpoons for fish, often having trident-like heads, are called *salapáng* in Tagalog, *sarapáng* in Tagbanuwa and Polillo-Dumagat, *sapáng* in Leyte-Bisaya, and similar mutants in other dialects.

<sup>94</sup> *Sibát* is a generic term for "spear" in a number of Philippine dialects.

the following plants are used to make this foreshaft (see the discussion below of the Traditional uses of plants):

*Apyók.* *Callicarpa formosana* Rolfe.

(bush) Local name: *aneyop* (Ilk., Ikn.)

*Búwa-ángot.* *Izora philippinensis* Merr.

(bush) This is a local descriptive plant name, but the meaning is not clear. *Búwa'* means "prolapsed uteri," and *ángot* is the Sambal term for the common coconut.

*Káyum-bákil.* *Canthium diococcum* (Gaertn.) Merr.

*Enonymus cochinchinensis* Pierre.

(small trees) This descriptive plant name means the "tree (*káyu*) of the mountains (*bákil*)."

*Páan-labúyo.*<sup>65</sup> *Pavetta indica* Linn.

*Psychotria zambalensis* Merr. & Quis.

(small trees) Local name: see footnote No. 95.

*Páan-labúyo-bágbag.* *Izora macrophylla* Bartl.

(tall shrub) Local name: see footnote No. 95.

Six small, strong, parallel cords secure the projectile point of the *húbát* to the shaft, and when the latter is entangled in the undergrowth, holds the pig or deer (see Plate 7, fig. 5-b). This cord is always made of the inner bark of one of the following three plants:

*Kuliyát.* *Gnetum indicum* (Lour.) Merr.

*Dalínót.* *Pipturus arborescens* (Link.) C. B. Rob.

*Ólip.* *Cypholophus moluccanus* (Blm.) Miq.

Another type of arrow, which may or may not have a detachable point, is also encountered among the Pinatubo pygmies, the *hawíl* (*tambát* or *sawíl* among the Bataan Negritos). The shaft of this arrow, like the bird arrows, is very long, and also made of *móa*, *Miscanthus sinensis* Anders. The barbed metal point detaches in the manner and with the function described for the *húbát*, but there is no foreshaft, and the tail-like base of the arrowpoint fits directly into the shaft. The *hawíl* is used to shoot monkeys, monitor lizards, large birds, and fish.

<sup>65</sup> The Pinatubo pygmies call at least six small trees *páan-labúyo*, and all belong to the family Rubiaceae. It is obvious that this descriptive plant name has been borrowed by the pygmies, for although *labúyo* means "wild chicken" in surrounding dialects, it has no meaning to the Negritos. They call the wild chicken, *manók-dikót*, that is, the "grass chicken." In Tagalog, this plant name would mean the "wild chicken's foot." A *bágbag* is a "large forest tract with sizable tree."

**Toy bows and arrows.**—Young male children play, or hunt birds, frogs, lizards, field mice, and other small animals, with toy bows made of bamboo, usually the introduced *kawayan-mantiḡ*, *Bambusa spinosa* Blm., and arrows made of either the same medium, split and trimmed, or of the stems of the following two grasses.

*Talangaw.* *Rottboellia ophiuroides* Benth.

(grass) Local names: *talango* (Tag.)

*Talitk.* *Andropogon tortilis* (Presl) Merr.

(grass) This is a common name throughout the Archipelago for the "Tartaric Hornbill" (*Pentelopes p. manillae*).

These toy arrows are not normally fletched but have only a neck for the bow string, and the end of the shaft is sharpened for the point. Sometimes precocious youngsters will fashion arrowpoints of bamboo which are identical to the metal points used by their fathers, add feathers to the shaft, and have a miniature replica of adult types of arrows. All toy arrows are called either *laháy-laháy* or *yaw-yáw'*, and the toy bows, *báy-báy'*. It is play activities such as this one, which copy adult behavior, that train the children for the responsibilities of their culture. Formal teaching is rare, for example, the father does not systematically show his son how to make a bow and arrow, but rather the child learns by observation, and by copying activities (see Plate 6, fig. 4).

**Traditional uses of plants.**—The plants utilized in the bow and arrow complex, as well as in other activities, are greatly influenced by tradition. For example, there are many hard wood trees which could be used for the foreshaft (*cf.*, p. 272 the discussion of the *lobáungan*), and the pygmies are aware of this fact, but due to traditional influences they select only those plants enumerated. Consequently, the plants which have been described herein are nearly all, if not all, of the plants which are normally utilized by the pygmies in making the bows and arrows. When more thorough ethnobotanical data is available, it will be interesting to see if these same plants are also traditionally utilized by other ethnic groups who still possess the bow and arrow. If persistent and geographically contiguous similarities and/or differences do exist, it might define, as I suspect, distinct bow and arrow trait-complexes.

**Stone arrowpoints ?**—As we shall see in a following section of this monograph, the Pinatubo pygmies possess the double bellows, vertical, bamboo forge and have apparently been work-

ing metals for a considerable period of time. With the exception of the bird arrows which are still made with points of bamboo or hard wood, all of their arrows now have metal points made by the Negrito smiths. In contrast, other items in the bow and arrow complex are made wholly from native Philippine plants, and could be of great antiquity. Therefore, what were the mediums used in making arrowpoints prior to the time that the Pinatubo Negritos could obtain drift-metals, and had the forge with which the metals could be worked?

We have one early observation by Dr. John Frances Gemelli Careci, made during his trip around the world from 1693 to 1697, which specifically notes the use of stone arrowpoints by the Zambales Negritos. This observation, which significantly is the only historic reference yet produced noting the use of stone for arrowpoints in the Philippines, is as follows:

Their weapons are Bows and Arrows, a short Spear, and a short Weapon, or Knife at their Girdle. They Poison their Arrows, which are sometimes headed with Iron, or a sharp Stone, and they bore the Point, that it may break in their Enemies Body, and so be unfit to be shot back. (*Italics mine*).<sup>\*</sup>

Typologically, Professor H. Otley Beyer has defined some very crude stone flakes in his collections as arrowpoints.<sup>77</sup> These arrowpoints (?) are extremely crude, for none show any signs of controlled pressure flaking, and as a matter of fact,

<sup>\*</sup> Reed, W. A. Negritos of Zambales (1904) 29. The Negritos of the Zambales Range do not normally use arrow poisons and are not aware of the plants—such as, *Solenospermum toxicum* Lober., and *Strophanthus* spp., used by the Polillo-Dumagut—which can be used for this purpose. I have never seen a Negrito poison an arrow although it is a widespread opinion among the surrounding lowland people that all of their arrows are poisoned tipped. Informants do state that on very rare occasions poisoned arrows were used against enemies. The point, according to informants, was removed from the arrow and pushed into the body of the scorpion fish *kapô* (*Gymnapistes niger* Cuv. and Val.) which has poisonous spines. The fish and point were then wrapped with banana leaves and placed in a fire until the fish had burned into ashes. The point was then reinserted in the shaft of the arrow and was believed to be poisonous. Frank Dorn states: "The arrows are not ordinarily poisoned. If a Negrito should decide to kill a man, or, as in the past, a party should decide to attack or raid another group, the "war" arrows would always be poisoned by having both the point and part of the shaft impregnated with the decayed meat of an animal." Dorn, F. Hungry Negritos in their watchful forests. *Asia* 31 (1931) 727.

<sup>77</sup> Cf., Beyer, H. O. Outline review of Philippine archaeology by islands and provinces. *Philipp. Jour. Sci.* 77 (1947) 205, plate 10, for illustrations of Neolithic arrowpoint (†)

I have seen no stone tools in Beyer's collection which evidence the developed pressure flaking characteristics of points from Indonesia illustrated by Heine-Geldern.<sup>38</sup> On the contrary, the large polished stone points illustrated by Beyer<sup>40</sup> are certainly spearheads, and were made by a Neolithic people who had thoroughly developed the art of cutting, boring, and polishing hard stones. I have also examined smaller polished implements in Beyer's collections which are very probably arrowpoints, and which are identical in form to specific types of metal points utilized by the Pinatubo pygmies. Certainly, sharp stone flakes, boar's teeth, etc., were used in making the bows, arrows, and other works of bamboo and wood prior to the introduction of metal to the pygmies and other ethnic groups! Countless scrapers of all sizes and varieties are represented in Beyer's collections.

Nevertheless, I do not believe that stone arrowpoints, whether chipped or polished, were extensively utilized by the Zambales pygmies, or by any other Philippine group. Among the Pinatubo Negritos, there is no traditional knowledge concerning the use of stone for projectile points, and this is true of all of the pygmy groups in the Zambales Range with whom I have worked. Despite the tremendous surface surveys carried on by Beyer, et al., in the Philippines, there have been no sites found indicating that they were extensive workshops and hunting camps, and yielding numerous arrowpoints, which would be expected, if the early hunting and fishing groups employed the bow and arrow and used stone arrowpoints extensively. I have spent hundreds of hours in the Pinatubo area, and elsewhere in the Zambales Range, looking for stone projectile points in hopes of illuminating this problem, but I did not find, or obtain information of, a single specimen.

If we are to judge by the specimens defined and illustrated by Professor Beyer as arrowpoints, they would have been greatly inferior technologically to the two mediums still commonly employed for arrowpoints by Philippine Non-Christian groups who do not use metal extensively for this purpose. These two mediums are: (1) the outer hard wood of palms, and (2)

<sup>38</sup> Heine-Geldern, Robert. *Prehistoric research in the Netherlands Indies*. New York, Southeast Asia Institute (1946) *figs. 23, 33 and 35*.

<sup>40</sup> Cf., Beyer, H. O. *Philippine and East Asian archaeology, and its relation to the origin of the Pacific Islands population*. Nat. Res. Council of the Philippines. Bull. No. 29 (1948) 1-130, *figs. 22-a, 22-b, and 23*.

bamboos. The evidence that I could gather in the field indicates that the palm woods and bamboos were also the materials used for projectile points by the Pinatubo Negritos prior to their present almost exclusive use of metals. The pygmies still make, though very seldom, points of bamboo which are exactly the same in shape as metal points. It is possible that older forms made with bamboo and wood have been transferred to the new medium. These bamboo points have the same generic name as the metal points, or the names are modified in one manner or another to denote that one point is made of bamboo, and another, similar in form, of metal. As noted, the *hawil* is a long, metal tipped arrow, which may or may not have a detachable point. The *hawil-hawil* is identical in form and function, but the point is made of a carved strip of thick walled bamboo. If the point of the *dumpil* (see Plate 7, fig. 2) is made of bamboo, it is called *dudumpil*. Many other examples could be cited.

Perhaps, some stone arrowpoints have been employed by the Pinatubo pygmies and by other pygmy groups; however, I believe, and the evidence indicates it, that the common mediums for this purpose, prior to the widespread use of metals, were bamboos and the outer hard wood of palms.

#### PLANTS USED AS FISH POISONS

Prior to the very recent introduction of a technique of shooting fish, shrimp, and eels from under the water using water goggles and a short metal arrow propelled by a rubber band (this technique is described in the next section of this monograph), plants were extensively utilized to stupefy and poison the numerous fish, shrimp, and eels found in the Pinatubo rivers.<sup>100</sup>

<sup>100</sup> The following fish and eels were identified by Albert W. C. T. Herre, School of Fisheries, University of Washington, from collections I made in the Pinatubo rivers; *andólan*, *Sicyopterus crassus* Herre, the fry of this same species, from the smallest to the largest, are called *táhiyáñ*, *éññññ*, and *díññññ* (no cognates found for these fish names); *bandáñ*, a rare snake eel, *Achiropichthys kampeni* Weber and de Beaufort, also called *kúyñññ* (no cognates found); *buññ*, *papññ*, or *babñññ*, an eleotrid, *Belobranchius belobranchia* Cuv. and Val. (local, descriptive fish names); *buñññ*, a heavy bodied eleotrid, *Buxaka pilgus* Herre (Dr. Herre notes in personal correspondence that *buñññ* is the Negrito (?) name for this fish at Casiguran, Quezon Province); *bagnññ*, a glassfish, *Ambassis natus* Hamilton-Buchanan (*bagnññ*, Ilk.); *kagnññ*, a mountain bass, *Kuhlia marginata* Cuv. and Val; *lagnññ*, a mountain bass, *Kuhlia rupestris* Seale and Bean; *pignññ*, a grunt, *Therapon caeruleatus*



The practice of catching fish by means of plant poisons is widespread in the Philippines, and all of the following plants used by the Pinatubo pygmies, with the exception perhaps of the leaves of the sweet potato and the fruits of palms, are commonly employed by many other Philippine people. *Túba*, a widespread term in the Philippines for "fish poison," as well as for the names of specific plants used for fish poisons,<sup>101</sup> is also the term used by the Pinatubo pygmies.

*Agúh. Caryota cumingii* Lodd.

The fruit of this palm, which is also called *kamandih* when it is bearing large fruit clusters, is ground to obtain a very strong fish poison. The fruit contains many stinging crystals (raphides). According to the Negritos, this poison kills the fish and eels, but not the shrimp, and is effective even in flowing water.

*Apýóh. Callicarpa formosana* Rolfe

The Pinatubo pygmies pound the leaves of this shrub until a small basketful is obtained. Then, the basket, with the pounded leaves inside, is placed in the river or stream and agitated to distribute the poison. This poison is said to kill the shrimp, as well as the large fish and eels.<sup>102</sup> As noted in Quisumbing's paper on Philippine plants used for arrow and fish poisons, the leaves of *Callicarpa formosana* contain saponin.<sup>103</sup> No related plant names were found for this shrub.

*Búndát. Derris elliptica* (Roxb.) Benth.

This vine, abundant in the Philippines at low and medium altitudes, is used throughout the Archipelago and Malaysia as

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Cuv. and Val. (*igok*, Bis.); *talipé*, goby-like, *Pythacichthys aspro* Kuhl and van Hasselt (no cognate found); *tawndhan-mantág*, moorish eel, *Anguilla mauritiana*; and *tataním*, a goby, *Chonophorus malanosephalus* Herre. Cf., Herre, W. C. T. A new labrid and other Philippine fish records. *Philip. Jour. Sci.* 78 (1949) 149-153.

<sup>101</sup> *Croton tiglium* Linn., is called *tába* in Ilk., Bik., Tag., S. L. Bis. Sul., and in Pol.-Dum.

<sup>102</sup> Among the Pinatubo Negritos, the generic term for all shrimp is *uláng*. In addition, they recognize a number of specific types; *hapaén*, the largest; *ulákal*, also large but dark in color; *guloýén*, large and light colored; and smaller varieties, *mamálay*, *kolodóng*, *didimán*, *hoyótut*, and *manampdi-asupé*.

<sup>103</sup> Quisumbing, E. Philippine plants used for arrow and fish poisons. *Philip. Jour. Sci.* 77 (1947) 172.

a fish poison, and in Polillo Island it is cultivated by the Tagalog and Dumagat who call it *tubli*. The Negritos pound the roots until about one kilo is obtained. The pounded roots are then placed in a basket which is put into the water and agitated. According to the Negritos, this is the very best poison, and will kill even the largest fish and eels. The plant is also called *būnát* in Botolan-Sambal, but no other cognates were found.

*Karáll. Albizzia procera* (Roxb.) Benth.

The bark of this tree is pounded, or scraped, and then employed like *būnát* (described above). The Negritos state that this *tuba* will kill all of the small fish, but will only stun the larger fish, and does not affect the shrimp. The bark contains saponin.<sup>104</sup> According to Merrill, this plant is called *káral* in Ibanag and Pangasinan, and *kálai* in Tinggian.

*Idúk. Arenga pinnata* (Wurm.) Merr.

The fruit of this palm is also pounded to obtain a powerful fish poison, for the fruit contains many stinging crystals. According to the Negritos, it is dangerous to use this poison in rivers from which the domesticated water buffalo drink. The pygmies state that the poison will kill the carabao even two days after it has been placed in the streams, and by unwritten agreement it is rarely used today.

*Labtáng. Anamirta cocculus* (Linn.) W. and A.

The seeds of this vine are heated and then ground to obtain a powder. A large quantity of this poison is merely dumped into the river, and it stupifies even the largest fish. Among the lowland Sambal, the powder is mixed with chopped bait (this type of poisoned bait is called *bayating*), and thrown into schools of fish. Fish eating the bait come to the surface swimming madly in every direction until caught by dip nets.

According to Quisumbing, the poison principle is *picROTOXIN*, and that ". . . poisoning due to eating the fish obtained by this means has often occurred."<sup>105</sup> The Negritos believe and state that none of the plant poisons are injurious to man.

Local names: *labtáng* (Ilk., Ig.); *lógteug* (Bis., Mbo., and Sul.)

*Pótat. Barringtonia racemosa* (Linn.) Blm.

<sup>104</sup> Quisumbing, *ibid.*, p. 148.

<sup>105</sup> *Ibid.*, p. 145. Also see Quisumbing's "Vegetable poisons of the Philippines. Philip. Jour. Sci. 77 (1947) 127-171.

The bark of this tree, reported to contain tannin, is scraped or pounded to obtain a powder which is used like *bándt* (described above), and according to the Negritos, is very effective for the fish but will not kill the shrimp.<sup>105</sup>

Local names: *pótat* (Tag.); *pátat* (Tag., Bik., S. L. Bis., P. Bis., Sul., Mag.)

In addition to these native plant poisons, we have also seen that two New World plants introduced by the Spanish are used today by the Pinatubo pygmies for stupifying shrimp, fish, and eels: (1) the leaves of the common sweet potato, *Ipomoea batatas*, which are said to be very effective for shrimp, and (2) the powdered bark of *kamástili*, *Pithecolobium dulce*, for fish and eels.

#### PLANTS USED IN THE MANGANTÚKO COMPLEX

In about the year 1925 (as agreed upon by all of my Christian and Negrito informants), a fishing technique was introduced to the Pinatubo Negritos, as well as to the lowland Sambal, which has completely revolutionized their fishing activities. This is the method of shooting fish, eels, shrimp from under water using water goggles called *antúko* or *bikol*, and a short, metal arrow usually made from an umbrella rib, the *asido* (Sp.) which is propelled by a rubber band made from the innertubes of automobile tires.<sup>107</sup>

The Negrito men, very infrequently the women, dive under the water, and either shoot the grunt and mountain bass as they swim by, or impale the numerous gobies found clinging to the rocks (see Plate 3, fig. 1). The technique is also very effective for the eels and shrimp which are found under the rock ledges and water grasses along the edges of the rivers. If the water is clear, any Negrito man or boy can get a sizable catch in a very short time. The efficiency of this technique has almost eliminated all other methods of fishing, and would do so completely if it were not for the fact that the rivers are muddy during the rainy season. In addition, the efficiency of this technique is beginning to have a marked effect upon the supply of fish, eels, and shrimp.

*Woods used for the water goggles.*—Though the *mangantúko* complex was introduced to the Pinatubo pygmies only twenty-

<sup>105</sup> *Ibid.*, p. 166.

<sup>107</sup> All of my informants stated that the *mangantúko* technique was introduced into Zambales by men from the Bikol Provinces; hence, the name of the goggles, *bikol*. The term *antúko* is very probably derived from *anteojos* (Sp.) meaning glasses or goggles.

five years ago, the form of the goggles, and the plants used in making the goggles, are now traditionally established. The water goggles are usually carved out of a solid, moderately hard piece of wood by each individual fisherman, so that, the goggles will exactly fit his eye sockets. As among other Philippine ethnic groups, the goggles are sometimes carved from the horn of the water buffalo, but it is difficult for the Negrito to obtain this medium. I have seen a few goggles made from the thin walled, tubular bamboos. Any type of clear glass which the Negrito can obtain is used for the "windows" of the goggles, and a rubber band holds the goggles tightly to the head.

The following woods, and one bamboo, are specifically used in making these diving goggles:

*Anaótung* or *laniti*. *Wrightia laniti* (Blco.) Merr.

*Balliwüt*. *Ehretia polyantha* R. Br.

*Bangábak*. *Macaranga grandifolia* (Blco.) Merr.

*Bangkál*. *Nauclea orientalis* Linn.

(tree) Local name: *bangkál* (Tag., Bot.-Sbl.)

*Bínúnga'*. *Macaranga tanarius* (Linn.) Muell.-Arg.

(tree) Local name: *bínúnga* (Tag., Kay., P. Bis., Sbl.)

*Bo:-'mantúg*. *Gigantochloa levis* (Blco.) Merr.

(bamboo) Very probably of prehistoric introduction; *bóho* (Tag.); *búlo* (Pol.-Dum.)

*Kalibutbút-ya-tagálbag*. *Voacanga globosa* (Blco.) Merr.

*Lítúhin-laním*. *Homonoia riparia* Lour.

*Ngúho'-dagi*. *Ligustrum pubinerve* Blm.

*Óak*. *Harpullea arborea* (Blco.) Radlk.

*Páan-labúyo*. *Psychotria luzoniensis* (Cham. and Schlecht.) F.-Vill.

(small tree) Cf., page 272 for a discussion of this plant name.

*Palumboyín* or *malapucing* *Syzygium similis* (Merr.) Merr.

*Leaves and stems of plants used in cleaning the glass windows of the goggles.*—Before diving to shoot the fish, eels, and shrimp, the pygmies very carefully clean the glass windows of their goggles with the leaves of one of the following plants. All of these plants are abundant along the streams and rivers. Three of the plants (marked with an asterisk) have no other function, and are conceptually important to the pygmies only because of this use. It is significant to note that these same three plants do not have specific names, but are named in terms of their apparent relationships with other useful plants. This is to be expected, for I am quite certain that these plants were ignored, and had no local name, prior to the introduction

of the *mangantúko* complex. Then, when by experimentation these plants were found to be useful, that is, were "meaningfully defined," they were given descriptively modified names which had already been established for other useful plants.

*Liúhin-lanfm.* *Homonia riparia* Lour.

#*Malakawáyan-lanfm.* *Polygonum barbatum* Linn.

(ground vine) The local Negrito name means "like the bamboo (*kawáyan*)," and *lanfm*, "water," denotes that this plant is found along the rivers.

#*Púdd'-kaúgan.* *Vigna* sp.

(vine) According to the Negrito, this is the type of *púdd'* found along the "large rivers," the *kaúgan*. In the pygmies' botanical system, the "true" type of *púdd'* is *Pueraria phaseoloides* (Rox.) Benth.

#*Sínko-sínko-lanfm.* *Jussiaea suffruticosa* Miq.

(shrub) This plant is believed to be related to *sínko-sínko*, *Polanisia icosandra* (Linn.) W. and A., and is differentiated by the use of the term for "water" designating the former's habitat.

*Táib.* *Saccharum spontaneum* Linn. subsp. *indicum* Hack.

(grass) The young stem of this abundant grass, which is full of juice, is broken, and then rubbed against the glass. This procedure very effectively cleans the windows.

It is also interesting to note how the Pinatubo Negritos have defined the habitat of the above plants by incorporating into the local plant names the terms *lanfm* and *kaúgan*. This technique is commonly utilized by the pygmies in the formation of autochthonous plant names.

*Fish-stringers made from trimmed stems or twisted leaves of plants.*—Before diving, the Negrito fishermen secure a *kalóloy*, "fish-stringer," around their waist on which they can string the fish, eels, and shrimp which they have shot without having to leave the water. A number of plants found along the banks of the streams, or in the forests nearby, yield tough whole stems, or leaves which can be twisted, for making this cord. Stringers are also made from carefully split and trimmed rattan.

*Ingwál.* *Flagellaria indica* Linn.

(vine) Local names: *ingwal* (Ilk.); *ingula* (Tag.) *ingul* (Pamp.)

*Púdd'-kaúgan.* *Vigna* sp.

*Pamikiwín-naputi'.* *Canavalia luzonica* Piper

(vine) In the Negrito's classification of plants, this is the *naputi'*, "white," type of *pamikiwín*. The "true" type

*paniklwin-mantúg*, has been identified as *Mucuna nigricans* (Lour.) Steud.

*Táib*. *Saccharum spontaneum* Linn. subsp. *indicum* Hack. (grass) The long leaves of this wild sugar cane are merely twisted together to form a stringer.

#### OTHER FISHING TECHNIQUES

As we have noted, the method of diving, and shooting fish, shrimps, and eels with a metal rod propelled by a rubber band, has almost eliminated all other techniques of fishing. However, during the rainy season (July through September) and the typhoon season (October and November), the rivers are periodically muddy, and it is difficult to see the fish, shrimps, and eels from under the water. Primarily because of this, other and older fishing techniques have survived. In addition, the older men and women rarely utilize the new fishing technique, but prefer one or another of the following methods: (1) plant poisons (discussed above), (2) fish traps, particularly the floodtrap (discussed in the following section), (3) the bow and arrow, the latter with specific types of trident points, (4) hand-poles and lines, the *patódan*, as well as short, set-poles and lines, and *pabátí'*, which are baited and placed at night along the banks of the rivers,<sup>108</sup> (5) diverting and drying streams, or the edges of the larger rivers, by one or a series of dams, the *balák*, and (6) gathering small fish, shrimps, and eels found hiding under and around the rocks and grasses along the edges of the rivers by hand. The latter technique is specifically the activity of small boys, girls, and the women. They sometimes use a short, pointed rod made of bamboo or metal, called the *hudi'* or *lalátog*, for impaling the river life, after its position had been discovered with the free hand.<sup>109</sup>

The Pinatubo Negritos are quick and efficient dam builders, in even the strongest current, and as this is an important

<sup>108</sup> All of their fishhooks are made of metal and are usually obtained from lowland Chinese stores, but are sometimes made by the Negrito smiths from heavy wire or umbrella ribs.

<sup>109</sup> One other fishing technique should also be mentioned, which though not commonly employed by the Pinatubo pygmies, is characteristic among the Sambal in the Pombato area. The Philippine night heron (*Nycticorax n. nycticorax*), called *bakaw* by the Sambal and the Negritos is used as a "fisher." The bird is caught while still young, tamed through association (these birds are literally a part of the family), and taken daily to the river to feed. When the bird has fed for itself and is satiated, it will still continue to catch fish, shrimps, crabs, frogs, and small eels. As no neck ring is used, these must be removed quickly from the bill by the keeper who follows the bird as it hunts the river life.

older method of fishing, it is discussed in detail herein. I early learned the efficiency of the Negritos in building dams through an unfortunate incident. During a typhoon in November, 1947 when I was attempting to drive out of the mountains, my automobile was caught in the center of a river which was about 40 feet across, and was being destroyed. Within a few hours, a number of my Negrito friends had built a dam across the swift river, which diverted the river into another channel, causing the water to drop from a depth which at one time must have reached four feet, to a level of less than one foot.

With sharp bolos, their method of building dams is rather simple, as well as speedy, in that plants found along the rivers or handy in the forests nearby provide for the entire construction. First, three or four tripods are placed at even intervals across the river. These are usually built of the small trunks of the *agóho*, *Casuarina equisetifolia*, which as we have noted, is very common in the streams and river bottoms of the Pinatubo area at low and medium altitudes. The tripods are tied with the whole stems of handy vines (cf., p. 285, the discussion of vines used to tie the flood-trap), or with split rattan which can be quickly prepared. Longer trunks of the *agóho* are then placed horizontally against the up-stream side of the tripods. Large rocks are piled around the bases of the tripods, and along the base of the lowest horizontal brace, to give the frame strength. The whole frame is constructed so as to slope with the river and does not receive the full force of the current as it would if placed at right angles. Then, beginning at the upstream end of the frame, the pygmies place many small branches upright against the frame. These are held in place by the force of the current. Against these upright branches, the Negritos next place a horizontal matting of reeds and tall grasses, and over this a final layer of large banana leaves. The water, which has been partly entering the new channel, and partly flowing over and through the dam, is almost wholly diverted with the addition of the banana leaves.

When the dam is complete, and the depth of the water below the dam markedly lowered, the men, women, and children (usually a whole village or a large family) feverishly catch the fish, shrimps, and eels by hand. Fish that have escaped into deep holes, which may still exist, are shot with the bow

and arrow, or by using the *mangantáko* technique. If repaired from time to time, these dams will last three or four months; however, their usefulness is over in a few days when all of the river food below the dam has been caught.

Frequently, the Negritos will merely dam the edges of the larger rivers, or portions of these rivers in which there are a number of channels. This is done by building a series of low rock walls, and using wild banana leaves as the facing. As we have noted, dams are called generally *balák*, but when a number are placed consecutively, each has a specific name; the first, *paliktik*, the second, *manaphón*, and those following, *pakatian*. A number of these small dams will dry entirely a part of the river, and it is easy for the women and children to catch by hand the small gobies and shrimp.

The use of dams to divert and dry rivers is a widespread food getting activity among Philippine people, and I doubt whether the practice as found among the Pinatubo pygmies involves any unique elements.

#### PLANTS USED IN THE CONSTRUCTION OF THE FLOOD-TRAP

The *ansdg*, a flood-trap, is the only fish trap commonly used at present by the deeper Negritos, and it appears to be a very old technique among all of the Pinatubo pygmy groups. A barrier or dam is thrown across the river (in the manner described in the preceding section) which has an opening in the center through which the water pours onto a sloping platform. The floor and low side-walls of the platform are made of split bamboo, and are spaced so that the water will pass



FIG. 1. The *ansdg*, a flood trap.



through, but which are still narrow enough to catch all but the very smallest fish which are swept onto the platform. The platform is about four meters long, and the sides about 60 cm high, and it slopes gradually up so that the downstream end of the platform is above the highest water level (see figure 1). During the rainy and typhoon seasons when the rivers flood, this is a very effective trap. Invariably, the builders will secure a bow beneath the platform of the trap to bring good luck.

The fact that this trap is used when the rivers flood demands that it be well built. For tying all parts of the trap, only the vine *kinis-nangtitit*, *Ichnocarpus volubilis* (Lour.) Merr., is used, and for the tripods, and the braces of the trap, the limbs and trunks of the following trees:<sup>110</sup>

*Agóho*. *Casuarina equisetifolia* Linn.

(conifer-like tree) This plant name appears in many Philippine dialects.

*Ana'an*. *Duabanga moluccana* Blm.

(tree) Local name: ana'an (Bot.-Sbl.); no other cognates were found.

*Awilí*. *Ficus hawii* Bleo.

*Banabáh*. *Lagerstroemia speciosa* (Linn.) Pers.

(tree) Local name: banabá (Tag.), and in many other dialects.

*Ditá*. *Alstonia scholaris* (Linn.) R. Br.

(tree) Local names: ditá (Tag., Bis.); dírita (Ilk.)

The flooring and walling of the flood-traps are made out of the following bamboos:

*Bikaw-mantúg*. *Schizostachyum fenixii* Gamble

Local names: bikai (Ilk., Ikn., Pamp., Pang., Tag.) for *Schizostachyum diffusum* (Bleo.) Merr. The Pinatubo pygmies call *S. diffusum*, *bikaw-bábey*, the "pig's bikaw."

*Kawayan-kiling*. *Bambusa vulgaris* Schard. (prehistoric introduction.)

<sup>110</sup> The Pinatubo Negritos gather, trade, or sell the *kinis-nangtitit* and the fern-vine *dulimán*, *Stenochlaena palustris* (Burm.) Bedd., to the lowland Sambal. As among the Tagalog, these two vines are used by the Sambal for tying all parts of the large fish corrals, the *tabagán* (the common *baklád* in the Tagalog regions). These vines are strong, and do not deteriorate quickly in either salt or fresh water.