

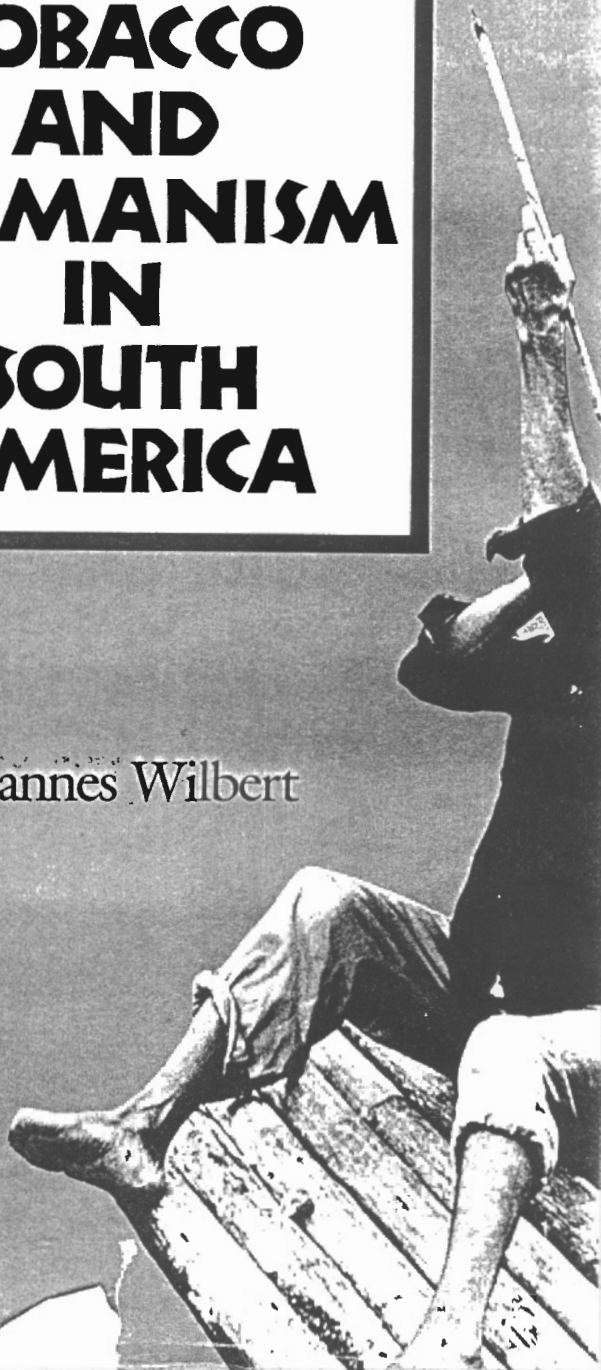
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*Psychoactive Plants of the World.*

# **TOBACCO AND SHAMANISM IN SOUTH AMERICA**

Johannes Wilbert

1987

Wilbert Tobacco and Shamanism in South America



# Tobacco and Shamanism in South America

JOHANNES WILBERT

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*To*  
GEORGE E. HALL  
*and*  
OLGA C. HALL

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## Preface

THE TOBACCO PLANT HAS AROUSED THE INTEREST OF SCHOLARS FROM A wide variety of fields. Early on, Schlözer (1775) pointed to the multidisciplinary requirements of tobacco research, arguing that in order to deal adequately with the subject matter, it needed to be examined from religious, therapeutic, medicinal, sociological, economic, commercial, and financial points of view. Later, Putnam (1938:47-48) broadened the research spectrum to include the fields of archaeology, chemistry, theology, philology, linguistics, and ethnography. In the present study I have adopted the approach of the latter discipline to document the distribution of tobacco use, while for the analysis of the ethnographic record an additional, that is, pharmacological, orientation was chosen.

Introducing the book is a discussion of wild and cultivated nicotianas, largely based on Goodspeed (1954). Tobacco-producing plants are derived from the genus *Nicotiana* of the nightshade family. Other well-known nightshades in the service of mankind include food plants like potato, tomato, pepper, and eggplant; hallucinogens like thorn apple, mandrake, henbane, and belladonna; and several garden ornamentals like petunia, which derives its name from the Tupían designation *petún* for tobacco, the most notorious nightshade of them all. A clear differentiation must be made between wild nicotianas and tobacco cultigens in order to appreciate the historical place of tobacco and the importance of the plant in Neo-Indian life.

To conduct the survey of indigenous methods of tobacco use, a total of 3,446 sources were retrieved from University of California libraries and from others through interlibrary loan services. In about 1,800 sources, tobacco was briefly mentioned or treated more extensively. However comprehensive the

ethnographic chapter may be, no claim is made for its completeness. Much documentation might have escaped the library search, and most of the available evidence on archaeological tobacco pipes has been excluded. Ideally, one would have sought to compare the South American data with those of traditional tobacco use in Middle America (Robicsek 1978) and North America (Linton 1924). However, the prospect of facing an even larger bibliography was forbidding, and a tobacco study embracing the entire continent of America remains a desideratum. As it is, the ethnographic evidence compiled for South American Indians is presented in a brief review of early tobacco history, followed by six sections organized according to the methods of gastrointestinal (chewing, drinking, licking, rectal) and respiratory (snuffing, smoking) tobacco ingestion.

Except in a few cases, for instance, where a tribe is well known to be extinct, the ethnological chapters of the book are written in the so-called ethnographic present, that is, tobacco practices are discussed in the present tense. This stylistic device prevents switching back and forth between the past and the present tenses and obviates determination in each and every case of whether a particular custom persists, has changed, or has ceased to exist. Yet despite the feeling of stasis this style of reporting conveys, the reader ought not be misled to believe that tobacco practices observed in the past have necessarily remained unchanged today.

The chapter on the pharmacology of South American tobacco use focuses on nicotine, man's primary interest in the tobacco plant. The discussion familiarizes the reader with the relative effectiveness of traditional methods of nicotine administration. In addition to treating the effects of the alkaloid on the nervous system, its relationship to catecholamines and serotonin is also briefly considered.

Researching the ethnographic section of the study brought out the close connection that exists between tobacco use and shamanism. True, this relationship may never have been an altogether exclusive one, inasmuch as chroniclers and early writers frequently reported on both religious and secular tobacco practices occurring side by side within the same society. But from pre-Contact times to roughly 1700 of the historic era, tobacco seems primarily to have served magico-religious and more or less related medicinal ends (Cooper 1949:526-27). As a result, the plant had a major impact on tribal value systems until, under the influence of the advancing frontier, the ideological tenets of tobacco beliefs began to shift increasingly from the religious to the profane. Recreational smoking by the common man and, in many cases, by the ordinary woman, usually entails tobacco consumption on a more moderate scale than does tobacco use by the shaman. While the effects of nicotine under the former

condition may be similar to the ones experienced by non-Indian users, those sought by shamans in ritual context reveal psychotropic pathways to the otherworld.

In order to gauge the pharmacological wisdom that informs many exotic and seemingly bizarre practices of indigenous tobacco behavior, the ethnographic data were scrutinized in the light of general pharmacology (Ashton and Stepney 1982; Goodman and Gilman 1975; Goodman Gilman et al. 1985; Levine 1983) as well as experimental and clinical studies of tobacco and nicotine (Larson, Haag, and Silvette 1961; Larson and Silvette 1968, 1971, 1975). Both sets of sources were heavily relied upon and drawn upon. A hand survey of the *Index Medicus* and a computer search for tobacco-related research on norepinephrine, epinephrine, and serotonin were conducted.

Stepping over one's own disciplinary boundaries is always fraught with danger, and, not being a pharmacologist, I shall certainly display inadequacies in interdisciplinary discourse. Yet the comparison of physical and mental effects of nicotine with cultural conceptualizations of the same will prove rewarding, I trust, and suggestive of little-explored avenues of ethnobotany. Besides establishing a dialogue between natural scientists and students of culture, this interdisciplinary analysis of drug use casts new light on the creative imagination and worldmaking capacity of the American Indian. Tobacco in traditional South American societies—as contrasted with the modern drug scene—is shown to have played a culture-building role. Functioning as an actualizing principle between the telluric and the cosmic, it has served to validate normative behavior and to affirm cultural institutions. This places tobacco on a par with a good number of psychotropic drugs and their age-old religious significance in South America and other world areas. Prehistoric evidence for tobacco use in South America may go back some fifteen hundred years in the case of an assemblage of shaman's paraphernalia from Niño Korin, sixteen hundred years in a Nasca burial (Wassén 1972:7–114; Bruhn et al. 1976:45) or even as far as three thousand years, in the case of tubular pipes from Marajó Island (Meggers and Evans 1957:197, fig. 58) and the lower Amazon (Hilbert 1968 pl. 12). But ritual tobacco is certainly much older on the continent than these dates suggest. Reaching back to the beginnings of lowland South American agriculture some eight thousand years ago (Reichel-Dolmatoff 1986:13), and possibly even antedating the domestication of food plants, the parent species of the hybrids *Nicotiana rustica* and *N. tabacum* may be the oldest cultigens in the Americas (Furst 1976:27). Thus the combined botanical, ethnographical, and pharmacological evidence presented in this book argues strongly in favor of great antiquity of South American tobacco and attests to its deep-rootedness in autochthonous culture and thought.

My interest in the cultural significance of tobacco in South America was triggered by longitudinal fieldwork since 1954 among the Warao Indians of Venezuela. Tobacco is so pervasive in Warao society that it permeates practically all cultural institutions (Wilbert 1972*a*; 1985). In order to gain a comparative perspective, I extended my tobacco research to all Indian societies of the subcontinent (Wilbert 1975*b*; 1976), building on noteworthy previous work by Stahl (1925), Cooper (1949), Zerries (1964), Furst (1976), Hartmann (1981), and de Smet (1983, 1985). The file of six hundred references which then graduate student Diane Olsen had assembled with a team of her UCLA peers was still in my possession in 1979 when Richard Evans Schultes, Timothy Plowman, and I embarked on a transcultural study of drug plants of South America. With the aid of a second team of student assistants, the onerous task of making a more extensive library search was accomplished within a period of two years. For their unstinting help I am indebted for this part of the project to Judith Davidson and Don Joralemon, who coordinated the research team consisting of Liesbeth Afek, Diego E. Berrío, Celine Cooper, Kimberley Cook, Molly A. Doty, Joe Graffam, Danny Hilton-Chalfen, Victoria S. Lockwood Joralemon, Arturo Muñoz, Lydia Nakashima Degarrod, Michael Paolisso, Rita Prochaska, and Karin Simoneau. Special thanks are due Danny Hilton-Chalfen for his assistance with data analysis, Kimberley Cook for backbreaking cartographic work, and Judith Davidson for many hours of volunteered time.

The monumental task entailed preparation of the comprehensive apparatus of well over eleven hundred items. As can be imagined, a bibliography with citations in many different European languages spanning almost five hundred years and several disciplines is in serious danger of resulting in an appalling assemblage of faulty entries. To produce a reliable bibliography, the project counted on the voluntary collaboration of Jill Sifton. Thanks to her linguistic abilities and patient work, she succeeded in producing a painstakingly edited bibliography based largely on the visual verification of titles and imprimaturs. She also checked the hundreds of quotations in the book against the entries in the bibliographical record. For this special effort and for her assistance in data analysis, I am deeply indebted to her.

Parts of the manuscript were read by a number of scholars: Peter Furst, Timothy Plowman, Michael J. Raleigh, Gerardo Reichel-Dolmatoff, Peter Rivière, Richard Evans Schultes, and S. Henry Wassén critiqued the ethnological sections; Sharon Nau Spooner reviewed the ophthalmological parts; and Bo Holmstedt, Murray E. Jarvik, Donald J. Jenden, Franklin L. Murphy, Jr., Ronald K. Siegel, and Arthur Yuwiler read and/or consulted the chapter on pharmacology.

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*Los Angeles, Easter 1986*

# I

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## *Wild and Cultivated Nicotianas*

THEORIES TO THE CONTRARY NOTWITHSTANDING, THE GENUS *NICOTIANA* Linnaeus (Gen. Pl., 84, 1754) is of South American origin and tobacco an American innovation.<sup>1</sup> Tobacco-producing plants are exclusively of the genus *Nicotiana*, and nicotianas belong to one of the largest genera of the nightshade family (Solanaceae).

In their natural state nicotianas occur in South America, North America, Australia, on several islands of the South Pacific, and in Africa (map 1). However, in terms of overall distribution of its sixty-four species,<sup>2</sup> *Nicotiana* is primarily a genus of the New World; 72 percent of its species are found in the Americas, as compared with 27 percent which occur in the Australo-Pacific region. Only one apparently endemic species is known from Africa (Namibia).

A more detailed analysis of *Nicotiana* geography shows that the continent of South America has the largest number of autochthonous species, that is, thirty-seven (58 percent). With seventeen species (27 percent) the Australo-Pacific region is in second place in world distribution, while North America (including Mexico), with only nine species (14 percent), ranks third, and Africa, with a single species, fourth.

1. For literature on the controversy regarding the origin of tobacco consult Brooks 1937-52, 1:5-13; Feinhandler, Fleming, and Monahan 1979; Richter 1928; Spinden 1950; Stahl 1931; Wiener 1920.

2. Authors differ regarding the number of *Nicotiana* species they recognize. To arrive at the total of sixty-four species, I have adopted the figures given by area specialists: Hunziker (1979:72), South America; Goodspeed (1954:8), North America; Horton (1981:1), Australia; and Merxmüller and Buttler (1975), Africa. In any case, however, there remains a large number of species that is insufficiently known (cf. Goodspeed 1954:490-91; Horton 1981:46-7). Therefore, the total number of species comprising the genus *Nicotiana* is probably larger than sixty-four species.

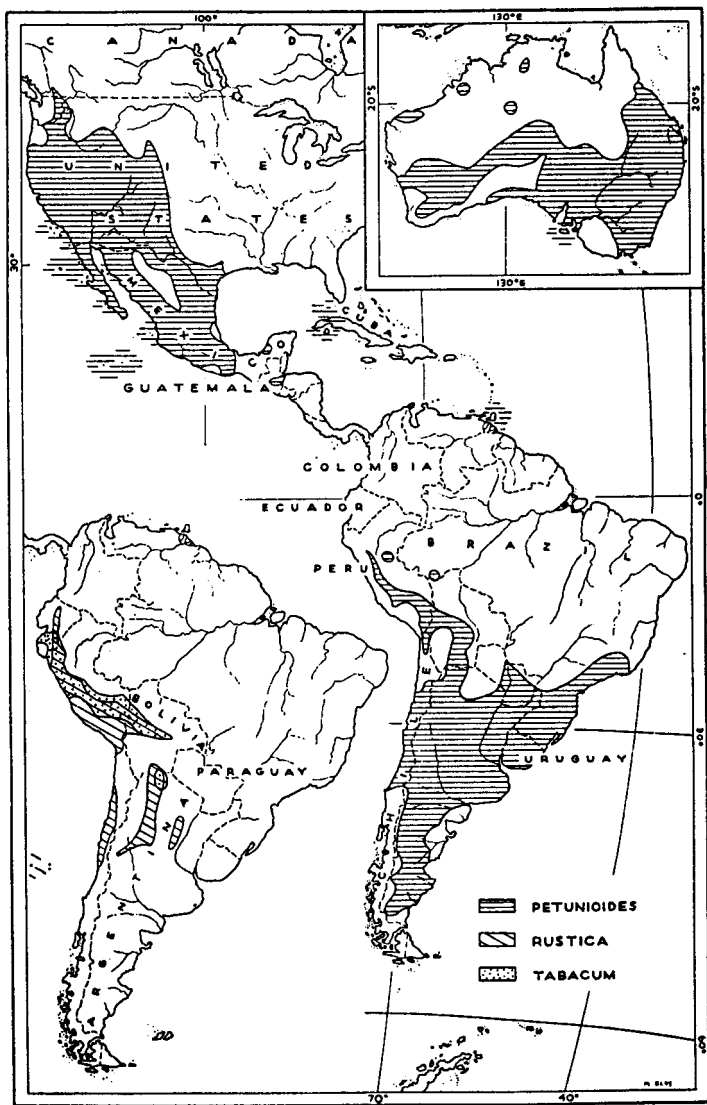


Wild nicotianas belong to three morphologically and cytogenetically determined subgenera: *Rustica*, *Tabacum*, and *Petunioides*. Of these, the first two are peculiar to South America; the last one occurs in the three world regions of major distribution. (The taxonomic position of the African species of *Nicotiana* remains uncertain.) But whereas there is a direct relationship between *Petunioides* (other than section *Undulatae*) of South America and of the Australo-Pacific region, North American species, although directly related to South American species, are only indirectly related to Australo-Pacific ones, that is, via South America. According to Goodspeed (1954:8), this combined genetic and distributional evidence "points to South America as the center of current distribution of *Nicotiana* and, together with other pertinent data, argues for origin of the genus in that continent with subsequent dispersal to North America and to Australia and the South Pacific."

The majority of South American nicotianas seem to have originated in the Andean region of the continent, but paleobotanical evidence to determine a period of origin of *Nicotiana* remains outstanding. The cordillera resulted from a series of uplifts between the mid–Upper Cretaceous to the Pliocene-Pleistocene and, by Pliocene, representatives of major diverging branches within the genus had dispersed throughout the region, eventually resulting in its three subgenera.

The South American distribution area of wild *Nicotiana* includes the Andean Highlands of southern Ecuador, Peru, north-central Bolivia, and northern Chile and the lowlands of the southern continental cone south of the central Gran Chaco with the exception of southern Chile, southern Patagonia, and Tierra del Fuego. Thus, wild *Nicotiana* is absent from the entire northern half of the subcontinent (northern Andes, Amazon-Orinoco basin, the Guianas, and eastern Brazil) but recurs in the West Indies (map 1). In their natural state nicotianas are believed to have dispersed from their Andean focus, via the Antilles and Central America, to western North America between southern Mexico and Canada; the Australian and Pacific species are assumed to have arrived there by way of the Antarctic. Merxmüller and Buttler (1975:98) suggest that the African species diffused from South America, Antarctica, or Australia at an early geological age. In any case, given the time depth involved, it is evident that man has not been instrumental, voluntarily or involuntarily, in the dispersion of the genus in its wild state (Goodspeed 1954:7–57).

The exact opposite is true of the South American distribution of cultivated species of *Nicotiana*. They are largely absent in southern regions of South America; but the northern parts of the subcontinent such as the Amazon-Orinoco basin and Guiana, which had never been conquered by wild species, experienced an almost universal invasion of cultivated nicotianas, profoundly



Map 1. Natural world distribution of the three subgenera of *Nicotiana*. Single African species not shown.

affecting the life-style of their human propagators. There is, then, a basic difference in South American *Nicotiana* geography between the natural distribution of wild species and their cultural insignificance, on the one hand, and the man-effected distribution of cultivated species and their immense cultural relevance, on the other.

Traditionally, the use of tobacco (and other psychotropic plants) by South American Indians is almost exclusively confined to horticultural peoples, whereas it is nearly absent from nonhorticultural tribes of the southern cone. Pertaining to the latter category are also several marginal and horticultural societies, other than Tupían, of eastern and southern Brazil (Cooper 1949:557). Chaco tribes adopted the use of tobacco most likely from northern cultivators and post-Contact Europeans, whereas in the Tropical Forest tobacco was the principal and nearly universal intoxicant used (Steward 1949:678).

It is understood that man's historic interest in *Nicotiana* has been exclusively because of the nicotine alkaloid it contains. Nicotine has been isolated from a large number of plants as diverse as angiosperms and cryptogams. But the ability to synthesize nicotine is particularly characteristic of nightshades. What bears pointing out in this connection is that not all of the sixty-four *Nicotiana* species are nicotine- or, to put it in cultural terms, tobacco-producers. Some species of the genus produce nicotine in relatively large quantities, some only in small amounts, and others not at all (table 8). For this reason only a dozen or so of the sixty-four species were particularly favored as tobacco cultigens, and most especially *Nicotiana rustica* and *N. tabacum*. As intoxicants these two species have achieved greater dissemination throughout Indian America than any other. None of the wild species of Australia and the Pacific seem to have been cultivated for tobacco in pre-Contact times. Rather Australian aborigines chew the leaves of several wild species of *Nicotiana* (Peterson 1979:179-80, 183-84) and exploit *pituri* (*Duboisia hopwoodii* F. Muell.) for its alkaloid content (among others) of nicotine and nornicotine (Watson 1983). The African species of *Nicotiana* does not seem to have been used as tobacco.

*Nicotiana rustica* Linnaeus (Sp. Pl. 1:180, 1753; type from "America" [LINN]); (Goodspeed 1954:351-56)

Coarse annual 0.5 to 1.5 m high. Stems one, less commonly several, erect, rather thick, moist- to viscid-pubescent, branches more slender. Leaves fleshy, minutely puberulent or viscid-puberulent; blade 10 to 15 (30) cm long, ovate, elliptic or cordate, sometimes elliptic-lanceolate or subrotund, base often unequal; petiole much shorter than blade. Panicles narrow and compact or broad and loose, central axis distinct, branches acute. Pedicels 3 to 4 mm long, later 5 to 7 mm. Floral calyx 8 to 15 mm long, poculiform to cylindrical, pubescent, membranes narrow, longish, teeth  $\pm$  broadly triangular, acute, one much

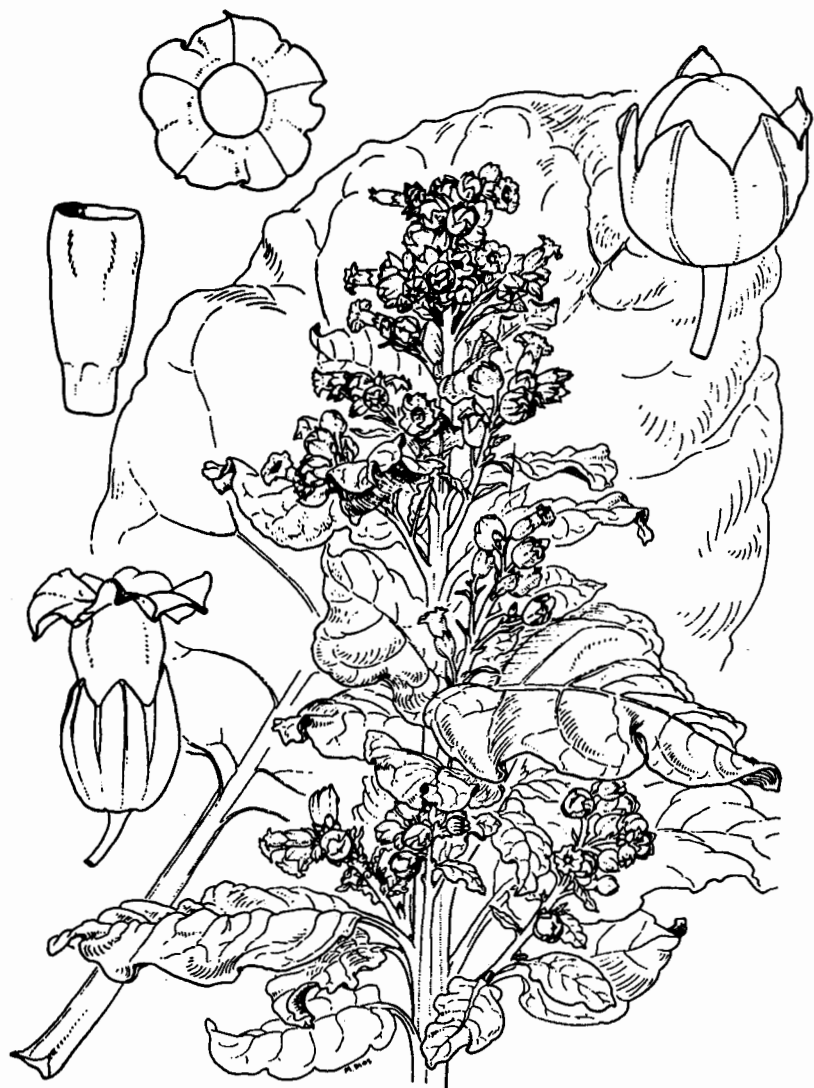


Fig. 1. *Nicotiana rustica* var. *brasilia* Schrank. Inflorescence,  $\times \frac{1}{6}$ ; entire flower, tubular part, limb, capsule,  $\times 2$ ; leaf,  $\times \frac{1}{2}$ .

longer. Corolla greenish yellow, 12 to 17 mm long exclusive of limb, puberulent exteriorly, tube proper commonly 3 mm long, 2 mm wide, throat *ca.* 3 × as long, 6 to 8 mm wide, broadly obconic with slight contraction at mouth, limb 3 to 6 mm wide, lobes very short, obtuse, entire or apiculate. Stamens white-pilose for *ca.* 2 mm above insertion on base of corolla throat, 4 extending nearly to mouth, sigmoidly erect, 5th shorter. Capsule elliptic-ovoid to subglobose, 7 to 16 mm long, included or nearly. Seeds elliptic, oval or angular, 0.7 to 1.1 mm long, dusky brown, surface fluted-reticulate. Embryo straight or bent. Chromosome number, 24 pairs.

*Nicotiana rustica* (fig. 1), possibly of amphiploid origin involving progenitors of *N. paniculata* and *N. undulata*, most likely originated in north-central Peru. As the hardier and richer in narcotic properties of the two cultivated species, it spread far beyond the tropical and subtropical belts to the very limits of New World agriculture between Chile and Canada. In fact, in its dispersal *N. rustica* rivaled even maize, along with such cultigens as cotton and the *Lagenaria* gourd. It has been the *petún* of Brazil, the *piciéte* or *piciétl* of Mexico, and the *Indian tobacco* of eastern North America. Considering its wide range from the tropics to high latitudes, it is likely that *N. rustica* represents the older of the two principal tobacco cultigens, since *N. tabacum*, in pre-Columbian times, did not extend beyond the tropical climates (Sauer 1950:523).

*Nicotiana tabacum* Linnaeus (Sp. Pl. 1:180, 1753; type from "America" [LINN]); (Goodspeed 1954:372-75)

Stout viscid annual or limited perennial 1 to 3 m high. Stem thick, erect, branches few, rapidly ascending. Leaves decurrent, the larger at least 5 dm long, ovate, elliptic or lanceolate, base tapering or winged-subpetiolate, apex acuminate. Panicle with distinct rachis, several branches, branches usually compound, commonly shorter than rachis. Pedicels 5 to 10 (15) mm long, later 10 to 20 (25) mm. Floral calyx cylindrical to cylindrical-campanulate, 12 to 20 (25) mm long, viscid, teeth triangular-acuminate, shorter than or equaling calyx tube, unequal. Corolla little if at all curved, outer surface puberulent, tube proper (7) 10 to 15 mm long, 2.5 to 3 mm wide, throat (23) 25 to 40 mm long, lower half cylindrical, 3 to 5 mm wide, pale greenish cream, upper half similar in color or pink to red commonly abruptly expanded into deep cup 7 to 12 mm wide, but occasionally obconic. Limb 10 to 15 mm wide, lobed or pentagonal, white, pink or red. Stamens inserted on base of corolla throat, erect, oriented to upper side of flower or evenly spaced, anthers of two longer pairs near mouth of corolla or slightly exerted, fifth stamen shorter than either pair. Capsule narrowly elliptic, ovoid or orbicular, acute or blunt, exerted or included, 15 to 20 mm long. Seeds spherical or broadly elliptic, *ca.* 0.5 mm long, brown, ridges fluted. Embryo straight. Chromosome number, 24 pairs.

*Nicotiana tabacum* (fig. 2), of interspecific hybrid origin involving progenitors of a member of section *Tomentosae* and *N. sylvestris*, probably had its origin



Fig. 2. *Nicotiana tabacum* Linnaeus ("Machu Picchu"). Inflorescence,  $\times \frac{1}{4}$ ; entire flower, tubular part, limb, capsule, stamen insertion,  $\times 1$ ; leaf,  $\times \frac{1}{4}$ .

in the eastern valleys of the Bolivian Andes, whence it spread in its natural state to adjacent regions of northwestern Argentina. It was eventually carried by man into the northern part of the subcontinent, where it remained closely associated with Neo-Indian forest planters of Amazonia, in Guiana, and in the West Indies.

In the wild state nicotianas, irrespective of varying species-specific ecological requirements, invariably need "considerable to strong illumination and well-drained soil for normal growth" (Goodspeed 1954:13). As cultigens in the tropical zone, they have the same two basic needs, and in many instances the Indians have learned how to regulate both drainage and radiation. In some places tobacco is allowed to grow semiwild around the house and the settlement. Authors refer frequently to the use of wild tobacco by Indians in Amazonia and other tropical regions of the subcontinent. In such cases, however, we most likely deal with runaway tobaccos rather than with wild species. Seeds from these "wild" plants are eagerly sought after at times, and the Indians sow them in garden patches close to home (Butt Colson 1977:53; Darbois 1956:57; Schomburgk 1922-23:1,60). Of course, patches sometimes are simply left to seed themselves. More often, however, the cultivation of tobacco receives careful attention. At the end of the rainy season seeds are sown densely in patches along the edges of swidden fields or around the house (Hartmann 1981:227). Frequently, the seedbed is fenced in. Cotyledons appear within a week, and weeding begins so as to favor their growth. After achieving a height of some twenty centimeters, the seedlings are usually, though not always, removed from their beds and transplanted in rows or widely spaced in scattered patches (Norwood 1964:111). The young plants may be protected for an initial period of several days by large leaves that shield them from direct sunlight and rain. However, after a week or so the shades are removed to allow for more illumination. "With the sun you will be able to have strong tobacco; with the rain tobacco will be weak," say the Yanoama (Biocca 1969:135-36). In subsequent weeks and months pests are removed by hand and flower buds frequently nipped. To protect their tobacco plants from a particular ground worm, Barama River Caribs soak the soil around the roots at intervals with fish poison, which kills the vermin (Gillin 1936:66). Many plants, however, are lost to a variety of worms, beetles, and butterfly larvae, and tobacco gardens need considerable care. The first leaves can be harvested after two or three months by removing a few at a time to avoid destroying the plant.

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## *Methods of Tobacco Use in South America*

### EARLY HISTORICAL ACCOUNTS

ASIDE FROM MESOAMERICAN PICTORIAL MANUSCRIPTS, THE WRITTEN HISTORY of tobacco begins with the discovery of America by the Europeans. To be sure, plant materials of various kinds had been in use since ancient times as masticatories, sternutatories, and inhalants on the continents of Africa, Asia, and Europe. But tobacco was not among such products, and there was no actual correspondence between these Old World customs and the purposes for which tobacco was found to be employed by American aborigines (Brooks 1937-57, 1:5). Not surprisingly, therefore, Europeans were initially confused and at a loss to describe tobacco practices in the New World. Inexplicably, to them, the natives seemed to have endowed some ungainly, shriveled leaves with the power to seal bonds of friendship between strangers. Almost from the day of first landfall, on October 12, 1492, the inhabitants of Guanahaní (San Salvador, Bahamas) regaled the newcomers with such herbs. And upon encountering near Fernandia Island a man in a small canoe carrying the same plant material among his meager essentials, Christopher Columbus surmised that the Indians held the leaves in high esteem. Certainty about the purpose of the herbs came several weeks later. Returning from a four-day exploration of the hinterland of Puerto Gibara on the north coast of Cuba, two of Columbus's crew, Luis de Torres and Rodrigo de Jerez, reported how they had become the first Europeans to witness the custom of tobacco smoking. Repeating and enlarging upon the admiral's momentous *Journal* entry of November 6, Bartolomé de las Casas recorded the event in his *Historia de las Indias*, from around 1527:



These two Christians met many people on the road, men and women, and the men always with a firebrand in their hands, and certain herbs to take their smokes, which are some dry herbs put in a certain leaf, dry also, after the fashion of a *musket* [squib, or tube] made of paper, such as boys make on the feast of the Holy Ghost. [These are] lit at one end, and at the other they chew or suck and take in with their breath that smoke which dulls their flesh and as it were intoxicates and so they say that they do not feel weariness. Those *muskets*, or whatever we call them, they call *tobacos*. [Brooks 1937-52, 1:243]

Thus, of the various modes in which American Indians were accustomed to take tobacco, tobacco smoking in the form of cigars was the method first discovered by Europeans. Eager to understand the purpose of the smoking habit and to experience the alleged intoxicating qualities of tobacco, they took up smoking themselves, only to become ensnared by the coercive power of the herbs. Reports Las Casas in continuation of the above-quoted passage: "I have known Spaniards in this isle of Hispaniola who were wont to take them, and being reprov'd for it and told that it was a vicious habit, they replied that it was not in their power to stop taking them." Also the "benumbing" property of tobacco was of great interest to early travelers and colonists who, according to Gonzalo Fernández de Oviedo y Valdés (1851-55, 1), began to smoke tobacco as an analgesic to calm the pain of syphilis.

Since Columbus's *Journal* and Las Casas's work were not published until long after 1535, the year when the first volume of Oviedo's monumental opus appeared, the latter is the earliest printed source to contain a reference to tobacco smoking and the first to mention "tabaco." Referring to the Caquetio of northern Venezuela, Oviedo y Valdés (1851-55, 2:298-99) goes into considerable detail regarding the practice of tobacco cultivation and use among these Indians.

They venerate and dread the devil very much, and the boratios say they can see him and have seen him many times. They paint his figure on their jewels and on wood in relief and on all the things and places which they esteem the most. These boratios are their priests and in every important town there is a boratio to whom everyone goes to ask what is going to happen, whether it will rain, or whether the year will be dry or abundant, or whether they should go to war against their enemies or refrain from doing so, or whether the Christians are well-disposed or will kill them, or finally, they ask all they wish to know. And the boratio says he will reply, after having a consultation with the devil. And in order to have the consultation he shuts himself into a cabin alone, and there he makes use of some [things] which they call *tabacos*, smoked with such herbs as deprive them of sense; and one day, or two or three, passes and still the boratio is shut up and does not come out. And as soon as he comes out he says this is what the devil tells him, answering the questions which have been asked,

according to the desires of those whom he wishes to satisfy. And for this work they give a gold jewel or other things to the boratio. For those matters which are not of such importance the Indians have another method. There is in the country an herb which they call *tabaco*, which is a kind of plant, the stalk of which is as tall as the chest of a man. . . . This puts forth leaves as long as a palm and four fingers . . . and they sow this herb and they keep the seed which it produces to sow the next year and they cure it carefully for the purpose of securing predictions. When they cut the leaves they put them together and having hung them up they dry them in the smoke in bunches and they keep them there, and the product is much esteemed by the Indians. . . . To find out whether to fish or plant or to know if he should hunt or if his wife loves him each one is his own prophet, since, having twisted the leaves of this herb in a roll to the size of an ear of corn, they light it at one end, and they hold it in their mouth while it burns, and blow forth [smoke], and when it is half burnt, they throw down what is rolled up [i.e., the cigar]. If the burned part of the tobacco stays fixed in the form of a curved sickle, it is a sign that the thing which they desire will be given; if the burned portion is straight, it is a sign that the contrary of what is desired will happen, and what they hope to be good will be bad. And they believe this so firmly that no one nor any reason can be enough to cause them to believe anything else. [Dickson and O'Neil 1958-69, 1:14.]

From the Nicoya of Nicaragua Oviedo y Valdés (1851-55, 4:96 [1549]) reported the ceremonial use of cigars during a festival at which cups of cooked cacao were passed. He had also learned of the men of Captain Grijalva who were offered reed cigarettes by Maya Indians off the coast of Yucatán (Robicsek 1978:11). And with respect to ritual smoking, Benzoni (1565) found on his travels (1541-55) that the shamans on Hispaniola and in Central American provinces thoroughly intoxicated themselves with tobacco smoke in order to effect a cure (fig. 3). Some men fell to the ground in this process as if dead and remained "stupefied for the greater part of the day or night." Returning to their senses, they recounted visions and told of their visit to the gods (Brooks 1937-52, 1:226).

At roughly the same time that these various chroniclers were reporting on tobacco smoking in the West Indies and along the Latin American Caribbean rim, others witnessed cigar smoking on the coast of Brazil. Here, sometime in 1555, the Franciscan friar André Thevet (1557) came into contact with the Tupinamba Indians and gave an especially clear description of tobacco as a seemingly recreational and ritual drug (figs. 4, 5):

There is a nother secrete herbe which they name in their language *Petun*, the which most commonly they beare about them, for that they esteeme it maruellous profitable for many things, this herbe is like to our Buglos. They gather this herbe very charely, and dry it [in the shade] within their little cabanes or



Fig. 3. Curing shamans on Hispaniola.

houses. Their manner to vse it, is this, they wrappe a quantitie of this herbe being dry in a leafe of a Palme tree which is very greate, and so they make rolles of the length of a cāndle, and than they fire the one end, and receive the smoke therof by their nose and by their mouth. They say it is very holesome to clense and consume the superfluous humors of the brain. Moreover being taken after this sort, it kepeth the parties from hūnger and thirst for a time, therefore they vse it ordinarily. Also whē they have any secrete talke or counsel among them selues, they draw smoke, and then they speake. The which they do customably one after another in the [councils of] warre, [for which purpose] it is very needeful. The women vse it by no means. If that they take too much of this perfume, it will make them light in the head, as the smel or tast of strong wine. The christiās that do now inhabite there, are become very desirous of this [herb and] parfume, although y<sup>t</sup> the first vse thereof is not without danger, before that one is accustomed therto, for this smoke causeth sweates and weaknesse, cuen to fall into a *Syncope*, the which I haue tried in my selfe. And it is not so strange as it seemeth, for there are many other fruits that offende the braine,

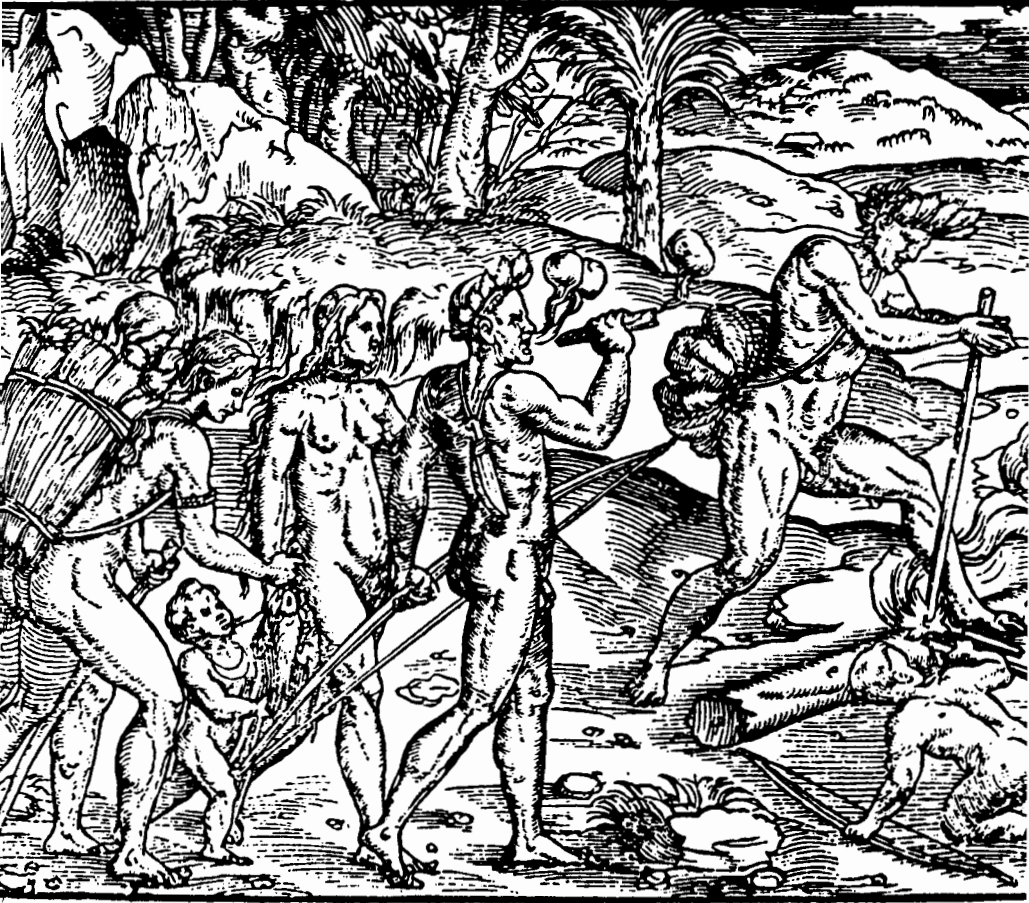


Fig. 4. Tupinamba smoking cigar.

though that the tast of them is plesât and good to eat. [Hacket, in Brooks 1937–52, 1:217–19]

Several years later (1578) Jean de Léry mostly confirmed Thevet's observations concerning tobacco smoking among the same group of Indians. Smoking, the Tupinamba could "go for three or four days without eating anything else," and women never used tobacco. In addition, however, Léry's Brazilian account includes the instance of a second mode of tobacco use among American Indians: ritual tobacco blowing. Speaking of "Carib" Indians, the early



Fig. 5. Tupinamba council of smoking men.

traveler saw their chiefs use a cane, four to five feet long, to blow tobacco smoke repeatedly on the men dancing about them, saying, "Receive all the spirit of fortitude whereby you may overcome your enemies" (Brooks 1937-52, 1:283) (fig. 6). This second mode of native tobacco use is often overlooked or underestimated in its effectiveness of nicotine administration. But as the illustration accompanying Bry's account demonstrates, the smoke was directed to the heads and faces of the bowing dancers, a condition conducive to substantial respiratory intake.



Fig. 6. War dance of Brazilian Indians. Smoke from large cigar is blown on the heads of circumambulating participants.

A straight or a forked tube, "about a span long and less than the thickness of the smallest finger," was employed, according to Oviedo y Valdés (1851–55:1535), by the Taino for the purpose of rhinal inhalation of tobacco smoke (fig. 14). Inserting the upper end(s) of the tube into the nostril(s), the smoker held the lower part over burning tobacco leaves to inhale the smoke several times, "until they lose their senses, and for a great space they lie stretched out on the ground without intelligence and stupefied as if in a dream." Undergoing this experience, chiefs would sometimes order their wives to carry them to their hammocks, where they eventually regained consciousness.

The bifurcated tube through which the Taino were alleged by Oviedo to have inhaled tobacco smoke was mentioned first by Columbus as an insufflator for psychotropic snuff. The Discoverer's son Ferdinand, using "the very words of the Admiral," includes a description of the ritual snuffing Taino shamans engaged in:

I was able to discover neither idolatry nor any other sect among them, although all their kings, who are many, not only in Española but also in all the other islands and on the mainland, each have a house apart from the village, in which there is nothing except some wooden images carved in relief which are called *cemis*; nor is there anything done in such a house for any other object or service except for these *cemis*, by means of a kind of ceremony and prayer which they go to make in it as if we go to churches. In this house they have a finely wrought table, round like a wooden dish in which is some powder which is placed by them on the heads of these *cemis* in performing a certain ceremony; then with a cane that has two branches which they place in their nostrils, they snuff up this dust. The words that they say none of our people understand. With this powder they lose consciousness and become like drunken men. [Bourne 1907:311–12]

Columbus refers here to the same practice Ramón Pané had mentioned earlier in his treatise *De Insularibus Ritibus*, which was written on the admiral's orders in 1497 and published, in 1511, by Anghiera (1912) as a paraphrase and epitome within his *De Rebus Oceanicis et Novo Orbe*. Unfortunately, the Catalonian friar's first published account of New World psychotropic snuff, while including the name of the powder *chohobba*, *chohuba* (*cohoba*), did not identify its botanical source. Accordingly, much controversy surrounds this question, some scholars believing it to have been tobacco (see Lovén 1924), others *Anadenanthera peregrina* (L.) Speg. (Safford 1916a). The former was abundant in the West Indies, the latter quite rare (Reis Altschul 1972:15). As a designation of ritual tobacco, the term *cohoba* (*coroba*) is currently still in use among the Winikina-Warao Indians of the Orinoco Delta, where *Anadenanthera peregrina* is absent.

Safford (1916*a*, 1916*b*), who was the first to identify the *cohoba* snuff of the Taino as a derivative of *Anadenanthera peregrina*, did so mainly because he doubted that tobacco snuff could produce the acute toxic effects mentioned in the literature. As is often the case, Western observers, judging from their experience with Virginia blends, tend to underestimate the potency of tobacco taken by Indians in ritual context. Some, like Bishop (1949:53), speculated correctly that the uncured tobacco of the Indians might be especially strong. But others explained the strength of native tobacco by admixture with different, even more potent, plant products or by the inhalation of carbon monoxide produced in the process of smoking. Yet, as shall be amply documented, tobacco in many parts of South America is taken with results quite similar to those reported by the chroniclers from the West Indies. Clearly, the quantity of tobacco consumed on ritual occasions produces powerful effects without the aid of hallucinogens.

Furthermore, despite Safford's (1924:170; 1927*b*:408) repeated assertions that Columbus and his men observed *Nicotiana tabacum*—the milder of the two principal cultigens—it remains actually quite unknown “whether the tobacco that was first seen smoked there was *Nicotiana tabacum*, for which Cuba was later famous, or *N. rustica*, which was grown in Indian cultivations from Chile to Quebec” (Sauer 1966:56). Brooks (1937–52, 1:19, 82, 204), for one, relates that during the early years after the Discovery, the Indians of Hispaniola smoked in fact *Nicotiana rustica* and that *N. tabacum* was introduced around 1535 from Yucatán. As will be shown, the difference in nicotine content between the two species is considerable. Since unquestionably smoke inhaled from either cultigen, but especially from *Nicotiana rustica*, is fully capable of affecting the user in the manner described by Oviedo, it would seem unwarranted, on the question of tobacco potency alone, to discredit the chronicler's evidence as some investigators have done (Ernst 1889) and as Safford, quoted earlier, suggested. Thus, refraining from ignoring or second-guessing Oviedo's account, I believe with Reis Altshul (1972:16) that “Oviedo's description of the inhaling of smoke from burning tobacco leaves through tubes ought to be accepted . . . as it is related.”

In pointing out *Anadenanthera peregrina* as the botanical source of *cohoba*, Safford might have grounded his case more securely on a short passage by Oviedo y Valdéz (1851–55, 1:347) which seems to identify *cohoba* with the tree and which he and others apparently overlooked: “É a queste cohoba lleva unas arvejas que las vaynas son de un palmo é mas é menos luengas, con unas lentejuclas por fructo que no son de comer, é la madera es muy buena é reçia” (And this *cohoba* bears peas whose pods of roughly palm's length contain lentil-shaped seeds which are inedible; and the wood is very good and tough).



Better than any other argument, this description relates *coboba* to the hallucinogen rather than to tobacco (Reis Altschul 1972:16). Apparently, the bifurcated tube referred to by Columbus and Pané as an insufflator for *coboba* snuff and by Oviedo as an inhalator for tobacco smoke was used by the Taino for both purposes. Whether it was also employed to snuff tobacco powder remains possible but undocumented. Both pulverized substances, pure or blended, as some authors have suggested (Dickson and O'Neil 1958-69, 1:19), could have produced the effects reported by Oviedo.

Tobacco chewing is a method allegedly observed by Amerigo Vespucci on some offshore island along the coast of northern South America. Unfortunately, the identity of the island is in doubt and has variously been given as Margarita Island (Brooks 1937-52, 1:191), the Guajira Peninsula (Vila 1972), the Paria Peninsula (Patiño 1967), and Marajó Island, in the mouth of the Amazon (Navarrete 1837-80, 3:256-58). Worse still, Vespucci (in Waldseemüller 1907:126-27) fails to specify the "herb" he saw chewed by the Indians:

each had his cheeks bulging with a certain green herb which they chewed like cattle, so that they could scarcely speak. And hanging from his neck each carried two dried gourds one of which was full of the very herb he kept in his mouth; the other full of a certain white flour like powdered chalk. Frequently each put a certain small stick (which had been moistened and chewed in his mouth) into the gourd filled with flour. Each then drew it forth and put it in both sides of his cheeks, thus mixing the flour with the herb which their mouths contained. This they did frequently a little at a time. [Brooks 1937-52, 1:189]

This description, according to Plowman (1981:198), "conforms very well with the custom of chewing whole coca leaves with powdered lime, which was wide-spread along the Caribbean coast of South America at the arrival of the Europeans and still persists there today" (cf. Plowman 1979). However, in the immediate vicinity of Margarita and Paria tobacco chewing also was common among the Carib of the Lesser Antilles at the time of Discovery. Here, tobacco leaves were dried over the fire, soaked in water, and kneaded into rolls which served as money throughout the area. In chewing, users added ashes to the quid or pulverized shell to the tobacco powder (Cooper 1949:532, map 9; Petitjean-Roget 1963:50; Rouse 1948b:561). To the north, in the Greater Antilles, the Arawakan Taino were suspected by Lovén (1935:390) to have chewed tobacco before they adopted the habit of snuffing; to the south, on the mainland across from Margarita and close to the Paria Peninsula, Carib shamans around present-day Cumaná used to chew tobacco during curing séances.

As in the case of early tobacco snuffing, the available documentation on tobacco chewing around the time of Conquest proves inconclusive. It may

refer either to the chewing of coca or of tobacco or even to the chewing of a mixture of the two products. Finally, as a point of special interest, we may add here that early on the method of tobacco consumption in elbow-pipes was observed, sometime in 1535-36, by Jacques Cartier (1545) among the Iroquois Indians of Hochelaga (Montreal).

In sum, within the first few decades after the Discovery, Europeans had become aware of several modes of tobacco consumption: cigar smoking, pipe smoking, rhinal smoke inhalation, smoke blowing, and, possibly, snuffing and chewing. They had learned that the drug was addictive and multipurpose. The Indians considered it wholesome and sacred. Its toxic effects were described to include perspiration, light-headedness, general weakness, and syncope. Tobacco (nicotine) had a biphasic action: in small doses it served as a stimulant, a hunger and thirst depressant, and an analgesic; large doses produced visions, trance, and catatonia. The drug was indulged in by men for social purposes (to seal friendship, to conduct tobacco palavers, war councils, and war dances, and to fortify warriors), for fertility purposes (to predict propitious weather, good fishing, lumbering, planting, successful courtship), and for spiritual purposes (vision quest, trance, spirit consultation, magical curing). The ethnographic evidence as established by chroniclers, missionaries, soldiers, travelers, and scholars over the centuries and as compiled in the rest of this chapter will serve to verify most of these early observations and document the near universal, variable, and multipurpose use of tobacco by South American Indians.

### CHEWING

Most cases discussed here under the rubric of tobacco chewing ought more properly to be described as tobacco sucking. As Furst (1976:29) correctly pointed out, South American Indians rather than masticate the tobacco quid hold it behind the lower lip or in the cheek for extended periods of time, while the juice trickles down the throat (fig. 7).

In native South America the consumption of tobacco as a masticatory is primarily of northwesterly and westerly distribution (Stahl 1925:84, 117; Zerries 1964, map 12). It occurs in the Lesser Antilles, Venezuela, and Guiana to the north, and in Colombia, the upper Amazon, and the Montaña to the west. A secondary focus is located in the Gran Chaco, while sporadic evidence for the practice is found in northern Bolivia and central and eastern Brazil (map 2, table 1).

In northern South America the Cumanagoto were among the previously mentioned coastal Carib whose shamans chewed tobacco. Warao sorcerers preparing to cast a spell chew and smoke tobacco simultaneously (Barral

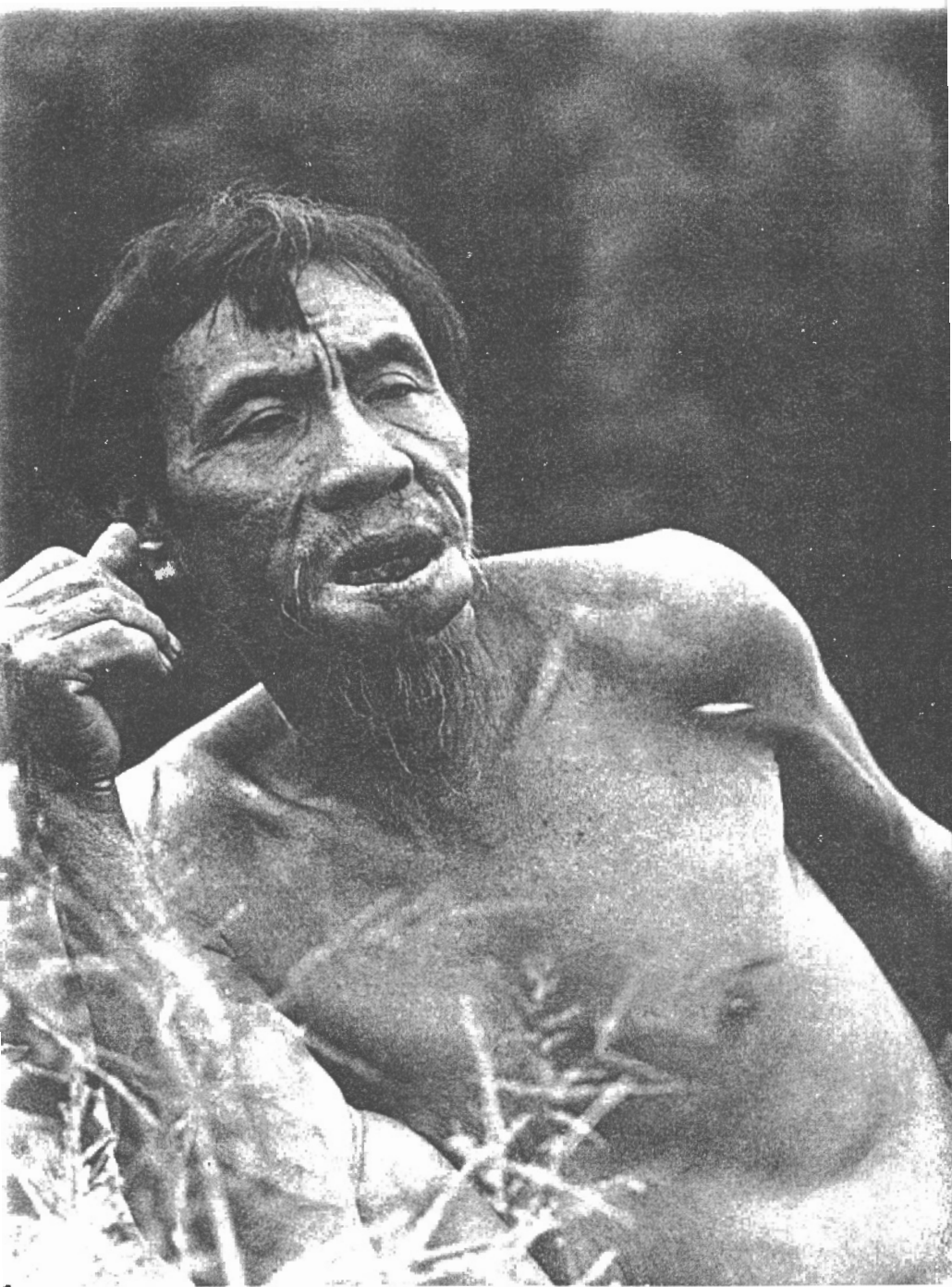


Fig. 7. Yanoama chewing tobacco.



Map 2. Distribution of tobacco chewing. Approximate location of tribes.

TABLE 1 Native Use of Tobacco in South America: Chewing

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
1	Cumanagoto	(Anonymous 1928:XIV-XX)
2	Warao	Barral 1964:227
3	Arecuna	Appun 1871,2:309; Gillin 1948:854; Norwood 1964:117; Roth 1911:3, 4; 1916-17:243; Schomburgk 1847-48,2:239
4	Taurepan	Appun 1871:2:309; Schomburgk 1847-48,2:239
5	Acawaio	Brett 1868:276; Brown 1877:64; Gillin 1948:854; Norwood 1964:117; Roth 1911:3; 1916:242-43
6	Patamona	Gillin 1948:854; Norwood 1964:117; Roth 1911:3; 1916-17:242-43
7	Carib:Surinam	Goeje 1930:284-85
8	Wapishana	Martius 1867,1:119, 273, 369
9	Yanoama	Armellada and Matallana 1942:76; Barker 1953: 452-53; Becher 1957:116; 1959:100; 1960:67, 88; Biocca 1965,2:53, 231; 1969:135, 248; Chagnon 1968:131; Gheerbrant 1952:94; 1953:186, 318ff, 346; Grelier 1954:115, 176; 1957:79; Knobloch [1967?]:73-74; Koch-Grünberg 1917-23,3:311; Polykrates 1969:140-41; Salathé 1932:303; Seitz 1960:199; 1963:121; Smole 1976:122; Vinci 1956: 70-71; Wilbert 1963: 209; Zerries 1964:97-98; Zerries and Schuster 1974:294
10	Panare	Dumont 1976:154
11	Cuna	Severino 1959:218
12	Goajiro	Armstrong and Métraux 1948:383; Bolinder 1957: 129-33; Cooper 1949:532; Hernández de Alba 1936:19, 34, 35; Jahn 1927:161-62; Julián 1980: 28; Mackenzie 1945:153, 154; Perrin 1979 MS; Pineda Giraldo 1950:13, 17, 19; Uscátegui Mendoza 1956:39-40; 1961:217, 225
13	Paraujano	Wilbert 1983:30
14	Yupa	Pérez de Barradas 1950:28
15	Barí	Caballero 1981:165-66; Villamañán 1975:19, 24; Wavrin 1937:151
16	Chimila	Uscátegui Mendoza 1956:40-41; 1961:218
17	Catio	Hernández de Alba 1948a:325
18	Tunebo	Márquez V. 1979:101-02; Rochereau 1961:91; Uscátegui Mendoza 1961:226
19	Páez	Bernal Villa 1954:227, 237; Méndez, Gerdel, and Slocum 1976:85; Nachtigall 1953:229; 1955: 136; Otero 1952:92; Uscátegui Mendoza 1956: 50; 1961:222

TABLE 1 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
20	Guambiano	Dovay 1890:762; Otero 1952:266, 268
21	Pasto	Ortíz 1946:967
22	Quillacinga	Ortíz 1946:967
23	Quijo	Steward and Métraux 1948 <i>a</i> :656
24	Nonuya	Domville-Fife 1926:218
25	Carapana	Valencia 1974:241
26	Bora	Girard 1958:99; Uscátegui Mendoza 1956:44
27	Zaparo	Steward and Métraux 1948 <i>a</i> :643; Tessmann 1930: 539, 448
28	Jivaro	Jiménez de la Espada 1880:688; 1889:648; Karsten 1935:400; Ortega Ricaurte 1940:190; Up de Graff in Stirling 1938:69
29	Coto	Tessmann 1930:196, 539
30	Tucuna	Herndon and Gibbon 1853-54,1:236; Nimuendajú 1948 <i>c</i> :722; 1952:104
31	Omagua	Hopp 1958:141; Métraux 1948 <i>f</i> :702
32	Cocama	Métraux 1948 <i>f</i> :702; Tessmann 1930:72
33	Omurana	Tessman 1930:448
34	Shebero	Steward and Métraux 1948 <i>a</i> :613; Tessmann 1930: 433
35	Aguano	Steward and Métraux 1948 <i>a</i> :590; Tessmann 1930: 260
36	Chamicuro	Tessman 1930:402
37	Chayavita	Steward and Métraux 1948 <i>a</i> :613; Tessmann 1930: 387, 391
38	Shipibo	Steinen 1904:17, 46, 72
39	Machigenga	Disselhoff and Zerries 1974:223; Grain 1942:242; Steward and Métraux 1948 <i>a</i> :548
40	Mashco	Alvarez 1946:11-15; Califano and Distel 1978
41	Araono	Armentia 1885:65; Cardús 1886:293; Fontana Com- pany 1936:19; Métraux 1942:44; Pauly 1928:128
42	Chimane	Métraux 1942:27
43	Cayapó	Pohl 1832-37,1:405
44	Shavante	Martius 1867,1:273; Pohl 1832-37:2, 31
45	Potiguara	Schaden 1962:52
46	Kayova	Schaden 1962:52
47	Caduveo	Koch 1902:7; Ribeiro 1950:73; Sánchez Labrador 1910-17,1:277-78
48	Mbayá	González 1967:11; Métraux 1946 <i>b</i> :347; Taunay 1931:61
49	Payagua	Métraux 1946 <i>b</i> :347; Taunay 1931:61
50	Chorote	Pape 1935:163
51	Chulupi	Cooper 1949:532; Métraux 1946 <i>b</i> :347

TABLE 1 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
52	Toba	Cooper 1949:532; Dobrizhoffer 1822,2:219-20; Métraux 1946 <i>b</i> :347
53	Mocoví	Baucke 1942-44,4:208-10; Métraux 1946 <i>b</i> :347
54	Abipon	Dobrizhoffer 1822:219-20; Métraux 1946 <i>b</i> :347, 348
55	Guaraní	González 1967:11
56	Caingua	Métraux 1928:117

1964:227). In Guiana tobacco chewing is associated with such Cariban tribes as the Arecuna, Taurepan, Acawaio, Patamona, and Cariña (Gillin 1948:854; Goeje 1929-30:284-85; Roth 1911:3-4; 1916-17:242-43; Stahl 1925:116; Zerries 1964: 98).<sup>1</sup> The Arecuna chew "in fair quantity." Perpetuating the traditional way, they chop fresh tobacco leaves very finely and knead them, together with a black, niter-containing earth, into a dough from which small pellets are prepared (Schomburgk 1847-48, 2:239). The practice of tobacco chewing among the Taurepan, documented by Schomburgk (1847-48, 2:239) and Appun (1871, 2:309) in the nineteenth century, had apparently fallen into disuse by the time of Koch-Grünberg's (1917-28, 3:57) visit. According to Brown (1876:64), every Acawaio man and almost every youth holds a pellet of green tobacco below his protruding lip. In order to prepare their chewing tobacco, the Indians cover the cassava griddle with layers of fresh tobacco leaves and sprinkle them with salt (Brett 1868:276, after McClintock). After baking the inch-thick cake over slow fire for some time, it is cut up and stashed in calabashes. The Acawaio and Patamona employ a surrogate salt made of the podostemaceous plant *oulin* (houyah, huya, weya; *Mourera fluviatilis* Aubl.), which they collect from

1. Dispersed through regions of north-central South America, between Cumaná west of the Orinoco Delta and the mouth of the Amazon, there continue to exist groups of Carib-speaking Indians who call themselves Cariña. In the literature they became known as Caraïben, Kalina (Dutch), Caribs and Caribisi or Caribisce (English), Galibi (French), Caribes (Spanish), and others. Throughout the book, whenever information on native tobacco use became available under any one of the synonymous tribal designations, it has been listed as pertaining to these specific local groups (for instance, smoking among the Galibi and Rucuyen of French Guyana). In addition, I have listed information on Cariña tobacco use when it was given in more generic geographical terms, such as Barama River Carib, Carib of Guyana (formerly British Guiana), Carib of Surinam, Maroni, and Carib of Cayenne (French Guiana). All of these groups belong to the Cariña branch of Indians who, while displaying considerable cultural variability, nevertheless show many similarities in their customs and beliefs related to tobacco consumption.

submerged ledges and rocks of certain waterfalls in the Cotinga and Ireng rivers, appropriately named as Orin-doui or Olin-toueuk, "place of the oulin plant" (Dance 1881:197). Explains Roth (1911:3):

It is of a pleasant salt taste, and is mixed with fine strips of Indian-cured tobacco, and kept in little goobies or gourds with a small opening: A stick to use as a fork is placed in the gourd, its upper extremity projecting through the stopper, so that the stopper acts as a cork to the gourd, and as both guard and handle to the fork: The mixture of oulin and tobacco which is moist and agreeable to the taste of a user of tobacco is called *Kawai*: It is kept in the mouth, in a very small quantity at a time, and answers the purpose of plugs of chewing tobacco.

The given synonyms of *oulin* appear to be cognates of the word *güeyo*, mentioned by Pané in his narrative as the name of a certain herb the Taino used on Hispaniola (Pané 1974:242; cf. Ortiz 1963:176; Roth 1916-17:242). Whether *güeyo* was used by these Indians in connection with tobacco chewing remains uncertain. The Cariña of Guiana chew green tobacco leaves as part of a shamanic initiation ritual (Anonymous [Serrano y Sanz, ed.] 1928:xiv-xx; Goeje 1941:96).

The Wapishana of southern Guyana and northern Brazil are the only Arawakan people within the Guiana distribution area who chew tobacco (Martius 1867, 1:639), although details regarding the preparation and consumption of their product are unavailable.

Throughout the far-flung subdivisions of the Yanoama of the Guiana Highlands chewing is the primary form of tobacco consumption (Polykrates 1969:140-41; Zerries 1964:97-98). Both sexes, adults as well as children, chew tobacco, "and practically no adult would be without his or her wad of rolled tobacco leaves," which they carry between the teeth and the lower lip (Smole 1976:122). The preparation of the tobacco quids is woman's work. As Helena Valera explains from personal experience (Biocca 1969:135),

They let the tobacco dry over the fire and take away the hard part which is like a stem in the center of the leaf. They leave a part of the stalk which is used to hang it high up over the fire. When the leaves are dry, they throw away the piece of stalk as well and keep the leaves one on top of another. Some tie the bundle of leaves with thin lianas, so that the wind does not blow them away. Then they line a basket carefully and fill it with leaves and begin to use those which are a bit spoilt. Before using them, they put them in a *cuia* with a little water; then, near the fire, they mix the leaves with ashes until they are dry again. Generally they take three leaves, beat them to remove the ashes and then roll them one over another. If the leaves are very long, they double them over several times, until they make a big long sausage which they put under their lower lip. [Cf. Knobloch (1967?):73-74; Polykrates 1969:141, fig. 64]



Instead of dusting the wet tobacco leaves with ashes, the Yanoama sometimes mix them with certain soils (Zerries and Schuster 1974:294). And although they plant a good amount of tobacco in their gardens, demand often surpasses supply and forces the Indians to resort to substitutes. One such surrogate plant is *tupiro* (*Solanum hirtum* Vahl), the leaves of which are used instead of tobacco. Yet another plant, referred to as *holehole be*, "ersatz-tobacco," is a pepper (*Piper cryptodon* DC.); a bunch of small roots are peeled and bundled and then placed in the lower lip (Barker 1953:452-53). Northern Yanoama (Sanemá) told me that in former times (when tobacco was still unknown to them?) they used the narcotic *tala* plant in lieu of *Nicotiana* (Wilbert 1972b:37-38; Zerries and Schuster 1974:294).

Finally, among the Panare, the westernmost tribe of the greater Guiana region, tobacco is consumed by initiated individuals of both sexes. Cultivated by the men during the rainy season, tobacco is available to the Indians throughout the entire year:

In the morning, a man, more often than a woman, will prepare his and her supply of tobacco for the day. Some tobacco leaves are dried over the cinders of the hearth. When the leaves become brittle, he crushes them into powder between his palms over a square piece of *Musacea* leaf. An equal amount of clean ashes is added and thoroughly stirred; finally, some water is spit into this powder. When it has turned into a smooth paste, a pinch of it is placed between the lower lip and the lower teeth. As it activates salivation, the juice is spit on the ground. [Dumont 1976:154]

In northern Colombia the Cuna Indians are said to make use of chewing tobacco (Severino 1959:218). The custom is confirmed by several authors for the modern Goajiro, whose shamans employ it for ritual and medicinal purposes and who after swallowing the nicotine laden saliva suffer dizziness, nausea, and vomiting (Cooper 1949:532; Mackenzie 1945:154-55; Pineda Giraldo 1950:13; Armstrong and Métraux 1948:383). Apparently, however, the licking of trade tobacco paste represents a preferred Goajiro practice in modern shamanic context. In the absence of such paste the Indians chew the leaves of unidentified *macuira*, a plant with tobacco-like leaves (Pineda Giraldo 1950:12). Among the Yupa Indians of the Sierra de Perijá, who are avid pipe smokers, tobacco chewing plays a decidedly secondary role. Elderly male or female curers of their southern neighbors, the Barí, place especially consecrated crushed tobacco leaves behind the lower lip (Villamañán 1975:24). The leaves are cured by mixing them with caraña resin (*Protium heptaphyllum* March.)<sup>2</sup> which has been

2. *Protium heptaphyllum*, a tree of the myrrh family or Burseraceae, yields a hard, translucent, whitish resin with a distinctly pungent odor. In powdery or granular form South American

liquefied over a firebrand (Castillo Caballero 1981:165-66). Curers store a supply of the mixture in small calabashes inside the house or slung around the neck when away from home.

Among the Chimila tobacco chewing is primarily practiced by elderly men who crush the dry leaves between two stones before mixing them with ashes and wild honey. Small portions of the mixture are formed into rolls some ten centimeters long (Uscátegui Mendoza 1961:218). The shamans of the Catio chew tobacco as part of their medicinal therapy (Hernández de Alba 1948a:325), and Tunebo shamans chew wind-dried tobacco for medicinal and ritual purposes. When diagnosing the cause of disease, the latter chew tobacco and coca simultaneously (Márquez V. 1979:101-02). In the course of an elaborate initiation ceremony for boys, the shaman asks the candidates to chew tobacco while subjecting them to ritual ablutions (Rochereau 1961:91). Also, the Guambiano (Otero 1952:266, 268), Pasto (Ortíz 1946:967), and Páez (Nachtigall 1955:136) shamans mix tobacco with coca and medicinal herbs for magic and curing purposes. But since the tobacco consumed is mainly trade tobacco, Uscátegui Mendoza (1961:222) suggested that its use among the Páez at least might be of recent origin. Ortíz (1946:967) mentions similar masticatory mixtures of tobacco with medicinal herbs, like the acrid rind of *espigo* and *rosa amarilla*, an emmenagogic plant, as being prescribed by male and female curers of the Pasto and Quillacinga. Regrettably, Steward and Métraux (1948a:656) fail to reveal the primary source according to which the Quijo chew ground tobacco mixed with coca and the ashes of several plants. Tessmann (1930:242) reports the traits as missing among these Indians, and Oberem (1957:177) mentions only smoking and the drinking of tobacco juice (Zerries 1964:99).

In the Northwest Amazon region the Nonuya are said (Domville-Fife 1926:218) to chew tobacco and coca, and in Carapana mythology a supernatural hero creates the rocks in the Vaupés River from chewing tobacco he expectorates (Valencia and Metzger 1974:241). The Coto of the western Tucano chew the leaves of tobacco (Tessmann 1930:196, 539), and so do the rain shamans of the Bora (Girard 1958:99). The Tupían Cocama were said to masticate or eat tobacco powder (Tessmann 1930:72), and Métraux (1948f:702) mentions tobacco chewing among both the Cocama and their linguistically related neighbors, the Omagua. The latter instance is confirmed by Hopp (1958:141), at least

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Indians mix it with tobacco or coca (*Erythroxylum*) to give it a balsamic savor (Schultes 1980:55). Having smoked it in Warao-made cigars myself, I doubt that caraña heightens or lessens the narcotic effect of tobacco. Its chemical properties were given by Schultes (1980:55) as 30 percent protamyrene, 25 percent protelemnic acid, 37.5 percent proteleresin, and several minor constituents. Burning in a brazier, pipe, or cigar, *Protium*-resin has the smell of frankincense, which Indians like the Warao, for instance, hold to be gratifying to their gods.

for the modern Omagua, who are said to chew a black, compressed tobacco while smoking at the same time.

In the Montaña region of northern Peru the Zaparo and Omurana chew tobacco leaves (Tessmann 1930:448, 539). Returning from a war party on which they took head trophies, the Jivaro chewed tobacco during the preparation of the tsantsas, or shrunken heads (Up de Graff, in Stirling 1938:69). Tobacco was also chewed during shamanic initiation ceremonies (Ortega Ricaurte 1940:190).

In the mid-nineteenth century Herndon and Gibbon (1853-54, 1:236) saw Tucuna shamans chew tobacco during a curing séance the same way they still practiced it a hundred years later during Nimuendajú's (1948c:722) sojourn among them. Also, among the Aguano, Shebero, Chamicuro, Chayavita, Shipibo, and Mashco tobacco chewing is restricted to shamanic practices. The Machigenga chew tobacco mixed with ashes (Grain 1942:242), and the Araona shamans chew tobacco powder blended with coca and herbs for curative and magic purposes (Armentia 1855:65). The Chimane are avid tobacco chewers and keep a quid handy behind their ears (Métraux 1942:27).

Scattered through central and eastern Brazil, tobacco chewing is documented for the Cayapó, who are very fond of it (Pohl 1832-37, 1:405), and for their linguistic relatives, the Shavante (Martius 1867, 1:273). On the extreme northeast coast of Brazil there used to live a Tupían-speaking tribe known as the Potiguara or Petigare. Though there is no evidence that they used chewing tobacco, their tribal designation, meaning "tobacco chewers," leads one to surmise as much.

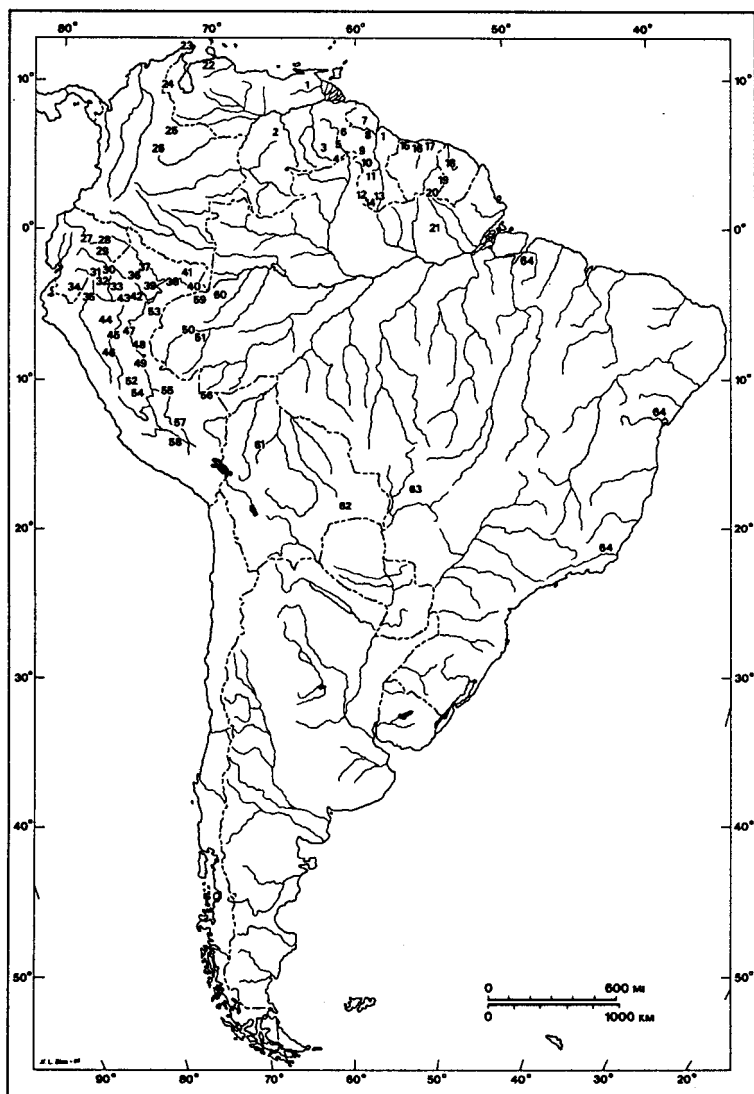
Apparently, however, the name Petigare was used to designate more than one Tupían tribe of Brazil, and Schaden (1962:52) suggested "tobacco-eaters" as a fitting appellation for the Kayova of southern Mato Grosso. Not only during their religious ceremonies but at any time, day or night, members of that tribe chew tobacco powder according to ancient tradition. The "ancestral tobacco" of the Kayova is a rapé placed between the gums and the lower lip. To prepare the powder the tobacco leaves are dried over a grill and crushed between the hands. Added to the powder is the white ash of *guajuvira* and *pimenta malagueta* (*Capsicum frutescens* L. Willd.), a plant native to the region. Another chewing tobacco formerly used by the Kayova was called *maxakaro*. It was prepared by placing the tender tobacco leaves in hot ashes prior to pounding them with a mallet. The resulting mass of tobacco and ash was formed into a wad and chewed. Schaden (1962:52) suggests that *maxakaro* chewing tobacco fell into disuse because the more readily available rope tobacco was adopted by these Indians for the same purpose. Only the women of the Caduveo, Mbayá, and Payagua are chewers of tobacco and constantly

carry a quid in their lower lip (Taunay 1931:61). The Caduveo dry the leaves of the plant near the fire and prepare small pellets from the material. Mbayá women mix ashes into the chopped tobacco leaves, as do the Mocoví, who prefer to chew honey-cured tobacco in the morning to aid digestion (Baucke 1942-44, 4:210). The Abipon mix their chewing tobacco with salt. Zerries (1964:99) suggests that the Caingua might have taken up tobacco chewing under the influence of the northern Guaicuruan (Mbayá, Payagua) tribes. The Toba were accustomed to chewing tobacco from childhood on and, mixing the leaves with saliva and salt, reduced them to a paste (Dobrizhoffer 1822, 2:219-20). Of the other Gran Chaco tribes tobacco chewing has been reported for the Chorote (Pape 1935:163) and the Chulupi. In addition, both the Toba and the Chulupi chewed a root called *koro-pa* for want of tobacco (Métraux 1946b:349). According to Tupí-Guaraní mythology, Kurumpira, the Master of Animals, was given offerings of chewing tobacco (González 1967:11) and, although not mentioned specifically, it is perhaps licit to assume that the Indians made use of this form of tobacco consumption themselves.

#### DRINKING

Tobacco drinking has two principal centers of distribution in South America, Guiana and the Montaña of Ecuador and Peru (map 3, table 2). Sporadic incidences of the practice have been reported for coastal Venezuela, western Colombia, and a few places in Bolivia and Brazil. But tobacco drinking is absent from the entire southern cone of the subcontinent below the twentieth parallel.

In the northeastern distribution area tobacco drinking, by mouth from a calabash or via the nose from a bottle gourd, is practically universal in Guyana, Surinam, and French Guiana, where it occurs widely among the Cariban, the Arawakan, and the linguistically independent tribes of the general region. Here, tobacco juice is often but a simple infusion made of green leaves and water. The leaves are steeped or boiled (Quandt 1807:261, Surinam) and subsequently strained and pressed by hand. Shamans of the Maroni River Carib (Cariña) prepare the brew "by pounding the tobacco leaves, mixing the pulp with water and pressing the fluid from this mixture" (Kloos 1970:117). Rather than concocting tobacco juice from plants available around the settlement, novice shamans and newly initiated practitioners are apt to visit distant places to gather the ingredients. Acawaio men, for instance, travel to a stream called Tobacco Creek, where they collect "mountain-spirit" tobacco and steep it in the water of the stream. Whereas at home they would add a measure of trade salt to the liquid, in the country they prefer to use the ashes of the salty



Map 3. Distribution of tobacco drinking. Approximate location of tribes.

TABLE 2 Native Use of Tobacco in South America: Drinking

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
1	Cariña	Civrieux 1974:50; Goeje 1941:96; 1967:266-67
2	Panare	Dumont 1976:154
3	Arecuna	Koch-Grünberg 1917-28,3:196ff.; Métraux 1944c:160
4	Taurepan	Ackerknecht 1949:625; Koch-Grünberg 1915-17:65; 1917-28,3:196ff.; 1962:45; Métraux 1944c:160
5	Pemon	Armellada 1946:42; Koch-Grünberg 1956:52, 53
6	Camaracoto	Simpson 1939:554
7	Warao	Appun 1872:684; Schomburgk 1847-48:1:172
8	Carib: Barama R.	Ackerknecht 1949:625; Gillin 1934:338-39; 1936:36, 147, 171, 179, 186
9	Acawaio	Butt 1962:11, 15, 22, 23, 25, 27; Butt Colson 1977:53-54
10	Patamona	Butt Colson 1971:53
11	Macushi	Appun 1871,2:348-49; Brown 1876:141; Diniz 1972:104; Farabee 1924:73; Im Thurn 1883:335; Koch-Grünberg 1917-28,3:57; Métraux 1944c:160
12	Wapishana	Farabee 1918:45-46; Koch-Grünberg 1913; 1917-28,3:57; Mussolini 1944:139; Swan 1958:170
13	Atorai	Farabee 1918:45-46
14	Taruma	Farabee 1918:151
15	Arawak: Coastal	Brinton 1891:248; Brett 1851:243; Coll 1903:524, 525; Goeje 1942:213, 214; 1967:266-67; Henfrey 1964:69-70; Staehelin 1914,1:225
16	Carib: Maroni R.	Kloos 1968:4; 1970:117; 1971:211
17	Carib: Surinam	Coll 1903:524, 525; Goeje 1930:284-85
18	Galibi	Ackerknecht 1949:625; Arnaud 1966:47; Biét 1896:301; Chrétien 1957:57; Crevaux 1883:158; Zerries 1960:132
19	Carib: Guiana	Andres 1938:331ff.; Goeje 1943
20	Oayana	Goeje 1941:90ff.
21	Aparai	Farabee 1924:227; Speiser 1926:185-86
22	Caquetio	Bolinder 1925:92
23	Goajiro	Pérez de Barradas 1943,1:20
24	Yupa	Wilbert 1974b:134
25	Tunebo	Márquez V. 1979:100; Rochereau 1961:48
26	Muisca	Bolinder 1925:92, 230; Jiménez A. 1945:128; Reclús 1958:144; Simón 1882-92,3:369
27	Yumbo	Granja 1942:81
28	Quijo	Tessmann 1930:246

TABLE 2 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
29	Canclos-Quichua	Whitten 1976:98
30	Zaparo	Reinburg 1921:26; Steward and Métraux 1948a: 643, 650; Tessmann 1930:539, 542
31	Sharpa	Coriat 1943:111; Girard 1958:210-11; Pérez de Barradas 1950:28
32	Kandoshi	Tessmann 1930:285; Steward and Métraux 1948a: 643, 650
33	Roamaina	Steward and Métraux 1948a:643, 650
34	Jivaro	Ackerknecht 1949:625; Disselhoff and Zerrics 1974: 230-31; Farabee 1922:119; Harner 1973a,b: 20ff.; Jiménez de la Espada 1889:262; Karsten 1920a:4; 1926:323; 1935:343-401; 1964:37, 106, 155; Naranjo 1970:67, 86-90, 94-99, 104; Ortega Ricaurte 1940:190; Palza 1946:82; Rivet 1908:243, 117-18; Steward and Métraux 1948a: 623, 625; Stirling 1938: 69, 118; Tessmann 1930:352; Weyer 1959:94, 96, 97, 106-07
35	Aguaruna	Davidson MS
36	Amaguaje	Steward 1948b:747
37	Pioje	Tessmann 1930:214
38	Coto	Tessmann 1930:196, 199, 200
39	Yameo	Tessmann 1930:569
40	Yagua	Métraux 1944c:163; Tessmann 1930:467
41	Peba	Steward and Métraux 1948a:635
42	Simacu	Tessmann 1930:503
43	Omurana	Tessmann 1930:448, 450-51
44	Shebero	Tessmann 1930:433
45	Chayavita	Tessmann 1930:391
46	Lamista	Tessmann 1930:226
47	Panobo, Pano	Steward and Métraux 1948a:590; Tessmann 1930: 112
48	Shipibo	Gebhardt MS; Karsten 1955b:169; 1964:202-03; Waisbard and Waisbard 1958-59:71
49	Conibo	Girard 1958:264; Métraux 1944b:204; 1944c:158; Waisbard and Waisbard 1958-59:71
50	Cashinaua	Branco 1956:65
51	Yaminaua	Branco 1950
52	Cholon	Steward and Métraux 1948a:604
53	Chamicuro	Tessmann 1930:402, 406
54	Amuesha	Reiser 1943:180
55	Campa	Elick MS; Harner 1973a:43; Tessmann 1930:95; Weiss 1975:260-61, 419, 479
56	Piro	Matteson 1954:75

TABLE 2 (Continued)

Number	Tribe	Reference
57	Mashco	Califano and Distel 1978:6-7
58	Machigenga	Anonymous 1956:225; Baer 1969 <i>b</i> :372; Baer and Snell 1974:63, 66, 75; García 1937 <i>b</i> :183
59	Cocama	Girard 1958:197; Métraux 1948 <i>f</i> :703; Tessmann 1930:76
60	Tucuna	Nimuendajú 1952:101
61	Chimane	Riester 1976:288
62	Ayoreo	Sebá 1964:128; 1965:92, 106, 107, 112-13, 114, 117
63	Bororo	Ackerknecht 1949:625; Wavrin 1932:140-41
64	Tupinamba	Biét 1664:385; Staden 1557

freshwater plant *oulin* (*Mourera fluviatilis*) that grows on the boulders of the rapids (Butt Colson 1977:54; Dance 1881:197; Roth 1911:3). Additives other than salt or *oulin* ashes have been mentioned for the Arecuna, among whom a mythical hero steeped tobacco leaves together with the emetic bark of *ayug*, an unidentified tree (Koch-Grünberg 1956:52). Crevaux (1883:158) heard that Galibi novice shamans drank tobacco juice mixed with *quinquina* sap and a few drops of the decomposition fluid of a dead shaman.

In other instances tobacco juice is not the only drug consumed. Penard (1928:656 ff.), for example, reports from the Guiana branch of the Cariña that newly initiated tobacco shamans, apparently still under the influence of nicotine, are served two small calabashes of *takini* latex (*Helicostylis tomentosa* [Poepp. & Endl.] Macbride or *H. pedunculata* Benoist), a hallucinogen possibly with a depressant effect on the central nervous system (Schultes and Hofmann 1979:45, 7-77). Like tobacco and pepper (*Capsicum baccatum* L.), *takini* constitutes the basis of a distinct branch of shamanism in Guiana (Ahlbrink 1931:400, 403; Andres 1938:341). When taken jointly, tobacco juice and *takini* latex—should it contain an active ingredient—act simultaneously on the candidate's nervous system to produce the desired state of hallucinatory ecstasy. Similar results are achieved by Arecuna shamans who imbibe tobacco juice through the mouth and nose subsequent to taking *parica* snuff (*Virola calophylloidea* Marcgraf) among other substances (Koch-Grünberg 1917-28, 3:206). Finally, shamanic apprentices, while imbibing tobacco juice, drink different kinds of alcoholic beverages, smoke cigars, swallow tobacco powder, and ingest rations of tobacco leaves or cupfuls of tobacco pulp (Ahlbrink



1931:401; Goeje 1929-30:284; 1941:96; 1967:267; Kloos 1971:212; Penard 1928: 644 ff.).

Wherever it occurs in the greater Guiana region, tobacco drinking is associated with rites of shamanic initiation, curing, and certain other religious observances. Particularly impressive is the intensity with which tobacco drinking is practiced by shaman apprentices, officiating shamans, and patients in order to achieve ritual cleansing and altered states of consciousness. To give some examples, at the end of a protracted period of preparation, which among Guianese Carib may last up to twenty-five years (Koch-Grünberg 1917-28, 3:205), the actual initiation period of several days or weeks (Galibi, Arnaud 1966:47) arrives, during which the aspirant is induced to drink ever-increasing doses of tobacco juice, until he literally faces death (Roth 1908-09:338). So potent is the drug that Macushi candidates are said to be "driven temporarily out of their minds" and to rush into the forest to remain there for about a week (Brown 1876:141). Aparai novices drink enough tobacco juice to go into convulsions (Farabec 1924:227), while the Camarocoto novice, imbibing the liquid through the nose, remains unconscious normally for half a day (Simpson 1940:554). Cariña initiates of Surinam swallow two cupfuls of tobacco pulp (Goeje 1941:96; 1967:267), while among the Galibi a large bowlful of tobacco juice is poured through a funnel into the swooning novice's mouth, rendering him comatose (Biét 1896:301). Should he fail to vomit most of the content, he is expected to go into convulsions and to contract chronic infirmity that may end in death (Barrère 1743:211). Finally, for an entire day Arecuna novices imbibe tobacco juice through the mouth and nose until they become unconscious and reach a deathlike state (Koch-Grünberg 1917-28, 3:207).

Dumont (1976:154) reported tobacco drinking among the Panare, and similar practices have been recorded for the Arecuna, the Patamona, and the Oayana (Koch-Grünberg 1956:52; Butt Colson 1971:53; Goeje 1929-30:282-85; 1941:90 ff.).

Religious practitioners of the Venezuelan Cariña no longer take tobacco juice, although they remember the practice vividly (Civrieux 1974:50). Pemon shamans imbibe the liquid through the nose (Armellada 1946:42) and do so repeatedly (among the Taurepan, for instance) in order to keep the juice from "drying up" in their bodies and to facilitate prolonged contact with the spirit world (Koch-Grünberg 1915-17:65; 1917-28, 3:197; Métraux 1949c:594). Ecstatic flight is also sought by the tobacco-drinking Acawaio, Patamona, Barama River Carib, and Aparai shamans, the Acawaio imbibing the liquid from a gourd through the nose (Butt Colson 1971:53; 1977:54; Gillin 1934:338; 1936:36; Speiser 1926:185-86).

In curing, Cariban shamans often give tobacco juice to their patients. Curers of the Macushi, for instance, who gurgle and expectorate the liquid themselves (Farabee 1924:73), let their patients drink intermittently for the duration of the séance (Appun 1871, 2:348). Among the Maroni Carib the drinking of tobacco juice to induce vomiting is an established therapeutic method. For patients, male or female, suffering from malaise or nonspecific ailments, the shaman prescribes two bowls or the equivalent of two liters of the liquid (Kloos 1968:4; 1970:126-27). Periodically throughout life, shamans drink tobacco juice so as not to lose their power (Chrétien 1957:57). However, the doses are smaller in comparison to those taken at the time of initiation (Barrère 1743:211). Finally, it ought to be mentioned that among the Cariña of Surinam puber girls, at the end of their month-long seclusion period, are given tobacco juice mixed with cassava beer (Ahlbrink 1931:323).

The Arawakan Wapishana, like, probably, the Atorai they absorbed, are users of tobacco juice. Preparation of the liquid takes place in a gourd some three inches long with "a ¼-inch hole cut in the side and another bored up through the stem into the gourd" (Farabee 1918:46). In it minced tobacco is steeped in water for some time and then stirred with a stick. For self-administration of the drug, the user places the hollow stem of the gourd in the nose and, bending his head backward, lets the liquid trickle down the nasal passages. Among the Wapishana, shamans absorb tobacco juice in this fashion during ritual performances and curing séances (Farabee 1918:45-46; Mussolini 1944:139; Swan 1958:170). Similarly, the coastal Arawak use tobacco juice in shamanic context, and practitioners take large quantities of it in the course of their initiation when, during a public ceremony, the novice downs a calabashful of the drink (Brett 1851:243). According to Goeje (1942:213, 214), the juice is prepared by boiling tobacco leaves in an earthenware pot. Throughout his novitiate, the candidate, in addition to drinking large amounts of tobacco juice, swallows pellets made from green tobacco leaves. Stachelin (1914, 1:225) wrote that during his apprenticeship of two months the candidate who abstains from food drinks much tobacco juice, so that a good many die from the ordeal. However, a trance state is produced not by tobacco alone but also by making the initiate inhale the fumes from a pot of *takimi* latex (*Helicostylis tomentosa* or *H. pedunculata*) (Goeje 1942:214).

For Guianese tribes other than those of Cariban or Arawakan affiliation, tobacco juice drinking has been reported among the Taruma (Farabee 1918:151) and the Warao (Appun 1872:684; Schomburgk 1847-48, 1:172). I have never seen it practiced by the Warao of the Orinoco Delta, but given the commonalities that exist between the belief systems of Warao and Carib tobacco

shamanism (Wilbert 1981*a*) and the reliability of the primary sources quoted, I consider it quite possible that the Warao of Guiana had adopted the practice from their Cariban and/or Arawakan neighbors.

On the extreme north coast of South America tobacco juice is said to have been taken by the Caquetio (Bolinder 1925:92) and by shamanic curers of the Goajiro (Pérez de Barradas 1943, 1:20). For the Yupa of the Sierra de Perijá, tobacco juice is mentioned only in mythological context where Sun attempts to drug his victim before devouring him (Wilbert 1974*b*:134). In real life the Yupa are said to have resorted to *Brugmansia*, an infusion of the leaves of which they "mixed with an enemy's *chicha* [fermented maize drink] in order to render him unconscious. When in a coma the unfortunate is killed with arrows" (Ruddle 1974:103). A tradition similar to this existed among the ancient Muisca of Colombia, who are alleged to have served strongly concentrated tobacco infusions mixed with *Brugmansia aurea* Lagerh. and alcoholic *chicha* to slaves and wives destined to be buried alive with their masters (Castellanos 1886, 1:65–66; Jiménez A. 1945:128). Male and female shamans of the Chibchan-speaking Tunebo take tobacco juice through the nose to diagnose the cause of disease (Márquez V. 1979:100). They also administer it to a mother and her infant in the performance of a protective ritual (Rochereau 1961:48).

As mentioned, the Ecuadorian and Peruvian Montaña is a second major distribution area of tobacco drinking in South America. In a fashion similar to the preparation of tobacco juice in Guiana, Montaña Indians also steep, press out, and stir the leaves in water, although here, rather than soaking and straining the entire leaves, they frequently mince them. Whether or not the leaf fragments are strained from the liquid remains mostly unmentioned, but one presumes as much, particularly in instances where the product is to be imbibed through the nose. In some cases, the tobacco leaves are chewed or crushed, rather than cut, and then thoroughly mixed with saliva. The boiling of tobacco leaves in water, otherwise typical for the production of *ambíl* paste, rare in Guiana (Surinam), is met with somewhat more often in the Montaña. Apparently, however, the objective of this process is not to boil the juice down to *ambíl* but to leave it in a liquid form. Sometimes even syrupy tobacco extract appears to be drunk rather than licked and in other cases the evidence remains inconclusive. The Witoto and related tribes like the Ocaina, Muinane, and Andoque, for example, make use of tobacco juice described as being licked and eaten rather than drunk (Preuss 1921–23, 1:234, 2:635; Wavrin 1932:136). Reports of eyewitnesses like Schultes (1945) speak of *ambíl* that is licked. Tessmann (1930:551) reports that the Ocaina drink tobacco juice, Girard (1958:132–33) that their shamans drink tobacco essence (*esencia*), and Izaguirre Ispizua (1927:26–27) that they lick, not drink, tobacco juice mixed with pepper by

passing the wetted finger across the tongue. Of course, there remains the possibility that both *ambil* and tobacco juice occur together in any one of these tribes, and that the latter is licked or drunk. For the time being, however, the available evidence is biased toward Witoto *ambil* and tobacco licking, and it has been treated that way in the body of this book. Similar evidential ambiguity prevails farther south in the Montaña among some of the Arawakan tribes (Amuesha, Campa, and Piro). Here, although the product consumed is described as concentrated and as thick as molasses, indications are that it was drunk. The tribes are listed here tentatively as drinkers of tobacco juice.

According to the available evidence, Montaña tribes do not mix ashes or salt into their tobacco juice. However, pepper has been mentioned in a few cases as an added ingredient. Quite frequently tobacco juice is taken in association with hallucinogens like *ayahwasca* (*Banisteriopsis caapi*) (Spruce) Morton and *Brugmansia*. Coca use (*Erythroxylum*) is also mentioned in this connection, as are several unidentified botanical materials.

In the Montaña and adjacent regions of the western Amazon Basin, tobacco drinking does not seem to be indulged in quite as intensively as in Guiana. An exception to this are the Jivaro, who, as presently discussed, have institutionalized tobacco drinking to a degree unparalleled in South America.

Ecuadorian tribes that make use of tobacco juice include the Yumbo (Granja 1942:81), the Quijo (Tessmann 1930:246), and the Canelos-Quichua (Whitten 1976:98). The men of the last tribe take the liquid through the nose. Along the Ecuadorian-Peruvian border, the Zaparo drink a good amount of tobacco juice. Young men are slowly introduced to this practice until they overcome the nausea that accompanies tobacco drinking, manage to consume two or three cups at a time and in doing so demonstrate that they are mature men. Consumption of such copious amounts produces vomiting and, when taken with *ayahwasca* (*Banisteriopsis caapi*) and *huanto* (*Brugmansia* sp.), true shamanic power (Reinburg 1921:26; Steward and Métraux 1948a:643, 650; Tessmann 1930:542). Also, the Roamaina and Kandoshi drink tobacco juice, the latter, according to Tessmann (1930:285), by pouring the infusion of minced tobacco leaves and water from a small calabash into the mouth or nose. Although the Sharpa also smoke, tobacco drinking is their principal mode of consuming the drug (Coriat 1943:111). Their shamans make use of it in ritual context (Girard 1958:210-11).

To the Jivaro tobacco drinking is of great cultural importance. They imbibe tobacco juice on numerous occasions and for many different reasons. In fact, Karsten (1926:323) found that their principal mode of tobacco consumption is in liquid form; "the leaves are boiled in water or chewed in the mouth and mixed with saliva. The latter is believed to enhance the magical effect of the

liquid." Tobacco juice is taken prophylactically against general symptoms of indisposition, colds, or chills, and therapeutically against snakebites. It also serves magical and ceremonial purposes. Men drink tobacco in the context of initiation, vision quests, war preparations, victory feasts, and witchcraft. Women drink or sniff the fluid during elaborate initiation and nuptial rituals. Shamans drink or sniff the fluid from the hollow of their hands (Farabee 1922:119) or from special pottery cups, and initiates blow it into each other's nose (Stirling 1938:118). Novices have their mentors squirt pathogenic "arrows" together with tobacco juice and saliva directly into their mouths (Karsten 1955a:170-77). On certain occasions such as during curing séances Jivaro men drink tobacco juice alternately with *ayahwasca* (*Banisteriopsis caapi*) and, possibly, *maikua* (*Brugmansia* sp.) (Lockwood 1979:150). The closely related Aguaruna also make frequent use of tobacco juice in combination with *ayahwasca*, although nothing has, as yet, become known about the full ceremonial context of its use (Davidson MS).

Among the western Tucano, Amaguaje shamans drink tobacco juice to cure (Steward 1948b:747), as do the Pioje (Tessmann 1930:214). Only the shaman of the Coto is permitted to take tobacco juice through the nose; ordinary men drink it, and shamanic novices imbibe it both by way of mouth and nose (Tessmann 1930:196, 199, 200). In this general Napo River area Orton (1876:197) speaks of Indians who absorbed an infusion of tobacco through the nose from the upper bill of a tucan. Also, among the Yaguan tribes (Yagua, Yameo, Peba) the custom of tobacco drinking appears to be restricted to shamanic purposes (Tessmann 1930:467, 596, 635). Would-be shamans of the Simacu and Omurana take tobacco juice from small calabashes either through the mouth or the nose. The tobacco liquid of the former is produced by squeezing the leaves in cold water (Tessmann 1930:448, 503). Shebero, Chayavita, and Lamisto shamans practice curing with the aid of tobacco juice and are initiated with it into office (Tessmann 1930:433, 391, 226, 229).

Tobacco drinking occurs among the principal Panoan tribes and, as elsewhere, primarily in association with shamanism. The practice is reported from the Pano, where only shamans use it. Among the Panobo it is sometimes used by common men (Tessmann 1930:590, 112). The Shipibo distinguish between two different kinds of religious practitioners, one of whom, the seer, works primarily with tobacco. The second one is an *ayahwasquero*, who mixes tobacco with *Banisteriopsis caapi*. Shamans obtain their power at the time of their initiation "by drinking gradually increasing amounts of tobacco juice dissolved in water" (Gebhart MS). It is also applied internally and externally as a medicine. Only under special circumstances do tobacco shamans mix *Brugmansia* stem pith into the tobacco juice. *Ayahwasquero* shamans prepare their

magic drink by crushing tobacco leaves and mixing them thoroughly with saliva. The juice is collected in a decorated pottery vessel and left overnight in a deep cavity the shaman cuts into the trunk of a *lupuna* tree (*Trichilia tocachiana* C.DC.). Although covered with bark, the supposedly poisonous sap of the tree is believed to run into the earthenware pot. Before using its contents for witchcraft, the shaman drinks the tobacco juice and *ayahwasca* (Karsten 1964: 202-03). Shamans of this kind are introduced to both drugs in the course of a protracted apprenticeship during which they drink tobacco juice obtained by masticating the leaves and expectorating them into a small pottery vessel. The *ayahwasca* drink is apparently prepared from the leaves of this forest liana (Karsten 1955*b*:169). Other Panoan tribes making use of tobacco juice are the Conibo (Métraux 1944*b*:204), where shamans prepare it for their disciples, the Yaminaua (Branco 1950), and the Cashinaua (Branco 1956:65), where it figures as a transformation agent in the tribal genesis of animal and human life.

Of the Cholon we know only that they took their tobacco as juice (Steward and Métraux 1948*a*:604).

Finally, among the Arawakan tribes of the Peruvian Montaña tobacco juice is drunk by the shamans of the Chamicuro and their students (Tessmann 1930:402, 406). But farther to the south we come into Arawakan territory, where tobacco leaves are boiled down to a concentrated liquid by the Amuesha, for instance (Reiser 1943:180), and by the Campa, where it acquires the consistency of thick molasses, that is, *ambíl* (Elick MS; Tessmann 1930:95). Piro shamans drink *ayahwasca* followed by tobacco juice (Matteson 1954:75). A drink of boiled tobacco leaves was described for the Zapiteri group of the Mashco, where Califano and Distel (1978:6-7) found it falling into disuse. Novices were repeatedly handed tobacco juice during their initiation when it was prepared in the communal house by boiling several fresh leaves in an earthenware pot. The juice was drunk from a calabash cup. Hunters drank it to communicate with game animals, and shamans used it for curing their patients. The Arawak-speaking Machigenga make a syrupy tobacco extract by squeezing the leaves and boiling them in water (Anonymous 1956:225; García 1937*b*:183). Would-be tobacco shamans were said to retire for one year into the solitude of the forest, where they drank tobacco. During curing séances shamans achieve ecstatic flight by drinking cold tobacco juice; but *ayahwasca* and *kabuiniri*, coca (*Erythroxylum*), are also taken on such occasions (Baer 1969*b*:372; Baer and Snell 1974:63, 66, 75). Wizards digest the same kind of drugs in connection with specifically related rituals (Baer and Snell 1974:66; García 1937*a*:12). According to Baer and Snell (1974:66), the Machigenga maintain that shamans cannot fall into trance by using tobacco alone. Instead, *Banisteriopsis* is essential for these purposes while drinking of tobacco juice

provides the ecstatic shaman with the strength required to confront the spirit world.

In the western Amazon Basin, other than among the already mentioned Panoan tribes, tobacco drinking is reported for the Cocama, who use it in combination with *ayahuasca* when inducting young shamans (Girard 1958:197; Tessmann 1930:76). They mince the tobacco leaves and macerate them in water until a thick liquid results. Shamans also administer tobacco juice mixed with cayenne pepper to patients and require them to absorb the liquid through the nose (Métraux 1948f:703). Master shamans of the Tucuña make their disciples drink a gourdful of tobacco juice to induce vomiting and narcosis (Nimuen-dajú 1952:101). In Bolivia shamanic apprentices of the Chimane drink tobacco juice mixed with the liquid of an unidentified plant (Riester 1976:288), while Ayoreo shamans take it in pure form in order to be able to cure (Sebag 1965:92). Finally, we may tentatively mention the Bororo in connection with tobacco drinking or licking as Wavrin (1932:140-41) records it occurring in the folk literature of these Indians (Ackerknecht 1949:625). And there is early evidence for tobacco drinking among the Tupinamba (Staden 1557; Biét 1664:385).

### LICKING

The custom of tobacco licking is of restricted distribution in South America. It occurs in the northernmost extension of the Colombian and Venezuelan Andes, in the Putumayo-Caquetá region of the Northwest Amazon, and in a few isolated places of the Montaña (map 4, table 3). Related in kind to the method of tobacco chewing, tobacco licking entails not the use of a quid or paste of green or toasted leaves, but of a syrup extract or jelly known as *ambíl*. It is unclear whether some of the incidences listed under tobacco chewing constitute cases of chewing or of licking. Descriptions of the preparation and administration of the products involved are often imprecise and defy unequivocal identification of the modes of their consumption.

The north-Andean focus of tobacco licking includes the Arhuaco (Kogi, Sanka, Ica) of the Sierra Nevada de Santa Marta, in northern Colombia. Here *ambíl* is the only traditional method of tobacco use. Modern Kogi have occasionally been observed to smoke gift cigars or cigarillos, but tobacco smoking is disapproved of in their society (Reichel-Dolmatoff 1949-50:79).

*Ambíl* as employed by the Kogi was first recorded by Brettes (1903:324-25) at the beginning of the present century. He referred to it as "a sort of honey mixed with nicotine." The preparation of what Chaves (1947:438) calls a "thick black gelatine" is described by Reichel-Dolmatoff (1949-50:79) as a process involving the boiling of tobacco leaves for several hours and even days until the



Map 4. Distribution of tobacco licking. Approximate location of tribes.



TABLE 3 Native Use of Tobacco in South America: Licking

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
1	Kogi	Brettes 1930:324-25; Chaves 1947:438; Ernst 1890:236; Mason 1940:234, 253; Park 1946:884; Reichel-Dolmatoff 1949-50:79; 1953:73; Uscátegui Mendoza 1956:33, 49; Vinalesa 1952:41
2	Ica	Bolinder 1925:85; Chaves 1947:438; Uscátegui Mendoza 1956:33, 49; Vinalesa 1952:40-41
3	Sanka	Uscátegui Mendoza 1956:49
4	Timote-Cuica	Acosta Saignes 1952:45-72; Aguado 1963:402
5	Witoto	Bolinder 1925:93; Coriat 1943:160-61; Farabee 1922:143; Gasché 1971:321; Girard 1958:61-62, 132-33; Hardenburg 1912:155; Hopp 1958:27; Izaguirre Ispizua 1927:26-27; Koch-Grünberg 1908-10,2:302; McGovern 1927:220-21; Monconill 1945:42-43; Pinell 1928:94; Preuss 1921-23,1:44, 61, 67, 71, 80, 85, 88, 100, 103, 114, 121, 124, 131, 137, 202, 220, 224, 234, 271, 289, 303, 315, 323, 327, 360, 371, 373, 386, 389, 401, 419, 433, 436, 454, 469, 479, 489, 494, 593, 616, 635, 656; Roth 1911:4; Steward 1948c:749; Tessmann 1930:319, 551; Uscátegui Mendoza 1961:223; Villarejo 1959:224; Wavrin 1932:136, 141; Whiffen 1915:143-44; Woodroffe 1914:151
6	Ocaina	Cartagena 1953:33; Izaguirre Ispizua 1927:26-27; Tessmann 1930:511; Uscátegui Mendoza 1956:35
7	Miraña	Cartagena 1953:29; Tessmann 1930:272; Uscátegui Mendoza 1956:34, 44
8	Bora	Bolinder 1925:93; Cartagena 1953:31; Girard 1958:101-02; Igualada 1938:300-44; Uscátegui Mendoza 1956:34; Whiffen 1913:46-47; 1915:221
9	Muinane	Bolinder 1925:93; Cartagena 1953:30; Tessmann 1930:332, 334; Uscátegui Mendoza 1956:34
10	Rosigaro	Castellví 1941-44:161; Uscátegui Mendoza 1956:34, 43
11	Yucuna	Uscátegui Mendoza 1956:34
12	Andoque	Whiffen 1915:65-66
13	Siona	Calella 1945:39; Uscátegui Mendoza 1956:35-47; 1961:222
14	Jivaro (?)	Cooper 1949:534
15	Campa	Cooper 1949:534; Elick MS; 1969:206-07; Harner 1973a:43; Tessmann 1930:95
16	Piro (?)	Cooper 1949:534

extract acquires the consistency of a concentrated black syrup. This is thickened further by adding the starch of manioc (*Manihot esculenta* Crantz) or arrowroot (*Maranta arundinacea* L.), referred to as *sugii* (*Sorghum* spp.) by Uscátegui Mendoza (1959:283). The *ambíl* is taken out of the cooking vessel by means of a stick (Chaves 1947:438) and preserved in a small calabash capped by a somewhat larger container of the same kind. Preparation of *ambíl* by the Sanka and the Ica follows closely the same procedure (Uscátegui Mendoza 1956:49).

To lick tobacco the Kogi extract a small quantity of *ambíl* with the fingernail and rub it across their teeth and gums. Although sometimes consumed alone, *ambíl* is more commonly taken while chewing coca leaves (*Erythroxylum*) (Chaves 1947:438; Park 1946:884; Reichel-Dolmatoff 1953:73). The Kogi maintain that the simultaneous use of the two drugs renders the oftentimes bitter coca leaves more palatable (Reichel-Dolmatoff 1949-50:79). Drawing on his own field experience with coca chewing in the Upper Amazon, Schultes (1945:20) points out that coca tastes "more or less salty, tending to sweet," while *ambíl* is "strong, piquant and salty." When the two substances are mixed, they produce a taste "very pleasant, warm, salty and slightly aromatic." Uscátegui Mendoza (1956:49) says of the Kogi that they are addicted to *ambíl*. The men apparently indulge frequently in tobacco licking, and their teeth are said to be stained black as a consequence. Women neither lick nor smoke tobacco.

In the Venezuelan Andes to the east of Lake Maracaibo the now culturally extinct Timote-Cuica are on record as having been consumers of *ambíl* (Acosta Saignes 1952:45-72; Dupouy 1967:387; Salas 1908:54-55). Their product was used and traded throughout the region, including the modern states of Mérida, Tachira, and Trujillo, and reached the lowlands as far as Barinas. Apparently, the Timote-Cuica mixed an alkaline substance known as *urao* into the tobacco gelatin. *Urao*, a sesquicarbonate of soda, is a grayish or yellow-gray, water-soluble, and alkaline-tasting substance that occurs in lenticular layers of varying thickness on the bottom of Laguna del Urao, near Lagunillas, Mérida (Dupouy 1967:387-88). Other than as an ingredient of *ambíl*, *urao* was used as a salt surrogate in food preparation and as a lime substitute in coca chewing. Accordingly, it enjoyed great currency as a trade item. Explains Aguado (1963:402) in the sixteenth century, "Some eat it with *echayo* [coca?] in place of lime, and others eat it with other foods instead of salt, and others make a kind of *betun* of it, like mead, and this they eat by licking, giving evidence of enjoying it greatly." The term *betun*, chosen by Aguado to designate the meadlike substance licked by the Indians, is a variation of *petún*, the Brazilian (Tupí-Guaraní) name for tobacco which from 1557 (the date of its introduction into the literature by Thevet) to the nineteenth century was as current a

term in Europe to designate the plant as was the name *tobacco*. Aguado seems to have been familiar with it. In any case, it can probably be surmised that Aguado correctly recognized *ambíl* as a tobacco product and that the saltpeter *urao* was used by Indians of the Venezuelan Andes as an *ambíl* additive long before the arrival, in Venezuela, of the Spanish chemist Pedro Verástegui, who supposedly discovered its suitability as an alkalizing agent for *ambíl* (Díaz 1861). As Patiño (1967, 3:322) observed, "From the very instructions left by him [Verástegui], it can be deduced that *mohoo* or *chimó*, or call it what you will, was something known and common—implying that he only emphasized details of a procedure already followed" (Kamen-Kaye 1971:43).

Interestingly, as Kamen-Kaye (1971) points out in her thorough monograph, a tobacco paste similar to the *ambíl* of the Timote-Cuica, only prepared with several other ingredients, is known by the term *chimó* to a large segment of the modern, non-Indian population that inhabits former Timote-Cuica territory and larger parts of western Venezuela (Dupouy 1967:392, map).

From the Northwest Amazon the use of *ambíl* has been reported for the Witoto and several other tribes of the Peruvian and Ecuadorian Montaña. Referring primarily to the Witoto but secondarily also to the Bora, Schultes (1945:20–21; cf. Kamen-Kaye 1971:35) explains,

The preparation of *ambíl* is interesting, because it shows another example of the use of alkaline ashes with a narcotic-alkaloid, a custom widely spread in many parts of the world. The Witoto cultivate *Nicotiana tabacum* very carefully, sowing it in the plots of yuca (*Manihot esculenta* Crantz). Only the largest and greenest leaves of the lower part of the plant are selected for making *ambíl*. One or two basketfuls of leaves are placed in a clay vessel which is usually three-quarters full of water. This mixture is placed on a pile of firewood, where it boils for six or eight hours, sometimes more. The mouth of the vessel is covered with a large leaf to lessen evaporation. When the extract is thickening and the evaporation slows up, the fire is put out and the extract is allowed to cool. The residue of the tobacco leaves is removed by hand, and all the excess juice is squeezed out. Before the extract concentrates to make a thick syrup or in some cases a paste, the *ambíl* is taken out of the vessel and, while being carefully stirred, is mixed with alkaline salts.

These salts are prepared by evaporating water which has been poured over and drained through the ashes of various plants commonly used for this purpose. A huge forest tree of the genus *Lecythis* . . . is probably the most used source of alkaline ashes. Among other plants which are used now and then in the preparation of these ashes are two palms: a *Bactris* and a *Chamaedorea*. The stem and leaves of the *Chamaedorea* . . . and the young shoots of the *Bactris* . . . are reduced to ashes.

Farabee (1922:143) also mentions the addition of plant ashes to Witoto *ambíl*, while Tessmann (1930:319) speaks of salt. Other variations of the basic

*ambil* recipe of these Indians call for ingredients like two avocado seeds (*Persea americana* L.) to be added to the boiling concentrate, crude sugar, manioc starch, tapioca (manioc juice), and peppers (*Capsicum baccatum*) (Coriat 1943:160; Izaguirre Ispizua 1927:26; Monconill 1945:42; Schultes 1945:21).

Generally speaking, the Witoto seem to prepare *ambil* during the night with "two or three persons staying awake to tend the fire and stir the extract. Sometimes, however, *ambil* is made during the day. There is no special day or time for the preparation of this narcotic. Moreover, no ceremony takes place during the preparation, and any man of the tribe can do it" (Schultes, in Kamen-Kaye 1971:36).

At the beginning of the twentieth century, Whiffen (1915:143) observed the Witoto and Bora prepare *ambil* by soaking tobacco leaves in water, pounding them in a mortar, and thickening the mixture with cassava to a "stiff, dark liquid" (see Cooper 1949:534). Girard (1958:61) confirms Schultes's observation that the Witoto add palm ashes to the *ambil*. The finished product is kept in leaf-packages (Koch-Grünberg 1908-10, 2:302; 1921:392), a nut shell (Whiffen 1915:144, fig. 145), or in a cacao half-shell covered with bark cloth (Schultes 1945:20). The Andoque carry their *ambil* pots usually on a string around the neck (Whiffen 1915:66). A cacao-shell container is preferred to an occasional glass bottle or tin can because it is said to transfer a sweet flavor to the tobacco concentrate. Properly preserved, Witoto *ambil* keeps for a period of four to five months, after which time it is discarded in favor of a fresh supply (Schultes 1945:20, 21). The Indians take *ambil* to the mouth either with a spatula or by simply using their fingers (Uscátegui Mendoza 1956:46).

Among the Witoto there are some men who either chew coca (*Erythroxylum*) or lick tobacco, but most use the two drugs simultaneously by first placing some *ambil* on the tip of the tongue and then taking a pinch of coca powder. Traditionally, Witoto women were excluded from the use of either intoxicant (Whiffen 1915:143), but in more recent times, Schultes (1945:20) has known several who have become addicted to *ambil*. The Witotoan Ocaina and the Bora-related Miraña apparently prepare and consume *ambil* in the way described (Uscátegui Mendoza 1956:45-46), although the Ocaina also prepare an infusion of tobacco macerated with pepper (*Capsicum* sp.) which they lick by dunking a finger into the liquid and passing it across the tongue (Izaguirre Ispizua 1927:26-27). The Bora also boil tobacco leaves to a "tar-like substance" which they take with coca (Igalada 1938:300-44). Drawing on Castellví (1941-44:161), Uscátegui Mendoza (1956:43) believes it likely that the Rosigaro acquired the custom of tobacco licking from their Witotoan neighbors, with whom they maintained close trade relations. Details of *ambil* use by the Muinane and Yucuna are largely missing, but from the Siona, the only

Tucanoan tribe on record as *ambíl* users, Caella (1945:39) reports that after an initial period of boiling the tobacco leaves, the Indians allow them to cool off, then pound them, and put them back on the fire again. The evaporating water is repeatedly replenished until a thick concentrate results. At this point, wild red cacao shells, green plantain peels, and yoco pods (*Paullinia yoco* Schultes & Killip) are burned and the sifted ashes mixed into the tobacco extract. Some users lick the *ambíl*, some seem to take it with cigars (*puro*), and the daring ones swallow it. Siona *ambíl* is supposed to be very strong and apt to stupefy the unaccustomed.

Cooper (1949:534) mentions tobacco licking for the Jivaro, Campa, and Piro of the Montaña region without citing the primary sources. The Jivaroan Aguaruna make *ambíl* but use it only rectally in the form of enemas (Davidson, pers. comm.). I did not come across a primary *ambíl* source for the Piro. However, the Campa shaman and his wife practice with the aid of *ambíl*. In collecting the necessary amount of tobacco leaves, the man picks them in a special order according to the cardinal directions. His wife boils them in water using a clay vessel, if available, rather than a modern metal pot. The cooking process continues until the concentrate has the consistency of thick molasses. The vessel is then removed from the fire, and the leaves, when cooled, are strained through the fingers, squeezed out, and discarded. The product is stored in a bamboo tube from ten to twenty centimeters long and about two-and-a-half to five centimeters in diameter. Religious practitioners lick *ambíl* from a stick or swallow it from the open hand, after imbibing *ayahuasca* (*Banisteriopsis caapi*) (Elick MS; Harner 1973a:43).

#### ENEMA

American Indians make use of two general types of enema syringes (Nordenskiöld 1930b:189, map 1). One consists of a commonly straight but sometimes also funneled hollow length of bone or cane. It is distributed from northwestern North America to the Peruvian Montaña. In the case of the Indians of Nicaragua (Gomara 1811:283; Nordenskiöld 1930a:54, fig. 20) or the Aguaruna of Peru (Davidson MS), for instance, practitioners blow the clyster by mouth through the enema tube into the body.

The second type of enema syringe consists of a bulb made of an animal bladder, leather, or rubber and a nozzle of bone or reed. Bladder or leather syringes are found in western South America and in Guiana (Roth 1916-17:705, fig. 341). The rubber bulb syringe is an invention of South American Indians and occurs in the Amazon region (Nordenskiöld 1930a:13, fig. 4).

Throughout the New World distribution area, the enema syringe appears

to be used for medicinal and/or intoxicating purposes with clysters consisting of peppers and antiseptic herbs for the former, and *ayahuasca* (*Banisteriopsis caapi*), *Brugmansia* sp., *parica* (*Virola*), *willka* (*Anadenanthera colubrina* [Vell.] Brenan) and tobacco (*Nicotiana* sp.) for the latter (Ackerknecht 1949:629-30; Davidson MS; Nordenskiöld 1930*b*:190-95; Roth 1916-17:704-05; Furst 1976: 27-28; Furst and Coe 1977:88-91; Hellmuth 1985:137-47; Rowe 1946:292; Schultes 1972; de Smet 1983:141-44; 1985:44-71, de Smet and Hellmuth 1986).

Only two well-established cases of South American tobacco enemas have come to my attention (table 6). The Shipibo Indians of Peru prepare tobacco juice mixed with ginger for medicinal rectal injection against helminthic infestation (Gebhart MS). Until now proof of ritual tobacco enemas had been missing for native South America. To be sure, early evidence for the association of tobacco and syringes came from the previously mentioned pre-Columbian medicine man's tomb from ca. A.D. 500, uncovered in highland Bolivia (Bondeson 1972; Wassén 1972), and from early accounts on Surinam (Fermin 1775) and Brazil (Spix and Martius 1823-31, 3). Also, the rectal administration of hallucinogens by South American and Mesoamerican Indians since prehistoric times has always argued in favor of rectal application of tobacco for medicinal and ritual purposes. But it is only because of Davidson's new primary reference that a conclusive statement can be made to this effect.

According to this information, the Aguaruna of the Peruvian Montaña make use of two different kinds of clysters, pure tobacco syrup and tobacco syrup mixed with *ayahuasca* (*Banisteriopsis caapi*). To prepare the tobacco syrup three slices are cut from a fusiform bundle of compressed and dried tobacco leaves. The slices are steeped in water in a cooking pot and the particles eventually strained to obtain a clear tobacco juice. The juice is then boiled down to syrup.

The mixed tobacco-*ayahuasca* clyster is prepared by drawing the head from boiling *ayahuasca* by means of a small clay vessel and adding fresh tobacco juice to the hallucinogenic brew. The mixture is placed near the fire, and crushed tobacco leaves are added. The liquid takes on a reddish color of dark varnish or strong coffee.

The clysters are prepared by an elder who is also responsible for administering the enema. This takes place in a section of the house behind a screen of leaves. After taking a thorough bath, the recipient enters the partition, where the elder waits for him with an enema tube in his hand. The recipient bends down on all fours and has the drug blown from the mouth of the donor through the cane into the rectum. The elder takes great care to apply the clyster gently, lest the tobacco kill the recipient by "striking his heart." Enemas are

usually administered to young males between twelve and thirty-five years of age.

To heighten the effect—that is, to make certain that a vision is obtained—prior to receiving the clyster, the young man drinks *ayahuasca* repeatedly followed by swallows of tobacco juice to induce copious vomiting.

From the house where the clyster is administered the young man is to walk to the nearby House of Rest, believed to be safe from the expected attacks of the soul jaguars which, it is hoped, will reveal themselves to the vision seeker. Speaking from experience, one Aguaruna told Davidson (MS),

Without previously taking *ayahuasca* the effect of tobacco clyster is not severe. But when one takes the enema after having drugged oneself with *ayahuasca*, the effect is truly unbearable. Who could bear this and set out walking? However, one does not feel the walking; it is as if the feet had become small [*fueron reducidos*]; it feels like walking in space, supported by one of the dead, walking with him as of one heart. [My translation]

According to the testimony of another informant:

After receiving the clyster my belly began to burn; it left me unconscious and dead. I had hardly come to, when I drank more tobacco juice and died again. On the way toward the House of Rest, I woke up and drank some more tobacco juice which had been placed for me out there. I walked, and drank tobacco juice again. Then, shortly before reaching the House of Rest my mind was opened and Payag [the comet] revealed himself to me.

I was walking in a daze when from above I heard a sound: tan-taan, tan-taan, tan-taan, kuya, kuya, kuya. The earth had humbled itself and become silent. The dense wind passed by, heavily and with noise. In the middle of this he appeared like a flame of fire and sat on the cross-beam of the House of Rest. Looking at him I saw that he had the form of a parrot with a beak of white crystal and red feathers around the neck. [My translation]

Undoubtedly, this represents a case of ritual enema use of tobacco and tobacco-*ayahuasca* clysters which assist the Aguaruna vision seeker in finding a soul. However, the general rarity in South America of rectal tobacco administration in the form of green tobacco or rapé suppositories (Warao) or as clysters is probably due to the fact that such a procedure frequently results in severe or fatal tobacco poisoning (Larson, Haag, and Silvette 1961:790; List and Hörhammer 1977).

#### SNUFFING

Since first observed by Pané in 1511 among the Taino, the use of intoxicating snuffs has been reported from other parts of the New World and particularly

from South America (Bourne 1907:312, 313, 324, 328). Here, the principal psychotropic snuffs include powders derived from the beans of *Anadenanthera*, from the leaves of coca (*Erythroxylum*), from the resin of several species of *Virola*, and from parts of a number of nicotianas. In addition, there are poorly understood lesser sources of New World snuffs (Schultes 1977:43–44; 1978:231–32). Rhinal absorption of intoxicants is widespread on the subcontinent and represents, apparently, a peculiarly American custom which, together with tobacco, spread to the Old World in post-Columbian times (Schultes 1967:292, 302–05) (fig. 8).



Fig. 8. Campa men using V-shaped insufflator.

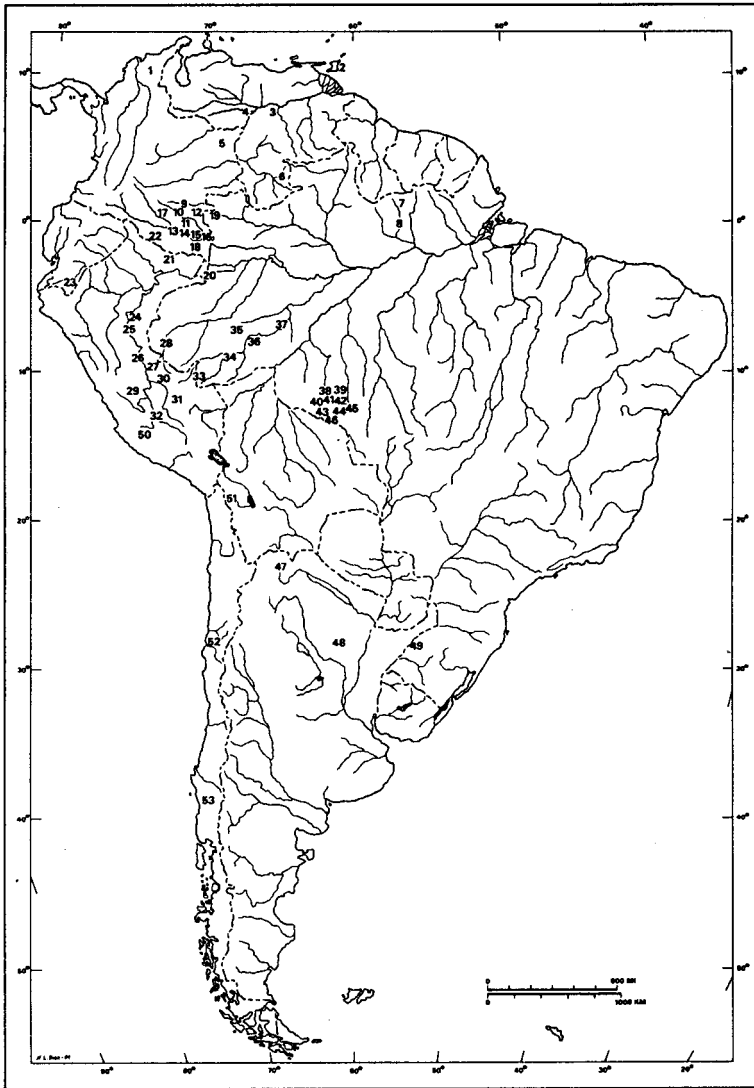


*Distribution of Tobacco Snuff*

For the Indians of South America, tobacco is a principal source of snuff (map 5, table 4). Its utilization, like that of other psychoactive snuffs, is of a north-westerly and westerly distribution with five major areas of concentration: the Orinoco, the Northwest Amazon, the Montaña-Río Purus, the Guaporé, and the Andean regions. Sporadic cases of the practice occur in peripheral areas (Cooper 1949:533, map 9; Stahl 1925:127, map 4; Zerries 1964, map 11).

The exact delimitation of tobacco snuff distribution in South America and the Caribbean is a task bedeviled by the imprecision with which snuff materials are identified in the literature. Especially vexing, in this regard, is the overlapping geographical distribution of potential source plants and the simultaneous use of snuffs derived from them within the same region or tribe. Consequently, tobacco snuffing is not always clearly distinguishable from that of other intoxicating materials (Cooper 1949:531, 533, 536-37, map 9; Reis Altschul 1972:8; Wassén 1965:13; 1967:264). Further exasperating the problem is the practice, in some societies, of blending tobacco with yopo (prepared from *Anadenanthera*), parica (from *Virola*), coca (from *Erythroxylum*), or still other substances (Zerries 1964:95). And although tobacco snuff is indeed used singularly it is just as often taken mixed with other preparations. Map 5 shows all instances where tobacco snuff is involved, be it in pure form or as a blend.

In the Orinoco distribution area tobacco snuffing was recorded for the Yanoama at the headwaters, and for the Maipure, Otomac, and Tamanaco along the middle course of the river. The Yanoama are primarily yopo snuffers who use tobacco rapé only on rare occasions (Barker, in Zerries 1964:93). Also among the tribes of the middle Orinoco, both kinds of snuffing materials seem to have been consumed (Lovén 1935:388-89). In colonial times, Gilij (1780-84, 2:103) found that shamans of the Otomac used snuff to communicate with the Supernaturals. Describing the snuff, his confrere Gumilla (1882:116) refers to the strong tobacco odor emanating from the plant from which it was prepared but assigns the name "yopa" to the product. Of the Tamanaco and Maipure, Gilij mentions tobacco snuff less equivocally probably because of his personal familiarity with both tribes (Lovén 1935:389). Off the coast of the Orinoco Delta, the Arawakan Inyeri of Trinidad snuffed tobacco (Castellanos 1850:93), as did Cariban tribes in other parts of the West Indies (Breton, in Petitjean-Roget 1963:50). In addition to using tobacco snuff, however, the islanders seem to have also inhaled yopo powder. As pointed out, there exists considerable controversy as to whether the native term *cohoba* refers to tobacco or to yopo. Early reports of *cohoba* use by Columbus, Pané, and Las Casas failed to identify the source of a certain powerful snuff taken by the shamans in



Map 5. Distribution of tobacco snuffing. Approximate location of tribes.

TABLE 4 Native Use of Tobacco in South America: Snuffing

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
1	Arhuaco	Cabot 1939:613
2	Inyeri	Castellanos 1850:93; Lovén 1935:389
3	Tamanaco	Cooper 1949:531; Lovén 1935:389
4	Otomac	Cooper 1949:531, 532; Gilij 1780-84,2:103
5	Maipure	Cooper 1949:531, 532; Lovén 1935:389
6	Yanoama	Zerries 1964:93
7	Waiwai	Fock 1963:117
8	Cachuenta (Kashuiena?)	Frikel 1961:1-28
9	Cubeo	Allen 1947:573; Schultes 1967:297; Silva 1957:182-85
10	Tanimuca	Schultes 1967:295, fig. 2, 297
11	Palanoa	McGovern 1927:331
12	Barasana	Torres Laborde 1969:45, 47, 48, 75, 161, 162
13	Menimehe	Whiffen 1915:143
14	Yucuna	Schultes 1967:293, 294, 297, fig. 1, 296, fig. 3; Uscátegui Mendoza 1961:225
15	Macuna	Schultes 1967:297
16	Yahuna	Whiffen 1915:143
17	Carijona	Uscátegui Mendoza 1961:225
18	Miraña	Uscátegui Mendoza 1961:224
19	Tucano	Hugh-Jones 1979:88, 89, 115, 148, 182, 204, 209, 261; Moser and Tayler 1967:68; Schultes 1967:297; Silva 1962; Uscátegui Mendoza 1961:224
20	Tucuna	Métraux 1949 <i>b</i> :377; Nimuendajú 1948 <i>c</i> :718; 1952:79; Schultes 1967:297; Wassén 1965:82-83; Zerries 1964:94
21	Coto	Steward 1948 <i>b</i> :747; Tessmann 1930:196; Zerries 1954:69
22	Witoto	Schultes 1967:293, 297; Steward 1948 <i>c</i> :759
23	Jivaro	Naranjo 1970:67; Stirling 1938:111
24	Pano (Chama, Panobo, etc.)	Saint-Cricq 1853:280-81; Steward and Métraux 1948 <i>a</i> :590, 592; Tessmann 1928:91-92; 1930:112; Villarejo 1959:92
25	Shipibo	Gebhart MS; Marcocoy 1869,1:682; Steinen 1904:17, 46, 72, 26; Waisbard and Waisbard 1958-59:71
26	Conibo	Anonymous 1865:13; Marcocoy 1853:280-81; 1869,1:655; 1875,2:30, 54; Orton 1870:197
27	Amahuaca	Tessmann 1930:165
28	Cashinaua	Branco 1950:39, 40; Métraux 1948 <i>e</i> :680
29	Campa (Anti, etc.)	Anonymous 1865:12; Cooper 1949:531; Fry 1889:70; 1907:433; Grandidier 1861:134, 140; Herdon and Gibbon 1853-54,2:208; Marcocoy

TABLE 4 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
		1869,1:573-74; 1875,2:30; Nordenskiöld 1924 <i>a</i> :20; Orton 1870:197; Tessmann 1930:90
30	Piro	Cooper 1949:531; Coriat 1943:66; Farabee 1922: 56-57; Fry 1889:70; 1907:433; Lommel 1960:61; Sabate 1877: 251; Wiener 1880:356, 369
31	Mashco	Califano and Distel 1978:6, 8ff.; 1980:951; Holzman 1952:[144]; Steward and Métraux 1948 <i>a</i> :548; Villarejo 1959:92
32	Machigenga	Bacr 1969 <i>b</i> :362-63; Villarejo 1959:92; Zerries 1954:69
33	Chontoquiuro	Anonymous 1865:13; Marcoy 1875,2:30; Orton 1870:197
34	Canamari	Tastevin 1926:163
35	Yamamadi	Cooper 1949:531; Ehrenreich 1891:55; 1892:261; Orton 1870:197; Steere 1901:371
36	Ipurina	Ehrenreich 1891:55, 62, 68; 1892:262, 327; Hum- boldt 1859-60,4:579; Métraux 1948 <i>e</i> :680; Orton 1870:197; Steere 1901:371-72, 375, 381-82, pl. 5
37	Paumari	Cooper 1949:531; Disselhoff and Zerries 1974:191; Steere 1901:366, 389, pl. 8, 391
38	Salumay	Becker-Donner in Wassén 1965:26-27
39	Kepikiriwát	Anonymous 1940:338; Badet 1951:156-57; Lévi- Strauss 1955:374; Lima Figuéiredo 1939:183
40	Tupari	Caspar 1952 <i>a</i> :256; Wassén 1965:26
41	Guaratégaja	Snethlage 1937:156ff.; Wassén 1965:16
42	Munde	Lévi-Strauss 1955:374; Zerries 1964:95
43	Yabutí	Sekelj 1950:57-63
44	Wayoro	Snethlage 1937:156ff.
45	Amniapa	Snethlage 1937:156ff.
46	Aicana (Guaporé)	Becker-Donner 1955:276, 283; Lévi-Strauss 1948 <i>c</i> : 378; Wassén 1965:26
47	Mataco	Métraux 1944 <i>a</i> :15-16
48	Abipon	Dobrizhoffer 1783-84,2:6; Métraux 1949 <i>a</i> :371
49	Guaraní	Ruiz de Montoya 1876,3:270-71
50	Inca	Bertonio 1879 <i>a</i> ,2:318; Bondeson 1972:183; Garcí- laso de la Vega 1609; 1941-46,1; 1973:190; Markham 1869-71,1:188; Orton 1876:197; Rowe 1946:292; Uhle 1898: 159-62
51	Aymara	Bertonio 1879 <i>a</i> ,2:318; La Barre 1948:66
52	Diaguíta	Bennett 1946 <i>a</i> :39
53	Araucano	Latham 1924:691

Hispaniola. But from the end of the sixteenth century to the present, *coboba* was associated with tobacco (cf. Holmstedt and Lindgren 1967:367–68; Lovén 1935). Based on early ethnographic descriptions of the snuff and especially its symptomatology, Safford (1916b:393–97) surmised that *coboba* was derived from *Anadenanthera peregrina*. The tree itself “still bears the name *coboba*, which was applied in ancient times both to the snuff itself and to the ceremonial practice of using it” (cf. Oviedo y Valdés 1851–55, 1:347). After a careful survey of the available evidence Wassén (1967:242) tends to agree with this conclusion, as do Holmstedt and Lindgren (1967:368), Reis Altschul (1972:13), and Schultes (1967:294).

In other parts of northern South America we have found the use of tobacco rapé among the Arhuaco tribes of the Sierra Nevada de Santa Marta and the Waiwai and Cachuena of Guiana. As a rule, tobacco snuffing is not practiced by Chibchan tribes, and its occurrence among the Arhuaco represents an exception. These Indians are avid chewers of coca leaves although tobacco is occasionally snuffed and offered on greeting (Cabot 1939:613).

The Waiwai (Fock 1963:117) and the Cachuena (Friel 1961) are among the few Guianan tribes who make use of tobacco rapé. The former introduce it forcefully into the nasal passages of a novice shaman. The Cachuena of the Trombetas prepare different kinds of snuff, called *morí*, either from tobacco alone, by blending the pulverized bark of a tree, parica (*Virola*) powder, and other substances taken from the seeds of a variety of wild fruits, or by mixing the two powders together (Friel 1961:11–12; Wassén and Holmstedt 1963:21–23). *Morí* snuff of either kind or in combination is used in the context of a dance ritual of the same name, to treat and to dispel disease. Only the men participate in the ritual while partaking of the snuff, and Friel (1961:4) appears to agree with his informants that *morí* is an ancient ritual among these Indians.

In the northwest Amazon tobacco snuffing is frequently associated with Tucano-speaking Indians. The Tucano proper, besides snuffing *Virola* powder, especially of *V. calophylloidea*, prepare a rapé of toasted and pulverized tobacco leaves to which is added an equal amount of plant ashes. Although the common man and woman may inhale tobacco powder (Uscátegui Mendoza 1961:224), when snuffed by shamans, the practice is associated with male spiritual principles as opposed to corporal associations inherent in the relationship between women and pepper (*Capsicum* or, possibly, *Piper*) (Hugh-Jones 1979:231). The Tucanoan Palanoa were found to mix tobacco snuff with a small quantity of pepper for added effectiveness (McGovern 1927:331). Among the Barasana, neighbors of the Tucano, tobacco snuff features in their mythology, where male and female dramatis personae partake of it. Also, during “cashiri” drinking festivals considerable amounts of tobacco rapé are taken alternately

with *yage* (*Banisteriopsis caapi*) and coca (Torres Laborde 1969:45, 47, 161–62). Tobacco snuff alone or mixed is mentioned for other Tucanoan tribes like the Cubeo, the Macuna, the Menimehe, the Tanimuca, and the Yahuna. Its use among the Coto of the western Tucano is affirmed by Steward (1948b:747), although Tessmann (1930:196) lists them as taking tobacco powder orally. The Arawakan Yucuna of the same general region were said to snuff tobacco rapé sometimes with powdered coca in exaggerated amounts (Schultes 1967:293; Uscátegui Mendoza 1961:225), and the practice is also confirmed for the Cariban Carijona (Uscátegui Mendoza 1961:225). In the very south of the region the Tucuna prepare a tobacco snuff mixed with cacao bark ash (*Theobroma subincanum*), bark ash of *pau mulato* (*Capirona* sp.), ash of the fruit rind of *envira de matamata* (*Eschweilera coriacea* [A. P. de Candolle] Mart. ex Berg.), ash of banana peel, and a yellow lichen (but not with parica) and take it during female puberty rites. Nimuendajú (1948c:718), to whom we owe this information, mentioned that boys of seven years or older were customarily given snuff (cf. Wassén 1965:82–83). Only then were they permitted to see and touch the sacred trumpets used during the ceremony, which were taboo to women and younger boys who had not taken tobacco snuff as yet. Métraux (1949b:377) reports that formerly Tucuna boys were given tobacco powder for the first time during their own initiation at the time when their voices changed. After inhaling the snuff they were formally presented to the sacred trumpets as newly initiated men. Finally, in the Northwest Amazon are the Witoto and Miraña, who were witnessed by Schultes (1967:293, 297) to snuff tobacco, sometimes with powdered coca, and it is possible that Crevaux's (1883:376, text p. 371) illustration of two Witoto men blowing—albeit with a questionable kind of insufflator—a powder into each other's nostrils represents an instance of tobacco snuffing (Steward 1948c:759).

In the Montaña-Río Purus region, according to Izaguirre Ispizua (1922–29, 8:162), tobacco snuffing has been observed among Panoan-speaking tribes since the end of the eighteenth century (Steward and Métraux 1948a:592). Here, in the Ucayali basin, Pano men and women make use of tobacco snuff (Steward and Métraux 1948a:590), whereas among the Panobo, Amahuaca (Tessmann 1930:112, 116, 165), and Cashinaua (Branco 1950:39–40; Tastevin in Branco 1950) only the men are reported to consume tobacco in this or any other form. The practice seems to have diminished among the modern Panobo, and among the Shipibo it has apparently fallen into disuse altogether (Gebhart MS; Waisbard and Waisbard 1958–59:71). Finally, with regard to Panoan tribes of the Peruvian Montaña, Saint-Cricq (alias Marcoy 1853:280–81) reported tobacco snuffing from the Conibo, who dry green tobacco leaves in the shade and then reduce them to a fine powder (Marcoy 1869, 1:655; 1875, 2:30, 54). Of

the tribes of the Ecuadorian Montaña only the Jivaro, avid tobacco users in general, also consume it on special occasions in the form of rapé (Stirling 1938:111).

South of the Pano, tobacco is snuffed by representatives of several Arawak-speaking tribes. For instance, Campa (Anti) men blow the powder into their own nose or into that of a partner with such intensity that Grandidier (1861: 140) considered it dangerous for the unhabituated, as "a European who tried it remained unconscious for several consecutive hours." The Machigenga snuff tobacco therapeutically (against influenza and other illnesses) or socially when two or more men visit each other's house. Tobacco snuff is mixed with bark powder of an unidentified tree (Baer 1969*b*:363). The Chontoquiro were said to take tobacco snuff in a similar fashion (Anonymous 1865:13). Piro shamans and their congregation inhale rapé, known as demon's tobacco, during healing séances and on many other occasions. According to Sabaté (1877:251, 255), after preparing the tobacco powder they mix it with finely grated and similarly strong bark of a particular bush. The Piro also snuff yopo powder (Farabee 1922:57-58, fig. 56; Lommel 1960:61).

Snuffing seems to be the only (Holzman 1952: [144]) or the principal (Califano and Distel 1978:10) mode of tobacco use among the Mashco, where the men practice it from puberty on. Holzman (1952: [144]) describes how the men crouch in a circle to have five or six doses of the powder blown into their nostrils. According to the author, this takes place twice daily, after breakfast and after dinner. But for the Zapiteri subgroup of the Mashco, Califano and Distel (1978:9) report that a man snuffs tobacco three or four times during the night at intervals of one or two hours.

Crossing from the Peruvian Montaña into adjacent Brazilian territory, we find tobacco rapé among several tribes. So, for instance, according to Canamari tradition, the practice of tobacco snuffing goes back to mythic times (Tastevin 1926:163). Before cigarette smoking became prevalent, around the turn of this century, the Yamamadi took tobacco exclusively in the form of snuff (Ehrenreich 1892:261-62). The Ipurina and Paumari mix their tobacco powder "in equal portion with the ashes of a bark or the hull of cacao beans" (Métraux 1948*e*:680; cf. Ehrenreich 1891:62; 1949:115; Steere 1901:389, table 8).

In the area north of the middle Guaporé River some nine tribes have been identified among whom taking of intoxicating snuff is quite customary. To the northern inland groups of the cluster belong the Kepikiriwát and Munde, whose men snuff tobacco rapé (Lévi-Strauss 1955:374). Much of the pertinent information on the former tribe, assembled by Lima Figuéiredo (1939:183), for example, and Badet (1951:156-57), goes back to an illustrated report of 1916 (Anonymous 1940:338-39) that mentions tobacco as the only material used.

The Tupari, in contrast, use parica powder, in addition to tobacco powder. At times, the two substances are held separately and snuffed in alternate fashion, beginning with tobacco (Caspar 1952*a*:256; 1953:223). On other occasions, during shamanic curing séances, for instance, tobacco is blended with parica powder and, in addition, is mixed with the bark of a particular tree, called *aimbepé*, to be snuffed as a homogeneous rapé. Participant observers of such ceremonies saw shamans having as many as two hundred and forty doses of this mixture blown into their nostrils in the course of a curing séance of three hours (Sekelj 1950:159–60). Métraux (1942:149) reports even more insufflation of the same intoxicating blend by Upper Guaporé Indians, indicating that sixty inhalations were taken to produce stupor. Large quantities of tobacco snuff mixed with pulverized Brazil nut shells are taken by Yabutí shamans and their apprentices in group session. Sitting around a rectangular low table covered with the powder, they take turns consuming the supply until nothing is left (Sekelj 1950:58–63). But whether consumed in large or small amounts, intoxicating snuff taken among the Guaporé tribes is usually a blend of tobacco, parica, and other materials. In addition to those tribes already mentioned, this is true of the Guaratégaja, Wayoro, Amniapa, and Aicana (Masaka, Huari) as well.

Among other South American lowland tribes the snuffing of tobacco has been mentioned for the Mataco and Abipon of the Gran Chaco and for the Guaraní. Métraux (1944*a*:15) reports that Mataco shamans take tobacco rapé blended with yopo powder. Abipon fathers in couvade retirement snuff tobacco (Métraux 1949*a*:370–71), and the ethnographic dictionary of Guaraní by Ruiz de Montoya (1876, 3:270) lists tobacco snuffing as one method of tobacco consumption practiced by these Indians.

In the Andean region tobacco rapé was taken alone by Araucano shamans (Latcham 1924:691) and mixed with parica powder by the Diaguita and, possibly, the Atacameño (Bennett 1946*a*:39; 1946*b*:612).

The earliest written reference to tobacco snuffing in Peru comes from Garcilaso de la Vega (1723, pt. I, bk. 2, ch. 25), who reports that the Inca practiced it to cure sundry diseases and “to purge the head.” Apparently, only wild varieties of native tobacco were used and their roots pulverized (Rowe 1946:292). Also, the Aymara of historic times seem to have made use only of uncultivated tobacco, and Bertonio (1879*a*, 2:318) confirms the use of tobacco snuff among the ancient Aymara.

Indirect prehistoric evidence for tobacco snuffing in the ancient Highlands was uncovered by Uhle in 1895, when he collected a naturally bifurcated and engraved bone snuff tube at Tiahuanaco (Uhle 1898; see also Posnansky 1937:132, fig. 129, Cochabamba). Subsequently, Uhle found that tobacco snuff-



ing "was neither of mean importance nor small geographical extension in Peru" (1898:161). He based this statement on the pertinent evidence contained in the provincial reports, published by Jiménez de la Espada (1889:1, 7, 86, 192), according to which the practice of taking tobacco rapé prevailed in central (Jauja) and southern (Lucanas) Peru as well as in La Paz, Bolivia. Reference to tobacco use for medicinal purposes also occurs in the reports for several other areas of southern Peru, like Abancay, Calca, and Chumbivilcas, and although snuffing is not specifically mentioned as the actual mode of taking the tobacco, Uhle (1898:162) argues that this "seems to have been omitted only for the sake of brevity, as in all other respects there is no difference in the notices." The author suggests that similar documentation for tobacco snuff in the Highlands of northern Peru ought to become available through eventual publication of the provincial reports from that region (still forthcoming as of this writing).

#### *Preparation of Tobacco Snuff*

Only Peruvian tribes of early Contact times were reported to have used the roots of wild tobacco plants to prepare tobacco snuff (Cobo, in Cooper 1949:331; Garcilaso, in Uhle 1898:161-62). Such information, however, was considered by Uhle (1898:161-62) to be in error and due to a misunderstanding on Cobo's part. In any case, tobacco snuff is generally prepared from the leaves of the plant, which are dried, crushed, and often sifted for this purpose. The Conibo dry the leaves slowly in the shade, and the Amahuaca more quickly in the sun. The tribes along the Purus River put the leaves to dry on a platform before exposing them to the fire at the end of a cleft stick. In contrast, the Ipurina and Yabutí stretch the leaves over a hot cooking pot that rests upside down on live coals. The dried and/or toasted leaves are then pulverized in a mortar (Palanoa) which is sometimes especially reserved for this purpose (Waiwai). Supposedly, Purus Indians use an ash-heated Brazil nut shell or (more likely) that of certain other nuts for mortar (Wassén 1965:59-63), and the Amahuaca a cooking pot.

#### *Snuff Containers*

To store the finished product special snuff containers are made from pieces of bamboo (Guaporé tribes), small calabashes (Amahuaca, Tucano, and other Vaupés tribes), and large snail shells (Tucano, Tucuna, Conibo, Campa, Piro, Machigenga, Chontoquiro, Mashco, Ipurina) (figs. 9, 10). For the Mashco the snail in question was identified as *Stophocheilus (Megalobulimulus) valencienensis*, Pfeiffer (Califano and Distel 1978:8). The opening of the spiral shell is



Fig. 9. Tobacco snuff container of snail shell (Tucano). Pouring tube of bone is inserted into the perforated apex of a large snail shell and closed with stopper (length, 11 cm). Opening of the shell is closed with glued-on piece of glass.

closed by gluing a cockle shell (Ipurina), a piece of mirror glass (Tucuna), or a potsherd (Tucano tribes) across the opening. To control the content the apex of the shell is perforated and the hole furnished with a small pouring tube of bone or cane. The distal end of the pouring tube is closed with a stopper of cotton (Campa), wood (Mashco), aromatic herbs (Campa, Piro), or toucan feathers (Ipurina).

### *Snuff Tubes*

Tobacco snuff, like snuff in general, is sometimes taken without the aid of a snuffing instrument directly from the palm of the hand or from a leaf. More often, however, the Indians employ a snuff tube for this purpose. Prehistoric and ancient instruments of this kind are known from Huaca Prieta on the north

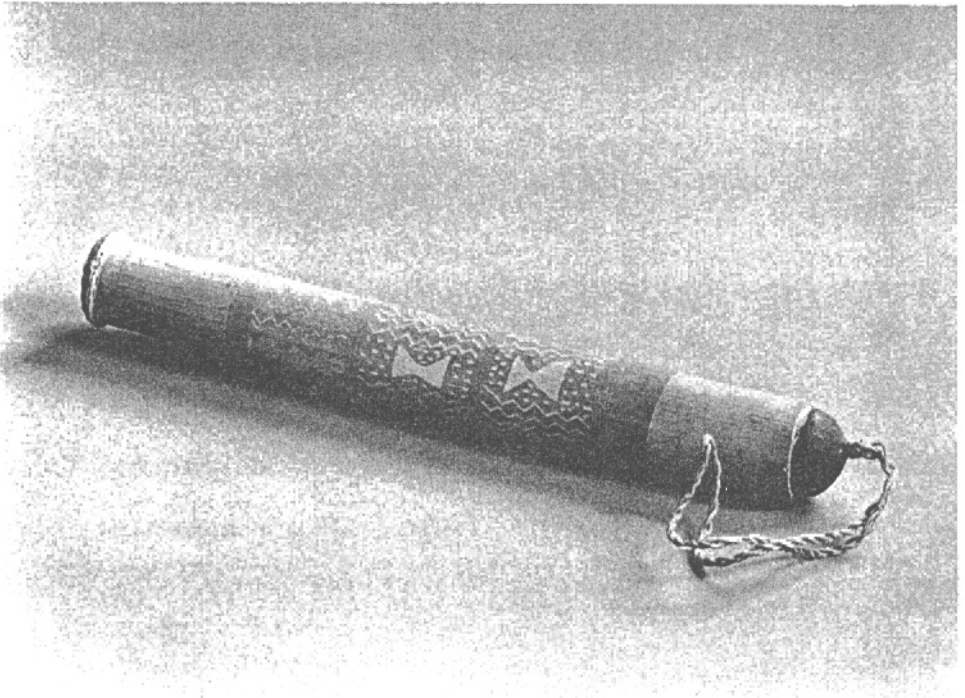


Fig. 10. Decorated snuff container of bamboo, Amniapa (length, 27 cm).

coast of Peru, where tubes of bird bone were found on preceramic levels from around 1000 B.C. (Bird and Hyslop 1985:222, fig. 164, 252–53). The previously mentioned snuff tube of bone found by Uhle at Tiahuanaco apparently belongs to the Atacameño culture of northern Chile and northwestern Argentina (Uhle 1915), where snuff tubes “of wood, bone or cane, or combinations of any two of these materials” (Bennett 1946*b*:612, fig. 132) were probably used for parica and tobacco snuffs.

Snuff tubes from the West Indies and South America have been systematized by Uhle (1898:168–71) and Cooper (1949:331). I distinguish between four basic types of snuff tubes used by South American Indians: single, double, forked, and angular.

Single snuff tubes are relatively short when used as inhalators for self-administration (Tucano, Tucuna, Yamamadi, Ipurina). Longer single snuff tubes, one meter long or more, are used as insufflators by two cooperating

individuals, one blowing and the other receiving a dose of snuff (Kepikiriwát, Salumay, Guratégaja, Tupari, Yabuti, and Amniapa).

Single snuff tubes are made of cane or bone and are of simple or composite construction (figs. 8, 11, 12, 13, 14, 15). Instead of simply cutoff lengths of raw material, single snuff tubes of the Guaporé tribes are made of two telescoping pieces of bone to increase their natural length (Wassén 1965:57, fig. 23). They may be provided with a nose piece extension shaped like a bird's head (Lévi-Strauss 1948*b*:378; Wassén 1965:26-27, fig. 3). Also snuff tubes from northern Chile, used for parica but possibly also for tobacco, are composite single tubes of the materials previously mentioned. They consist of a conical-shaped nose piece and a slender, cylindrical tube. The latter are often decorated with relief or overlaid with gold leaf. In those made of wood the nose piece and the tube are commonly carved from one piece and are single snuff tubes of simple construction. In those made of combined materials a wooden nose piece is slipped over a tube of cane or bone.

Rather than a straight tube, the Zapiteri-Mashco make a bent single tube from a piece of cane twenty-seven centimeters long. It is an insufflator used by two persons who successively blow the snuff into each other's nostrils. The tube is decorated with windings of fine cotton thread, producing alternating bands of black and white (Califano and Distel 1978:8).

Double snuff tubes consist of two hollow tubes of cane (Cachuenà) or bird bone (Purus Indians, Ipurina), some twenty centimeters long. The two juxtaposed tubes are tied and glued together with cotton thread and wax. The proximal end of each tube is usually rounded by means of a perforated nut which is slipped over the bone or by attaching to each end a bulbous ring of wax for better application to the nostrils. Through this kind of double snuffing instrument the powder is absorbed through both nostrils from the palm of the user's hand or from a leaf that serves as a tray.

Double X-shaped snuffers reported by Crevaux (1883:376) for the Witoto appear to be unauthentic (Wassén 1965:87-90).

Forked snuff tubes for tobacco and other materials come in two different forms: truly forked, or Y-shaped, inhalators and angular, or V-shaped, insufflators.

As mentioned, the Highland and Caribbean snuff tubes were of the former kind. So is the finely carved and bird-shaped implement of wood described by Zerries (1965:185-93), assigned by him to the lower Trombetas region of Brazilian Guiana, where, at least in the general neighborhood, the Cachuena and the Waiwai are known as snuffers of tobacco. Forked snuff tubes were also found among the Tucuna, who manufacture them of bamboo or "bone of

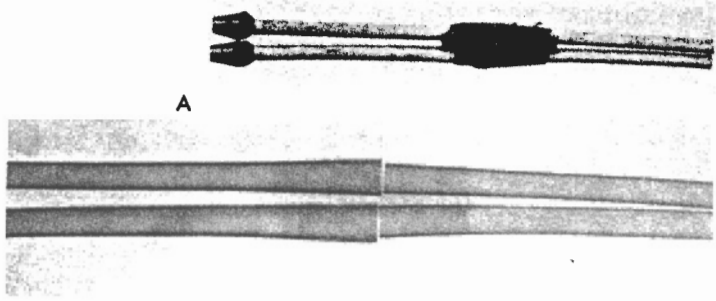


Fig. 11. (a) Telescoping double insufflator; (b) X-ray photograph of the same device.

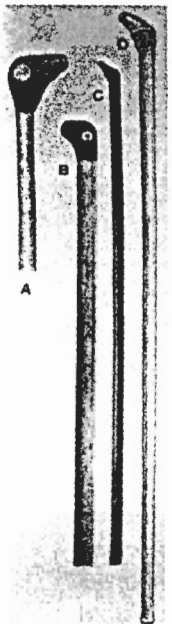


Fig. 12. Insufflators from the Guaporé region with nose piece extensions in the form of birds' heads (A, Munde; B, Salumay, length, 66 cm; C-D, Tupari, length, 88 cm).

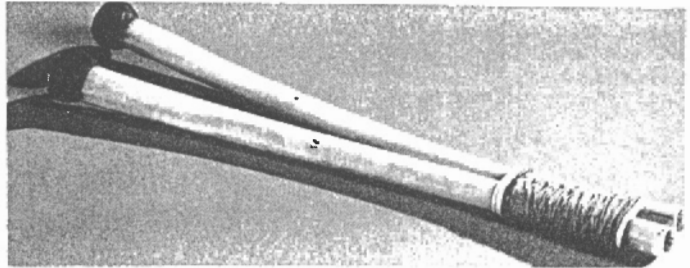


Fig. 13. Double snuff tube for tobacco or parica, Ipurina (length, 17 cm).



Fig. 14. Earliest depiction of Y-shaped insufflator/inhalator from Hispaniola in the Caribbean.

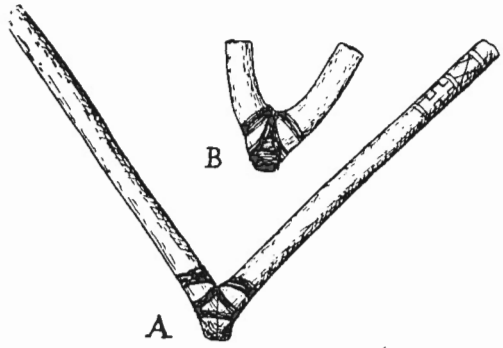


Fig. 15. V-shaped insufflators (Piro) (A, made of heron leg bones. Snuff is placed in decorated mouthpiece; B, used by an individual).

royal hawk, bifurcated by quills of the same bird to form two tubes, firmly joined by wax" (Nimuendajú 1948c:718).

More frequent, however, is the second type of forked snuff tube, the angular insufflator. Implements of this kind in the shape of a V are made of two lengths of wing or leg bone of birds, like wild turkey, for instance, but deer and monkey bones have also been mentioned in this connection. The end of one bone is glued to the end of the other at an angle so that a current of air can pass freely through the communicating tubes. Small instruments of this kind are used for self-administration of snuff; the lengths of bone are about nine centimeters long and attached to each other at an acute angle so that the user can take one end between his lips and insert the other one into his nostrils (Tucano, Palanoa, Witoto, Campa, Piro, Mashco, Cashinaua). Larger instruments of the V-shaped kind are used by two cooperating users; the lengths of bone are twenty to thirty centimeters long and are attached to each other at an obtuse angle, so that one end can reach the mouth of one user and the other the nose of his close-standing partner (Pano, Conibo, Campa, Piro, Machigenga, Mashco, Cashinaua). Sometimes the two bone tubes are of unequal lengths, with the short end being used for blowing and the long end for receiving the snuff (Piro, Mashco). Apparently, the distribution of the small, angular snuff tube for individual use overlaps with that of its larger counterpart for mutual administration.

To take snuff by means of the angular insufflator the powder is deposited at the nasal end and blown from the buccal end with a short, sharp puff into the nostrils of the receiver. Special trays like those from which other snuff materials are taken by South American Indians are not mentioned in the literature in connection with tobacco snuff. A small, rectangular, three-legged table fifty centimeters high on which the tobacco snuff ration is deposited was mentioned for the Tupari (Caspar 1956:184; Caspar in Wassén 1965:30-32, fig. 5) and Yabuti (Sekelj 1950:59, pl.). Neither author, however, refers to any special craftsmanship related to what in the photos looks like a relatively crude stand; and by no means does the piece look comparable in quality to the tables or trays of *cohoba* snuff users of Hispaniola and the Caribbean described by Pané, Columbus, and Las Casas (Bourne 1907:311-13; cf. Wassén 1964:97-102; 1967:234-37; Wassén and Holmstedt 1963:27-35).

This ethnographic survey has produced fifty-three incidences of tobacco snuffing in South America. With an increased knowledge of intoxicating snuff distribution Schultes (1967:293) predicted that "we shall see other narcotic snuffs assume greater roles and tobacco find a progressively less important role than it has been given in our ethnobotanical evaluation." Since tobacco snuff was found to be taken rarely alone but often in addition to or blended with

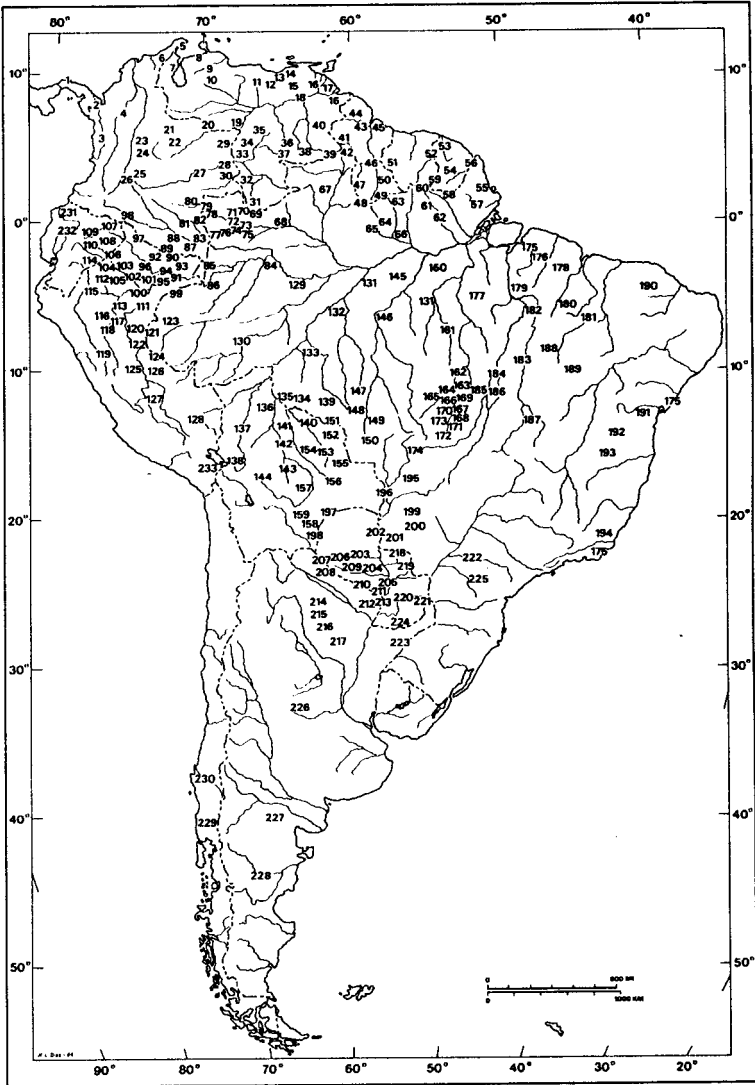
other intoxicating preparations, I see evidence for such a trend. Snuffing powders from hallucinogenic plants are more toxic than tobacco rapé and hence contain more "spirit power." This may also be the reason why the accessories, like snuff tubes and tablets, for parica and ebena powders appear to have been manufactured with greater care and craftsmanship than paraphernalia used in association with tobacco snuff.

### SMOKING

The practice of smoking tobacco is more frequent and has a wider distribution in native South America than any other mode of tobacco consumption (maps 6, 7, table 5). Passing through a predominantly pipe-smoking region of Talamancan tribes in lower Central America, one arrives at a threshold of South America, where, between the Panama Canal and Colombia, the Cuna Indians are smokers of pipe and cigar (Steward 1948a:33). The pipe is enjoyed by adults of both sexes, whereas cigar smoking appears to be primarily practiced by males. Women and men smoke the pipe during council meetings (Kelly 1966:333), and male ritual chanters and midwives do so when assisting at childbirth (Simon 1975:80, 82). Men also smoke pipe to divine (Larsen and Larsen 1964:112).

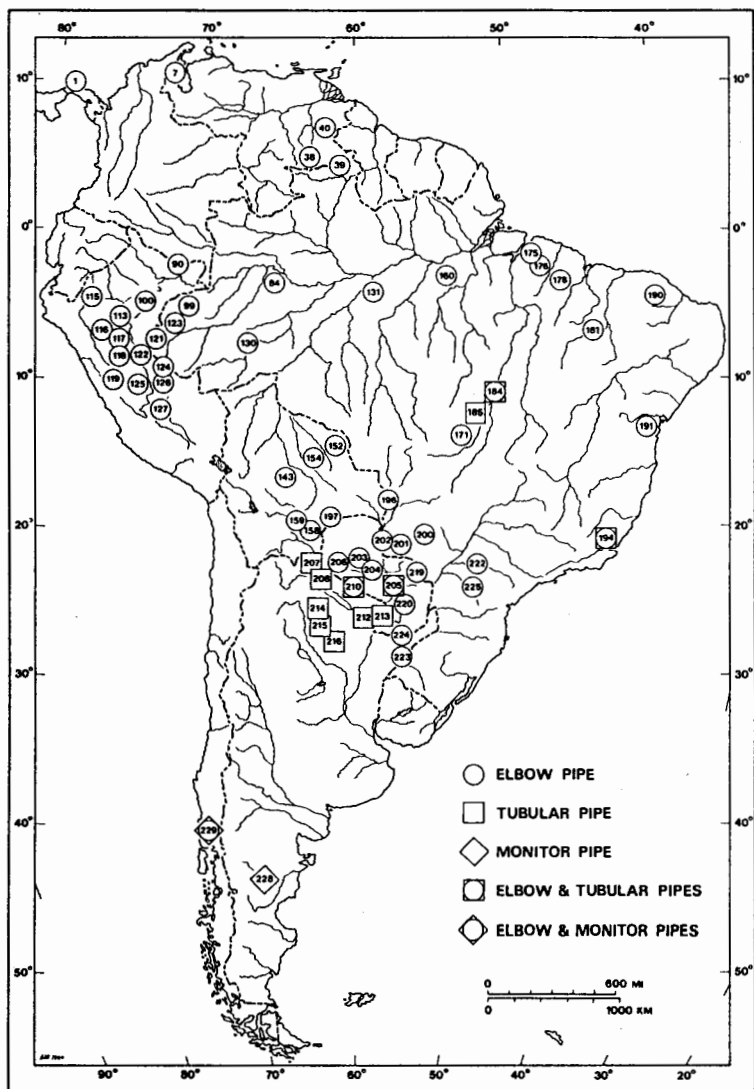
Cuna men smoke cigars individually on various ceremonial occasions. But at certain large gatherings young assistants circulate with long cigars to blow smoke into the faces of the assembled (fig. 16). A particularly instructive first account of this practice was given by Wafer (1933:102) in the seventeenth century.

These *Indians* [Cuna] have *tobacco* among them. It grows as the *Tobacco* in *Virginia*, but it is not so strong, perhaps for want of transplanting and manuring, which the *Indians* don't well understand; for they only raise it from the Seed in their Plantations. When 'tis dried and cured they strip it from the Stalks; and laying two or three Leaves upon one another, they roll up all together side-ways into a long Roll, yet leaving a little hollow. Round this they roll other Leaves one after another, in the same manner but close and hard, till the Roll be as big as ones Wrist, and two or three Feet in length. Their way of Smoking when they are in Company together is thus: a Boy lights one end of a Roll and burns it to a Coal, wetting the part next it to keep it from wasting too fast. The End so lighted he puts into his Mouth, and blows the Smoak through the whole length of the Roll into the Face of every one of the Company or Council, tho' there be 2 or 300 of them. Then they, sitting in their usual Posture upon Forms, make, with their Hands held hollow together, a kind of Funnel round their Mouths and Noses. Into this they receive the Smoak as 'tis blown upon them, snuffing it up greedily and strongly as long as they are able to hold



Map 6. Distribution of tobacco smoking. Approximate location of tribes.





Map 7. Distribution of tobacco pipes. Approximate location of tribes.

TABLE 5 Native Use of Tobacco in South America: Smoking

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
1	Cuna	Casimir de Brizuela 1973:22; Gálvez 1952:64; Holmer and Wassén 1947:67; 1963:10-11, 29, 45, 48, 53; Kelly 1966:333; Larsen 1964:112; Richter 1928: 442; Rubén Darío 1973:7, 16; Rubio 1940:21; Severino 1959:174; Simon 1975:12ff.; Steward 1948a:29; Stout 1948: 265; Torres de Ianello 1957:19; Uscátegui Mendoza 1961:220; Wafer 1933:63, 102; 1960:34, 66; Weyer 1959:81
2	Cueva	Rubio 1940:8
3	Chamí	Duque Gómez 1945:215; Reichel-Dolmatoff 1945a:429; Uscátegui Mendoza 1956:48-49; 1961:218
4	Catio	Hernández de Alba 1948a:325; Severino 1959:58
5	Goajiro	Armstrong and Métraux 1948:382; Turrado Moreno 1950:49; Uscátegui Mendoza 1956: 39; Wavrin 1948:26, 49, 79-80
6	Guamaca	Ernst 1890:236
7	Yupa	Bolinder 1917:36-39; 1958:58, 60, 69, 72, 80 bis, 160 bis, 176; Disselhoff and Zerries 1974:204; Métraux and Kirchhoff 1948:366; Nordenskiöld 1919: 92-93; Paolisso MS; Reichel-Dolmatoff 1945b:18, 26, 33, 45, pls. 7, 21, 23; Sociedad La Salle 1953:41-45, pls. 14, 28, 36, 37; Uscátegui Mendoza 1956:48; 1961:218; Venturello 1947: 268, 271; Wavrin 1937: 150, 151, 152; 1948: 229; 1953:247, 251-52; Wilbert 1960:111; 1974b:45-47; pl. 16
8	Caquetio	Acosta Saignes 1958:178-79; Fernández de Oviedo 1851-55,2:298; Hernández de Alba 1948d: 473, 474
9	Jirajara	Hernández de Alba 1948d:474
10	Timote	Briceño Iragorry 1946:17
11	Quiriquire	Hernández de Alba 1948d:474
12	Palenque	Hernández de Alba 1948c:411
13	Piritu	Hernández de Alba 1948c:411
14	Coaca	Civrieux 1970:54, cf. 40
15	Chaima	Steinen 1886:50
16	Cariña	Gocjc 1941:96; Civrieux 1974:14, 28, 54, 55, 56, 65, 95, 103
17	Warao	Chaffanjon 1889:12-13; Osborn 1959:169; Schomburgk 1922-23,1:132; Turrado Moreno 1945:161-62; Wilbert 1972b:95

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
18	Tamanaco	Humboldt 1941,4:453
19	Yaruro	Kirchhoff 1948 <i>d</i> :463; Mitrani 1973:50; Petrullo 1939:173, 251; Steward 1948 <i>a</i> :40
20	Guahibo	Chaffanjon 1889:184; Reichel-Dolmatoff 1944:453; Uscátegui Mendoza 1956:42; Wassén 1965:104
21	Tunebo	Jerez 1952:47, 52
22	Achagua	Rivero 1956:19, 109; Uscátegui Mendoza 1956:41
23	Guambiano	Rowe 1954-55:150-53
24	Muisca	Pérez de Barradas 1950-51,2:489
25	Sac	Kirchhoff 1948 <i>c</i> :390
26	Guayupe	Aguado 1916-17,1:797; Kirchhoff 1948 <i>c</i> :390; Steward 1948 <i>a</i> :35
27	Piapoco	Tavera Acosta 1954:63; Uscátegui Mendoza 1956:42
28	Saliva	Hernández de Alba 1948 <i>c</i> :411; Steward 1948 <i>a</i> :37
29	Maipure	Humboldt 1941-42,4:453
30	Baniwa	Saake 1959:437, 440
31	Baré	Koch-Grünberg 1911:123; Silva 1957:145
32	Yavitero	Koch-Grünberg 1911:123
33	Maco	Tavera-Acosta 1954:63
34	Piaroa	Boglár 1971:335; Gheerbrant 1957:52
35	Panare	Dumont 1976:154
36	Yecuana	Civrieux 1959:130; Gheerbrant 1952:130, 163, 164, 281, 293, 419; Koch-Grünberg 1917-28,3:271, 387; Reinburg 1921:46; Vinci 1956:282, pl. 7
37	Mayongkong	Schomburgk 1840 <i>b</i> :237; Roth 1916-17:241-42
38	Arecuna	Appun 1871:309; Armellada 1946:42; Métraux 1944 <i>c</i> :160; Nordenskiöld 1919:92; Pérez de Barradas 1950:28; Roth 1916-17:242; Schomburgk 1922-23,1:189
39	Taurepan	Armellada 1946:42; Koch-Grünberg 1915-17:65; 1917-28,3:57; Métraux 1944 <i>c</i> :160; 1949 <i>b</i> :592
40	Camaracoto	Armellada 1946:42; Simpson 1940:414
41	Acawaio	Brett 1868:276; Butt 1956:41, 45; 1961-62:145; Butt Colson 1977:53; Roth 1911:3
42	Patamona	Schomburgk 1842:192
43	Caribisi	Schomburgk 1842:192
44	Carib: Barama R.	Gillin 1934:338-39; 1936:66, 147-48, 171, 185

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
45	Arawak: Guianas	Brett 1881:52-53, 117; Goeje 1942:213; Henfrey 1964: 68; Roth 1916-17:242
46	Macushi	Appun 1871,2:347; Diniz 1972:104; Schomburgk 1922-23,1:2
47	Wapishana	Farabee 1918:46-47; pl. 28; Koch-Grünberg 1917-28,3:57; Martius 1867,1:639; Mussolini 1944:139; Schomburgk 1922-23,1:32-33
48	Waiwai	Fock 1963:126; Yde 1965:57-60
49	Taruma	Chaffanjon 1889:68; Farabee 1918:139
50	Atorai	Farabee 1918:45-46
51	Carib: Guyana	Goeje 1929-30:284-85; Im Thurn 1883:317-18
52	Carib: Surinam, Maroni R.	Ahlbrink 1931:453; Coll 1903:500; Kloos 1968: 4, 10, 12, 13, 14, 16-17; 1970:117; 1971:112-15
53	Galibi	Arnaud 1966:47-48; 1971:23; Barrère 1751: 139ff.; Crevaux 1883:158; Froidevaux 1901: 182; Roux 1935:208-09
54	Emerillon	Perret 1933:78
55	Palikur	Arnaud 1970:4, 6-7, 13-14, 16, 18, 20; Fernandes 1948:211
56	Carib: Cayenne	Prudhomme 1798:312
57	Oyampi	Métraux 1928:67-116; Pinto 1935-38,2:94
58	Rucuyen (Wayana)	Coudreau 1893:153, 206, 207; Crevaux 1883: 116-17; Goeje 1906:14; Schaden 1963:17
59	Wayana (Rucuyen)	Crevaux 1883:116-17; Darbois 1956:57; Goeje 1906:14; 1941:93, 95; Koch-Grünberg 1914: 168
60	Tirio (Trio)	Frikel 1960:19; 1973:50-51, 71-72; Goeje 1906: 14; 1910:1-34
61	Aramagoto	Figuciredo 1961:5
62	Aparai	Carvalho 1955:43; Crevaux 1883:299; Speiser 1926:183-84
63	Ingarune	Frikel 1961:12
64	Parucoto	Farabee 1924:190
65	Kashuiena	Polykrates 1957:128, 138; 1962:82-83
66	Kahuyana	Frikel 1953:261; 1957:531
67	Guaimara	Koch-Grünberg 1917-28,3:337
68	Manao	Martius 1867,1:587; Métraux 1940 <i>b</i> :235; 1948 <i>f</i> : 711
69	Karúтана	Koch-Grünberg 1911:124
70	Katapolítani	Koch-Grünberg 1911:124
71	Tariana	Koch-Grünberg 1911:249

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
72	Pira-tapuya	Stradelli 1890:449
73	Tucano	Biocca 1965,2:146; Builes 1951:135; Cooper 1949:527, 528; Fulop 1954:107, 110, 113, 116, 117, 118; Hartmann 1974:181; Jackson 1983:197; Koch-Grünberg 1917-28,1:959; McGovern 1927:219, 220; Mead 1907:109; Moser and Tayler 1967:68; Reichel-Dolmatoff 1975:78, 81, 89, fig. 25; Rodríguez Lamus 1966:3; Silva 1962:188, 227, 351; 1966:201; Uscátegui Mendoza 1956:47; 1961:224; Ypiranga Monteiro 1960:37
74	Barasana	Torres Laborde 1969:32, 48, 62
75	Warckena	Koch-Grünberg 1911:176
76	Desana	Koch-Grünberg 1917-28,1:821; Reichel-Dolmatoff 1971:118, 143, 144, 172; Renard-Casevitz 1979:88
77	Tuyuka	Castellví 1941-44:91; Koch-Grünberg 1914:168; 1921:200; Lommel 1960:93; Uscátegui Mendoza 1956:35
78	Carapana	Valencia and Metzger 1974:241
79	Cubeo	Allen 1947:582; Goldman 1940:245; 1963:169, 170-80, 265; 1968:218, 219; Koch-Grünberg 1915-16:124; 1921:99; López et al. 1974:100; Silva 1957:182; Teschauer and Sampaio 1955:274
80	Guasana	Koch-Grünberg 1915-16:168
81	Rosigaro	Uscátegui Mendoza 1956:43
82	Uaikana	Koch-Grünberg 1914:168
83	Macuna	Århem 1981:80
84	Omagua	Girard 1958:83; Métraux 1946 <i>e</i> :134; 1948 <i>f</i> :702; Tessmann 1930:54
85	Passé	Martius 1867,1:522
86	Tukuna	Tessmann 1930:561, 562
87	Yucuna	Cartagena 1942:39-40; Uscátegui Mendoza 1956:42
88	Muinane	Tessmann 1930:332; Uscátegui Mendoza 1956:34, 35
89	Ocaina	Girard 1958:160; Tessmann 1930:531; Uscátegui Mendoza 1956:35, 45
90	Orejón	Girard 1958:174
91	Andoque	Steward 1948 <i>c</i> :759
92	Witoto	Crevaux 1883:371; Hardenburg 1912:155; Koch-Grünberg 1908-10,2:302; Roth 1911:

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
		3; Steward 1948c:749, 759; Tessmann 1930:319; Uscátegui Mendoza 1956:45
93	Bora	Cartagena 1942:40; Tessmann 1930:272; Uscátegui Mendoza 1956:44
94	Yagua	Fejos 1943:43, 91-92; Girard 1958:40; Métraux 1944c:163; Steward and Métraux 1948b:735; Tessmann 1930:464, 467
95	Coto	Tessmann 1930:196, 200
96	Amaguaje	Steward 1948b:747
97	Auishiri	Dirks 1879:123
98	Siona	Calcella 1945:39; Tessmann 1930:272; Uscátegui Mendoza 1956:47; 1961:222
99	Mayoruna	Steward and Métraux 1948a:555; Tessmann 1930:272
100	Chamicuro	Steward and Métraux 1948a:592; Tessmann 1930:402, 406
101	Yameo	Tessmann 1930:569
102	Simacu	Castillo B. 1961:87-88; Steward and Métraux 1948a:592; Tessmann 1930:495-96
103	Zaparo	Tessmann 1930:539; Uscátegui Mendoza 1956:46
104	Murato	Steward and Métraux 1948a:650
105	Omurana	Tessmann 1930:448
106	Andoa	Steward and Métraux 1948a:650; Tessmann 1930:531
107	Cofán	Uscátegui Mendoza 1956:46
108	Auca	d'Orbigny 1945,3:839
109	Quijo	Tessmann 1930:242, 246
110	Canelos-Quichua	Whitten 1976:146, 149
111	Aguaruna	Davidson MS
112	Shapra	Girard 1958:210-11
113	Aguano	Tessmann 1930:260
114	Jivaro	Harner 1973a:60; Karsten 1920a:4-16; 1920c:18, 46, 50, 56; 1926:323; Rivet 1907:593, 601-02; Wavrin 1932:132-33; 1948:228-29
115	Cocama	Espinosa 1955:501; Girard 1958:196-97; Métraux 1928:67, 116-17, 260; 1948f:702; Pinto 1935-38,2:94; Tessmann 1930:76, 77; Villarejo 1943:124, pl. 125
116	Shebero	Steward and Métraux 1948a:613; Tessmann 1930:425
117	Chayavita	Steward and Métraux 1948a:613; Tessmann 1930:387, 391
118	Lamista	Tessmann 1930:226, 229

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
119	Cholon	Steward and Métraux 1948 <i>a</i> :604
120	Pano	Steward and Métraux 1948 <i>a</i> :548, 556, 590, 592; Tessmann 1930:112, 116, 117; Waisbard and Waisbard 1958-59:70
121	Shipibo	Farabee 1922:104; Gebhart MS; Girard 1958: 264; Karsten 1955 <i>b</i> :170-71; 1964:204-05; Marcoy 1869,1:655; Steinen 1904:17, 46, 72; Waisbard and Waisbard 1958-59:71
122	Conibo	Coriat 1943:63; Díaz Castañeda 1912:315; Girard 1958:264; Izaguirre Ispizua 1922- 29,1:315; Marcoy 1869,1:574; Nordenskiöld 1919:92; Ordinaire 1887:311; 1892:220; Pérez de Barradas 1950: 28; Skinner 1805: 285-86; Stahl 1928:163; Waisbard and Wais- bard 1958-59:71
123	Cashinaua	Girard 1958:221
124	Amahuaca	Carneiro 1962:34; Steward and Métraux 1948 <i>a</i> : 592; Tessmann 1930:165
125	Campa	Elick MS; 1969:206-07; Grandidier 1861:134, 140; Métraux 1944 <i>c</i> :158; Steward and Métraux 1948 <i>a</i> : 548; Tessmann 1930:90; Torre López 1969:4,5
126	Piro	Fry 1889,1:52; 1907,1:417; Matteson 1954:75; Steward and Métraux 1948 <i>a</i> :548
127	Machigenga	Disselhoff and Zerries 1974:223; Renard-Casevitz 1979:60; Steward and Métraux 1948 <i>a</i> :548
128	Yamiaca	Pérez de Barradas 1950:28
129	Ibanoma	Pérez de Barradas 1950:28
130	Yamamadi	Steere 1901:371
131	Arara	Coudreau 1897 <i>a</i> :203
132	Mura	Nimuendajú 1932:99
133	Parintintin	Klimek and Milke 1935:83
134	Chapacuro	Métraux 1940 <i>a</i> :126
135	Huanyam	Nordenskiöld 1919:92; 1924 <i>a</i> :249
136	Chacobo	Nordenskiöld 1919:92
137	Caviña	Nordenskiöld 1919:92
138	Tacana	Hissink and Hahn 1961:240, 391, 397
139	Tupari	Caspar 1957:157; 1975:177-78
140	Baure	Nordenskiöld 1919:92; Pérez de Barradas 1950:28
141	Itonama	Nordenskiöld 1919:92
142	Mojo	Métraux 1942:77-78; 1943:16; 1948 <i>c</i> :424
143	Siriono	Cardús 1886:282; Herzog 1910:194ff.; Holm- berg 1948:462; 1950:37, 38; Rydén 1941:96- 98

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
144	Yuracare	d'Orbigny 1945,4:1402; Nordenskiöld 1919:92
145	Máue	Bellizzi 1958:29; Castro 1941:173; Pereira 1954:71, 78; San José 1847:190; Silva 1957:18, 20
146	Mundurucú	Bates 1864:275; Coudreau 1897 <i>b</i> :199; Hartt 1881:126; Horton 1948:274; Mense 1935:22; Murphy 1954: 65; 1958:32-33, 35; Murphy and Murphy 1974:84, 135; Pinto 1935-38,2:94
147	Tapoya	Vinhaes 1941:89
148	Nambicuara	Lévi-Strauss 1948 <i>a</i> :368; Lima Figuéiredo 1939:118; Métraux 1942:158, 169; Pinto 1935-38,2:96; Ramos de Aranja Pereira 1944:99-100; Roquette-Pinto 1938:249-79; 1938:125
149	Apiacá	Castelnau 1850-59,5:278; Coudreau 1897 <i>b</i> :186; Pinto 1935-38,2:94
150	Paressi	Schmidt 1914:245; Steinen 1886:183; Wavrin 1926:19
151	Huari	Nordenskiöld 1919:92; 1924 <i>a</i> :227
152	Pauserna	Métraux 1942:107; 1948 <i>c</i> :436
153	Nape	Nordenskiöld 1919:92; Pinto 1935-38,2:94
154	Guarayu (Pauserna)	Cardús 1886:78-79; Cors 1957:112-13; d'Orbigny 1945,4:1230; Métraux 1948 <i>c</i> :436; Nordenskiöld 1924 <i>b</i> :143, 228; Pérez de Barradas 1950:28; Rydén 1941:98
155	Chiquito	Métraux 1950 <i>a</i> :66; Sepp 1768,2:216
156	Churupa	Nordenskiöld 1919:91
157	Ñeozé (Siriono)	Wegner 1934:34
158	Chané	Nordenskiöld 1912 <i>a</i> :182; 1912 <i>b</i> :158; 1919:91; Pérez de Barradas 1950:28; Schmidt 1938:21
159	Chiriguano	Campana 1902:44, 45, 46, 59; Comajuncosa 1884:49; García Rosquellas 1946:266; Klimek and Milke 1935:83; Métraux 1930:339; 1948 <i>a</i> :89; 1948 <i>d</i> :481; Nordenskiöld 1912 <i>a</i> :182; 1912 <i>b</i> :158; 1919:91; Romano and Cattunar 1916:169-70; Schmidt 1939:57
160	Cayapó	Krause 1911 <i>a</i> :388, fig. 241 <i>a, b</i>
161	Chipaya	Klimek and Milke 1935:83; Lowie 1949:323; Métraux 1928:116, 296; Nimuendajú 1919-20:1004; Snethlage 1921:416
162	Yuruna	Coudreau 1897 <i>a</i> :175; Nimuendajú 1948 <i>a</i> :238; Steinen 1886:261
163	Suya	Snethlage 1930:157; Steinen 1886:163, 205
164	Trumai	Murphy and Quain 1955:63, 66
165	Waurá	Schultz and Chiara 1971:124



TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
166	Camayura	Carneiro and Dole 1956-57:179, 201; Carvalho, Lima, and Galvão 1949:42; Oberg 1953 <i>a</i> :24, 25; Teixeira da Fonseca Vasconcelos 1945:80; Weyer 1955:114; 1959:119
167	Aucte	Klimek and Milke 1935:83; Pinto 1935-38,2:94; Steinen 1886:345
168	Cuicuru	Dole 1964:55-59
169	Yawalapiti	Petrullo 1932:139
170	Custenau	Steinen 1886:183
171	Kalapalo	Basso 1973:114-16; Tolksdorf and Lang 1956:272
172	Anauqua (Cuicuro)	Dole 1964:55-59
173	Mehináku	Gregor 1977:76-80, 333-39
174	Bacairi	Branco 1956:16; Oberg 1953 <i>a,b</i> :72; Schmidt 1902:45; 1905:97-98; Steinen 1886:68-69, 173, 344
175	Tupinamba	Acuña 1729:623; Brinton 1891:234; Cardim 1906,16: 425-26; 1939:151-52; d'Évreux 1864:137; Fernandes 1963:333, 338-39; Krickeberg et al. 1962:451; Léry 1951:163-64, 194-96; Métraux 1928:116; 1948 <i>b</i> :127, 130; 1949 <i>c</i> :593; 1950 <i>b</i> :142, 145, 150, 163-65, 174, 179, 182, 192, 325; Pinto 1957:371; 1958:96; Soares de Sousa 1974:109, 177; Staden 1928:82-83, 149; Thevet 1557:158; Wagley 1951: 115-21; Wied-Neuwied 1820-21,1:34
176	Tembé (Tenetchara)	Barbosa Rodríguez 1882:32; Huxley 1957:195; Métraux 1928:116 (see Guahahara)
177	Asurini	Arnaud 1961:12; Jangoux 1978:18, 21 (figs. 5, 6) 22, 27, 36, 39, 55 (fig. 37); Lukesch 1976:60, 67-68, 90
178	Urubú	Huxley 1957:194-96, 198, 200
179	Manajé	Lange 1914:234-35, 255; Métraux 1928:116
180	Amanaye	Nimuendajú and Métraux 1948:202
181	Guahahara (Tenetchara)	Lopes 1934:162-63; Sneath 1927:468-69; 1930:124; Wagley and Galvão 1948 <i>a</i> :145-46; 1949:41, 85, 109, 111; 1961:115-16, 117, 118-19, 120-21, 122-23
182	Apinaye	Nimuendajú 1939:88; Lowie 1946 <i>a</i> :393
183	Shavante	Maybury-Lewis 1965:42, 57; Pohl 1832-37,2:165

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
184	Carajá	Ehrenreich 1891:15-16; Krause 1911 <i>a</i> :53, 258-61; 1911 <i>b</i> :4, 28-29; Lane 1950:381-88; Lelong 1952: 22, 47, 80; Lipkind 1948: 191; Machado 1947:32, 34; Ramos de Aranjó Pereira 1943-47,1:273
185	Tapirapé	Baldus 1937 <i>b</i> :107; 1964:321-22, 326; Krause 1911 <i>a</i> : 406, 469; Wagley 1943:69, 72-74, 80, 82-94; 1977:67, 135, 140, 181, 191, 192, 198, 200, 203, 205; Wagley and Galvão 1948 <i>b</i> :175-76
186	Yavaje	Krause 1911 <i>a</i> :359
187	Sherente	Martius 1867,1:273; Pohl 1832-37,2:31
188	Macamecra	Ribeiro 1841:321
189	Timbira (Ramcocamecra)	Ribeiro 1841:317
190	Tarairiú	Barlacus 1659; Nicuhof 1744:135 after Lowie 1946 <i>c</i> :565
191	Tapuya	Baro 1651:238, 241; Hohenthal 1960:76; Nordenskiöld 1919:92; Piso and Marcgravi de Liebstad 1648:274; Ploetz and Métraux 1930:183
192	Camacan	Ploetz and Métraux 1930:182-84
193	Botocudo	Lowie 1946 <i>a</i> :393; Manizer 1919:266; Nimuendajú 1946:102; Wied-Neuwied 1820-21,2:34
194	Puri-Coroado	Métraux 1946 <i>d</i> :528, 529
195	Bororo	Baer 1969 <i>a</i> :284; Colbacchini and Albisetti 1942: 197-200; Cook 1909:420; Mussolini 1946: 79; Schaden 1959:89; Steinen 1894:514
196	Guato	Schmidt 1905:248, 266
197	Siracua	Nordenskiöld 1912 <i>b</i> :274, 324
198	Tapieté	Nordenskiöld 1919:92; Schmidt 1939:56
199	Tereno	Baldus 1950:220-21; 1960 <i>b</i> :259-60; Márquez Mirando 1940-41,2:318; Oberg 1948:285
200	Guaná	Cardús 1886:324; Castelnau 1850-59,5:276; Koch 1902:5, 6; Métraux 1946 <i>b</i> :346
201	Caduveo	Boggiani 1895:38; Métraux 1946 <i>b</i> :347; Ribeiro 1950:73; Sánchez Labrador 1910-17,1:168, 277-78
202	Chamacoco	Baldus 1931:38, 41; Nordenskiöld 1919:92; Sicmiradzki 1898:133
203	Kaskihá	Baldus 1931:68
204	Sanapaná	Koch 1902:5
205	Lengua	Grubb 1904:70-71; 1911:73-74; Hawtrey 1901: 287; Kurze 1905:27

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
206	Suhín	Hawtrey 1901:287, pl. 40; Métraux 1946 <i>b</i> :346-47; Nordenskiöld 1919:92
207	Chorotc	Boman 1927-32:309-41; Chervin 1907-08,1:145, 148; Métraux 1946 <i>b</i> :246-47; Nordenskiöld 1912 <i>b</i> :90-91; 1919:91; 1920:58; Pape 1935:163; von Rosen 1921:220-21; 1924:136-40
208	Mataco	Chervin 1907-08,1:127; Dijour 1933:214; Mallat de Bassilian 1892:33-34, 76; Métraux 1946 <i>b</i> :347-48; Nordenskiöld 1919:92; Outes and Bruch 1910 <i>b</i> :68-69; Raffo and Massazza 1949:237-48; Schmidt 1939:55
209	Ashlushláy	Métraux 1946 <i>b</i> :347; Nordenskiöld 1912 <i>a</i> :182; 1912 <i>b</i> : 31, 56; 1919:91-92; 1920:58
210	Pilagá	Métraux 1946 <i>b</i> :347-48; Palavecino 1933:532-33
211	Maca	Uncertain
212	Toba	Alfaro de Lanzone 1969:435-41; Campana 1903:299-300; Cámos 1888:105; Métraux 1946 <i>a</i> : 60-62; 1946 <i>b</i> :347; Nordenskiöld 1919:92; Outes and Bruch 1910 <i>b</i> :76; Raffo and Massazza 1949:237-48
213	Payagua	Azara 1809,2:139; Demersay 1860-64,1:368; Koch 1903:117-24; Métraux 1946 <i>b</i> :347; Nordenskiöld 1919:92; Siemiradzki 1898:149; Steinen 1901:1-6
214	Chunupi	Mallat de Bassilian 1892:33-34, 76
215	Vilela	Mallat de Bassilian 1892:33-34, 76
216	Mocoví	Baucke 1942-44,3:208; Mallat de Bassilian 1892:33-34, 76; Nordenskiöld 1919:92
217	Abipon	Dobrizhoffer 1783-84, 1:84, 2:68, 282, 330, 335, 417
218	Guaicuru (Payagua)	Taunay 1931:61
219	Mbayá	Baldus 1952:480-81; Cadogan 1949:23; 1958:93; 1971:44, 48, 103-04, 115; Laytano 1957:78; Métraux 1946 <i>b</i> :346; Müller 1928:501; Nordenskiöld 1919:92; Watson 1952:33
220	Guaraní	Aparicio 1948:65; González 1942:29-30; 1958:26, 42; 1967:11; Keane 1909,1:477; Morales 1929:124; Pereira de Godói 1967:314-22; Sepp 1768,2:21

TABLE 5 (Continued)

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
221	Chiripá	Müller 1928:501
222	Tembecua	Hanke 1947:605
223	Caingang	Ambrosetti 1899:55; Klimek and Milke 1935:83; Métraux 1946c:470; Nordenskiöld 1919:921; Serrano 1936:45; 1947:138, 149
224	Guayaki	Clastres 1974:25, 39, 113, 132
225	Caingua	Métraux 1948a:89; Outes and Bruch 1910b:93
226	Comechigon	Pérez de Barradas 1950:28
227	Genaken	Serrano 1947:190
228	Tehuelche	Bourne 1853:94-95; Cooper 1946a:157; 1949: 530, fig. 182; Lista 1975:117; Musters 1872: 203; 1911:273; Prichard 1902:100-01
229	Araucano	Argumosa 1963:141; Badano 1945:4, 5; Cooper 1946b:741, 749, 752, 757; Cox 1863:83; d'Orbigny 1835-47,2:241; Énault 1867:275; Falkner 1935:91; Faron 1968:73-74; Guevara 1911: 262-82; Guinnard 1864:149-50; Hil- ger 1957:316, 340; 1966:76; Latcham 1924: 691; Nordenskiöld 1919:92; Nuñez de Pineda 1863:159-61; Outes and Bruch 1910b: 108; Philippi 1893:551; Serrano 1947:244; Titiev 1951:30
230	Pehuenche	Hutchinson 1865:330
231	Cayapa	Barret 1925,1:104-05
232	Colorado	Wavrin 1948:229
233	Aymara	Tschopik 1946:556

their Breath, and seeming to bless themselves, as it were, with the Refreshment it gives them.

Then as now, smoke-blowing of this kind is practiced in a house especially built for the purpose (Simon 1975:147), and the tobacco ceremony is accompanied by the burning in braziers of cacao beans and peppers (Stout 1948:263). Heavy smoking of tobacco takes place also during group conjurations when participants indulge themselves on eight consecutive nights (Helms 1979:114).

The apparently now extinct Cueva of the Darién smoked tobacco upon welcoming their invited guests, but whether they did so in pipes or in the form of cigars remains unclear (Rubio 1940:8). Among the Chamí of the eastern slopes of the Colombian Cordillera Occidental men manufacture multiple-passage pottery pipes. The globular bowl, measuring twelve centimeters in



Fig. 16. Cuna men smoking tobacco in council by means of smoke blowing.

diameter, features a flattened base and a salient rim. From the lower part of the bowl emanate four ceramic stems which serve as mouthpieces to an equal number of smokers. Apart from their unique form, which in itself suggests a ceremonial function, communal pipes stand out in that they are exclusively manufactured by men, not by women, who produce all other utility ware; and it seems safe to say that in Chamí society use of multiple-passage pipes is restricted to the male sex (Duque Gómez 1945:215; Reichel-Dolmatoff 1945a: 425, 429; Uscátegui Mendoza 1956:48-49). As indicated, this multistemmed pipe bowl is unique for South America and possibly of African origin (Reichel-

Dolmatoff 1956:75). In the Cauca Valley the Catio were found to blow tobacco smoke in curing (Hernández de Alba 1948*a*:325) and to include cigars in recipes that patients must procure in order to be healed by their shaman (Severino 1959:58). Generally speaking, the Highland Chibcha of Colombia are not heavy smokers but use cigars as fumigants in shamanic curing, at funeral rites, and for crop protection. So, for instance, the Tunebo appreciate gifts of cigars or cigarillos and blow the smoke over their defunct relatives (Jerez 1952:52-53; Uscátegui Mendoza 1961:226); the Muisca are said to have smoked tobacco (Pérez de Barradas 1950-51, 2:489); and the Guambiano consider cigars indispensable for shamanic curing. Funeral attendants smoke cigarettes, and shamans, or the farmers themselves, blow four puffs of smoke from a cigar over potatoes and ears of corn in order to "cure" the crop (Rowe 1954-55:150-53).

In the extreme north of the subcontinent the Goajiro of Colombia and Venezuela smoke long cigars which the women roll from eight or ten leaves of tobacco. Both sexes indulge hedonistically in this practice while tobacco chewing and drinking are engaged in by shamans and shamanesses for ritual and medicinal purposes (Armstrong and Métraux 1948:382; Turrado Moreno 1950:49). Tobacco use seems to have displaced coca chewing among the Goajiro, resembling what has occurred among the Guamaca, where the young have taken up cigar smoking on festive occasions and where only the older men continue to chew coca, lime containers in hand (Ernst 1890:236).

The Yupa Indians of the Sierra de Perijá are a tribe of passionate smokers. Adults and children of both sexes apply themselves with gusto, and some individuals appear to smoke incessantly (Ruddle 1974:103; Wavrin 1953:251). Although cigars have been occasionally observed among them (Bolinder 1917:37; Ginés, Foldats, and Matos 1953:452), they far more typically smoke tobacco in locally manufactured angular pipes of clay (Wilbert 1960:111, pls. 1, 10).

Nowadays, the Yupa obtain a good part of their tobacco supply through barter and purchase. But they also continue to grow a fair amount in their doorway gardens and fields. To harvest the tobacco they cut the leaves and allow them to dry partially in the shade. Then they roll the leaves into fusiform bundles, one meter long and ten centimeters thick, tied together with a vine. As the leaves continue to dry, the ligature is periodically tightened. When the tobacco is ready for use, the smoker cuts a thin slice from the roll, rubs it between the hands, and places the shredded tobacco into a rectangular basket or leather case manufactured by the men (Bolinder 1958:58; Reichel-Dolmatoff 1945*b*:33). The supply of tobacco rolls is hung in the open or inside provision baskets from the rafters of the house.

Pipes are made by men and women from local clay. They form the bowl in

their hands and smooth the outer side by means of a knife or a flat stone (Bolinder 1917:39; Sociedad La Salle 1953: pls. 20, 21).

Pipes vary somewhat in size and design but, generally speaking, the Yupa model features a cylindrico-conical bowl, between four and four-and-a-half centimeters high and three to four centimeters wide at the rim (figs. 17, 18). The wall of the bowl is very fine and only a few millimeters thick. Perpendicularly attached to the conical bottom of the bowl is a one-centimeter-long and one-and-a-half-centimeter-wide basal cylinder which serves as the smoke tube of the bowl. Often protruding from the anterior side of the bowl is a nonfunctional extension of the smoke tube or several approximately one-centimeter-long conical and diverging appendages (Schön, Jam, and Cruxent 1953:43; Wavrin 1953:252). The bowl is usually decorated with bands of parallel or diagonal lines of angular or circular incisions around the rim or across the entire bowl. When finished, the soft clay bowls are fired near an open hearth and left to cool upside down on the tips of short sticks that are stuck in the ground away from the fire (Sociedad La Salle 1953, pls. 20, 21).

To ready the pipe for smoking the user inserts a wooden stem ten to fifteen centimeters or more long and one centimeter in diameter into the short smoke tubes at the bottom of the fired bowl. The stem may be smooth or carved in a bead-chain pattern with a round or oval cross section. The mouthpiece is usually broadly flattened. Some stems are decorated with alternating bands of multicolored thread (Reichel-Dolmatoff 1945*b*:33, pl. 7). With their light ochreous bowls, black firing spots, incised patterns, and finely carved or decorated stems, pipes are of aesthetic importance to the Yupa and, if well executed, become admired conversation pieces. Each pipe is unique, explains Paolisso (MS), and the Indians know how to identify the owners on the basis of craftsmanship and design.

In any case, imported wooden pipes, while becoming more prevalent, have not as yet replaced their ceramic counterparts. Yupa clay pipes resemble those made of stone found archaeologically in Tairona territory along the Colombian coast north of the Sierra Nevada de Santa Marta (Métraux and Kirchoff 1948:366). This is especially true of Yupa specimens that betray less European influence and that feature the protruding elements on the anterior side of the bowl so characteristic of autochthonous American pipe forms (Reichel-Dolmatoff 1945*b*:45). Accordingly, it appears unwarranted to assume with Bolinder (1917:37) that the Yupa pipe model is entirely European in origin and that, rather than pipes, the Yupa may earlier have smoked cigars.

East of Lake Maracaibo, shamans of the now extinct Caquetio used to smoke cigars of tobacco mixed with various herbs that "robbed them of their senses" (Fernández de Oviedo y Valdés 1851-55 [1535], 2:298). Shamans and



Fig. 17. Yupa man smoking elbow pipe.





Fig. 18. Yupa woman smoking elbow pipe.

ordinary tribesmen blew smoke from inverted cigars (the lighted end inside the mouth) to divine the future. To predict major events Caquetio, Jirajara, and possibly Quiriquire shamans seem to have gone into seclusion for a period of three days while they smoked tobacco and ingested other intoxicants (Fernández de Oviedo 1851–55 [1535], 2:298–99; Hernández de Alba 1948*d*:474). Timote shamans blew tobacco smoke in curing.

To propitiate their tutelary spirits Palenque and Piritu shamans of eastern Venezuela offered cigars of tobacco mixed with caraña granules (*Protium heptaphyllum*) (Hernández de Alba 1948*c*:411). When inhaled by the ritual specialist in the smoking process caraña affects the vocal cords and masks the voice of the smoker, who acquires a raspy, low timbre considered appropriate for ritual discourse between man and the spiritual powers.

Descendants of the culturally extinct Coaca remembered that their ancestors smoked cigars made of tobacco they themselves cultivated (Civrieux 1970:54). The Cariña smoke cigars during shamanic incantations in order to attract the wind spirits of the cardinal directions or to blow smoke over the body of a patient (Civrieux 1974:54–56, 65).

To the Warao of the Orinoco Delta tobacco is of utmost cultural significance despite the fact that they cannot grow it in their swampy habitat but rely on its importation from the island of Trinidad and from regions adjacent to the Orinoco Delta. Although very occasionally tobacco chewing and drinking may occur, snuffing of any substance is a completely unknown practice; the preferred form of tobacco use, by far, is smoking long cigars the thickness of a finger. To prepare a cigar a quantity of rope tobacco is cut off, and the compressed leaves are pulled open and rolled into a piece of inner lining of the spathe of a manaca palm (*Euterpe* spp.) (fig. 19). Ordinary men and elderly women smoke cigars twenty to forty centimeters long and with the light brown spathe of *Euterpe edulis* Mart. Religious practitioners smoke longer ones up to ninety centimeters long, using the spathe of a taller, as yet unidentified, *Euterpe* (figs. 19–21). To prevent the manaca cigar from opening, a very narrow strip is spliced off halfway down the outer lateral side of the wrapper and tied around the center of the cigar in a twist. Great care is taken to collect the spathe not from the swampy ground but off the tops of nearby bushes on which they are caught in falling. Warao shamans perfume their cigars with pulverized or granulated caraña (*Protium heptaphyllum*).

In their mythology, the Warao speak of male and female Lords of Rain, who reside on sky-bearing mountains along the horizon and who smoke pipes rather than cigars (Wilbert 1981*b*). These rain gods are depicted in human form and with peculiarly wide, flaring heads. Although the mythological pipes of the Warao are referred to as *akasibo* (Port. *cachimbo*), there is no compelling

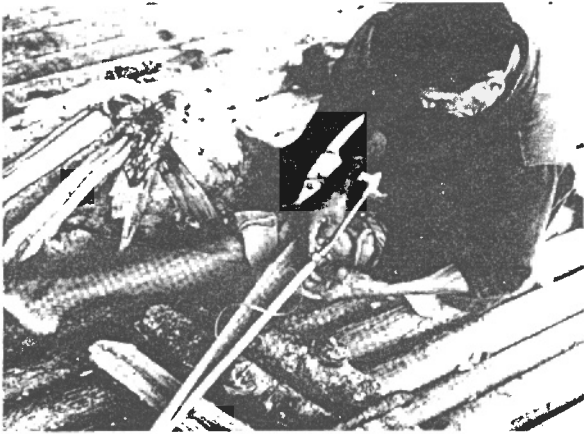


Fig. 19. Warao shaman preparing ritual cigar with *Euterpe* palm wrapper.



Fig. 20. Warao shaman holding caraña resin to lighted end of ritual cigar.



Fig. 21.  
Warao shaman smoking ritual cigar.

need to assume that they are modeled after European prototypes. Archaeological clay figurines with large, flaring and canoe-shaped heads are known from the Lake Valencia area of north central Venezuela, where they occur in association with clay pipes. Also, some of the pipe bowls represent elongated or bulbous human heads (Peñalver Gómez 1976; Rouse and Cruxent 1963:100, pl. 45). Pertaining to the Barrancoid series, similar clay pipes have been found in territory immediately adjacent to the deltaic homeland of the Warao (Rouse and Cruxent 1963:146, pl. 36B). Although modeled separately, bowl and stem of these prehistoric clay pipes were of one piece.

Farther upriver on the Orinoco the Tamanaco and Maipure smoked cigars of tobacco rolled in maize husks (Humboldt 1941-42, 4:453). Among the Yaruro, men and women smoke daily a good number of cigars made of "several strips of tobacco leaf wrapped in a thick green leaf obtained from one of the trees along the bank" (Petrullo 1939:251). In the course of an all-night performance one male shaman was observed to have consumed forty-two industrial cigarettes and about one hundred native cigars. The latter consisted of "several strips of tobacco leaf wrapped in a thick green leaf" (Petrullo 1939:251), and from which the cigar, *caramba*, may derive its name (Mitrani 1973:50). Women often roll and light cigars for their husbands, and although both sexes smoke freely, Yaruro females apparently consume less tobacco and other intoxicants than their male counterparts. Shamans of the neighboring Guahibo ingest quantities of smoke from thick cigars and fumigate their patients with clouds of smoke (Chaffanjon 1889:184). In a similar vein, Achagua shamans light a series of cigars to fumigate, under ceremonial chanting and gesticulating, supplies of fish and manioc to sanctify the food and protect those who eat it from harm (Rivero 1956:109). Common tribesmen of the Guayupe and Sac smoked a broad-leafed pubescent tobacco through the mouth or nose either singly or with *Anadenanthera*. The users would lose consciousness and experience visions they regarded as absolute truth and from which they derived binding cues for action (Aguado 1916-17, 1:797-98). The Piapoco of the Guaviare region are inveterate smokers of cigarettes made of tobacco wrapped in *tauari* (*tabari*).

*Tauari* is obtained from the whitish inner bark of the tree *Couratari guianensis* Aubl. belonging to the Lcycythidaceae. The laminated fiber is cut in long strips wide enough for cigar wrappers. It has an astringent and bitter taste and, for want of tobacco, the Piapoco, like other Indians of the general region, roll "cigarettes" of *tauari* to suck on them as substitutes (Tavera-Acosta 1954:63; Chaffanjon 1889:237). Sometimes the inner portion of the bark is separated, boiled, pounded with a mallet, and exposed to the air for a few hours. In the process it becomes perfectly white and tasteless. The famous

naturalist Bates (1975:162) saw a man obtain "sixty, eighty, and sometimes a hundred layers from the same strip of bark." Ahlbrink (1931:475-77, pls., p. 128) completes the description by pointing out that the Indians cut a long piece of preferably black bark from the *Couratari guianensis*, almost two to three meters long and fifteen centimeters wide. The strip is cut to a point at one end and the point is beaten with a stick. This separates the layers. The fluffing of the laminae has to occur soon after separation from the tree as it would not succeed at a later time. To prevent them from coiling up, the loosened layers are tied together before the bundle is placed to dry in the sun. Bates also mentions the Sapucaia nut tree (*kakaralli*, *kakareli* [*Lecythis ollaria* Loefling]), of the same natural order as *Couratari*, which provides a source of similarly fine, paperlike layers of inner bark suitable for cigarette wrappers. Based on Im Thurn (1883:317), Roth (1916-17:241) explains, concerning the use of the latter, that "a long strip of bark of exactly the width required is cut from the tree with straight sides and ends. From this the outer rough bark is removed. With a thick short stick the Indian then repeatedly strikes the cut edge of one end of the inner bark with a peculiar but indescribable knack so as to separate it into a great many even-surfaced sheets."

The Saliva shaman smoked cigars containing caraña (*Protium heptaphyllum*) and blew the smoke over people and objects to purify them. Shamanic novices of the Baniwa are blown upon with cigar smoke, and shamans smoke cigars during certain rituals while simultaneously under the influence of *Virola* snuff (Saake 1959:437, 440). Ritual smoking of cigars occurs also among the closely related Baré and Yavitero.

In Greater Guiana between the Orinoco, Río Negro, and the lower Amazon cigar and cigarette smoking is prevalent among the majority of tribes. To the extreme west of this region, the Salivan Piaroa and Maco smoke long cigars of green tobacco rolled in banana leaf, and shamans puff great clouds over patients and initiates undergoing the ant ordeal (Gheerbrant 1952:52). The Panare produce their tobacco during the rainy season and throughout the year keep a sufficient supply on hand for daily consumption. Both sexes chew tobacco paste but only male shamans either drink tobacco juice or smoke cigars to officiate as medical practitioners and to communicate with the supernatural world (Dumont 1976:154). The Yecuana are heavy smokers of cigars, and both sexes indulge from an early age. For wrappers they use either maize husks or *tauari* paper (Civrieux 1959:130; Koch-Grünberg 1917-28, 3:387). Tobacco supplies are kept in tightly bound, fusiform bundles from which the leaves are peeled off according to demand. Shamans chain-smoke almost foot-long cigars during public adjurations, when smoke is blown over the practitioners and their paraphernalia prior to imbibing *ayahuasca* (*Banisteriopsis caapi*) (Koch-

Grünberg 1917-28, 3:388). The Mayongkong smoke cigars with corn husk wrappers. When on the march the men periodically kindle a fire around which they squat to prepare their cigars. A stranger who arrives at their house is offered the half-smoked cigars of several individuals as a gesture of welcome (Schomburgk 1840b:237). Among the Arecuna only the men are allowed to smoke. They smoke cigars wrapped in *tauari* and homemade pipes of clay bowls and bamboo stems (Appun 1871, 2:309). Pipes have also been observed among the other Pemon tribes (Taurepan, Camaracoto). But in the case of the Taurepan they were identified by Koch-Grünberg (1917-28, 3:57) as trade goods from British Guiana, and in that of the cane-stemmed, wooden pipes made by the Camaracoto, as recent introductions (Simpson 1940:414). More typically, the Taurepan smoke cigars of tobacco wrapped in *tauari* or maize husks. The smoke is commonly exhaled through the mouth and nose. This takes place, for instance, during curing séances at night, when practitioners smoke cigars, drink tobacco juice, and take other drugs. Taurepan women apparently refrain from smoking, whereas among the Camaracoto, both sexes of all ages, except children, smoke cigars. Bundles of dried tobacco hang from the rafters of their houses, and whoever wants to smoke helps himself to a few leaves for a cigar. Acawaio, male and female, were found to make almost continuous use of tobacco in the form of cigars (Brett 1868:276). Tobacco smoke is used in ritual blowing for the purpose of causing illness and death. In a benevolent way smoke is blown as a preventive measure, to effect a cure, or to bring otherwise good fortune (Butt 1956:41, 45).

The Arawakan Wapishana of southern Guyana and adjacent regions of Brazil smoke cigars of tobacco with *kakareli* (*Lecythis ollaria*) wrappers, blowing the smoke mostly through the nose (Schomburgk 1922-23, 2:32). The harvested tobacco leaves are hung to aerate under the roof and are tied into fusiform bundles before they become too dry. Cigars or cigarettes of the desired length are made by stripping the leaves from the midribs and placing them into a piece of *kakareli* bark some ten centimeters wide and from fifteen to thirty-eight centimeters long. The wrapper was said to add a delicate flavor to the tobacco. Smoking is done mainly by men when sitting about talking, and rarely, if ever, when they are at work. Women seldom smoke but sometimes take a puff from a friend's cigar (Farabee 1918:46). Wapishana shamans cure by swallowing smoke and drinking tobacco juice (Mussolini 1944:139). The same is true of Macushi shamans, who use a hollow jaguar bone to blow clouds of tobacco smoke into their patient's face (Im Thurn 1883:347). Macushi cigarettes, smoked for magico-religious purposes by the shamans and hedonistically by their fellow tribesmen, are made of tobacco rolled in *kakareli* bast (Schomburgk 1922-23, 1:2).

In the late 1950s the Waiwai, under pressure from missionaries, seem to have abandoned the use of tobacco. Traditionally, however, and up to that time, they had been smokers of cigars made of homegrown tobacco wrapped in the bast of two different kinds of trees, locally known as *irimaru* and *awiyuro* and identical, most likely, to the variously mentioned species of *Lecythydaceae*. Fibers from the same bark were used to tie the cigar along its length in two or three places (Yde 1965:57-60). After harvesting the plants, Waiwai men would string up leaves by their stalks on a cord and leave them for about a week inside the house to wind-dry them. Then they were bundled and wrapped in palm leaves for storage high under the roof. Ordinary men enjoyed smoking cigars for recreational purposes, whereas shamans employed cigar smoke as a magical and ceremonial agent. In curing, smoke was blown over patients, and religious practitioners used cigars to summon their tutelary spirits or to prepare themselves for celestial flight. They also offered tobacco smoke to secure the aid of spirits, such as the Father of Peccary, for instance, who himself smokes and who blows smoke over shamans to grant special favors (Fock 1963:28, 126). Of the Taruma we know that they smoke during funeral ceremonies (Chaffanjon 1889:68). The Atorai probably smoke cigars like the Wapishana by whom they have been absorbed and assimilated (Farabee 1918:45-46, 132).

The Cariña of the Barama River of Guyana use tobacco for smoking purposes only in the course of everyday life, whereas tobacco juice is drunk in shamanic context. Smoking is done by means of cigars with the tobacco rolled between the palms to a pencil-like cylinder and then covered with a strip of Sapucaia bark (*Lecythis ollaria*) twenty-five to thirty centimeters long. The wrapper is secured at each end and in the middle of the cigar by thin threads of the same bark, stripped from the edge of the cover. Tobacco smoke is blown by sorcerers to produce illness and death and by friendly shamans to cure patients from pain caused by such malevolent acts (Gillin 1934:338-39). Shamans of the northern Arawak of Guiana smoke cigars for curing purposes, and men, before retiring at night, make one or two cigars to have them ready for the next morning. The cigars are stored within easy reach between the scale lines of their hammocks (Roth 1916-17:242).

The Carib-speaking Patamona and Caribisi (Cariña) smoke cigars, and both sexes of the latter are known to smoke from an early age (Schomburgk 1842:192).

Of the Carib of Guyana (Cariña), Im Thurn (1883:317-18) says that "every Indian man, and nearly every boy, smokes." They grow tobacco in their provision fields and dip the harvested leaves sometimes in honey. Hung up under the roof of the house until they are partly dry, the leaves, arranged side

by side, are eventually tied in bundles. As the bundles dry, the string holding them together is drawn increasingly tighter. To produce a cigar, the Indian takes half a leaf and wraps it in a piece of Sacupaia bast (*Lecythis ollaria*) or the inside skin of a manaca spathe (*Euterpe* sp.). According to Ahlbrink (1931:453), the Carib of Surinam (Cariña) plant two kinds of tobacco, one of wide leaves (*tamu*) and one of pointed leaves (*yari*). To make the tobacco strong, the ribs and the leaves are punctured with a sting-ray barb. The harvested leaves are dried by first holding them over a low fire, then by hanging them for one night over the fire, and finally by placing them in a covered basket. Among the Cariña of Surinam, only the men make use of tobacco, that is, in the form of cigars. Those of the common man are about twenty centimeters long while those of the shaman are usually much longer. A one-meter-long cigar is proffered by a courting youth's father to a prospective father-in-law of his son. Visitors are also greeted by the offer of a cigar. For cigar making the tobacco is rolled in *tauari* bark paper (*Couratari guianensis*) and tied at several places with bast fibers spliced off from one of the lateral sides of the papery bark. Coll (1903: 500) also mentions the use of bark from *Bignonia inaequalis* DC. (*Arrabidaea inaequalis* [DC. ex Splitg.] K. Schum.) as a cigar wrapper.

Shamans among the Carib of Surinam (Cariña) are initiated with tobacco juice and hallucinogenic *takini* latex (*Helicostylis tomentosa* or *H. pedunculata*). To retain their shamanic power in subsequent years they smoke cigars. Ingesting tobacco in this fashion endows the shaman with the power of the benevolent tobacco spirit, a power which lodges in the hand of the practitioner, who, in curing, strokes and fumigates the patient's body with tobacco smoke.

Also for the Maroni River Carib (Cariña) tobacco is associated with a spirit believed to be as powerful as the spirit of the *takini* tree (Kloos 1970:117). As a rule, tobacco is no longer grown by these Indians, although shamans may still continue the practice for medicinal purposes. Their long cigars are made with a bark paper wrapper. In tobacco trance shamans undertake heavenly journeys and communicate with good and evil spirits. Tobacco smoke when blown by the shaman serves as an agent of purification of objects, foods, and people. In his role as a curer, the shaman of the Maroni River Carib blows over and massages with tobacco smoke the patient's body in order to expel the pathogenic spirit (Kloos 1968:4; 1971:212-13). As is customary among other Cariña groups, Galibi men smoke foot-long cigars on such social occasions as welcoming a visitor (Roux 1935:208-09), and shamans fumigate their patients with tobacco smoke (Arnaud 1966:47-48). In the late nineteenth century, the Carib of Cayenne (Cariña) were reported by Prudhomme (1798:312) to smoke cigars of tobacco rolled in bark paper. Shamans of the Wayana or Rucuyen (Cariña)



of Surinam and French Guiana, after attracting their tutelary spirits with cigar smoke, cure by blowing the smoke of their cigars over the patient (Coudreau 1893:206; Crevaux 1883:116-17; Gocje 1941:93, 95).

Living in enclaves among the Cariña of the Guianese littoral are a number of Tupían and Arawakan tribes known to be smokers of cigars. The Tupían Emirillon and Oyampi make cigars of tobacco wrapped in *tauari* bast (*Cou-ratari guianensis*). During an initiation period of six months shamanic apprentices smoke such cigars to placate the Supernaturals (Arnaud 1971:23; Perret 1933:78). And among the Arawakan Palikur, the ritual cigar, together with the ceremonial rattle, belongs to the essential paraphernalia of their shamans. These men learn how to smoke and how to blow tobacco in the course of their initiation and, subsequently, practice it in their role as healers. Tobacco smoke is also blown for malevolent purposes by Palikur sorcerers (Arnaud 1970:16). According to tribal tradition an otherworldly, primordial shaman made use of tobacco smoke to replenish the male population of the tribe after it had been annihilated by warfare and pestilence (Fernandes 1948:211). Ritual smoking of cigars up to thirty centimeters long is reported for the Tirio, to whom they are indispensable for shamanic curing (Friel 1960:19). Aramagoto men smoke cigars during ritual dancing (Figueiredo 1961:5), and Aparai shamans make use of cigars some forty centimeters long to blow smoke over their patients (Carvalho 1955:43; Crevaux 1883:299). Aparai shamans use cigars during healing séances, blowing tobacco smoke into their cupped hands before passing them, without touching, over the hurting parts of their patient's body. To cure toothache they reverse the burning cigar and, with the lighted end in their mouth, blow a stream of tobacco smoke into the open mouth of the patient. Ordinary Aparai men smoke somewhat smaller, twenty-centimeter cigars with *Lecythis* covers at mealtime (Speiser 1926:136-37, 184). Although snuff of tobacco or parica plays an important role among them, Ingarune men smoke cigars of tobacco for ceremonial and, probably, for hedonistic purposes (Friel 1961:12). Parucoto shamans blow smoke from cigars over their patients. Although recreational smoking seems to be common among the Kashuiena, tobacco is nowadays almost entirely traded rather than planted. Their shamans, however, consider tobacco endowed with magical properties and employ it in curing and in secret ceremonial dances. The cigars consist of tobacco wrapped in bark paper (Polykrates 1957:138, 146; 1962:82-83). Kahuyana men smoke tobacco abundantly during the preparation of curare poison, and warriors take cigars on their way to engaging the enemy (Friel 1953:261; 1957:531). The Guaimara (Wayumara) were found by Koch-Grünberg (1917-28, 3:337) to smoke cigars, as do the Karútana, Katapolítani, and Tariana (Koch-Grünberg 1911:124). Leaving the greater Guiana area, we may add that

the men of the now extinct Manao made cigars of twenty to thirty centimeters long by wrapping tobacco in *tauari* bark paper or in a "leather-like leaf," probably the spathe of manaca palm (*Euterpe* sp.). To have them available when needed, the men carried these long cigars tucked under their waistband. Shamans blew tobacco smoke from large cigars over their patient's body (Martius 1867, 1:587).

Turning now to the Vaupés Valley of northwestern Brazil and southeastern Colombia, we meet with what Wallace (1972:195, 206) referred to as the "gigantic cigar" (fig. 22). In the course of his mid-nineteenth-century expedition, the naturalist observed that "the cigar is eight or ten inches long and an inch in diameter, made of tobacco pounded and dried, and enclosed in a cylinder made of a large leaf spirally twisted. It is placed in a cigar-holder about two feet long, like a great two-pronged fork. The bottom is pointed, so that when not in use it can be stuck in the ground." At the beginning of the present century (1904-05) Koch-Grünberg visited the same general region of the northwest Amazon and collected several of the gigantic cigars, which measured thirty-five centimeters long and four centimeters thick (Hartmann 1974; 1981:228-29). They are conico-cylindrical in shape, and the wide end serves as the mouthpiece. Mentioned in the literature as the basic material for the spirally twisted cigar wrapper are tobacco leaf, *tauari*, banana and maize leaves, and leaves of wild plants.

Characteristically associated with the giant cigar of the Tucano-speaking tribes of the northwest Amazon is the already mentioned cigar holder (resembling a large tuning fork) and, indirectly, the ceremonial bench (Zerries 1970).

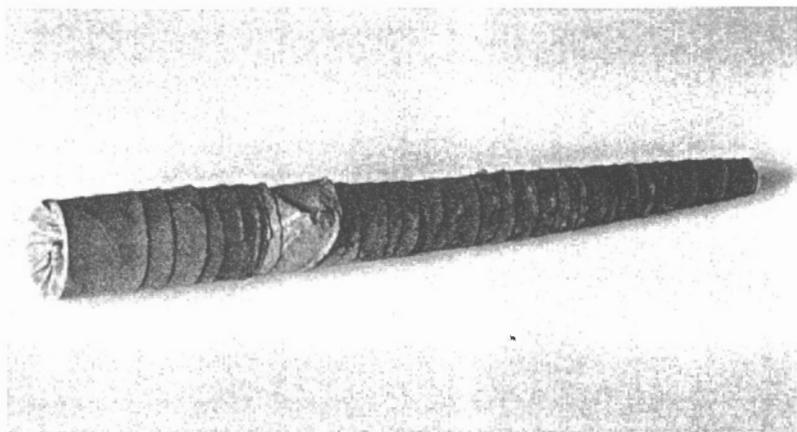


Fig. 22. Large ritual cigar, Tucano (length, 32.5 cm).

Regarding the former, Reichel-Dolmatoff (1971:118) details, "The object is some fifty centimeters in length and consists of three parts: a long, tapering point that forms the lower part; two flat, hourglass-shaped bodies superimposed one upon the other in the center, and a bifurcation that consists of two thin prolongations between which the cigar is secured" (fig. 23). There are formal variations on record for the cigar holders as revealed by the text and illustrations of Hartmann's monograph on the subject (Hartmann 1974; 1981: 230; see also Roth 1916-17:241). But cigar holders of the kind here under discussion are restricted in distribution to the northwest Amazon, where they are associated with Tucano-speaking tribes. The cigar holders, erroneously identified by Ernst (1886:540 ff., fig. 3) as "clubs" of the Puinave, are an

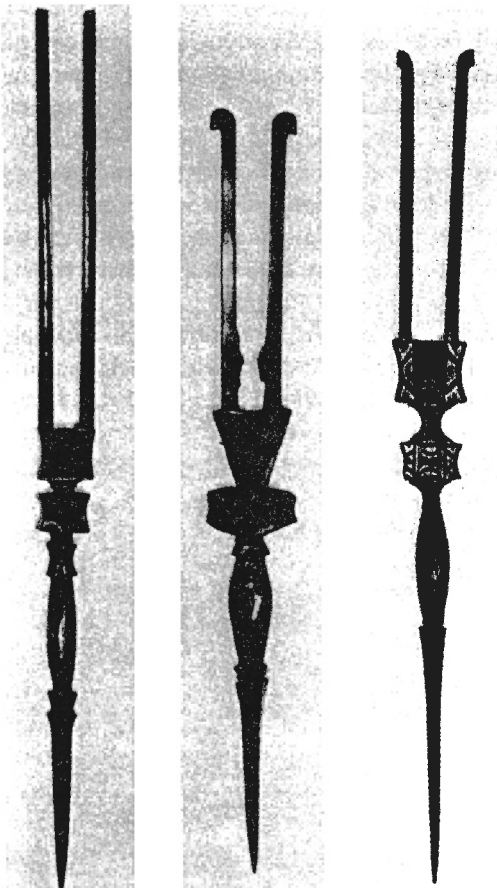


Fig. 23. Holders for large ritual cigars (Tucano).

exception to this rule of general distribution and mark, should the provenience of the pieces be correctly recorded, the northernmost extension of the cigar holders' distribution along the Inírida River (Hartmann 1974:178-79), especially since the object identified as a cigar holder of the Yecuana is actually a ceremonial weapon (Wilbert 1972:148).

When smoking with the aid of a cigar holder, the Indian places the cigar at the lower third of its length between the bases of the two prongs (fig. 24). What sustains the cigar in this position is not so much the tension of the prongs but the increasing thickness of the lower part of the conical cigar itself, which jams the cigar between the prongs and prevents it from slipping through. Given the width of the lower end of the cigar, the smoker, holding the fork by its handle, brings the wedged-in cigar in front of his mouth. But rather than enclosing the butt end with his lips for airtight suction, he presses his slightly parted lips against the end of the cigar for a less hermetic connection, allowing for controlled hyperventilation.

The ceremonial bench, the distribution of which in the northwest Amazon coincides with that of the giant cigar and the cigar holder, is a "little wooden stool carved out of a single block and fitted with a concave sitting platform" (Reichel-Dolmatoff 1978:23; cf. Hartmann 1975*b*; Zerries 1970). Besides offering comfort and rest, the stool provides the smoking man who occupies it a self- and world-centered space for meditative communication with the metaphysical powers. Thus, tobacco, cigar holder, and ceremonial bench function as complementary means of conveyance to the otherworld.

Among the Tucano proper, according to Silva (1962:227), men and women love to smoke, although many local groups seem to rely for their tobacco supply on compensation in kind that they receive for work rendered outside the tribe. Only in less acculturated settlements is tobacco still planted, albeit on a small scale. The men place the plucked leaves, including the stems, into a very hot pot and reduce them, under constant stirring, to a dark mash. This is formed into small, round cakes which, when sun- and smoke-dried, become hard (fig. 25). Someone intent on smoking a cigar crumbles up parts of this tobacco and rolls them into a piece of *Couratari* paper or *Musa* leaf (Silva 1962:227). From the Aiary River, Koch-Grünberg (1921:85, fig. 57) describes how the tobacco leaves are separated from the stems and dried on a sifter near the fire. Dampened and dried again, they are eventually pounded in a mortar. By means of a strong band of bast and several smaller strips, the leaves are formed into a flat, circular brick and sun-dried while the elastic press is tightened up from time to time. Men smoke for recreational but primarily for ritual purposes, and shamans blow tobacco smoke from cigars in curing. In either case the lighted cigar is smoked by a group of men who pass it around in



Fig. 24. Tucano man seated on ceremonial bench holds ritual cigar with cigar holder.

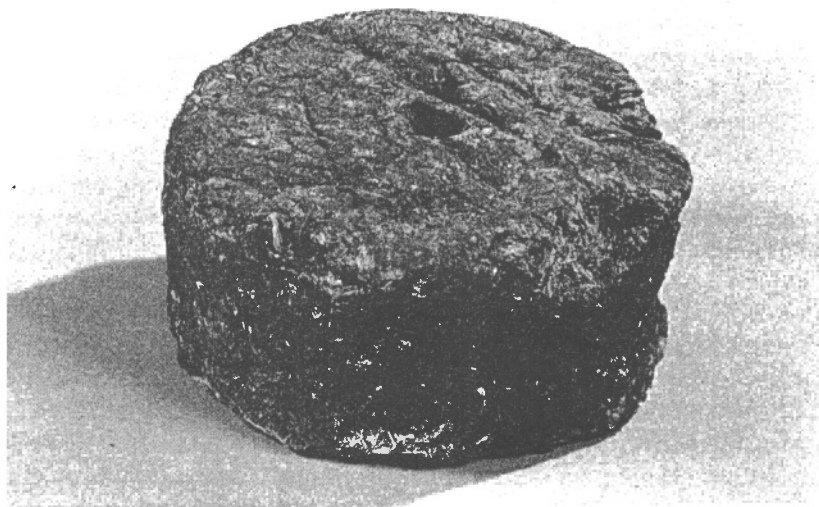


Fig. 25. Cake of pressed tobacco leaves, Río Yapurá (diameter, 12 cm).

a cigar holder. The local chief taking the first puff, a cigar of sixty to ninety centimeters suffices for the entire community at a sitting. Women are excluded from this ritual smoking of purportedly very potent cigars. Both sexes, however, enjoy industrial cigarettes (McGovern 1927:219–20). Smaller cigars held in the prongs of a cigar holder are also smoked by individual men, who enjoy them while lying in their hammocks; periodically they reach out and stick the cigar holder and cigar into the ground nearby. Ritual blowing of tobacco smoke as a means of curing and purification in general is a common practice among Tucanoan tribes, and tobacco smoke is inhaled in connection with *ayahuasca* (*Banisteriopsis caapi*) to heighten the hallucinatory effect. Sorcerers known as blowers blow tobacco smoke at victims to cause paralysis, illness, and death (Goldman 1948:797). The Omagua of the Upper Amazon also smoke large cigars, using for a wrapper the bark of the *Tabebuia chrysostricha* Standl. tree of the family Bignoniaceae, *tauari* (*Couratari* sp.), or corn husk leaves (Hopp 1958:141; Tessmann 1930:54). Formerly, smoking was said to have been restricted to the men, but in recent times both sexes have been observed to indulge in it. Pipe rather than cigar smoking seems to be preferred by both men and women. Modern Omagua are said to chew tobacco while smoking.

Weather-makers, in contradistinction to cigar-smoking shamans of the tribe, make use of the pipe, a practice that relates them to their colleagues among the Warao of the Orinoco Delta, where the same distinction is made by the different kinds of ritual specialists (Girard 1958:177 ff.). Omagua shamans take tobacco in conjunction with *parica* (*Virola*) and *ayahuasca* (*Banisteriopsis caapi*).

*Parica* is also used by the *Passé* neighbors of the Omagua, among whom tobacco smoking seems to be less prevalent. A large cigar circulates among men for recreational purposes, women smoke for medicinal purposes, and shamans use cigars in exorcistic rituals (Martius 1867, 1:522). Tucuna Indians smoke the pipe, and shamans practice sorcery while smoking (Tessmann 1930:561, 562). Tobacco cultivation among the Yucuna has diminished considerably according to Cartagena (1942:39-40). But long cigars of tobacco rolled in *uva de monte* leaves (probably *Pourouma* sp., Moraceae) are smoked by participants in ritual dances. Only the men smoke among the Muinane and Ocaina. They plant and harvest their tobacco and roll it into cigars, employing banana leaves for a wrapper (Tessmann 1930:332, 551). Ocaina shamans use cigars for ritual purposes (Girard 1958:160). Tobacco growing is also considered to be man's work by the Orejón, but they smoke it both as cigars of banana leaf or in pipes. The pipes are made by the women of the tribe, who use either clay or wood in their manufacture. Girard (1958: 174) describes the Orejón pipe bowl as conical in shape; wooden bowls are made of *aguaje* wood or fruit, and pipe stems of wood or bird bone. Nowadays, only shamans smoke the traditional pipe.

In the area of the Peruvian and Ecuadorian Montaña, the Witotoan tribes (Bora, Ocaina, and others), besides making much use of *ambú*, also smoke tobacco in the form of cigars. The latter are either rolled in tobacco or dried *Musa* leaves. Traditionally, the men who appear to have cultivated and harvested the plant were also the only ones to have consumed it (Tessmann 1930:319, 322, 551, 561). Since the turn of the century, however, Witoto mores concerning the use of tobacco seem to have been changing. Women were reported by Whiffen (1915:105) to be growing, harvesting, and drying tobacco, but its consumption was still taboo to them. Finally, in more recent times women are supposed to partake both of tobacco smoking and tobacco licking (Uscátegui Mendoza 1956:45). Among the Bora (Miraña) tobacco planting and harvesting are restricted to the men, who smoke it wrapped in leaves of *uva de monte* or, if that is unavailable, plantain leaves. Formerly reserved for ritual occasions only, cigar smoking seems to be practiced now also recreationally (Cartagena 1942:40). Only the shamans of the Yagua smoke cigars of tobacco rolled in a dried banana leaf. Nowadays, these Indians obtain tobacco mostly through trade, and only those living a long distance away from the Marañón River prepare their own small tobacco fields. A shaman uses the tobacco smoke

from cigars for curing purposes. From a special pouch carried by his apprentice he selects a cigar that is properly dried and will burn evenly. After having consumed about one-quarter of the cigar in deep puffs, the shaman blows large mouthfuls of smoke over the afflicted part of the patient's body. It is believed that the smoke softens the skin so as to allow the practitioner to extract the pathogen through energetic suction (Fejos 1943:91–92). Among the Yagua-speaking Yameo, ordinary men smoke cigars and shamans drink tobacco juice. The shaman of the Amaguaje (Encabellado) cures with tobacco smoke, blowing the smoke and sucking out the “thorns” of illness (Steward 1948*b*:747). The Auishiri (Abijera) of the Marañon cultivate much tobacco because they all like to smoke (Dirks 1879:123). Like the Tucano of the Vaupés, the linguistically related Siona use the giant ceremonial cigar, but they also make smaller ones for nonritual use (Uscátegui Mendoza 1961:222). Tobacco is the only intoxicant employed by the Mayoruna, according to Steward and Métraux (1948*a*:555), and only the men use it. Rather than as cigars or in any other form, they smoke tobacco in pipes made of a hollowed-out fruit of the tucum palm (*Astrocaryum*) and a stem of spider monkey bone (Tessmann 1930:272). The cigar of the Chamicuro is made by rolling tobacco into an outer leaf of an unspecified plant or a piece of dried banana leaf. Traditionally, only the men used to smoke, but recently women have also acquired the habit. Of equally recent origin seems to be the adoption of the pipe, made of wood, by the Chamicuro. Simacu (Itucale, Urarina) men are said to be heavy smokers of cigars, starting the practice at an early age. Only men cultivate tobacco, whose dried leaves are rolled in a wrapper of *Tabebuia chrysotricha* bark (*tahuari*), Bignoniaceae, or banana leaf. During their initiation, shaman novices smoke such cigars every day. Later, as practicing healers, they use the cigar as a diagnostic agent and remedy. The Zaparo and the linguistically related Andoa smoke cigars with banana wrappers. Shamans take *ayahuasca* (*Banisteriopsis caapi*) to see better but believe that their true power derives from tobacco. Also the Murato (Roamaina, Kandoshi) and Shapra shamans smoke cigars for power and cure by blowing smoke (Steward and Métraux 1948*a*:650). Sharpa men smoke cigars during certain rituals (Girard 1958:210–11). Omurana cigars are made with banana wrappers. Tobacco cultivation, harvesting, and consumption are male privileges among these Indians. The latter is true for the Cocama, who smoke cigars and the pipe. Tessmann (1930:72) suggested that the pipe is of more recent standing with the Cocama than the cigar, and both sexes seem to smoke the pipe. Cigars are made with *Tabebuia chrysotricha* (*tahuari*) or banana leaf wrappers and are smoked by the common men of the tribe and by curers and sorcerers. Weather shamans blow smoke from prayed-over cigars to dispel a storm (Villarejo 1943:124); curers may also use a pipe



when practicing. Girard (1958:197) observed that Cocama curers swallow the smoke from their pipes and do not blow it over the ailing body parts of their patients. However, others have seen them practice the latter, using cone-bowled, composite pipes up to fifteen centimeters long (Villarejo 1943:125, photo). Cocama pipe bowls are made of *palo de sangre* (Girard 1958:196). Characteristic of the Montaña region, the bowls of Cocama pipes are sometimes decorated with incised geometrical, zoomorph, or anthropomorph designs (Espinosa 1955:501). The stems are frequently made of hind or monkey bone (Girard 1958:196). Both the cigar and the pipe occur also among the Aguano, where smoking is mainly practiced by the men and less frequently by the women. Cigars are made with cover leaves of tobacco or banana (Tessmann 1930:260).

Although the Jivaro and the related Aguaruna take tobacco mainly in liquid form, they nevertheless prepare also cigars of tobacco wrapped in banana leaf or maize husks. They say that cigars with cover leaves of either kind are guaranteed to burn evenly and have a pleasant odor, which occasional cigars, with other leaves as wrappers, do not (Davidson MS). Another method of inhaling smoke employed by the Jivaro and Aguaruna is somewhat reminiscent of the Cuna practice of smoke blowing. Among the former tribes it entails the preparation of a big cigar. Karsten (1926:323) explains that the Jivaro use such a cigar during the "tobacco-smoking feast" celebrated to initiate a youth into manhood. The candidate has the smoke blown into his mouth by another man. Similar rituals of tobacco inhaling are performed by the Jivaro to assure good luck on the hunt. A group of young men, under the supervision of an experienced elder, congregate to inhale tobacco smoke for a three-day period. During this time "they alternate the smoke-inhalation sessions with hunting in the forest with blow guns" (Harner 1973*a*:60). Both Jivaroan groups use bamboo tubes for this purpose, lighting the dry tobacco leaves inside and taking turns blowing the smoke into each other's mouths. Hunting luck is assured through this procedure only if the receiver inhales or swallows the smoke in its entirety (cf. Rivet 1907:601-02, fig. 21) (fig. 26).

Among the Shebero tobacco is traditionally planted and consumed by the men. However, smoking by the common man and woman appears to be a more recent development inasmuch as tobacco in the form of cigars may traditionally have been smoked only by ritual specialists (Tessmann 1930:425). Nowadays, pipe smoking is the most prevalent reported form of tobacco consumption among the Shebero. The cigar of the linguistically related Chayavita is made by using a tobacco cover leaf or a wrapper of banana leaf. Only men cultivate and consume tobacco, either in the form of cigars or in wooden pipes. Shamans smoke and chew tobacco, a practice they assume in



Fig. 26. Jivaro smoke blowing.

the course of their initiation (Tessman 1930:387, 391). Among the Lamista tobacco is mostly cultivated by men and only rarely by women. Cigars are rolled by using a tobacco cover leaf or a piece of banana leaf. They are smoked principally by men and less frequently by women. In addition both sexes smoke the pipe, whose bowl is made of a moriche fruit (*Mauritia* sp.) and whose stem is a piece of hollow bone. Clay pipes are recent introductions. The more traditional way of smoking in the form of cigars is associated more typically with shamanic practices. Initiates to the office are given daily several cigars, which they smoke while ingesting various kinds of hallucinogens, like *Banisteriopsis caapi* and *Brunfelsia grandiflora* D. Don (Tessmann 1930:226, 229). Also, the Cholon smoke cigars and pipes made of wood with a bone stem; clay pipes are a recent introduction (Steward and Métraux 1948a:604).

The Panoan tribes of the Peruvian Montaña use few intoxicating plants, although tobacco seems to have come increasingly into general use among them. It is taken mainly in the form of cigars and in pipes. Shipibo cigars are said to be twenty-five centimeters long (Marcoy 1869, 1:655). Pipe tobacco, especially if destined for use in ritual context, is kept in a small calabash

decorated with geometrical designs or in a large snail shell (Waisbard and Waisbard 1958-59:71).

Pipes in the typical cone-bowled, Montaña style are manufactured of either wood or clay (fig. 27). The former are made by reaming out a section of the *chicachica* palm (*Geonoma interrupta*) (R. & P.) Mart. and by inserting in the midsection of the conical bowl a stem of spider monkey bone (Carneiro 1962:34, photo, Amahuaca; Cooper 1949:530, fig. 183, Conibo). But whether of wood or clay, the pipe bowls are often decorated around their upper half either by incised (wood) or painted (clay) delicate geometrical designs. Pipes observed by Izaguirre Ispizua (1922-29, 8:162) in the general region around 1790, consisting of a hollow reed with a small, tubular mouthpiece, have not been reported for Panoan tribes in more recent times. Equally rare are pipes with double stems as documented for the Cashinawa by Girard (1958:221). According to this ethnographer double-stemmed pipes were used simultaneously by two individuals who absorbed the smoke through their noses. Smoking among Panoan tribes is practiced by men and women, who indulge in it for social and recreational reasons. But tobacco smoke, whether produced by cigar or pipe, is also of deeply rooted magico-religious significance (Girard 1958:264). Weather shamans on the Ucayali blow tobacco smoke to divert thunderstorms. Curers use it as a therapeutic agent, and the tobacco shaman of the Shipibo, called *muraya* (seer), smokes tobacco to procure design patterns, which he passes on to the women for artistic execution on pipes, ceramic vessels, and in textiles, among others (Gebhart MS).

Campa men smoke tobacco preferably in pipes like those of the just described Panoan tribes. From the time of their initiation, Campa curers know how to dose themselves heavily with tobacco smoke and *ambíl*, which they ingest simultaneously with *ayahuasca* (*Banisteriopsis caapi*) and coca (*Erythroxyc-*

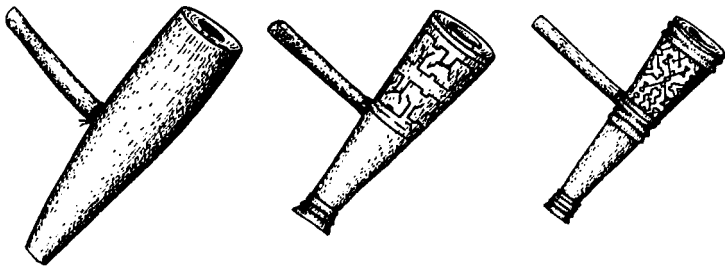


Fig. 27. Conibo conical bowl pipes of wood, plain and decorated, with stems of bird bone.

*lum*). Often designated "tobacco eaters," shamans blow tobacco smoke for prophylactic and therapeutic reasons (Torre López 1969, 4:2-8, 20). Even after death their souls are believed to live by smoking (Tessmann 1930:93). The pipe is smoked socially by men who used to assemble, for instance, with tobacco pipes and chicha bowls to plan a strike against the enemy (Grandidier 1861:134). Cone-bowled pipes are also smoked by the Piro Indians, who make the twelve-centimeter-long bowl from hard, black palm wood and a stem of similar length from a monkey's leg bone (Matteson 1954:75). Fry (1889, 1:52) mentions composite pipes made of a palm fruit (*coco*) bowl and a horn (*asta de toro*) stem, which they held as their prime possessions. Pipes are primarily smoked for magico-religious purposes. Matteson (1954:75) observed that before rolling the tobacco leaves into cigars they sprinkle them with the juice of cashew fruit mixed with "wine." In addition, they powder the bark of a certain tree referred to as "tobacco mixer" and mix it with the tobacco leaves. The Machigenga smoke cone-bowled pipes just like those of their Arawakan and Panoan neighbors (Steward and Métraux 1948a:548).

Of the tribes between the Juruá and Tapajos basins of northwest Brazil, the Yamamadi and Arara plant their own tobacco and smoke it in pipes and as cigars, and the Mura and Parintintin smoke cigars. Chapacuro shamans and probably those of their linguistic relatives, the Huanyam and Nape, when curing smoke a good number of cigars whose tobacco has been sprinkled with the granules and powder of some resin, probably caraña (*Protium heptaphyllum*) (Métraux 1940a:126). Tacana myths make reference to tobacco smoking (Hissink and Hahn 1961).

Cigarette smoking among the Tupari appears to be of relatively recent introduction, tobacco snuffing being the most traditional form of consumption. Through their association with Brazilian rubber collectors some Tupari are said to have become inveterate smokers, preferring trade cigarettes from Pará or Bolivia to their traditional cigarettes made with corn husk wrappers (Caspar 1957:157). Similarly, they have learned to appreciate pressed tobacco of the Brazilians. Tobacco smoking is practiced only by the men, who make a cigarette by holding an air-dried leaf for a short while over the fire, crumbling it between the hands, and rolling it in a piece of corn husk. The cigarette is held together by means of one or two strands of maize leaf. Besides smoking for pleasure, high-ranking shamans smoke in ritual context (Caspar 1975:177-78). Mojo (Baure) shamans used cigars in curing, blowing the smoke on the patient (Métraux 1942:77-78), and the Itonama Indians smoked cigars of homegrown tobacco (Nordenskiöld 1919:92).

Tobacco is the only intoxicant used by the Siriono (Ñeozé), among whom men and women, including postpuberty youths, smoke it in clay pipes. In

Holmberg's (1960:37) estimation tobacco does not seem to have been aboriginal with the Siriono, who may have adopted it around the turn of the century. The Indians plant tobacco regularly with their crops. Women harvest the mature leaves and put them on a mat to dry over a slow fire. The leaves are then crushed in the hands and stored in a small calabash secured with a corncob stopper.

Like tobacco production, the manufacture of clay pipes is also in the hands of the Siriono women. Using an egg-shaped lump or disk of clay tempered with carbonized seeds of the *motacú* palm, the artisan forms the pipe in one piece. Using her forefinger, she starts by making an indentation in the clay until it adopts the form of a small cup. From this she molds a conical bowl, sometimes with a slightly flaring rim. When working on the bowl the woman leaves at the bottom a small quantity of clay which, upon finishing the bowl, she fashions into a tapered stem. This is accomplished by pushing a stick of even thinness through the bottom of the bowl and then working the clay gradually over the stick until the desired length of the conical stem has been reached. At the bottom of the pipe, where the base of the stem widens into the bowl, as it were, the woman leaves a small projection, or spur, which the Siriono refer to as a teat. For a few days, the molded pipe is let to dry in the open air and then fired. The slender stick within the stem is either removed before firing or left to burn out in the firing process to produce the smoke channel (Holmberg 1960:13; Rydén 1941:96-97). Sometimes the molded bowl is given a polished finish by means of a land snail. Internally, however, the bowl remains unpolished, and its porosity permits absorption of the combustion moisture, yielding a dry smoke. This is a particularly significant aspect in view of the fact that the pipe, with its stem obtusely angled from the bowl, is often enjoyed by a smoker lying in his hammock, sitting in an upright position, or standing with his head tilted way back on his neck, so as to prevent the tobacco from falling out of the bowl (Radwan 1929:294; Wegner 1934:19). The finished, one-piece Siriono pipe is about twenty centimeters long. It appears to be a direct descendant of the simple tube pipe, which accounts for the tilted bowl, characteristic of a good number of American tube pipes.

When used, the pipe is filled with green, almost pulverous tobacco and lighted by placing a piece of live coal on top of it. The smoke is sucked into the buccal cavity but not inhaled into the lungs. It is enjoyed in short puffs, after each one of which the pipe is withdrawn and the smoke blown out through extended lips. Stopped-up pipes are cleaned with a straw from a *motacú* frond.

Smoking among the Siriono almost always takes place in the house while the smoker is resting in the hammock. Here the pipe is enjoyed by a single smoker or possibly by a group of several men, who pass it from one to another.

Offering the pipe to a fellow man is considered a sign of friendship (Lunardi 1938:198). Hunters returning from the forest almost always smoke to stave off hunger before the meal. Although smoking is mainly a secular activity, there are some indications that it may also be of magico-religious import to the Siriono. Smoke seems to be blown prophylactically over potentially endangered individuals, and, during a drinking feast, when the men consume increased amounts of tobacco, the women sing impromptu songs about pipes and tobacco which may be indicative of the drug's possible magical significance (Cardús 1886:282; Holmberg 1960:37).

D'Orbigny (1945, 4:1402) observed a Yuracare woman smoking (a cigar?) to blow smoke over the leg of a female patient suffering from rheumatism. The Máue smoke cigars wrapped in *tauari* (*Couratari* sp.) bark paper. On festive occasions the men take tobacco in this form together with parica (*Virola*) snuff and such beverages as cassiri and yoco or guaraná (*Paullinia cupana* H.B.K. var. *sorbilis* [Mart.] Ducke). The Máue, around the middle of the last century, held sort of a monopoly of the latter stimulant in their area along the Amazon, exporting it widely (Castro 1941:183; Cooper 1949:547-49, map 12; Pereira 1954:71, 98). The Mundurucú grow an excellent tobacco among the charred pieces of wood in their gardens, they consume it only in the form of large cigars wrapped in *tauari* (*Couratari* sp.) bark paper. Their shamans blow clouds of tobacco smoke over the sick person in an attempt to cure through object extraction. But they do not attempt to reach an intoxicated state during the cure. A nicotine trance is only achieved by a shaman whose objective is to feed the owners of game with manioc gruel (Hartt 1881:126; Murphy 1958:32-35, 40). Sorcerers blow tobacco smoke to send destructive jaguars against their victims (Murphy 1958:110). The Nambicuara (Tapoya) are very fond of smoking cigarettes by powerful and deep inhalations (Vinhaes 1941:117). They cultivate a mild and pleasantly scented tobacco of very small leaves which, upon harvesting, are dried between two pieces of wood and stuck into the house thatch. Tobacco dust is also stored in special calabashes (Roquette-Pinto 1938:235). To prepare a cigarette, the Indians crush a leaf between their hands and roll it in a *tauari* (*Couratari* sp.) bark wrapper tied with grass or bast. On journeys the Nambicuara take along their tobacco calabashes filled with tobacco dust or tobacco leaves and sit down, occasionally, around a fire to enjoy a smoke. Imported rope tobacco is smoked as cigarettes rolled in pieces of newspaper. Pipes are of recent introduction. Shamans cure by blowing tobacco smoke over the bodies of their patients (Métraux 1942:169). The Apiacá smoke cigars, and among the Paressi, men, women, and even small children like to smoke cigarettes, the stronger the better (Wavrin 1926:19). The Huari grow tobacco and, around the turn of the century, they were observed smok-

ing it in large cigars. Nowadays, they seem to prefer Western cigarettes (Nordenskiöld 1924*b*:227). The Pauserna smoke tobacco wrapped in maize husks. Pipes found among them by Snethlage (1935:284) were of Western origin. The Pauserna press their tobacco into bars fifty centimeters long, in which form they use it as a trade item. Snethlage (1935:284) suspected that these Indians are light smokers themselves and that they make no ceremonial use of tobacco. Métraux (1942:107), however, speaks of Pauserna ceremonies during which the leader blows tobacco smoke over the dancers and the stamping tubes (used to mark the rhythm of the dance) to consecrate them. Together with the Siriono the Guarayu, their neighbors, who also speak Tupían, are an exception in the Amazonas region inasmuch as they smoke the pipe rather than the common cigar. They appear to have migrated, in historic times, from the south to their present habitat (Frödin and Nordenskiöld 1918:33), and it is likely that the Guarayu clay pipe points to Gran Chaco influence. Large clay pipes and rolls of tobacco are kept in a sanctuary. As among the Pauserna, at the beginning of certain rituals the master of ceremonies blows smoke from one of the pipes over the participants and over the dancing tubes they are about to use (Cardús 1886:79–80). Shamans also blow tobacco over the bodies of their patients (d'Orbigny 1945, 4:1230). The Chiquito and Churupa plant tobacco, which they smoke in cigars (Sepp 1768, 2:216; Nordenskiöld 1919:91).

The Chané and the Chiriguano (Tapieté) plant tobacco on a small scale and are not great smokers. The harvested tobacco leaves are dried over the fire and rolled into small cigars with wrappers made of maize husk. The cigars or cigarettes are kept in a twilled basketry etui. The pipe is used only rarely, although it appears to be of prehistoric origin in their area. Nordenskiöld (1912*a*:182) unearthed a pre-Hispanic pipe at Caipipendi and depicts a specimen with a special handle in front of the tobacco bowl. Among the ancient Chiriguano, says Giannechini (Romano and Cattunar 1916:169–70), tobacco is reserved for shamans and adults, the former using it in connection with weather magic and ritual curing.

Among the Gê tribes of central Brazil tobacco, although probably known since pre-Contact times, plays only an insignificant role in any ritual context and is used primarily for hedonistic purposes. In 1930 Snethlage (1930:157) was of the opinion that tobacco cultivation among the Gê went back no more than one hundred years. Even today, tobacco is rarely planted, and the Indians rely mainly on trade tobacco (Lowie 1946*b*:509; Nimuendajú 1939:88). The Northern Cayapó, for instance, smoke their purchased tobacco in pipes either carved of Brazilian mahogany wood (*Cariniana legalis* [Mart.] Kuntze) or made of clay. However, of either material, the bowl is conical in shape and provided with a wooden stem that is inserted toward its lower end. Both the pipe's form

and name point to the Carajá, from whom the Cayapó apparently adopted it by way of Brazilian intermediaries (Krause 1911a:388–90, fig. 241a, b). All the Gê-speaking Timbira, including the Apinaye and Canella, are passionate smokers and universally make use of the cigarlike smoking funnel consisting of a spirally rolled palm leaflet filled with tobacco. The funnels, since the sixteenth century, are better known from the Tupí of eastern Brazil, where they pertain to an elaborate complex of tobacco use. Farther south, the Gê-speaking Suya offered Steinen (1886:205) a large cigar, which was probably a similar smoking funnel. Southern Gê, for example, the Shavante and Sherente, smoke the pipe, and in more recent years, the latter were also found to plant tobacco themselves (Maybury-Lewis 1965:42). Ritual smoking was mentioned for the northern Canella-Gê, where shamans perform a collective treatment against epidemic disease by smoking tobacco from a funnel (Lowie 1946b:512–13).

The Tupían-speaking Chipaya were believed by Snethlage (1921:416) to have smoked big cigars wrapped in *tauari* (*Couratari* sp.) bark paper, although modern cigarettes of tobacco and paper were certainly appreciated at the time of his visit with them. Nimuendajú (1919–20:1004) seems to have seen the *tauari* cigars still in use among the Chipaya, where young men swallow their smoke during shamanic initiation and where religious practitioners are never without them. High-ranking shamans had their cigars prepared and lighted by their students, who dried the fresh leaves of homegrown tobacco on a stick over the fire and crumbled and rolled them in a piece of *tauari* bast. Shamans cure and seal bonds of friendship between adult men by blowing tobacco; they are reputed even to have the power to revive the dead through tobacco blowing.

In the Xingú basin tobacco smoking is practically universal. The Yuruna smoke long cigars of tobacco rolled in *tauari* bark paper (Steinen 1886:261). In order to “really” smoke and to be accepted for full participation in the men’s circle, Trumai youths must undergo a special initiation ceremony. Although uninitiated young men know how to smoke and occasionally do so, their smoking is referred to by the adults of the tribe as “lying smoking” (Murphy and Quain 1955:86). “Seeing smoking” is practiced at night by anyone who wants to receive messages, warnings, and visions. Tobacco narcosis is a privilege of the shaman, and only certain older men become visionary shamans. Healers cure by blowing tobacco smoke over their patients (Lévi-Strauss 1948a:346; Murphy and Quain 1955:63, 65, 66). According to Oberg (1953a:24, 25) tobacco plays a major role in Camayura daily life. It is cultivated only by the men, who are also its exclusive users. At the beginning of the rainy season they place the tobacco seeds along the edges of their manioc fields, where within four months they grow into mature plants. The harvested leaves are hung from



a cleft stick to air-dry, cut into narrow strips, and stored in small baskets. To prepare a cigar twenty-five centimeters long and the thickness of a pencil, the tobacco is rolled in spiraling strips of leaf from several different unidentified trees, and the end tied with moriche fiber. The cover leaf adds a strange flavor to the cigar (Oberg 1953*a*:25); one kind at least was said to be odoriferous, and Weyer (1955:114) suggested that the cover leaves might enhance the narcotic effect of the cigar. The Camayura, although very fond of tobacco, are light smokers and restrict the use of tobacco largely to shamanistic ritual. Shamans are said to smoke for pleasure, but they consider tobacco a medium to enter into contact with the spirit world. They blow smoke in healing and use tobacco for malevolent purposes. Sometimes there are female healers who, in practicing their art, form an exception to the male rule of tobacco use (Weyer 1959:119). Belonging to the Camayura linguistic group, the Aute also make use of cigars.

The Arawakan-speaking tribes of the Xingú headwaters smoke cigars. In Waurá mythology tobacco smoke functions as a means of reviving the dead (Schultz and Chiara 1971:124). Yawalapiti chiefs receive their guest formally while smoking cigars (Petrullo 1932:139). The Custenau, according to Steinen (1886:183), plant their own tobacco and smoke it in the form of cigars. In the Mehináku language the words for smoker and for shaman are identical. Most mature men are shamans or hope to become one. During their nightly tobacco palavers shamans smoke long cigars of tobacco wrapped in some leaves. They cure by blowing tobacco smoke over their patient's body (Gregor 1977:76-80, 333-39).

Among the Cariban tribes of the Upper Xingú region, Cuicuru (Anauqua) shamans cultivate their own tobacco and use it primarily to enter into trance during their curing séances. The leaves of the harvested plants are dried for several days by hanging them from the house beams. When still partially green, they are toasted on a clay griddle and crushed to be rolled into small cigars. For wrappers the Indians take the leaf of an unidentified plant which they roll in spiraling form around the tobacco (Carneiro and Dole 1956-57:179). Shamans may smoke for pleasure, but when officiating as healers or religious practitioners they reach a critical stage of nicotine intoxication through deep inhalations in rapid succession. They massage patients with smoke, blow smoke to dispel pathogenic agents, and divine after ingesting massive doses of cigar smoke. Among another major Carib-speaking group of the Upper Xingú, the Kalapalo, tobacco is said to be used for profane and ritual purposes. Both sexes apparently smoke, and Tolksdorf and Lang (1956:272) noted that women smoke even more than men do. Bundles of harvested tobacco leaves are dried in the house and crushed between the hands before use. Shamans grow

tobacco behind their houses and use it in the form of cigars for ritual blowing and curing (Basso 1973:37). Tolksdorf and Lang (1956:272) also mention pipes as being in use among the Kalapalo, their bowls made of the fruit of the piteira tree and their stems of bamboo. The Indians are said to smoke only within the settlement and when resting during the hunt or while on the trail.

Farther south from the Xingú group of tribes, the Bacairi grow tobacco and store it in the form of spindle-shaped bundles. For cover leaf they use the foliage of an unidentified tree. Before they wrap tobacco in it, they hold the green leaf over the fire for a short while until it gives off a balsamy odor. The smoke is inhaled. Bacairi men smoke nightly when they congregate for tobacco palavers on the village plaza, passing the aromatic cigar from mouth to mouth (Schmidt 1905:97-98; Steinen 1886:68-69). Tobacco has also a ritual use among the Bacairi, as shamans smoke heavily prior to performing a rite (Oberg 1953a,b:72).

The Tupinamba of the Brazilian coast enjoyed tobacco smoking as a daily pastime but employed it also on ceremonial occasions (Thevet 1557; see earlier quote). Another sixteenth-century observer, Purchas, noted that the Tupinamba regularly spent part of the day and night smoking their palm leaf cigars until it made some of them "dizzy and drunk" (Purchas 1906:425-26). And Léry (1951:163), writing at the close of the sixteenth century, agreed with Thevet that tobacco among the Tupinamba was used by the men only, whereas Purchas mentioned that elderly and sick women smoked at least for medicinal purposes. D'Évreux (1864:276) reported in the early seventeenth century that the Tupinamba were always with "the herb *petun* [tobacco] in their mouths and they inhale the smoke through the mouth and exhale through the nose. . . . They smoke after their meals and in the morning, in getting up, or in the evening before going to bed." Thus smoking was a common secular practice among these Indians. In addition, it occurred in formal council meetings, where a cigar was passed from man to man after the chief had initiated the round. Shamans, finally, smoked cigars and cane pipes to communicate with the supernatural world in what amounted to a deeply rooted tobacco religion.

The common man and woman of the Tembé and Guahahara (two groups of Tenetehara Indians) enjoy smoking thirty- to fifty-centimeter-long cigars as a favorite pastime. However, cigar smoking also plays an important role in their religious life, and shamans practice it in the treatment of illness and in ceremonial life (Wagley and Galvão 1948a:145-46, pl. 14; 1949:41). Nowadays, a good part of the needed tobacco supply is obtained by way of Brazilian merchants, but Tenetehara living in remote areas continue to grow tobacco locally in sufficient quantities to satisfy their own demand and to allow for

intervillage trade according to a long-standing tradition. Accordingly, native tobacco is an important crop to these Indians, who sow it in baskets placed on elevated platforms and replant the sprouts either in the garden, in small plots near the village, or even in the very center of the village plaza.

In the harvesting process, the larger nervures are removed and the leaves strung up to dry. The dry leaves are stacked on top of each other and fashioned into tubular bundles. The bundles are wrapped in leaves of the *sororoca* plant (*Phenakospermum guyanense* Endl.) and tied with a vine. To make an ordinary cigar, some tobacco is cut off the bundle, shredded, and wrapped in *tauari* (*Couratari* sp.) bark paper. Shamans, though, prefer making their forty- to fifty-centimeter-long ritual cigars from whole dry leaves rather than from shredded tobacco. Also, while the common man and woman may smoke hashish (*Cannabis sativa* L. var. *indica* [Lam.] Small & Cronq.) and women small clay pipes, tobacco smoked in the form of cigars is the only traditional drug for shamans. They reach a state of tobacco intoxication through deep inhalations and swallows of smoke (Wagley and Galvão 1949:41-42; 1961:114-15, 118-21).

Huxley (1957:195) describes how an Urubú man who had learned the art from a Tembé master smoked a shamanic cigar by "taking the smoke with great sucking gasps right into his lungs, working his shoulders like bellows to get as much smoke in as possible in the quickest time, and then out again, suck blow, suck blow." In doing this, the smoker does not seal his lips tightly around the end of the cigar, but rather leaves some space to allow for an increased intake of the gas-air mixture into the lungs. An accomplished Tembé shaman can smoke five or six *tauari* cigars forty-five centimeters long in one night. Urubú shamans, however, traditionally smoked tobacco in clay pipes rather than in giant cigars of the Tembé kind (Huxley 1957:192).

To the Asurini tobacco is one of the more important crops in their gardens. They smoke it in cigars that vary in length between twenty and fifty-five centimeters. For cover they use *tauari* (*Couratari* sp.) bark paper. The cigar is tied together at three or four places to prevent it from unrolling. Sometimes the *tauari* wrapper is filled only with bast of the same kind and smoked without tobacco (Lukesch 1976:90). Bundles of up to fifteen long cigars are carried along on journeys, each cigar being tied with a thick cotton thread. The threads may be decorated with small, tubular beads of bone, and the cigars are often painted with small black spots arranged in straight lines along their entire length (Lukesch 1976, fig. 64). Smoking is a social rather than an individual event. Sitting in a circle, men, women, and children pass one of these long cigars around, each participant taking a few puffs before handing it to the neighbor. The smoke is not inhaled but kept in great amounts in the mouth

and then exhaled. The Asurini smoke cigars on certain formal occasions to demonstrate friendship and fraternity, and they blow tobacco smoke for the protection of their departing guests. Shamans go into a mild, nicotine-induced trance in the course of healing séances and certain other ceremonies (Janguoux 1978). The Manajé and Amanaye are local groups of the same tribe, sometimes also referred to as Ararandewa. Like so many of the Tupían-speaking peoples of the general region, they smoked large cigars thirty centimeters long and more than one centimeter thick and wrapped in *tauari* bark paper. In social smoking among men, the chief's wife may roll a cigar and give it to her husband, who lights it. After taking a few draughts himself he hands it to his neighbor to be passed around (Lange 1914:234-35; Nimuendajú and Métraux 1948:202).

The Carajá of the middle course of the Araguaia River and Bananal Island are heavy smokers, and men, women, and children enjoy tobacco in a pipe as their only available drug. Indians maintain that they adopted the practice during the first half of the nineteenth century from Brazilians who gave them seed or shoots. However, the Carajá may confuse the acquisition of tobacco with that of another plant unless the tobacco Fonseca (1867:387) saw them smoke in 1775 had been imported. Smoking also figures in Carajá mythology of the Great Flood (Balduz 1937a:202-03). Today tobacco is sown during the rainy season and harvested when the leaves start drooping. The leaves are hung up in the house to dry. When half-dry, they are rubbed between the hands so that they turn black and are then hung outside the house from a pole or from a special sloping rack until they are completely dry. Tobacco is stored in large, oblong baskets; the Carajá twist theirs into a rope, and the Yavaje, their cousins on southern Bananal, plait theirs into a braid of three strands. The latter carry the tobacco braids in woven bags or pouches of monkey hide (Krause 1911a: 258-59, pl. 61, fig. 2, 360, fig. 194). Apparently, Carajá tobacco is of a very mild sort and its aroma not particularly pleasant. That is why the Indians prefer the variety cultivated by the Yavaje, from whom they acquire seedlings to improve their stocks.

When in contact with Brazilians, the Carajá do not reject a Western cigarette. However, among themselves they smoke only homemade pipes of several different kinds. The bowl of the most simple type is made of a *jequitiba* fruit, a species of Brazilian mahogany (*Cariniana rubra* Gardner ex Miers) that is specific for the Carajá habitat and beyond, for the region of central Brazil (Lane 1950:381-82). Even the local Brazilians have been known to use the fruit of what they call the pipe tree for smoking purposes. The conical fruit, approximately seven centimeters long, is closed with a stopper. When the fruit is ripe, the stopper falls and releases the seeds. The Indian cleans the empty

capsule with a knife and smooths the outside. The exterior of this natural bowl may be decorated by either painting it red with urucú (*Bixa orellana* L.) or by incising it with geometrical patterns and a characteristic circular groove close to the rim. Bowls similar in form and decoration are made of wood. A peculiarity of the *jequitiba* pipe is that it comes as bowl and "stem" in one piece; in other words, it is a tubular pipe. The lower end of the conical capsule is somewhat elongated and perforated. It is this end the smoker takes between the teeth and lips.

One-piece wooden pipes carved after the *jequitiba* model are bottle-shaped, providing for a somewhat longer yet still relatively small built-in stem. In an attempt to lengthen the stems even further, some Carajá pipes carved of wood in the conical shape of the fruit capsule are composite in form, with an independent short stem inserted at the bottom of the conical bowl in an axial rather than angular position. And, finally, Lane (1950:385, fig. *d*) depicts a wooden pipe eight and one-half centimeters long that represents the modern, most prevalent type of Carajá wooden pipe featuring an oval but more bulbous bowl with a relatively long stem axillary attached to the bottom of the bowl and measuring some six centimeters in length. The circular groove so characteristic of Carajá pipes is retained and adorns the small bowl closer to its middle than its rim. Krause (1911a:260-61, fig. 108) noticed at the time of his visit in 1908 that the northern Carajá, who were in contact with Brazilians, were using angular, composite clay pipes with cane stems. The Indians manufactured them after the Western model, the only difference being a wide and flat underside. The bowls are decorated with geometrical designs, and some show relief-type carving on one side of the bowl (Krause 1911b:5, fig. 14). The light natural color of the clay turns black in the firing process.

To smoke the pipe, the Carajá fill two-thirds of the bowl with firmly pressed tobacco and place a coal on top. The mouth of the bowl is then closed off with the hand or a finger. By sucking the pipe many times in rapid succession, the smoker starts the tobacco burning. The coal may or may not be removed at that time. In smoking, the Indians draw the smoke in a series of rapid draughts, as if they were drinking, remove the pipe, and expel the smoke.

Modern indicators seem to suggest that smoking among the Carajá and Yavaje is a secular activity, practiced by whoever wants to smoke at whatever time. Yet, mythological and historical evidence negates tribal tradition concerning the recency of the practice. As indicated above, Fonseca, as early as 1773, mentions clay pipes in the possession of these Indians and suggests that they might have been smoked in a ceremonial way by being pointed in an easterly direction. Thus, a religious purpose of smoking might perhaps have

been contemporaneous with or antecedent to a purely hedonistic practice in Carajá history.

The immediate westerly neighbors of the Carajá, the Tapirapé, clearly do distinguish between a recreational and religious purpose of smoking, and only the men indulge in it. Tobacco is not planted in fields together with other crops, but transplanted occasionally from scattered patches around the garden and village to areas near their longhouses. It seems that tobacco patches of this kind seed themselves and do not require any special care. He who discovers a "wild" tobacco patch hastens to put a low fence around it in order to claim it for himself.

Harvested tobacco leaves are dried in the sun and stored in large braided cylinders from which they are removed and crushed between the hands (Baldu 1937*b*:107). Smoking is done exclusively in pipes of two different types, that is, tubular wooden pipes either carved or made of *jequitiba* (*Cariniana rubra*) seed pods, or tubular clay pipes. Both types are used by the common man of the tribe, while shamans smoke only tubular clay pipes, sometimes thirty centimeters long. The smoke is swallowed and then expelled in a rapid sequence of belches. Men will not undertake a journey without taking along a good supply of tobacco. Using it for recreational and medicinal purposes, they blow smoke over their limbs to rid themselves of soreness and fatigue. Shamans require tobacco in all their activities. They blow tobacco smoke to cure patients, to protect their fellow men from evil spirits, to sanctify new maize and the first honey of the season, and to exorcise any possible evil from fresh game. Shamans "eat smoke" by forcing down large gulps of smoke from their pipes to induce dreams and trance, in which state they encounter the Supernaturals. Massive doses of tobacco smoke are "eaten" by shamans and attendants during weather ceremonies, when the men become thoroughly intoxicated with tobacco smoke and are seized in trance (Wagley and Galvão 1948*b*:175-76; Wagley 1977:200-11).

The little known Tapuya and Tarairiú, a Tapuya people of northeastern Brazil, smoked the pipe, according to Ploetz and Métraux (1930:183), and their chiefs and shamans used it for ritual blowing (Lowie 1946*c*:565-66). One can assume from the evidence that the farther east one goes in Brazil the less was tobacco grown by the majority of non-Tupian tribes. Thus, Wied-Neuwied (1820-21, 2:34) knew to report that the Botocudo had learned how to smoke from the whites and, indeed, by the time of Manizer's visit in 1915, though avid smokers, they had not as yet taken to planting tobacco themselves. Rather, in the absence of tobacco they smoked other plant materials (Manizer 1919:260; Wied-Neuwied 1820-21, 2:34). In their tribal lore sky-dwelling wonder-

workers supply a supplicant with a red tobacco pipe and excellent giant leaf tobacco (Nimuendajú 1946:102). The Puri-Coroado smoked tobacco in clay pipes or bamboo tubes, and their shaman blew tobacco smoke from his pipe over a mother and infant in childbed and conjured spirits at night while blowing clouds of smoke (Métraux 1946*d*:525, 529).

The Bororo Indians, occupying a central region of the subcontinent, smoke cigars and prefer strong to mild tobacco. Cook (1909:420) notes that they roll the pulverized tobacco into an unidentified leaf and that in the absence of tobacco they substitute certain other leaves. However, cigars rolled in corn husk wrappers have also been reported for the Bororo (Steinen 1897:400, 425). Shamans smoke cigars in curing and suffer convulsions when entering into contact with the spirit world (Mussolini 1946:79). Immediate neighbors of the Bororo, the Guato, smoke tobacco in cigars and pipes.

To the tribes of the Gran Chaco tobacco represents a commodity in high demand and pipe smoking the preferred method of consuming it (figs. 28, 29). Most tribes plant their own tobacco, albeit in small quantities. The dried leaves are crushed in the hands and transferred to the pipe without any further preparation. Toward the end of the last century, it was reported that Zamucuan-

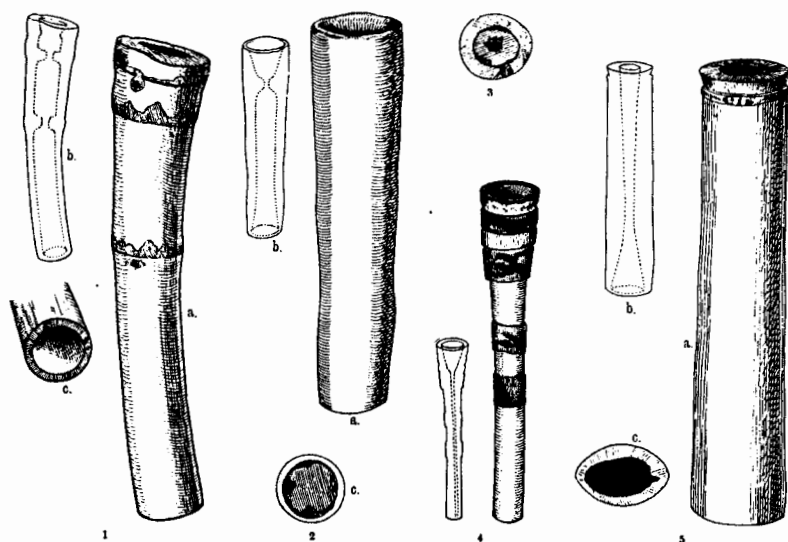


Fig. 28. Tubular pipes from the Gran Chaco: 1, Chorote (cane); 2, Mataco (wood); 3, Mataco (mouthpiece of a cane pipe); 4, 5, Chorote (wood).

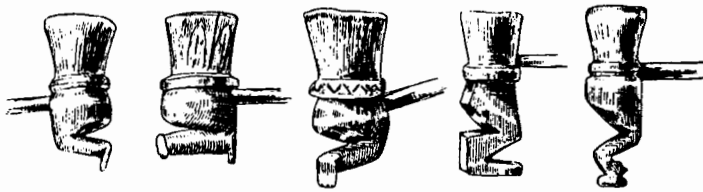


Fig. 29. Bent-knee effigy pipes from the Gran Chaco (Guaicuru).

speaking tribes like the Siracua and the Chamacoco did not plant their own tobacco, but depended rather on trade and booty for their supplies. Siemiradzki (1898:133) saw them use crudely carved wooden pipes of palo santo (*Bulnesia sarmienti* Lorentz ex Griseb.). Typically, these pipes consisted of a cylindrical bowl and an angularly inserted reed stem. In the 1920s, Baldus (1931:38) still saw this kind of pipe in use among these Indians, although Paraguayan cigars and cigarettes had also become appreciated. In addition, homemade cigars were rolled whenever paper was obtainable. Traditionally, smoking was done primarily by men and elderly women. Nowadays, both sexes smoke freely, the older generation favoring pipe and cigar, the young cigars and cigarettes.

The Tereno, a local group of the Guaná (Chana), raised several varieties of tobacco to satisfy their own demand and that of their Mbayá masters (Métraux 1946b:346). Pipes of clay were smoked on solemn occasions. Anthropomorph wooden effigy pipes feature a conico-cylindrical bowl (torso) with a basal appendage in the form of genuflected legs. The upper and lower parts of the bowl and handle are separated by a waistband, so to speak, carved in relief. The stem is inserted at an angle below the band and in the crotch of the kneeling figurine (Koch 1902:5, fig. 4b). Other Tereno pipes are hourglass-shaped, the upper conico-cylindrical part serving as the bowl, the lower shorter part as a handle. Around the midsection, between bowl and handle, are two horizontal parallel wheels like gears or spurs. A wooden stem is inserted sideways at the level of these serrated bands (Márquez Miranda 1940-41, 2:318). Using palo santo wood (*Bulnesia sarmienti*), the Caduveo also carve effigy pipes of the Tereno kind (Boggiani 1895:38). Other types show a full male or female figure, with its head usually serving as the bowl, and its body, from the shoulders down, as the handle. The stem is inserted obliquely into the nape of the figurine. Yet another variant of Caduveo effigy pipes features a cylindrical bowl with a circle of full human figures in bas-relief in a bent-knees stance, so



characteristic of the primitive arts of Oceania and Africa (Campbell 1974:138-39), and with their backs against the outer wall of the bowl. As with the previous type, the stem enters the bowl obliquely through the upper part of the bowl, at the level of the necks of the figurines (Ribeiro 1980:299-300, fig. 54). Caduveo smokers maintain that pipes carved of palo santo (*Bulnesia sarmienti*) give tobacco a better taste, which, considering the use of the resinous heartwood as incense, may very well be an accurate statement. Only men seem to smoke tobacco, whereas women prefer to chew it (Sánchez Labrador 1910-17, 1:168, 277-78).

The Lengua grow small quantities of tobacco in their gardens. After picking the mature leaves and while they are still green, the women strip them from the central rib and pound them in a mortar. The pulp is moistened with saliva and formed between the hands into small circular cakes. Exposed to the sun or to the fire, they become quite hard; they are strung together through a hole in the center and hung up for storage in the house. The tobacco is of a dark brownish-green color and is relatively mild. Nearly all men, women, and children smoke a pipe. But the Lengua are not heavy smokers and share a pipe rather than smoke one entirely alone (Grubb 1911:73-74; Hawtrey 1901:287).

Lengua pipes vary in form from ordinary tubular pipes made of a hollowed-out stem or a length of bone (Schmidt 1939) to elaborately carved forms with bowls in the shape of human figures and faces, birds, and animals (Grubb 1904:70-71). Some of the effigy pipes are of the type featuring a conico-cylindrical bowl and a bent-knee handle. In Lengua the name for "pipe," whether made of clay or of wood, is homonymous with that for "earth." For either kind of pipe, however, stems are of reed or of the core of a certain cactus. Old pipe stems are carefully preserved for times of scarcity when tobacco supplies run low; then they are chopped up and the nicotine-saturated pieces smoked as a tobacco surrogate. A small, sweet-scented moss and the bark of the incense tree are also substituted to this end (Grubb 1904:70-71; 1911:73). The Sanapaná of Lenguan affiliation smoke bent-knee effigy pipes of wood, and the same is probably true of the Kaskihá, although the latter also smoke cigars when away from home (Koch 1902:5, fig. 4e; Baldus 1931:68). The Mataco-speaking Suhín are known for beautifully carved pipes with Janus-faced bowls and conically rounded-off, necklike appendages serving as handles, the latter being worked with a twisting groove motif (Hawtrey 1901: pl. 40). The obliquely inserted stem perforates the neck below the chin of one of the two opposed heads. Chorote men plant and women harvest tobacco. However, their brand is of an inferior quality so that trading for commercial tobacco is keenly pursued. The Indians like to mix their tobacco with the shavings of an aromatic tree bark (von Rosen 1921:221).

Chaco tribes of the Pilcomayo and Bermejo regions smoke their tobacco primarily in tube pipes of bamboo, wood, or clay. Composite angular pipes do occur, but they are rare and of decidedly secondary importance. Similar to the Lengua tube pipe made of a hollow piece of bone, the Chorote equivalent made of a bamboo section is an elementary and crude device of rare occurrence. To make it the Indian chooses a straight stem or one that is slightly bent at one of its natural knots. Two cuts are made in the stem, one a short distance above and another a longer distance below the knot. The funnel-shaped compartment above the knot serves as the anterior tobacco container of the pipe, the part below the knot as stem and mouthpiece. The septum of the knot is provided with a narrow aperture which connects the two compartments and serves as the smoke hole. In smoking, the stem section of the pipe is plugged with a fiber or moss filter that traps any possible ashes and the juices of combustion.

Wooden pipes of the Gran Chaco Indians are usually carved from hardwoods such as guayacan (*Caesalpinia melanocarpa* Griesb.), palo santo (*Bulnesia sarmienti*), quebracho colorado (*Schinopsis balansae* Engl.), and chonta palm (*Astrocaryum* sp.). The various types of wooden tube pipes are occasionally also executed in clay.

Generally speaking, tube pipes are less than twenty centimeters long and less than two centimeters thick. Technically, they may feature an anterior, funnel-shaped compartment serving as tobacco retainer and a one-centimeter-wide smoke channel that leads from the bottom of the tobacco chamber to the mouthpiece. Other tube pipes have two more or less funnel-shaped compartments connected at their apexes by a longer or shorter smoke channel. Accordingly, the smoke hole of the mouthpiece may be round, rhombic, or rectangular.

Tube pipes in use among the Chorote, Mataco, Toba, Pilagá, and possibly others show a number of formal differences (Boman 1927-32:330, figs. 35-38; Raffo and Massazza 1949:237-48; von Rosen 1924:136-40, figs. 153-61). The simplest type is a straight, hollowed-out piece of stem with a smooth exterior and either devoid of decorations or else incised with a fine ring near the distal end of the tube where the tobacco chamber meets the body of the pipe. Occasionally, there are pyrographic markings around the distal field so defined. Then there are cylindrical tube pipes which are slightly tapered from both ends toward the middle, where there is a single or double band of wood carved in relief and pyrographically darkened or otherwise ornamented. Other cylindrical pipes show a depression around the bottom of the tobacco chamber featuring one or more continuous or discontinuous bands in juxtaposition. Cylindrical pipes with more or less pronounced flaring tobacco chambers are

also decorated with a series of bands. The bands are spaced apart and carved in relief; they are pyrographed or made of tin to set them off from the yellowish wood of the pipe. Apparently, all these tubular and cylindrical pipes are fashioned after their natural prototype, the bamboo cane with incised rings and relief bands simulating the typical knots of the plant.

A second class of Chaco tube pipes is modeled after the fish. Piscine tube pipes have a conical or elliptical upper part emulating, partly or entirely, the form of a fish's body, and a flat, triangular, and flared-out lower part, resembling the caudal fin of a fish. Where the two parts meet, the pipe is decorated with one or more bands carved in relief and, possibly, fire marked. Other such bands or annular incisions may also occur in the forward section of the tube. Sometimes the body of the pipe acquires a bulbous shape, spherical or ovoid, with a short, cylindrical distal projection and/or a narrow, flaring rim. Variations of the proximal end may show two more or less triangular fishtail patterns in a row with the smoke hole exiting at the median end of the lower one that serves as mouthpiece.

Some piscine tubular pipes—those of the Chorote, for instance—are also carved in the form of an entire fish with the fusiform body and flanged tail separated by a narrow wooden band in relief. The entire pipe is pyrographically decorated with anatomical detail such as eyes, scales, and fins. The cavity of the tobacco retainer is bored obliquely through one of the flat sides in the forward section of the pipe, more or less where the gills would be located (Boman 1927–32:333, fig. 35). Yet other pisciform tube pipes are sculptured by the Mataco. The triangular mouthpiece is separated from the spinal-shaped body by a band of tin. There are two lateral, handlelike attachments that, raised from the body of the pipe, emulate the pectoral fins of a fish.

Besides tube pipes there are single-piece elbow and composite angular pipes in use among the Gran Chaco Indians. Both types, however, seem to be modeled after European prototypes, albeit under retention of traditional detail. Thus, the Pilagá make an elbow-pipe with a stem shaped like that of a fishtail tube pipe (Raffo and Massazza 1949:243, fig. 14). Composite angular pipes feature cylindrical clay bowls that on rare occasions are decorated with incised bands of rhombic, scatterings of cruciform and triangular, geometric, and zoomorph (mammals and birds) designs (Raffo and Massazza 1949:246, fig. 16). The stem is made of reed. Other composite angular pipes of Gran Chaco Indians are cone-bowled and decorated with pyrographic designs on the bowl, reminiscent of the Montaña types (Mataco, Boman 1927–32:333).

The Mataco smoke the pipe for recreational purposes, and their shamans use it in curing. Men and women smoke the pipe among the Toba, although

Toba-Pilagá women start smoking only when adult and elderly (Palavecino 1933:533).

The Payagua Indians make pipes consisting of a large cylinder of hardwood and a short mouthpiece that is either carved as a single-piece appendage or inserted into the otherwise closed proximal end of the tube. Under early Jesuit influence the Indians had taken to decorating the cylinder of their tube pipe with intricate carvings depicting biblical scenes, mainly of the Garden of Eden and Adam and Eve (Koch 1903). Short versions of this kind of pipe are used for everyday purposes, while shamans and chiefs use longer ones on ritual and ceremonial occasions. As early as the beginning of the nineteenth century Azara (1809, 2:139) told of such tube pipes in use by Payagua shamans, describing them as being thirty centimeters long and as thick as a fist. Around the middle of the nineteenth century Demersay (1860-64, 1:368) found these pipes to measure fifty centimeters in length. He expressed the opinion that they were reminiscent of the gigantic funnel-shaped cigars of the Tupinamba and others. Since the time of Koch's (1903:117-24) publication on the subject, it is known that profane tube pipes of the Payagua may measure five or ten centimeters in length and between two and one-half and five and one-half centimeters in diameter. The mouthpiece is about two centimeters long. Sacred tube pipes were found to be between twenty-three and fifty-four and one-half centimeters long and between three and one-half and four centimeters wide. Their mouthpiece is from one or two to almost five centimeters long. In addition to the carved designs, tube pipes may be decorated with brass nails and mirror fragments. Ceremonial pipes are greatly treasured by the Payagua and passed on from one chief to the next (Koch 1903:118). Besides the pipe the Indians also smoke cigars of an undisclosed kind (Siemiradzki 1898:149).

Around the middle of the eighteenth century Baucke (1942-44, 3:210) found the Mocoví more fond of tobacco chewing than of smoking, and smoking was more frequently practiced with pipes than with cigars. Mocoví pipes are tube pipes made of a finger-long piece of cane, carved wood, or clay. Clay pipes have a circular mouthpiece and an obliquely cut distal end which retains the tobacco. Wooden and ceramic pipes are funnel-shaped. The Mocoví store their tobacco as dried and pressed conical bundles tied together with a strong elastic fiber rope. For chewing and smoking the Indians cut a desired amount of tobacco from the broad end of the bundle. It is through this evenly shaven end that they pour honey to cure the entire bundle and to produce a finely flavored brand of tobacco. The Chunupi and Vilela, who also smoke tube pipes, pound their still green tobacco in a mortar, adding a little water. The mashed tobacco is rolled into orange-sized balls and dried in the sun for

conservation and storage. The Indians smoke their tube pipes when lying stretched out on their backs (Mallat de Bassilan 1892:34). Among the Guaicuru, Taunay (1931:61) found only the men to be passionate pipe smokers whereas women, apparently, preferred to chew tobacco.

As pointed out, the Mbayá received a good part of their tobacco from their Guaná serfs. In more recent times they were also found to cultivate "black tobacco," and both men and women go out during the rainy season to sow it. It is stored in the form of rope tobacco and is smoked by both sexes in clay pipes with a *taquari* cane stem. Religious practitioners cure through fumigation and ritual smoking (Cadogan 1958:93).

The Guaraní, according to Keane (1909, 1:477), are inveterate smokers of pipe and cigar. Men, women, and children can be seen smoking, and mothers are said to use cigars even as pacifiers for their infants. However, tobacco smoke is also used in magico-religious context (González 1967:11; Müller 1928:501) (Chiripá). The Tembecua smoke the pipe (Hanke 1947:605). Both cigar and pipe are smoked by the Caingua, whose pipe consists of a conical bowl with a short smoke tube angularly attached to it; a reed serves as stem. Axially modeled onto the forward side of the bowl is a handle in the form of a vertical spur wheel or cock's comb. The middle section of this handle is perforated with a hole large enough to accommodate a finger of the smoker (Outes and Bruch 1910b:93, fig. 72). Guayaki shamans smoke pipes for ritual blowing and to communicate with the gods (Clastres 1974:25, 113). In Caingang culture tobacco plays a rather inconspicuous role. Métraux (1946c:469) observed that although a great many stone pipes have been found in their area, the Caingang have not been observed to smoke. However, the same author reported (1946c:470) that the Caingang shaman consulted the spirits by smoking a pipe and by surrounding himself in a cloud of smoke. Other than a word for "tobacco," Caingang-speaking Wayana have not been reported to make use of the plant either, although the native designation for tobacco seems to relate it to ritual festivals (Serrano 1936:45). The Genaken adopted the habit of smoking through contacts with the Mapuche and, subsequently, from the population of European descent (Serrano 1947:190).

Tobacco was equally absent from Tehuelche culture before the eighteenth century. Subsequently, it was used by men, elderly women, and sometimes children, although visitors to the tribe around the turn of the present century still found two out of three Tehuelche not to be smokers at all (Prichard 1902:101). Tobacco is mixed with about 80 percent of calafate (*Berberis* sp.) shavings, with other herbs, or with "Paraguay tea" (Musters 1911:273). The calafate wood gives the tobacco an acrid taste but allows it to burn with a very blue smoke. The Tehuelche smoke this blend of tobacco in homemade moni-

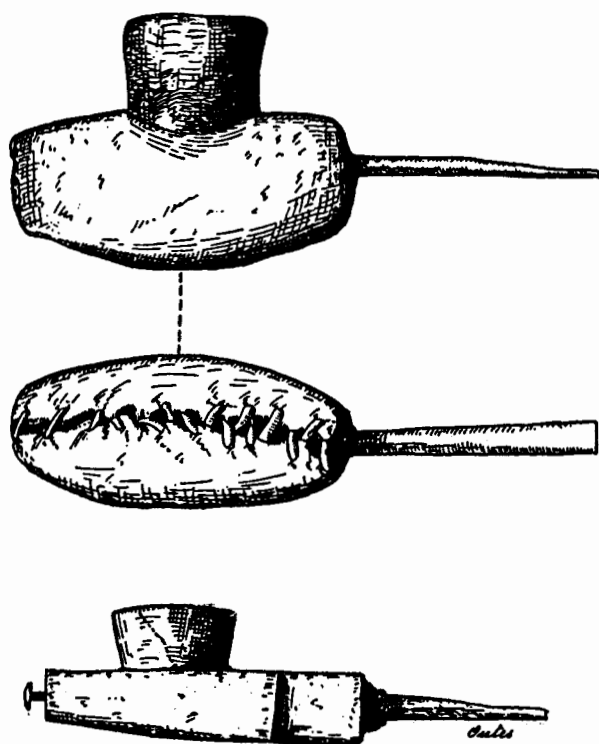


Fig. 30. Monitor pipes (Tehuelche).

tor pipes of stone or of wood fitted with stems of wood, silver, or copper (Cooper 1949:530, fig. 182; Lista 1975:117),<sup>3</sup> (fig. 30). Prichard (1902) observed a silver pipe with a silver tube for drinking mate as a stem. "When about to smoke," explains Musters (1872:203), "the Indians invariably puff a portion to each cardinal point, muttering an incantation; they then lie prone on the ground, and inhale several puffs, which produces a state of torpor or insensibility, lasting perhaps one or two minutes, when they take a drink of water and recover their senses." Occasionally this toxic state progresses into convul-

3. Monitor pipes derive their name from the resemblance they bear to heavily armored ships with a low freeboard and a revolving turret on top (cf. Cooper 1949:530, fig. 182). The part likened to the ship's hull serves as a stand or handle of the pipe, that resembling the raised turret as the bowl. The stem is inserted at one end of the navicular body.

sions. Bourne (1853:94-95) witnessed a social occasion when a dozen or more assembled to smoke in the above fashion, and the author suspected that there was a ritual intent behind the meeting. The Tehuelche seem to have adopted not only tobacco itself from their Mapuche neighbors but also their mode of smoking it in monitor pipes. The monitor pipe is known ethnographically only from these two southern societies and archaeologically from two seemingly pre-Columbian sites of southeastern Bolivia (Nordenskiöld 1931:91).

Araucano (Mapuche) monitor and angular pipes were made of clay, stone, or wood. Stone and wooden pipes were probably made by men, but the manufacture of clay pipes was in the hands of women, who fashioned them from the same clay they used in pottery making. Angular pipes consist of a conico-cylindrical bowl and a short stem of the same material; a hollowed-out *colihue* stalk was inserted into the end of the pottery stem. The actual mouth end was somewhat flattened (Hilger 1957:316). Nowadays, Argentine-made cigars and cigarettes are also smoked.

Old informants seem to remember that in the very early days the Araucano traded with people west of the Andes a substance in the form of plugs and sticks that was finely cut and smoked (Hilger 1957:316). In historic times, tobacco supplies were obtained from passing ships and, more recently, through government rations. But the general scarcity of standard brands curtailed the practice of smoking on modern reservations. To preserve their tobacco supplies, the Indians resorted to different kinds of additives. Mentioned in the literature are the leaves and stalks of maqui (*Aristotelia maqui* L'Her.), a mixture of the leaves of maqui and rauli (*Nothofagus procera* Oerst.), the leaves of wild potatoes (*papa silvestre*), triturated stalks of the boldo shrub (*Peumus boldus* Molina), and possibly others. In the sixteenth century the Spaniards introduced tobacco cultigens into Chile and, as of the seventeenth century, the Araucano cultivated them in their own gardens. Tribal chiefs planted tobacco in separate plots and sold their especially strong brand to people in their region. Tobacco was kept in pouches of animal skin, the skin of rhea necks, and the scrotum of cattle (Guevara 1911:275-76). The southern group of Araucano (Huilliche) preserve their tobacco by pounding the leaf when still green and forming the trituration into short and thick cylindrical rolls. This is a particularly strong tobacco when crumbled up and smoked (Latham 1924:692).

As a pastime activity smoking is widespread among the Araucano, especially by men in their twenties. It used to be that male teenagers smoked at the risk of inciting their father's anger; today, however, boys of fifteen smoke with impunity. Women are usually married or over sixty years old before they take up smoking, and children are not permitted to do so at all (Hilger 1957:316). Men smoke individually on festive occasions or when sitting around the hearth

of their homes. To induce intoxication they also smoke lying down on their stomachs to swallow the smoke with great fruition. Social smoking is done by passing one or more cigars around in a circle of men. Ceremonial smoking is practiced by men in their homes, on festive occasions such as during agricultural fertility rituals, and by shamans as part of their various prophylactic and curative activities. Monitor pipes, especially those with two smoke holes at opposite ends of the navicular body, are commonly used for ritual purposes. The shaman sucks the smoke from one end and his assistant blows at the other. In this fashion smoke can be inhaled by the hyperventilating shaman through the mouth and nose simultaneously, producing the desired result more quickly.

Throughout the Andean highlands smoking of tobacco was of very restricted distribution. The Cayapa of northern Ecuador maintain that tobacco, in aboriginal time, was unknown among them and that it was introduced long after the Conquest. Even in modern times tobacco is seldom seen in their plantations, and there is no native term for the plant. Nowadays, the Cayapa smoke only cigars rolled from tobacco, although anthropomorph effigy pipes are known from the province of Esmeraldas (Saville 1924, 1:63-69). Smoking is done for pleasure and for ceremonial reasons. Shamans and ritual participants exorcise evil spirits by circumambulation of the infested place and by blowing smoke and a concoction of certain herbs into the air and on objects (Barrett 1925, 1:104-05). The Colorado, immediate neighbors of the Cayapa, smoke cigars and so do the Canelos-Quichua, whose shamans cure by blowing the smoke during séances of ritual cleansing (Whitten 1976:146). The Inca made no use of tobacco other than as medicine and as a charm against poisonous animals and snakes (Rowe 1946:292). The Aymara of the Titicaca basin make occasional use of tobacco smoke as ritual offerings (Tschopik 1946:556).

#### *Typology and Distribution of Tobacco Pipes*

Dispersed throughout the preceding chapter on smoking are frequent references to the use of tobacco pipes of different types and materials. Although much less frequent and, possibly, of less formal variation than in North America (West 1934), South American tobacco pipes are still of wide distribution and take on a variety of forms (map 7). As tubular, monitor, and elbow types made of reed, bamboo, wood, dry hard fruit, bone, clay, or stone, South American pipes were ethnographically found to occur in two chief areas of the subcontinent, the Marañón-Huallaga-Ucayali region and the Gran Chaco. More sporadically they are present along the north coast and the Guiana hinterland, the Amazon, and in coastal provinces of Brazil. Farther inland and north of the Chaco focus of distribution pipes occur in central and southern



Bolivia and on the lower Araguaia. South of the Gran Chaco they were met with in middle and southern Chile and in Patagonia. Shown on map 7 are those tribes for which information has become available in ethnographic literature. Identified by number, the names of the tribes in question are listed in table 5. Not listed there are archaeological pipes of stone, clay, and wood that have been excavated in large numbers in the area of the southern cone south of Mato Grosso, the Sierra-coastal belt from Colombia to northern Chile, as well as in northern Surinam and on Lake Valencia in Venezuela (Nordenskiöld 1908; Stahl 1925:112-16, table 3; Cooper 1949:527, 529-31). Also unlisted are the Chamí multiple-passage pipe mentioned in the text as of possible African origin and the "mythological" pipes that occur in the oral literature of certain tribes like the Botocudo and Warao, but are not in actual use.

Of the three types of South American tobacco pipes, the tubular pipe is considered perhaps the oldest. Although not all archaeological pipes of this or any other type are also pre-Columbian, there is strong evidence for the prehistoric origin of tubular pipes not only in South America but also in Central and North America (Nordenskiöld 1908:294-95; Cooper 1949:529-30; Spinden 1950:20; West 1934:131). Birket-Smith (1929:37-39) considered them to have developed from the secular and ritual drinking tube via the shamanic sucking tube, both of great age in the Americas and throughout much of the world.

In South America the tubular pipe has its main center of distribution in the Gran Chaco, where nine tribes were found to use it. Outside this region it occurs in three societies on the Araguaia and in southeastern Brazil. In addition, Nordenskiöld (1908: 296) mentions pipes of this kind from the Conibo and West (1934:155) from the Yagua of northeastern Peru, respectively. However, both incidences refer to unpublished museum pieces. Finally, mention should be made of the beautifully decorated tubular pipes of dark brown hardwood that were excavated at Pachacamac and Ica (Stahl 1925:114-15, figs. 19, 20), which may have been used in ancient Peru for medicinal purposes before coca replaced tobacco as the dominant drug of this Andean region. Stahl (1925:116) reports prehistoric tubular pipes from Ecuador, and other pieces were earlier mentioned in the preface from the lower Amazon. This extends the distribution area of this ancient pipe type from the Andes, through the Gran Chaco and central Brazil, to the Atlantic coast. If, as Nordenskiöld (1908:296) suggested, tube pipes were also known in Colombia (Antioquia, Tunja; cf. Hamy 1884) and Surinam, the distribution area of this aboriginal pipe form could indeed be extremely widespread, corroborating the claim for its great antiquity in South America.

The monitor pipe is very rare in South America. It occurs only among the

Araucano-Huilliche and the Tehuelche of central and southern Chile and Patagonia. Most likely the Tehuelche adopted this type of pipe from the Araucano, who conquered them in the course of their expansion toward the end of the eighteenth and the beginning of the nineteenth centuries. In addition, monitor pipes of apparently pre-Columbian origin were reported from two different sites of southern Bolivia. In North America the monitor pipe of various types was distributed throughout the eastern part of the United States, and "it is safe to say that it was made and used east of the Mississippi River, centuries before the advent of the white man. . . . In fact, there is no authentic report of its use since the coming of the white men" (West 1934:156, 157, 383). Thus, with the pre-Columbian origin of tubular and monitor pipes rather conclusively established for the New World, it follows that the custom of pipe smoking is aboriginal to the American Indian and not of European introduction.

The elbow or angular pipe is the most widespread type of all South American pipes, occurring in fifty-six tribes of the present sample. Its presence in early Colonial times was recorded for the Tupinamba of eastern Brazil and the Araucano-Huilliche of Chile. Clear-to-probable pre-Contact pipes come mostly from archaeological sites of southern South America, from the upper Araguaia to Patagonia, from the coast and highlands of Ecuador to northern Chile, and from the Calchaquí country (Cooper 1949:527). The present distribution of elbow pipes is defined by the maximum definition given above for South American tobacco pipes in general. In many regions, like Guiana, along the Amazon, and in Patagonia, the elbow pipe is of recent or post-Columbian introduction. Angular pipes may be of one piece, like the clay pipe of the Siriono, or composite pipes with a conico-tubular bowl and a detachable stem. Characteristic types include the cone-bowled pipe of the Montaña region and the cylinder- or spool-bowled types of the Gran Chaco. In the latter region we also find effigy pipes with carved bowls of anthropomorphic and zoomorphic designs similar to archaeological pieces from such widely scattered areas as Venezuela, Ecuador, Peru, north Argentina, and southern Brazil (Cooper 1949:531).

## DISTRIBUTION OF TOBACCO USE

### *Internal Methods of Application*

The preceding ethnographic survey discusses tobacco use in South America from nearly three hundred societies and according to six different methods of internal (gastrointestinal and respiratory) application: chewing, drinking, lick-

ing, rectal, snuffing, smoking (table 6).<sup>4</sup> Of these, smoking (cigars, cigarettes, or pipes) proves the most common, occurring in 233 cases and more often, by far, than all other cases of internal application combined (maps 6, 7). There probably is no single, definitive reason to account for this overwhelming preference, although a number of contributing factors do come to mind. For instance, included among the societies, especially those along the periphery of Amazonia, where smoking in one form or another occurs are those which adopted the custom through association with Europeans in post-Contact times. There is also the fact that smoking, pharmacologically speaking, is a most efficient method of nicotine administration. In any case, it seems that from before the period of Discovery, smoking "cigars-cigarettes prevailed over the great northern focal area of the continent and adjacent Antilles and Middle America, pipes over a roughly crescent-shaped belt peripheral thereto on the southeast, south, southwest, and west, a tobaccoless zone peripheral in turn to the pipe zone" (Cooper 1949:527-28).

The ingestion of tobacco in liquid form, either as an infusion or as a syrup, occurs in two focal areas of distribution, the upper Amazon and the Guianas. Drinking (sixty-four cases) and licking (sixteen cases) of tobacco products was recorded in a total of eighty Indian groups (maps 3, 4). Although some tribes of the Montaña, the Sierra Nevada de Santa Marta, and the Venezuelan Andes boil tobacco leaves down to a syrup or paste, Indian tobacco concentrates are, by and large, sufficiently liquid to be drunk. Of the principal methods of tobacco use, taking the drug in liquid form through the mouth or the nose has found little acceptance outside the subcontinent.

Chewing and snuffing of tobacco products are methods found with almost equal frequency among South American Indians, the former occurring in fifty-six and the latter in fifty-three cases. Tobacco chewing is of widespread and scattered distribution, mainly from the Gran Chaco in a belt along western Amazonia and extending beyond into the Colombian Andes, the Caribbean, and the Northwest coast of North America (map 2). This distribution pattern is taken among other criteria by Zerries (1964:99-100) as indicative of the great antiquity of this method. Also Sauer (1969:48) considered chewing and drinking as possibly the oldest methods of tobacco use. Although proof will be hard to find, one tends to agree with their suggestions mainly because of the naturalness of both forms of ingestion.

Tobacco snuffing, like the inhaling of intoxicants in general, seems to be

4. Tribal identification in South America poses complex problems. Generally speaking the names used by the respective authors have been retained throughout, albeit according to a unified form of spelling. Where two or more names appear to designate the same or closely related tribal groups, alternate nomenclature is given in parentheses. Overlapping does occur in some instances.

TABLE 6 Methods of Tobacco Use in South America<sup>a</sup>

Tribe	Use					
	Chewing	Drinking	Licking	Enema	Snuffing	Smoking
Abipon	+	-	-	-	+	+
Acawaio	+	+	-	-	-	+
Achagua	-	-	-	-	-	+
Aguano	+	-	-	-	-	+
Aguaruna	-	+	-	+	-	+
Aicana	-	-	-	-	+	-
Amaguaje	-	+	-	-	-	+
Amahuaca	-	-	-	-	+	+
Amanaye	-	-	-	-	-	+
Amniapa	-	-	-	-	+	-
Amuesha	-	+	-	-	-	-
Anauqua (Cuicuru)	-	-	-	-	-	+
Andoa	-	-	-	-	-	+
Andoque	-	-	+	-	-	+
Aparai	-	+	-	-	-	+
Apiacá	-	-	-	-	-	+
Apinaye	-	-	-	-	-	+
Aramagoto	-	-	-	-	-	+
Araono	+	-	-	-	-	-
Arara	-	-	-	-	-	+
Araucano	-	-	-	-	+	+
Arawak: Coastal	-	+	-	-	-	-
Arawak: Guianas	-	-	-	-	-	+
Arecuna	+	+	-	-	-	+
Arhuaco (Kogi, Ica, Sanka)	-	-	-	-	+	-
Ashlushláy (Chulupi)	-	-	-	-	-	+
Asurini	-	-	-	-	-	+
Atorai	-	+	-	-	-	+
Auca	-	-	-	-	-	+
Aucte	-	-	-	-	-	+
Auishiri	-	-	-	-	-	+
Aymara	-	-	-	-	+	+
Ayoreo	-	+	-	-	-	-
Bacairi	-	-	-	-	-	+
Baniwa	-	-	-	-	-	+
Barasana	-	-	-	-	+	+
Baré	-	-	-	-	-	+
Barí	+	-	-	-	-	-
Baure	-	-	-	-	-	+
Bora	+	-	+	-	-	+
Bororo	-	+	-	-	-	+

TABLE 6 (Continued)

Tribe	Use					
	Chewing	Drinking	Licking	Enema	Snuffing	Smoking
Botocudo	-	-	-	-	-	+
Cachucna (Kashuiena, Kahuyana?)	-	-	-	-	+	-
Caduveo	+	-	-	-	-	+
Caingang	-	-	-	-	-	+
Caingua	+	-	-	-	-	+
Camacan	-	-	-	-	-	+
Camaracoto	-	+	-	-	-	+
Camayura	-	-	-	-	-	+
Campa	-	+	+	-	+	+
Canamari	-	-	-	-	+	-
Canclos-Quichua	-	+	-	-	-	+
Caquetio	-	+	-	-	-	+
Carajá	-	-	-	-	-	+
Carapana	+	-	-	-	-	+
Carib: Barama R.	-	+	-	-	-	+
Carib: Cayenne	-	-	-	-	-	+
Carib: Guiana	-	+	-	-	-	-
Carib: Guyana	-	-	-	-	-	+
Carib: Maroni R. (Surinam)	+	+	-	-	-	+
Caribisi	-	-	-	-	-	+
Carijona	-	-	-	-	+	-
Cariña	-	+	-	-	-	+
Cashinaua	-	+	-	-	+	+
Catio	+	-	-	-	-	+
Caviña	-	-	-	-	-	+
Cayapa	-	-	-	-	-	+
Cayapó	+	-	-	-	-	+
Chacobo	-	-	-	-	-	+
Chaima	-	-	-	-	-	+
Chamacoco	-	-	-	-	-	+
Chamí	-	-	-	-	-	+
Chamicuro	+	+	-	-	-	+
Chané	-	-	-	-	-	+
Chapacuro	-	-	-	-	-	+
Chayavita	+	+	-	-	-	+
Chimane	+	+	-	-	-	-
Chimila	+	-	-	-	-	-
Chipaya	-	-	-	-	-	+
Chiquito	-	-	-	-	-	+
Chiriguano	-	-	-	-	-	+

TABLE 6 (Continued)

Tribe	Use					
	Chewing	Drinking	Licking	Enema	Snuffing	Smoking
Chiripá	-	-	-	-	-	+
Cholon	-	+	-	-	-	+
Chontoquiro	-	-	-	-	+	-
Chorote	+	-	-	-	-	+
Chulupi (Ashlushláy)	+	-	-	-	-	-
Chunupi	-	-	-	-	-	+
Churupa	-	-	-	-	-	+
Coaca	-	-	-	-	-	+
Cocama	+	+	-	-	-	+
Cofán	-	-	-	-	-	+
Colorado	-	-	-	-	-	+
Comechigon	-	-	-	-	-	+
Conibo	-	+	-	-	+	+
Coto	+	+	-	-	+	+
Cubeo	-	-	-	-	+	+
Cueva	-	-	-	-	-	+
Cuicuru (Anauqua)	-	-	-	-	-	+
Cumanagoto	+	-	-	-	-	-
Cuna	+	-	-	-	-	+
Custenau	-	-	-	-	-	+
Desana	-	-	-	-	-	+
Diaguíta	-	-	-	-	+	-
Emerillon	-	-	-	-	-	+
Galibi	-	+	-	-	-	+
Genaken	-	-	-	-	-	+
Goajiro	+	+	-	-	-	+
Guahahara	-	-	-	-	-	+
Guahibo	-	-	-	-	-	+
Guaicuru (Payagua)	-	-	-	-	-	+
Guaimara	-	-	-	-	-	+
Guamaca	-	-	-	-	-	+
Guambiano	+	-	-	-	-	+
Guaná	-	-	-	-	-	+
Guaraní	+	-	-	-	+	+
Guaratégaja	-	-	-	-	+	-
Guarayu	-	-	-	-	-	+
Guasana	-	-	-	-	-	+
Guato	-	-	-	-	-	+
Guayaki	-	-	-	-	-	+
Guayupe	-	-	-	-	-	+
Huanyam	-	-	-	-	-	+
Huari	-	-	-	-	-	+

TABLE 6 (Continued)

Tribe	Use					
	Chewing	Drinking	Licking	Enema	Snuffing	Smoking
Ibanoma	-	-	-	-	-	+
Ica (Arhuaco)	-	-	+	-	-	-
Inca	-	-	-	-	+	-
Ingarunc	-	-	-	-	-	+
Inyeri	-	-	-	-	+	-
Ipurina	-	-	-	-	+	-
Itonama	-	-	-	-	-	+
Jirajara	-	-	-	-	-	+
Jivaro	+	+	+	-	+	+
Kahuyana (Cachuena?)	-	-	-	-	-	+
Kalapalo	-	-	-	-	-	+
Kandoshi	-	+	-	-	-	-
Karútana	-	-	-	-	-	+
Kashuiena (Cachuena?)	-	-	-	-	-	+
Kaskihá	-	-	-	-	-	+
Katapolítani	-	-	-	-	-	+
Kayova	+	-	-	-	-	-
Kepikiriwát	-	-	-	-	+	-
Kogi (Arhuaco)	-	-	+	-	-	-
Lamista	-	+	-	-	-	+
Lengua	-	-	-	-	-	+
Maca	-	-	-	-	-	+
Macamecra	-	-	-	-	-	+
Machigenga	+	+	-	-	+	+
Maco	-	-	-	-	-	+
Macuna	-	-	-	-	+	+
Macushi	-	+	-	-	-	+
Maipure	-	-	-	-	+	+
Manajé	-	-	-	-	-	+
Manao	-	-	-	-	-	+
Mashco	+	+	-	-	+	-
Mataco	-	-	-	-	+	+
Máuc	-	-	-	-	-	+
Mayongkong	-	-	-	-	-	+
Mayoruna	-	-	-	-	-	+
Mbayá	+	-	-	-	-	+
Mchináku	-	-	-	-	-	+
Menimeche	-	-	-	-	+	-
Mirafña	-	-	+	-	+	-
Mocoví	+	-	-	-	-	+
Mojo	-	-	-	-	-	+
Muinanc	-	-	+	-	-	+

TABLE 6 (Continued)

Tribe	Use					
	Chewing	Drinking	Licking	Enema	Snuffing	Smoking
Muisca	-	+	-	-	-	+
Munde	-	-	-	-	+	-
Mundurucú	-	-	-	-	-	+
Mura	-	-	-	-	-	+
Murato	-	-	-	-	-	+
Nambicuara	-	-	-	-	-	+
Nape	-	-	-	-	-	+
Neozé (Siriono)	-	-	-	-	-	+
Nonuya	+	-	-	-	-	-
Oayana	-	+	-	-	-	-
Ocaina	-	-	+	-	-	+
Omagua	+	-	-	-	-	+
Omurana	+	+	-	-	-	+
Orejón	-	-	-	-	-	+
Otomac	-	-	-	-	+	-
Oyampi	-	-	-	-	-	+
Páez	+	-	-	-	-	-
Palanoa	-	-	-	-	+	-
Palenque	-	-	-	-	-	+
Palikur	-	-	-	-	-	+
Panare	+	+	-	-	-	+
Pano	-	-	-	-	+	+
Panobo	-	+	-	-	-	-
Paraujano	+	-	-	-	-	-
Paressi	-	-	-	-	-	+
Parintintin	-	-	-	-	-	+
Parucoto	-	-	-	-	-	+
Passé	-	-	-	-	-	+
Pasto	+	-	-	-	-	-
Patamona	+	+	-	-	-	+
Paumari	-	-	-	-	+	-
Pausema	-	-	-	-	-	+
Payagua (Guaicuru)	+	-	-	-	-	+
Peba	-	+	-	-	-	-
Pehuenche	-	-	-	-	-	+
Pemon	-	+	-	-	-	-
Piapoco	-	-	-	-	-	+
Piaroa	-	-	-	-	-	+
Pilagá	-	-	-	-	-	+
Pioje	-	+	-	-	-	-
Pira-tapuya	-	-	-	-	-	+
Piritu	-	-	-	-	-	+



TABLE 6 (Continued)

Tribe	Use					
	Chewing	Drinking	Licking	Enema	Snuffing	Smoking
Piro	-	+	+	-	+	+
Potiguara	+	-	-	-	-	-
Puri-Coroado	-	-	-	-	-	+
Quijo	+	+	-	-	-	+
Quillacinga	+	-	-	-	-	-
Quiriquire	-	-	-	-	-	+
Roamaina	-	+	-	-	-	-
Rosigaro	-	-	+	-	-	+
Rucuyen (Wayana)	-	-	-	-	-	+
Sac	-	-	-	-	-	+
Salumay	-	-	-	-	+	-
Saliva	-	-	-	-	-	+
Sanapaná	-	-	-	-	-	+
Sanka (Arhuaco)	-	-	+	-	-	-
Shapra	-	-	-	-	-	+
Sharpa	-	+	-	-	-	-
Shavante	+	-	-	-	-	+
Shebero	+	+	-	-	-	+
Sherente	-	-	-	-	-	+
Shipibo	+	+	-	+	+	+
Simacu	-	+	-	-	-	+
Siona	-	-	+	-	-	+
Siracua	-	-	-	-	-	+
Siriono (Ñeozé)	-	-	-	-	-	+
Suhín	-	-	-	-	-	+
Suya	-	-	-	-	-	+
Tacana	-	-	-	-	-	+
Tamanaco	-	-	-	-	+	+
Tanimuca	-	-	-	-	+	-
Tapieté	-	-	-	-	-	+
Tapirapé	-	-	-	-	-	+
Tapoya	-	-	-	-	-	+
Tapuya	-	-	-	-	-	+
Tarairiú	-	-	-	-	-	+
Tariana	-	-	-	-	-	+
Taruma	-	+	-	-	-	+
Taurepan	+	+	-	-	-	+
Tehuelche	-	-	-	-	-	+
Tembé	-	-	-	-	-	+
Tembecua	-	-	-	-	-	+
Tereo	-	-	-	-	-	+
Timbira	-	-	-	-	-	+

TABLE 6 (Continued)

Tribe	Use					
	Chewing	Drinking	Licking	Enema	Snuffing	Smoking
Timote	-	-	+	-	-	+
Tirio (Trio)	-	-	-	-	-	+
Toba	+	-	-	-	-	+
Trumai	-	-	-	-	-	+
Tucano	-	-	-	-	+	+
Tucuna	+	+	-	-	+	+
Tuncbo	+	+	-	-	-	+
Tupari	-	-	-	-	+	+
Tupinamba	-	+	-	-	-	+
Tuyuka	-	-	-	-	-	+
Uaikana	-	-	-	-	-	+
Urubú	-	-	-	-	-	+
Vilela	-	-	-	-	-	+
Waiwai	-	-	-	-	+	+
Wapishana	+	+	-	-	-	+
Warao	+	+	-	-	-	+
Warekena	-	-	-	-	-	+
Waurá	-	-	-	-	-	+
Wayana (Rucuyen)	-	-	-	-	-	+
Wayoro	-	-	-	-	+	-
Witoto	-	-	+	-	+	+
Yabuti	-	-	-	-	+	-
Yagua	-	+	-	-	-	+
Yahuna	-	-	-	-	+	-
Yamamadi	-	-	-	-	+	+
Yameo	-	+	-	-	-	+
Yamiaca	-	-	-	-	-	+
Yaminaua	-	+	-	-	-	-
Yanoama	+	-	-	-	+	-
Yaruro	-	-	-	-	-	+
Yavaje	-	-	-	-	-	+
Yavitero	-	-	-	-	-	+
Yawalapiti	-	-	-	-	-	+
Yecuana	-	-	-	-	-	+
Yucuna	-	-	+	-	+	+
Yumbo	-	+	-	-	-	-
Yupa	+	+	-	-	-	+
Yuracare	-	-	-	-	-	+
Yuruna	-	-	-	-	-	+
Zaparo	+	+	-	-	-	+

+ = Reported in text.

- = Not reported in text.

peculiar to the New World, whence it spread to the Old World in post-Hispanic times. Like chewing, the snuffing of tobacco powder is of wide and scattered distribution, reaching from Chile to Colombia and, in rare cases, beyond into Mexico and North America (map 5). Again, this distributional evidence, coupled with the fact that snuffing of pulverized tobacco is found in close association with ecstatic and divinatory shamanistic techniques, suggests considerable antiquity of the custom.

Rectal tobacco application through enemas and suppositories has only occasionally been observed for South America. However, suppositories are administered by the Indians for therapeutic reasons, and in two cases ritual enemas have been reported.

### *External Methods of Application*

The two principal external methods of application include percutaneous and ocular administration of the drug. Both methods will be treated more fully in the following chapters on pharmacology and tobacco ideology.

Percutaneous tobacco administration in the form of juice, powder, or leaves is of widespread distribution on the subcontinent and probably of great antiquity. Smoke blowing has been recorded frequently since chroniclers, like Thevet, reported it for the first time in the sixteenth century. But rarely do authors seem to have been aware of the fact that they were witnessing a distinct method of topical drug administration. Consequently, there exists a general imprecision in the recording of "smoke blowing," which makes it difficult to determine whether it was done directly to a person or into the open air. This made tabulation of the method problematic. Nevertheless, we have come across some two hundred references to apparently purposeful percutaneous drug administration.

# 3

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## *Pharmacology of South American Tobacco Use*

### THE NICOTINE ALKALOID

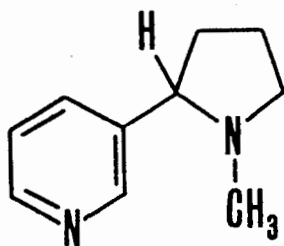
THE SEARCH FOR THE CHIEF ACTIVE PRINCIPLE OF TOBACCO HAS A LONG history and includes the contributions of precursors like Baillard (1668), Letschius (1695), Lémery (1696), and Büchnero (1746). However, prior to 1806, scholars worked with impure preparations and unrefined methods, and nicotine, the object of their search, proved elusive until 1807, when Cerioli discovered the "olio essenziale" of tobacco (Cantani 1869:170). Independently and almost contemporaneously, Vauquelin (1809) found the same "potent, volatile and colorless" substance, which he called the "essence de tabac." Both authors discuss in their respective papers some of the physiological effects of nicotine on the human organism, observations which they gathered not experimentally but from the literature available at the time of their writing. Hermbstädt (1822) confirmed Vauquelin's results and determined the presence of the active principle of tobacco in sixteen different species of *Nicotiana*. In honor of Jean Nicot, the consul of the king of France, who in 1560 had sent tobacco from Portugal to Paris, Hermbstädt called the *causa efficiens* of nicotianas "Nicotianin" and found it present—for the first time—in tobacco smoke and rapé.

Some two decades after the discovery of the active ingredient of tobacco by Cerioli and Vauquelin, and after Sertürner, in 1806, had isolated for the first time a pure chemical agent (morphine), two students at the University of Heidelberg, Wilhelm Heinrich Posselt and Ludwig Reimann, succeeded in isolating nicotine in a pure form. Following the presentation of their research paper to the medical faculty of their alma mater in 1828, Reimann published his chemical part of the joint essay as a separate article, but coauthoring it with

Posselt and even signing it as junior author (Posselt and Reimann 1928–29). Among other smaller corrections to the original version Reimann replaced the determination “Nicotianin” with “Nikotin,” introducing, thereby, the now generally accepted term for the principal tobacco alkaloid. The physiological part of the prize-winning essay by coauthor Posselt was published in 1940, more than a century after its original presentation (cf. Koenig 1940:59–84).

The correct formula for nicotine, expressed as  $C_{10}H_{14}N_2$ , was determined by Melsens (1843) and confirmed by Barral (1847) and by Schloesing (1847). The latter also established its molecular weight.

The alkaloid nicotine is liquid in its natural form, colorless, volatile, and strongly alkaline in reaction. When exposed to the air it assumes a brown color and the characteristic odor of tobacco. Nicotine and its salts are miscible in all proportions with water below  $16^{\circ}\text{C}$  and above  $99^{\circ}\text{C}$ . They are less soluble between these temperatures (Marion 1950:235). The alkaloid is composed of a pyridine and a pyrrolidine ring, represented as follows:



As such it is closely related to nornicotine ( $C_9H_{12}N_2$ ) (demethylated nicotine), and both forms of nicotine appear to be of the same potency (Jackson 1941; Volle and Koelle 1975:567). Taking Marion's (1950:230–31) adjusted but nearly complete list as an example, we see that of fifty-one species of *Nicotiana* tested (table 7), nicotine occurred (a) as the main alkaloid in fourteen species with a secondary alkaloid either absent or present in insignificant quantities; (b) together with nornicotine in appreciable quantities in twenty-two species; (c) either not at all or in very small quantities in twelve species with nornicotine as the principal alkaloid; and (d) as a secondary alkaloid either singularly or jointly present with nornicotine in three species with anabasine ( $C_{10}H_{14}N_2$ ) as the chief alkaloid (Marion 1950:230–32). Wild *Nicotiana* species were demonstrated to have a lower alkaloid content than the two cultigens *Nicotiana tabacum* and *N. rustica*. Nicotine is the major alkaloid of these tobacco plants, and its percentage in the leaf of the former varies widely, from 0.6 percent to 9.0 percent (Hoppe 1975; Schultes 1981). In the latter, it may reach 18.76 percent  $\pm$

TABLE 7 Alkaloids of *Nicotiana* Species

<i>Species</i>	<i>Main Alkaloid</i>	<i>Secondary Alkaloid</i>
<i>N. acuminata</i> Hook.	Nicotine	
<i>N. alata</i> Link & Otto	Nicotine	None
<i>N. angustifolia</i> Mill. <sup>a</sup>	Nicotine	
<i>N. attenuata</i> Torr.	Nicotine	
<i>N. benavidesii</i> Goodspeed	Nicotine	Nornicotine
<i>N. bigelovii</i> S. Wats.	Nicotine	
<i>N. bonariensis</i> Lehm.	Nicotine	
<i>N. chinensis</i> Fisch.	Nicotine	
<i>N. clelandi</i> A. Gray	Nicotine	
<i>N. gossei</i> Domin	Nicotine	None
<i>N. inglubra</i> Black	Nicotine	Nornicotine
<i>N. langsdorffii</i> Schrank	Nicotine	Nornicotine
<i>N. macrophylla</i> Spreng. <sup>a</sup>	Nicotine	
<i>N. paniculata</i> L.	Nicotine	Nornicotine <sup>b</sup>
<i>N. petiolaris</i> Schlecht.	Nicotine	
<i>N. quadrivalvis</i> Pursh	Nicotine	
<i>N. raimondii</i> Macbr.	Nicotine	Nornicotine <sup>b</sup>
<i>N. rustica</i> L.	Nicotine	
<i>N. sanguinea</i> Link & Otto	Nicotine	Nornicotine
<i>N. solanifolia</i> Walp.	Nicotine	Nornicotine
<i>N. stocktoni</i> Brandg.	Nicotine	Nornicotine
<i>N. tabacum</i> L.	Nicotine	Nornicotine
<i>N. wigandioides</i> C. Koch & Fint.	Nicotine	None
<i>N. benthamiana</i> Domin	Nornicotine	
<i>N. caudigera</i> Phil.	Nornicotine	
<i>N. cavanillesii</i> Dun.	Nornicotine	Nicotine <sup>c</sup>
<i>N. eastii</i> Kostoff	Nornicotine	
<i>N. exigua</i> Wheeler	Nornicotine	Nicotine
<i>N. glutinosa</i> L.	Nornicotine	None <sup>d</sup>
<i>N. goodspeedii</i> Wheeler	Nornicotine	Nicotine
<i>N. maritima</i> Wheeler	Nornicotine	None
<i>N. megalosiphon</i> Heurck & Muell. Arg.	Nornicotine	Nicotine
<i>N. nesophila</i> I. M. Johnston	Nornicotine	Nicotine
<i>N. nudicaulis</i> S. Wats.	Nornicotine	Nicotine
<i>N. otophora</i> Griseb.	Nornicotine	
<i>N. palmeri</i> A. Gray	Nornicotine	
<i>N. plumbaginifolia</i> Viv.	Nornicotine	Nicotine
<i>N. repanda</i> Willd.	Nornicotine	Nicotine
<i>N. rosulata</i> Domin	Nornicotine	Nicotine
<i>N. rusbyi</i> Britton	Nornicotine	
<i>N. sanderae</i> Hort.	Nornicotine	
<i>N. suaveolens</i> Lehm.	Nornicotine	Nicotine

TABLE 7 (Continued)

<i>Species</i>	<i>Main Alkaloid</i>	<i>Secondary Alkaloid</i>
<i>N. silvestris</i> Speg. & Comes	Nornicotine	Nicotine
<i>N. tomentosa</i> Ruiz & Pav.	Nornicotine	None <sup>d</sup>
<i>N. tomentosiformis</i> Goodspeed	Nornicotine	Nicotine <sup>c</sup>
<i>N. trigonophylla</i> Dun.	Nornicotine	None
<i>N. undulata</i> Ruiz & Pav.	Nornicotine	Nicotine <sup>b</sup>
<i>N. velutina</i> Wheeler	Nornicotine	
<i>N. debneyi</i> Domin	Anabasine	Nicotine
<i>N. glauca</i> R. Grah.	Anabasine	Nicotine <sup>c</sup>
<i>N. rotundifolia</i> Lindl. <sup>f</sup>	Anabasine	Nornicotine Nicotine

Source: After Marion 1950:230-31.

<sup>a</sup>Synonymous with *N. tabacum* L.

<sup>b</sup>Smith and Smith (1942) disagree with Shmuk and Borozdina (1941) as to the major alkaloid.

<sup>c</sup>Present as a trace only.

<sup>d</sup>Shmuk and Borozdina (1941) report nicotine.

<sup>e</sup>Depending on the strain, nicotine or nornicotine may accompany the anabasine.

<sup>f</sup>Synonymous with *N. suaveolens* Lehm.

2.6 percent in west Mexican *Nicotiana rustica* (Siegel, Collings, and Díaz 1977:22). Nicotine is distributed throughout the plant, with 5 percent of the total occurring in the flowers, 18 percent in the stems, 13 percent in the roots, and 64 percent in the leaves (Marion 1950:229). Nicotine was also found in the seeds of *Nicotiana rustica* (Schmid and Serrano 1948) and *N. glutinosa* L. (Posselt and Reimann 1828-29).

Once thought to be a diagnostic alkaloid for nicotianas, nicotine has since been found to be a very widely distributed plant alkaloid, occurring even in two separate phyla of the plant kingdom, the Pteridophytes and the Spermatophytes (Schievelbein 1962:244). Among the Pteridophytes it has been isolated from the vascular cryptogams such as *Equisetum arvense* L. (Manske and Marion 1946), in *Lycopodium flabelliforme* L. (Manske and Marion 1946), in *Lycopodium tristachyum* Pursh. (Marion and Manske 1944), in *Lycopodium clavatum* L. (Marion and Manske 1944), in *Lycopodium lucidulum* Michx. (Manske and Marion 1946), and in *Lycopodium sabinaefolium* Willd. (Marion and Manske 1946).

Among the Spermatophytes nicotine occurs in angiosperms such as *Asclepias syriaca* L. (Marion 1939), in *Sedum acre* L. (Marion 1945), in *Sempervivum arachnoideum* L. (Paris and Frigot 1959), in *Zinnia* and *Mucon* (Manske 1961),

and in *Eclipta alba* L. (Mothes and Romeike 1951). Nicotine is probably also present in *Cannabis sativa* var. *indica* (Preobraschenski 1876; Gibbs 1974, 1:299). Among the familiar Solanaceae, nicotine has been isolated in *Lycopersicum*, *Atropa*, *Datura*, *Solanum*, *Petunia*, *Duboisia*, and especially in *Nicotiana*. However, although nicotine is widely distributed in the plant kingdom, the ability to synthesize nicotine—and some of its close relatives—is particularly characteristic of certain genera of Solanaceae, especially *Nicotiana*, and the amount of nicotine present in them is usually much higher than that in other plant genera (Kuhn 1965:38; Leete 1983:86, 89; Marion 1950:228, 229).

From the time of the first experiments by Posselt and Reimann (1828–29), nicotine has been recognized as one of the more toxic botanical substances in nature. One or two drops, or the equivalent of 60–120 mg, of the substance placed on the tongue or the skin are said to kill a man. Thus, the quantity of nicotine contained in an ordinary cigar—if it were extracted and injected internally—would prove lethal for two full-grown humans (Mendenhall 1930: 57; Larson, Haag, and Silvette 1961).

### ABSORPTION OF NICOTINE

In the context of South American ethnography, the various means of nicotine absorption into the body involve the gastrointestinal tract, the respiratory apparatus, the skin, and the eye. Nicotine is absorbed through all forms of indigenous tobacco use, but, as with drugs in general, the rate of absorption depends, among other factors, upon the contact intensity and the absorption coefficient of the different media of application (Levine 1983:73–102).

#### *Gastrointestinal Absorption*

The prevalent methods of chewing, licking, drinking, and rectal application of tobacco products rely on the gastrointestinal route of administration and on enteric absorption from the buccal cavity and the stomach as well as from the small and large intestines.

The oral cavity is a most propitious site for nicotine absorption; it has a thin epithelium and a rich blood supply. In addition orally administered nicotine is not diminished by passage through the liver but gains access directly to the heart and to the general circulation. The rate of nicotine absorption from chewing tobacco depends upon the time the quid is retained, the intensity of chewing, and the number of expectorations. Under optimal circumstances, however, a 100 percent efficiency of absorption appears to be possible (Gaede



1940; Larson 1960:34), and modern pharmacological studies have indicated substantial blood levels of nicotine effected by tobacco chewing (Gritz et al. 1981).

With regard to the length of time for which the tobacco chew is kept in contact with the mucous lining of the oral cavity, Indians were found to retain the quid over extended periods in the lower lip or cheek. But sublingual administration, though potentially the most effective method of oral tobacco application, was probably considered too inconvenient and has not been reported (map 2; table 1). As previously pointed out, South American Indians tend to suck rather than to chew the tobacco quid or pellet (chapter 2). If this should diminish the rate of nicotine absorption, the fact that they commonly swallow rather than expectorate the juice must more than compensate for any loss.

Critical for the efficient absorption of nicotine in the mouth is the fact that the alkaloid is readily miscible in the salivary secretions, so that transport of the solute across the epithelium and the vascular barriers may proceed rapidly. Reference is made throughout the ethnographic section to the practice, in many tribes, of using chewing tobacco in combination with alkalizing ashes of different kinds. While nicotine—in contradistinction to intoxicants like coca (*Erythroxylum*) and betel (*Piper betle*)—does not require an alkalizing substance to liberate it, the presence of such an agent, nevertheless, accelerates and intensifies the action of the drug by increasing salivation (Hammilton 1957). Furthermore, alkalizing the buccal environment prepares the site for optimal absorption (Bray and Dollery 1983:274).

In terms of absorption, tobacco chewing is very similar to the less widely distributed method in South America of tobacco licking (map 4; table 3). *Ambil*, in paste or jelly form, is rubbed across the teeth, the gums, and the tongue. In this form the retention of the drug is likely to be of shorter duration than as a quid of chewing tobacco. Apparently of high nicotine content, *ambil* concentrate dissolves rapidly in the copious saliva it produces. And here again, the common practice of adding, among other things, alkaline ashes promotes solute movement into circulation and increases absorption.

Finally, nicotine in quantities large enough to have a pharmacological effect is also deposited by noninhaling smokers in the oral cavity, that is, about 5 percent of the nicotine content in the mainstream smoke (Schievelbein 1962:215). This includes smoke from pipes and cigars, and the stronger the tobacco product the more and the faster nicotine is absorbed in the mouth (Armitage et al. 1975; Lehmann 1908). However, noninhaling pipe or cigar smokers absorb much less nicotine than those who swallow it or inhale it

(Ashton and Stepney 1982:31), and "puffers" like the Asurini, the Siriono, and the Wapishana are the exception rather than the rule among South American Indian smokers.

Nicotine absorption through the stomach is variable and relatively reduced in comparison with absorption via the buccal cavity and the small intestine. "Drinking," "eating," and swallowing of tobacco smoke by South American Indians have frequently been reported. Tenetehara shamans reach a state of tobacco narcosis through large swallows of smoke, and Tapirapé shamans are said to "eat smoke" by forcing down large gulps of smoke only to expel it again in a rapid sequence of belches. In general, swallowing of tobacco smoke is quite frequently likened to "drinking." However, although the amounts of nicotine swallowed in this way—or in the form of saturated saliva or pipe juice—may be large enough to be behaviorally significant at normal levels of gastric pH, nicotine, like other weak bases, is not significantly absorbed.

From the standpoint of absorption, the drinking of tobacco juice and the interaction of the infusion or concoction with the small intestine is a highly effective method of gastrointestinal nicotine administration. The epithelial area of the intestines is incomparably larger than the mucosa of the upper tract including the stomach, and "the small intestine represents the area with the greatest capacity for absorption" (Levine 1983:81–83). As practiced by most of the sixty-four tribes documented here, intoxicated states are achieved by drinking tobacco juice through the mouth and/or the nose. Especially large amounts are quasi force-fed to the novices on the occasion of their shamanic initiation, so that the copious quantities of liquid carrying the alkaloid and the fact that shamanic administration of tobacco juice usually occurs on an intentionally purged and dieted stomach further the rapid passage of the full-strength nicotinic solute into the small intestine to produce, as in the case of the Guianan tribes, severe toxic reactions.

The large intestine, although functionally little equipped for absorption, nevertheless absorbs nicotine that may have passed through the small intestine. More important, however, the rectum serves several South American tribes as a site for medicinal and ritual nicotine administration. Rectally administered nicotine escapes from digestive changes along the gastrointestinal tract and, as in the case of oral administration, from hepatic reactions. With direct access to the bloodstream, rectally absorbed nicotine is known to be a cathartic (Opitz 1955), but also highly toxic and even fatal if administered as infusions of fifteen to twenty grams of tobacco (Fabre et al., 1957) and of as little as two grams (Larson, Haag, and Silvette 1961:466; List and Hörhammer 1977; cf. de Smet and Hellmuth 1986).

*Respiratory Absorption*

The methods of tobacco snuffing and smoking rely on the respiratory route of nicotine administration and on parenteral absorption of the drug from the nasal cavity and the lungs.

As detailed in the ethnographic chapter (chapter 2), for purposes of tobacco snuffing South American Indians employ two methods of nicotine administration: self-administration by inhalation with or without a snuffing device and mutual administration of two persons by forceful blowing with the aid of a variety of snuffing tubes. The effects produced by these two methods may differ in intensity, but both are conducive to nicotine absorption and, like the method of simple pinch snuffing Western-style, can be expected to lead to substantial blood levels of the drug (Russell, Jarvis, and Feyerabend 1980; Russell et al. 1981). Unaided inhalation deposits the tobacco powder primarily in the middle meatus. But as Holmstedt and Lindgren (1967:366) suggested, forceful blowing of the dust by means of straight or V-shaped snuffing apparatuses probably effects a more widespread deposition on the nasal mucosa, and transportation even of some particles into the lungs (Chinachoti and Tangchai 1957). However, the latter possibility notwithstanding, nicotine absorption through tobacco snuffing—and from rhinally imbibed tobacco juice—affects the brain mainly from the nose, via the richly vascularized nasal mucosa and the bloodstream. Certain drugs, like (snuffed) cocaine, and simple solutions have also been reported to act directly on the brain without passage through the general circulation (Yoffey and Drinker 1938). But whether nicotine is one such drug has not been established to my knowledge.

In any case, references attesting to vigorous snuffing practices of potent tobacco rapé are certainly not lacking for native South America, as, for instance, in the case of Grandidier's (1861:40) warning that unaccustomed users of Campa snuff have remained unconscious for several hours. Repeated doses may be taken during the day and sometimes even during the night at intervals of one to two hours, which, incidentally, corresponds well to reported blood (plasma) half-life levels of twenty to sixty minutes. With the effect of maintaining nicotine concentrations in the tissue at a desired high level, strongly habituated tribesmen of the Guaporé, in Brazil, were said to take as many as 240 insufflations of tobacco rapé, singly or mixed with parica (*Virola*) powder during an extended séance. In some other tribes those attending a séance sit around a low, rectangular table covered with tobacco and parica snuff and can take up to sixty inhalations before showing any drug effects. Especially large doses are also taken by Colombian tribes such as the Yucuna and the Carijona.

Of the fifty-three cases of snuffing documented in chapter 2 of this book, tobacco rapé, although taken alone in many instances, is often ingested in combination with the powders of hallucinogens such as *Anadenanthera*, *Erythroxylum*, and *Virola*. Thus, tobacco rapé continues to be used even in the presence of powerful psychotropic drugs. One reason for this simultaneous use must be seen in the differential pharmacological effect which these types of intoxicants have on the human body. Nicotine affects not only the central nervous system—as do yopo, coca, and parica—but also the sympathetic and the parasympathetic components of the autonomic system. Apparently, in societies where both kinds of drugs are customary, the Indian is less after a “mindblowing kick”—the more psychedelic the better—than after a drug-specific or orchestrated neurological trance experience. He takes the tobacco snuff alone not as a hallucinogenic substitute but because its ingestion serves a purpose different from that of a hallucinogen and because the purpose of either may very well be different again from the use of a tobacco-hallucinogen blend. Plant ashes often mixed in with snuff powders increase secretion, which transports nicotine and intensifies its action, while at the same time functioning as alkalizing agents to liberate coca and possibly parica in blended powders.

Smoking is the second principal method of nicotine administration via the respiratory system. It is the more effective of the two and a most efficient method of nicotine absorption. Tobacco (nicotine) is one of the three drugs that are taken by this route, the others being marijuana and opium. As previously indicated, the predominance of smoking tobacco over chewing, drinking, and licking can best be explained in terms of increased efficiency in drug intake and user satisfaction. Nicotine absorbed through the lungs and their large absorptive surface in the bronchioles and alveoli reaches the bloodstream quickly and in large amounts. Estimates are that in smoking, up to 50 percent of nicotine contained in the tobacco enters into the mainstream smoke (Pyriki in Lickint 1939; Schievelbein 1962:215) and that 65 percent to 95 percent of this is absorbed into the body (Creighton 1973). To my knowledge, tests of nicotine absorption have not been conducted among native South American cigarette, cigar, or pipe smokers. In commercial products the alkalinity of cigar and pipe tobacco varies according to curing methods. Quantitative data concerning nicotine absorption in cigar and pipe smoking are also difficult to establish because of a lack of standardization of the cigar and of the bowl and stem of the pipe, “and the wide variability in transfer of nicotine to the mainstream smoke that would result from variations in the tightness of packing” (Larson 1960:34). In addition such behavioristic factors as puff rate, puff volume, and depth of inhalation, among others, are difficult to gauge. All of

these variables apply equally to aboriginal methods of smoking, so that not much can be said about the rate of nicotine absorption by Indian smokers except that it is probably at least as high as that of Western smokers.

In fact, I venture to suggest that in many instances Indian cigar smokers absorb more nicotine than Western smokers of cigars. Not only does the amount of tobacco in Indian cigars appear to be larger (for instance, in the giant cigar of the Tucano of the Northwest Amazon, the Guahahara of Brazil, and the Carib of Guiana) than that in most commercial cigars, but also the rate at which Indian cigar smokers inhale and the way they draw the smoke deeply into their lungs argues for a highly efficient mode of self-administration. Warao shamans smoke several long cigars in one curing séance or during a tobacco palaver, inhaling the smoke through hyperventilation. Or, as Huxley (1957:195) so graphically describes it, the Urubú shaman inhales the smoke from his cigar with "great sucking gasps" into his lungs, "working his shoulders like bellows" for copious and speedy intake. Thus the indigenous method of cigar smoking through inhalation appears to be more intensive than is typical of Western cigar smokers, while the quantity of tobacco consumed in either case and at any one time also seems to favor the native user.

Quite apart from considerations of smoking method and quantity, however, there is also the matter of the different species of tobacco involved. In many South American and Mesoamerican societies native smokers use *Nicotiana rustica* to roll their cigars rather than *N. tabacum*, or tobacco blends, as is the case with commercial cigars. This is the *coboba* ritual tobacco which Warao shamans expect traders to bring back from their expeditions; and *N. rustica* was used for cigar making in other tribes of western South America and Mexico. With nicotine concentrations in excess of 18 percent, cigars of this tobacco species are strong enough to produce hallucinations and catatonia (Siegel, Collings, and Díaz 1977:22) and stand unrivaled in the world. But no matter what the tobacco species in cigar smoking, close to 100 percent efficiency in inhaled mainstream nicotine absorption does not seem impossible to achieve by this method (Wenusch 1942; Larson 1960:34).

A special method of respiratory absorption of nicotine is by inhalation of free tobacco smoke in the atmosphere. A case in point is that of the Tupinamba of Brazil, whose religious practitioners blow smoke from cigars on the heads and faces of circumambulating warriors (fig. 6). They also burn tobacco leaves in effigy rattles representing a head, in order to inhale the smoke that streams through the orifices of the instrument. Jivaro men blow tobacco smoke through tubes several feet long into the open mouth of a partner until the latter falls to the ground, vomits, and enters a state of physical and mental collapse

(Rivet 1907:601-02, fig. 21), (fig. 26). Cuna elders of Panama inhale tobacco smoke that is blown into their faces by a youth from an inverted cigar (fig. 16). Whereas this latter practice seems to serve a purely hedonistic purpose for the simple pleasure of relaxation offered by low nicotine intake, there exists, of course, in South America the widespread custom of blowing tobacco smoke prophylactically and therapeutically into the face and over the entire body of patients.

Practices of the latter sort are commonly explained on purely symbolic grounds, the interpretation of the exhaled tobacco smoke being the visible and magically endowed breath of the shaman. However, besides the psychological effect that this practice and its associated beliefs evoke in the patient who receives the manifest power of his/her shaman's breath, there is, I submit, a biological effect connected with low-level nicotine absorption through this form of "involuntary smoking." More often than not, curing séances accompanied by tobacco smoke blowing take place in a sheltered and poorly ventilated area of the Indian's house, where the concentration of nicotine in the atmosphere can be high enough to affect the patient who inhales the smoke blown over his head and body. Even very low levels of 15 to 32  $\mu\text{g}/\text{m}^3$  measured in the air cause a small rise in nicotine excretion (Cano et al. 1970). But the rise of nicotine levels in a patient who has clouds of smoke blown into his face may be substantially higher and similar to the values of 90 ng/ml (plasma) and 80 ng/ml (urine) that occur in nonsmokers exposed to severe tobacco smoke pollution (Russell and Feyerabend 1975). Considering that under traditional circumstances the use of tobacco was restricted to shamans and, furthermore, that even in modern Indian societies with secularized tobacco use, women and children are often little habituated to nicotine or not at all, rates of nicotine absorption as are involved in the kinds of involuntary smoking mentioned here are apt to produce the tonic effect of the biphasic drug that shamans seek for their ailing patients.

### *Percutaneous Absorption*

Application of tobacco or tobacco products to the intact or broken skin is a commonly overlooked but widely practiced method of native nicotine administration in South America. As conclusively demonstrated by experimental and clinical studies, nicotine readily penetrates the skin, and percutaneous absorption of the alkaloid in amounts large enough to cause severe and even fatal poisoning in humans has variously been effected by the application to the skin of tobacco, tobacco leaves, infusions or decoctions, and pipe tar (Larson,

Haag, and Silvette 1961:2). With the possible exception of the latter, South American Indians avail themselves of these same and several other methods of percutaneous nicotine administration.

When topically applied, tobacco is often intended for local effect. However, passage by passive diffusion of nicotine through the cornified layer to the underlying dermis well supplied with lymph and blood capillaries leads also to systemic effects of this parenteral form of nicotine administration. In cases of immediate application of tobacco to the lesioned skin, nicotine is absorbed without delay through the exposed tissues below the epidermis. In other cases, tobacco and tobacco preparations are topically applied to the intact skin so that the rate and speed of absorption of pharmacologically significant amounts of the drug depend to a large degree on the contact intensity with which it can be supplied. Relatively prolonged and continuous nicotine delivery is effected by the Indians through the application of tobacco leaf, paste, snuff plasters, tobacco juice ablutions, nicotine-laden sputum, and fumigations, all of which function as more or less sustained-release mechanisms of application.

The main purpose of local tobacco administration is as an analgesic. In experimental cases, tobacco has been shown to produce senso-cutaneous modifications and to be effective in reducing cutaneous pain (Schtscherbak 1887). Mattila, Ahtec, and Saariniivaara (1968) demonstrated a rise in the pain threshold by tobacco analgesia in animals and suggested that the analgesic effect resulted from central cholinergic blockage. Of considerable importance in topical administration is the fact that nicotine releases norepinephrine from the heart, the blood vessels, and the skin to produce a local effect. Less than one microgram of nicotine can cause constriction of blood vessels, greatly reducing flow in skin vessels. Skin temperature has been shown to fall from 32.5°C to 25.5°C from smoking one cigarette (Burn 1962:16-18). This striking cooling effect of nicotine on the skin not only provides soothing comfort to the user in the tropics, but may also become associated with the concept of heat control by the tobacco shaman.

### *Ocular Absorption*

Another rather uncommon route of nicotine absorption practiced by South American Indians is by way of the eye. Nicotine is absorbed from the conjunctiva of the inner surface of the eyelid and the forepart of the eyeball. Administration of the alkaloid takes place either by dropping tobacco juice or by blowing tobacco smoke into the eyes. The former procedure is very painful and generally causes occlusion of the eyes. The blowing of tobacco smoke into the eye is irritative but not painful and causes copious lacrimation (Passey and

Smith 1963). In both cases, however, abundance of liquid in the form of juice and tears and relative contact intensity due to closing of the eye greatly facilitate penetration of nicotine through the membranous barrier, so that absorption of nicotine from the conjunctiva is rapid with systemic effects (Macht 1938).

Application of nicotine directly on the eyeball has a corrosive effect and produces an initial miosis (Rogow 1867). Cutaneous administration of nicotine via the outer eyelid has previously been referred to. Suffice it to point out in the present context that parts of any liquid applied in its immediate vicinity are bound to get into the eye and affect both the iris and the conjunctiva.

It becomes apparent from the foregoing discussion of the sites of nicotine absorption that, short of injection, South American Indians make use of practically all possible routes of administration. Furthermore, on certain occasions, they avail themselves simultaneously of several modes of administration to orchestrate the effects of nicotine with those of alcohol and hallucinogens. Shamanic apprentices in Guiana, for instance, may take cigars, tobacco juice, tobacco powder, and cupfuls of tobacco pulp, and drink different kinds of alcoholic beverages in the course of a single initiatory séance, while their masters indulge in drinking tobacco juice through the mouth and nose at the same time that they ingest *takini* latex (*Helicostylis tomentosa* or *H. pedunculata*) or parica snuff (*Virola*). Rather than being just followers of the motto "more is better," South American shamans are becoming increasingly known for their empirical knowledge of the psychotropic properties of botanically derived drugs and for their experience in mixing and dosing them to achieve a variety of desired effects.

#### DISTRIBUTION AND BIOTRANSFORMATION OF NICOTINE

From the different enteral and parenteral media of application nicotine reaches its sites of action by transportation via the bloodstream and by distribution of the solute into the cells and tissues. Free nicotine is highly fat soluble and capable of passing the cellular membranes of the capillary endothelium most expeditiously. As this transfer occurs, the portion of nicotine circulating as dissociated salts is changed into free nicotine and continues the transmembranal distribution process from the vascular into the extracellular and intracellular fluids (Ashton and Stepney 1982:32). It bespeaks its extraordinary degree of toxicity that nicotine affects so many tissues and organs throughout the body even when present only in relatively small amounts within the fluid pool. Though the presence of nicotine in the various tissues may vary in quantity and



over time, experiments have shown that the drug is absorbed by all tissues of the body (Langley 1909).

Remarkable is the speed with which nicotine invades the organism. For instance, from the onset of smoking, it reaches the brain in seven seconds. The adrenal medulla and the sympathetic ganglia are affected with similar promptness, and animal experiments have shown that other nervous tissue experiences peak concentrations of the drug quite shortly after administration (Larson, Haag, and Silvette 1961; Larson and Silvette 1975).

Equally rapid is the process of nicotine metabolism. Biotransformation takes place mainly in the liver, but also in the lung, the kidney, and still other organs and tissues. Removal of the drug from the body occurs primarily by way of the kidney through urination. Only 10 percent is excreted as unchanged nicotine, the rest in chemically altered form (Larson, Haag, and Silvette 1961:17; Larson 1952:279). Thus, the maintenance of elevated concentration levels of nicotine in the body requires repeated inhalations of tobacco smoke, frequent insufflations of rapé or application of any other form of intermittent administration of the drug.

#### NICOTINE AND ACETYLCHOLINE

The condition that facilitates the swift and diverse action of nicotine in the organism is the structural similarity of the nicotine molecule to the naturally occurring neurohumor acetylcholine. Acetylcholine is one of many neurohumors that function as chemical mediators at nerve endings. More specifically, as detailed by Levine (1983:391-92), acetylcholine mediates at "the axonal terminals of (1) all preganglionic fibers of both divisions of the ANS [autonomic nervous system] and preganglionic nerves to the adrenal medulla; (2) all postganglionic fibers of the parasympathetic nervous system; and (3) some postganglionic fibers of the sympathetic nervous system." Finally, acetylcholine serves as a neurohumor "in all motor nerves of the somatic nervous system." Message transfer through acetylcholine or other specific neurohumoral transmitter agents entails conduction of a nerve impulse along the nerve fiber to the axonal terminals, where the impulse liberates the neurohumor from presynaptic storage vesicles. Diffusing across the synaptic cleft that separates two neurons or across other neuroeffector junctional sites, transmission takes place when the neurohumor combines with specific post-junctional chemical receptors, initiating a further electrical impulse or chemical activity in the affected nerve cell. Following each transmission action, the neurohumor acetylcholine is disposed of at most cholinergic junctions by the

hydrolytic action of the highly specialized enzyme acetylcholinesterase; at others it is apparently removed by diffusion.

The importance of all this to the study of nicotine action is that thanks to the mentioned structural similarities between the drug and the body chemical, the nicotine molecule is able to function like acetylcholine and to combine with cholinergic receptor sites to activate them like the normal neurohumor. Recognition of the nicotine molecule by cholinergic receptors is possible because the positive charge on its ammonium head and the electronegative charge of its pyridine ring are exactly the same distance apart from each other as are corresponding electrical charges on the acetylcholine molecule. Like the latter, the nicotine molecule is attracted by and combines with opposite charges located on the postganglionic receptor sites. This simulation capability of nicotine has been likened to the function of a skeleton key inasmuch as it fits and opens, so to speak, all cholinergic locks of postsynaptic receptors in the body. Conventionally, therefore, acetylcholine receptors that respond to nicotine are classified as nicotinic receptors. Producing qualitatively the same effects as those produced by acetylcholine, nicotine not only affects a plurality of organs but also interacts with transmitter systems other than the cholinergic.

It follows that to know which effector organs contain cholinergic receptors of the nicotine type is to know which ones are most likely to respond to nicotine. As previously mentioned, this includes the autonomic and somatic ganglia. Typically, nicotine combines with cholinergic receptors for longer periods of time than does acetylcholine so that nerve impulses are inhibited and transmission is impeded as long as the receptor sites remain occupied by nicotine. In other words, depending on the amount of nicotine present at the synapse, the drug may display a biphasic effect, ranging from that of a stimulant, if small doses are involved, to that of a depressant or even of a lethal blockade, if large or exaggerated doses are present, respectively. Stimulant and depressant phases are also displayed by the adrenal medulla in response to nicotine action, small doses triggering the discharge of catecholamines and large doses inhibiting their release (Ashton and Stepney 1982:36-41; Levine 1983:42-44, 390; Volle and Koelle 1975:565).

#### NICOTINE, AMINES, AND HALLUCINOGENS

The previously noted interaction of nicotine with other than cholinergic transmitter systems is exemplified in the effect the alkaloid has on the neurohumor norepinephrine (Watts 1960), which it liberates from its stores at the

postganglionic fibers of the so-called adrenergic nerves of the sympathetic nervous system. But nicotine also releases epinephrine, serotonin, dopamine, and sundry other compounds (cf. Larsson 1985:10, table 1), furthering their distribution by increasing the permeability of membranes (Werle and Schievelbein 1966). The effects of these substances on the native tobacco user are of great significance to the understanding of tobacco ethnobotany in South America and elsewhere. For instance, much remains to be said about the action of nicotine-triggered release of catecholamines like epinephrine and norepinephrine. Liberation of epinephrine and, on a similar but generally reduced basis, of norepinephrine produces effects like tenseness, excitement, restlessness, wakefulness, palpitation, hyperventilation, anxiety, fear, weakness, tremor, dizziness, throbbing headache, reduction in appetite, moist skin, pallor, lacrimation, and a heightened blood flow to skeletal muscles. Epinephrine elevates blood pressure, blood glucose, and lactate (Innes and Nickerson 1975:483-91). Effects of epinephrine reactions of this kind and magnitude have had a profound influence on South American tobacco lore.

Finally, one may ponder the implication of the fact that norepinephrine is a neurohormone chemically related to the hallucinogen mescaline, with which it shares the same basic structure; both are derivatives of phenylethylamine. Then, there is the fact that nicotine is capable of releasing serotonin from the brain commensurate in amount with the concentration of nicotine present (Schievelbein 1962:231; Schievelbein, Surberg, and Werle 1962:53; Schievelbein, Werle, and Jacoby 1961:602, 603). This brain hormone, in turn, is closely related to the hallucinogens psilocybine and psilocine (Schultes and Hofmann 1979:172-75). Not surprisingly, therefore, the question has been raised whether this trigger-effect of nicotine on amines chemically related to plant hallucinogens may play a role in evoking hallucinogenic effects in the tobacco user (Murphree 1967; Poindexter and Carpenter 1962*a, b*; Cuzin 1966; Dobkin de Rios 1984; Janiger and Dobkin de Rios 1973, 1976). As documented in the ethnographic sections of the book, there remains no doubt that through action on the central nervous system nicotine is apt to produce altered states of consciousness akin to hallucination. However, the general character of this ethnographic record makes it impossible to contribute meaningfully to the solution of a specific pharmacological problem of this kind. More appropriately, rather, it is hypothesized here for examination in the final chapter, that in the human body the action of nicotine on the central and peripheral nervous systems (including the sympathoadrenal system) produces physiological and psychological effects that have served (and still serve) the Indian to confirm basic tenets of shamanic ideology.

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## *Tobacco Shamanism*

SCATTERED THROUGHOUT THE LITERATURE ON TOBACCO USE IN SOUTH America are references to shamanic practices that betray a keen awareness, on the part of the Indian, of the organoleptic effect of nicotine on the human body. Psycho-physiological symptoms of nicotine action together with certain botanical characteristics of the plant itself have served to confirm and legitimize a number of core tenets of a drug-free shamanic ideology, to which ancient Americans from Alaska to Tierra del Fuego came to adhere.

In this context it is well to recall that by the time Paleo-Indian hunters set foot in the New World, wild *Nicotiana* had long since become dispersed in the Americas and beyond. But despite the fact that the South American habitat of wild nicotianas coincided largely with the distribution area of hunters in the southern half of the subcontinent, Paleo-Indian shamans relied on endogenous and ascetic techniques of mystic ecstasy rather than on drug-induced trance. The absence of sacred tobacco use remained a characteristic trait of South American hunters and gatherers well into late historic times (Steward 1949:678). As Cooper (1949:557) has put it:

In South American Indian life, aboriginal stimulants and narcotics are confined almost exclusively to the horticultural peoples, and one or more such stimulants and/or narcotics are in use among practically all these peoples. Conversely, stimulants and narcotics of all kinds are, or in earlier post-Contact days were, completely lacking among the southern nonhorticultural peoples from the southern and perhaps the northern limits of the Pampa to Cape Horn, as also they are or until recent times were from a large and fairly continuous block of peoples (Gé and other non-Tupí), some horticultural, some non-horticultural, of Eastern and Southern Brazil.

Of the various aboriginal South American stimulants and narcotics, alcoholic beverages and tobacco have the widest distribution, being practically coterminous with gardening.

Thus, the use of psychotropics, including tobacco, in South American shamanism is of relatively late standing. Tobacco shamanism,<sup>1</sup> based predominantly on cultivated *Nicotiana rustica* and *N. tabacum*, is tied to the origin of slash-and-burn farming in the rain forest of the northern half of the subcontinent, where wild nicotianas are absent. It follows that while man was not instrumental in the dispersal of wild *Nicotiana*, the distribution of the cultigens involved in tobacco shamanism has been a function of the expansion of Neo-Indian farmers who originated and perpetuated them in their gardens. Considering that the origin of horticulture in lowland South America may go back some eight thousand years, tobacco shamanism, while more recent than drug-free shamanism, is still of considerable antiquity. The unprecedented diffusion throughout the New World of tobacco as a ritual intoxicant is probably due in large part to the fact that nicotine action tended to provide empirical support, in many ways, for shamanic beliefs of early Americans.

#### NATURAL MODELING IN TOBACCO SHAMANISM

Examined below are some of the characteristic features of shamanism and their relationships to nicotine action. In addition to the sporadic ethnographic data assembled through library research, I draw upon more comprehensive information available for the Warao to broaden the data base.

##### *Botanical Models*

To begin with certain botanical characteristics of the tobacco plant that served as models for shamanic concepts and beliefs, there is the fact that "a considerable number of species of *Nicotiana* have a propensity to occur in quantity on soil newly disturbed, naturally or artificially" (Goodspeed 1954:13). So, for instance, *Nicotiana rustica*, among others, belongs to the species found along roads, ditches, and plowed fields, and *N. tomentosa* has been observed in Peru to "grow to considerable size in enriched soil" (Goodspeed 1954:13, 355). The

1. The designation "tobacco shaman" is used by a number of tribes, like the Cariña, the Machigenga, and the Campa, to differentiate the tobacco-using shaman from his colleague who employs other drug plants. Extending the concept, I use "tobacco shaman" here to designate the religious practitioner who uses tobacco, whether exclusively or not, to be ordained, to officiate, and to achieve altered states of consciousness. Based on the use of a cultigen, the two concepts of "tobacco shaman" and "tobacco shamanism" are convenient to differentiate between the religious practitioner and his office of a drug-free nonagricultural (Paleo-Indian) and an agricultural (Neo-Indian) tradition of culture.

roadside distribution of tobacco coincides with the belief of Brazilian Indians that Kurumpira, a central figure of native lore, lives along the roads where he expects to find tobacco, especially in the form of gifts from passersby (Teschauer 1906:27). The occurrence of tobacco on sites fertilized by ashes is mentioned in narratives about the origin of crop plants. In Pilagá mythology a cannibal-woman is killed by the culture hero and from her ashes the first tobacco grows (Métraux 1946a:60–62). Grave sites and old abandoned house sites (which often serve as burial grounds) are places of disturbed and enriched soil, and the occurrence of tobacco in quantity on them has not gone unnoticed by the Indians. In fact, they have etiologically identified the plant with the ancestors and with ancestral deified shamans. Receiving the gift of the plant from the ancestors' graves, shamans transform it into an offering of tobacco to serve as a means of communion between mankind and the Supernaturals (Carib and Arawak of Guiana, Coll 1903).<sup>2</sup> As Kruse (1951–52:918) learned among the Mundurucú the tobacco-spirit, when still in human form, was buried under a tree and from his grave grew the first tobacco plant.

A sympathetic association between botanical characteristics of the tobacco plant and shamanic beliefs is based on the mottling of the leaves, which is likened to the markings on the fur of the jaguar. The Acawaio, as mentioned earlier, refer to this tobacco as tiger tobacco (*kumeli*), and shamans smoke it to exorcise and destroy evil spirits (Butt Colson 1977:53). Tiger tobacco is of a very special potency, and its effects on the human body relate it to shamanic combativeness and to the shaman-jaguar transformation complex, about which more will be said presently.

Falling into the same category of analogical associations is the relationship which South American Indians see between the fleshy and venational tobacco leaf and human skin. In Barasana genesis tobacco leaves form the "skin" cover of a human figurine (Torres Laborde 1969:32). A flayed personage in Yecwana mythology has his skin restored by being covered with tobacco leaves (Disselhoff and Zerries 1974:108). Through application of tobacco directly to the human skin shamans believe they can endow it with the potency of the leaf, cleanse the body, and restore good health. How this belief in the innate efficacy of the plant is coupled with the belief in the shaman's special powers of breath and blowing, for instance, will be discussed later in this chapter.

### *Chemical Models*

Another instance of natural modeling in tobacco shamanism becomes apparent in the recognition, by the Indians, of tobacco (nicotine) as a powerful

2. See Harrington (1932a:78–79) and Kroeber (1925:88) for Yurok practices.

insecticide. As such, tobacco preparations are commonly employed on a physical level to rid seed stock and the human body of insect infestations. On a projected metaphysical level, tobacco products are used to incense people for the purpose of delivering them from pathogenic evil.

Little needs to be said here about the extraordinary effectiveness of nicotine as an insecticide and vermifuge. Nicotine is a most powerful insect killer; some 8 percent of the insecticides in tobacco are transferred into the mainstream smoke Indians use, among other methods, to fumigate insects (Nesemann, Schröder, and Seehofer 1968). Beginning with a chance discovery by Turner in 1762, nicotine clysters were shown in Western medicine to be effective against intestinal worms. Since then, tobacco has been applied by mouth (Cunningham 1836) and as a cataplasm simultaneously with oral administration (Sigmond 1838) to purge patients of roundworms, tapeworms, threadworms, and pinworms. More commonly, however, Westerners applied vermifuges in the form of an enema of tobacco infusion.

Known in the Western world as an insecticide since 1690 (McIndoo, Roark, and Busbey 1936), tobacco was found to have been used by South American shamans in that capacity at least as early as 1641, when Tarairiú shamans were observed to fumigate maize "seeds with tobacco smoke to enhance their fertility" (Lowie 1946c:565). The practice of fumigating maize before sowing it is being continued by the Guaraní and Yupa at the present time (Cadogan 1958:93; Paolisso, pers. comm.), and the blowing of smoke over new maize by the Tapirapé (Wagley 1977:195) and over maize and potatoes by the Guambiano (Rowe 1954-55:150-51) to "cure" or purify them may have its origin in the same kind of farmer's wisdom. Foods like fish and cassava are preserved in a similar way (Rivero 1956:108-09).

Extending this practice of fumigating seeds and edibles to rid them of insects and reap the full benefit of their natural potency, elders of the Camayura gather around a piquia tree (*Caryocar* sp.), should it bear badly, to blow tobacco smoke at it while simultaneously requesting its guardian spirit to cure the tree of evil and make it bear well (Oberg 1953a:23-24). Manasi (Chiquito) and Mojo shamans blow tobacco smoke across the river and recite charms to propitiate the river spirit as they ask him to reward the fishermen with an abundant catch (Fernández 1895:275; Métraux 1943:24; 1948c:390).

Similarly, tobacco is closely related to hunting luck in the ideology of the Cashinaua, whose ancestors, taking tobacco juice for the first time, were transformed into game animals. One woman who abstained and retained her human form was ordered by the tobacco-leaf spirit to dry some tobacco leaves; she became pregnant and gave origin to mankind (Branco 1956:65). Blowing tobacco smoke over the fetus of a tapir is practiced by the Mundurucú to create

the Mother of the Tapir and to attract abundant game. The same Indians create the Mother of Peccary to attract herds of that game animal (Murphy 1958:40-41). Participants at a fertility festival of the Chimane ingest tobacco powder to ensure good hunting and fishing (Riester 1976:305). Yaruro shamans blow smoke from their cigars over parties setting out to hunt, fish, gather, or cultivate so as to protect them from all sorts of potential danger and thereby guarantee an abundant food supply (Mitrani 1973:53). Shamanic tobacco blowing as a fertility practice is especially well developed among the Waiwai of Guiana, where it pertains to an even more comprehensive custom of magic blowing (Fock 1963:104-13).

Employing magic stones (*ñukwa*) and chants (*eremu*) shamans may blow tobacco smoke on

the claws of an armadillo when cassava cuttings are being planted in order that they may acquire good roots. . . . By a special *eremu* a *yaskomo* [shaman] can in dreams summon the *okomo* (wasps) in order that they may sting caterpillars to death, before they can damage the crop. Another *eremu* assures the fruit crop of useful trees, for example the *lu* palm, and for this purpose a big fly (*pom*) that sits frequently on clusters of the *lu* flower is summoned. The blossom *eremu* runs: "Pom, tia, tia, tia, pom, tia, tia, tia" (repeated). The *yaskomo* can also ensure by an *eremu* a good yield from the pepper bushes.

By the help of the *ñukwa* stone and tobacco the *yaskomo*, as we saw, can invoke the Father of wild pigs, and using an *eremu* he is also able to summon wild pigs. . . . Other *eremu* ensure good hunting; one, for example can cause the spider monkey to scream and thus betray itself. A *yaskomo* can also assure the bird stock by blowing tobacco smoke over a *ñukwa* stone representing the Father of birds, and an *eremu* can also be used by him to bring good fishing. (Fock 1963:114)

In native therapy tobacco is also used as an insecticide on the human body. The Otomac, for example, rub their bodies with chewing tobacco to dislodge hard-to-remove ticks (Bueno 1933:42). The Yanoama employ tobacco juice for the same purpose against ticks and sand fleas. Tobacco is highly effective against the dreaded infestations of a wide-ranging neotropic species of botfly (*Dermatobia hominis*), which undergoes its larval development subcutaneously in man and other mammals. In fact, the Yuracare, Chacobo, Chimane, and Atsahuaca were said to cultivate tobacco especially as a medicament against this so-called macaque, or mosquito worm, and to place tobacco powder on the entry spot on the skin to stupefy the insect and to facilitate its extraction (Nordenskiöld 1912a:182; 1912b:158; 1922:182; Métraux 1948c:452). From the Japurá River, Bates (1864, 2:407) reported that Indians removed the larvae by applying strong tobacco juice, the same way it is used by Indians of Guiana



(Brown 1876:353). The Cuna combat the botfly larvae by blowing smoke "from a pipe especially prepared and with a specially treated tobacco into the wound" (Larsen and Larsen 1964:122), and Indians of Surinam extract the *Muskitten-wurm* by the same method (Kappler 1887:187). Worm-infested wounds were treated by the Tupinamba with strong tobacco juice, and Indians of the Gran Chaco voided intestinal worms upon application of tobacco powder (Kramer 1945:63).

With convincing results like these to back them up, shamans claim to be able to direct their tobacco power against invisible pathogens as well and to potentiate the vitality and reproductive faculties of their fellow men. Understandably, these supernatural enemies were often envisioned in the form of natural parasites. The Urubú, for instance, believe themselves to be susceptible to maggot infestations emanating from the King-Vulture spirit. The maggots must be extracted with tobacco smoke. Or there is the case of the Mbyá-Guaraní, who consider tobacco smoke a life-giving mist attributed to the god of spring; their shamans fumigate patients with tobacco smoke to purge them of larval and helminthic infestations with which they are presumed to have fallen ill through the action of a sorcerer (Cadogan 1958:93).

Be this as it may, South American Indians employ tobacco to enhance human vitality in general (Carib, Church 1912:33; Tupinamba, Métraux 1950a:63; Cuna, Rubio 1940:21; Saliva, Steward 1948a:37) and human fertility and fecundity in particular throughout a person's life in many different ways. Belief in the life-giving force of tobacco becomes apparent in myth when women are created from clay over which tobacco smoke is blown (Yecuana, Civricux 1980:23), or, as mentioned earlier, when models of bone wrapped in tobacco leaves come to life if blown upon with tobacco smoke (Barasana, Torres Laborde 1969:32). In a similar vein the Baré (Silva 1957:145), the Tucano (Rodríguez Lamus 1966:3), and the Urubú (Huxley 1957:196) believe that children blown over with tobacco smoke "revive," as also Barasana (Torres Laborde 1969:32) and Shipaya (Nimuendajú 1919-20:1004) shamans blow tobacco smoke to "resurrect" the dead.

Virgins are fumigated with tobacco prior to defloration (Tairairú, Lowie 1946c:565) or to make them attractive for marriage (Cuna, Fulop 1954:107). Boys smoke and blow smoke in the course of puberty rituals (Desana, Reichel-Dolmatoff 1971:143). Brides among the Barí have masticated tobacco placed on their legs and breasts by their fathers (Castillo Caballero 1981:165); young women of the Siriono are prophylactically incensed with mouthfuls of tobacco smoke (Cardús 1886:282), as are Tapirapé women who wish to conceive (Wagley 1977:67). At puberty, at the time of their wedding, and repeatedly in the course of later life, Jivaro women undergo a special ritual in the course of

which they drink quantities of tobacco juice to obtain dream visions and be filled with the presence in their bodies of the tobacco spirit (Harner 1973a:94; Karsten 1920a:11-29; 1935:191-207). During the night they retire to sleep in the solitude of a hut and to dream of abundant domestic animals, hunting dogs, and fertile gardens. Together with other women of the group, brides chant to the earth mother. The purpose of the ritual, explains Karsten (1920a:28-29),

is to impart to the future housewife strength and ability for the various domestic works and duties which are incumbent on a married Jibaro woman. The spirit of the tobacco will entirely take possession of her and fill her with a mysterious power not only for the moment but for many years onwards, and this power will, as it were automatically, be transferred to all departments of her activity: she will get energy and insight for the attendance of the domestic animals and for the care of the plantations of manioc, plantain, camote, beans, etc., so that the former will grow fat and increase in number, the latter develop, flourish, and bear abundant fruits. . . . The woman will also be able to serve her husband well and to educate her children nicely. All this is effected by the tobacco, or properly speaking, by the spirit (*wakáni*) of tobacco, upon which a mysterious influence has been exercised through the ceremonies of the feast.

Some years later, when the domestic economy of the family seems to require it, when there are no or only few animals, when the plantations have grown old and give only a scarce crop, a new tobacco feast is made for the housewife. This feast is thus from time to time repeated within the same family.

During this exceptional ceremony in which women are not passively blown upon with tobacco smoke but actively partake of sacramental tobacco juice, Jivaro women take on a shaman's mediating functions between the Supernaturals and mankind, a relatively rare instance in South American ethnology of ritual tobacco use by women. Cuna shamanesses who communicate with the spirits, predict the future, and cure the sick smoke tobacco when practicing and are another example of ritual tobacco use by women in South America (Gálvez 1952:117). The Tucano wife has her husband blow smoke from his cigar over her naked body with magic intent (Silva 1962:389), and a mythological female of the Baniwa religion is impregnated by a tobacco leaf (Silva 1962:389). The Tucano and Tapirapé blow smoke to assist birthing women (Bödinger 1965:73; Wagley 1977:67), while among several tribes of Brazil, mothers and their newborn infants are subjected to fumigation rituals (Ramos de Aranjó Pereira 1943-47, 1:156; Coroado, Métraux 1946a:528). In Baniwa mythology children "nourished" by cigar smoke grow up with miraculous speed (Saake 1958:273). Guayaki women and Camayura fathers subject their newborns to prolonged fumigations with tobacco smoke (Clastres 1974:113; Oberg 1953a:61). Tucano elders blow smoke during the naming ceremony of their children so as to align them with the Supernaturals (Silva 1962:430). And Cubeo grandfathers blow

smoke to protect their own offspring and that of the entire sib (Goldman 1963:170).

In sum, I believe that the empirical relationship of the tobacco plant with the ancestral graves, its analogical formal associations, and demonstrable potency as an insecticide and vermifuge—apart from what additional act of faith is involved in ascribing to the shaman the power of purification and sanctification—are bound to have affirmed any related beliefs in his other-worldly status and role.

### INITIATORY SICKNESS, DEATH, AND ORDEALS

#### *Magic Thresholds*

Shamans the world over must undergo initiatory ecstasy to manifest their call to office and to validate their vocation and supernatural power to themselves and to their society (Eliade 1964:35). South American shamans also undergo ritual ordination and experience symbolic death, both essential stations on the arduous road to shamanism on the continent as elsewhere. Familiarity with death as a gateway to life on a different plane of existence is what sets the shaman apart from the average person. Thus, shamans are frequent travelers across the threshold between life and death and, beginning with the initiatory “dismemberment” and contemplation of their own “death,” they “die” repeatedly in the course of their praxis.

Early chroniclers and missionaries to the New World were puzzled by the custom of native practitioners of seeking a deathlike state and of “going out of their minds” in order to communicate with the “devil” (Benzoni 1967 [1565]; Monardes 1580). The phenomenon of the Indians’ seeking refuge in the shaman, who, in service to his people, took death upon himself to be reborn a savior, was disquietingly reminiscent of the central doctrine of their own religion. What they and subsequent generations of religious and secular explorers failed to recognize was that this very psychotropic experience of the native curer constitutes the basis of a traditional theory of healing which stipulates that he who overcomes death by healing himself is capable of curing and revitalizing others.

To assist them on their wanderings between the reality of this world and that of the otherworld, South American shamans employ a variety of hallucinogenic drugs and tobacco. They have learned how to dose themselves appropriately for a safe round-trip journey and to appreciate tobacco, in the words of the chronicler, as a “very precious” herb indeed (Oviciedo y Valdés 1851–55, 1:131).

Whereas hallucinogens are particularly effective in providing the vivid imagery that illustrates the shaman's celestial journey, nicotine, the biphasic drug in tobacco, is exceptionally well suited to manifest the continuum of dying, which begins with initial nausea, heavy breathing, vomiting, and prostration (illness); continues with tremors, convulsion, or seizure (agony); and ends with peripheral paralysis of the respiratory muscle (death). Progressive blockade of impulse transmission at autonomic ganglia and central stimulation are the primary pharmacological conditions of this journey toward death whence, if appropriately dosed, the shaman is granted safe return thanks to the prompt biotransformation of nicotine in the body (Wolff, Hawkins, and Giles 1949).

Here is how Dole (1964:57–58) witnessed the death and revivification of a tobacco shaman among the Cuicuru:

Metsé inhaled deeply, and as he finished one cigarette an attending shaman handed him another lighted one. Metsé inhaled all the smoke, and soon began to evince considerable physical distress. After about ten minutes his right leg began to tremble. Later his left arm began to twitch. He swallowed smoke as well as inhaling it, and soon was groaning in pain. His respiration became labored, and he groaned with every exhalation. By this time the smoke in his stomach was causing him to retch. He swallowed with audible gulps in an obvious effort to keep from vomiting.

The more he inhaled the more nervous he became. He rubbed his eyes, scratched his head and chest, blew his nose and wiped his hand on his leg. He took another cigarette and continued to inhale until he was near to collapse. A helper now supported his back as he continued to grow weaker. Suddenly he “died,” flinging his arms outward and straightening his legs stiffly. At this point the log stool was removed from beneath him, and three men held his rigid body horizontal about chest high for a few moments. His tendons snapped as he writhed slowly in this position. Soon he relaxed and was lowered to a sitting position on the ground, his head hanging limply and his back again supported by the helper.

During his “death” Metsé breathed continuously, but in a very subdued manner. After some minutes his eyelids fluttered. He remained in this state of collapse nearly fifteen minutes. From time to time toward the end of this period he moved his limbs slightly, breathed more deeply, and uttered some incomprehensible noises. As he began to revive, he rubbed his eyes, scratched his head several times and looked about in a startled manner as if listening for something. When Metsé had revived himself two attendant shamans rubbed his arms. One of the shamans drew on a cigarette and blew smoke gently on his chest and legs, especially on places that he indicated by stroking himself.

Because catatonic states near death are so essential to the proper conduct of shamanism, it is not surprising to find evidence throughout the ethnographic

literature of the existence among South American Indians of a tendency toward acute nicotine poisoning (Cooper 1949:534). I am referring not so much to instances where tobacco appears to have been used to produce deathlike states in victims marked for execution (Yupa) or live burial (Muisca), but to cases where shamanic masters take their apprentices after months or even years of progressive nicotine habituation to the very brink of death. In the course of a final ritual of initiation the candidate ingests such large quantities of tobacco that he suffers the successive stages of nicotine intoxication from nausea to catatonia. During the ordeal the master counts for his pupil's survival on nicotine-induced copious vomiting—which almost always (Larson, Haag, and Silvette 1961:473) but not invariably (Stevenson 1933) occurs—and realizes that should it fail, his student might suffer irreparable physical and psychological damage that could end in death (Barrère 1743:211).

The process becomes most apparent in shamanic initiation and practice, which involve symbolic rituals of magic illness and mystical death. In Guiana the novice is driven out of his mind (Macushi), remains unconscious for hours (Arecuna), goes into convulsions (Aparai), and reaches deathlike states (Arecuna). Or, as Goeje (1967:266) describes the sequence of tobacco intoxication among Guiana Indians, they fall asleep, tremble, faint, go blind, and reach a breathless state. Tobacco-mediated loss of consciousness and fainting spells are assimilated to ritual death (Jivaro, Stirling 1933), and the novice may indeed suffer transitory respiratory arrest (Larson and Silvette 1965:3), as described, for instance, by Carneiro and Dole for the Cuicuru (1956–57:201). But “he must submit to the chance of death by drinking the poisonous nicotian draught, the decoction of tobacco, in repeated and increasing doses” (Dance 1881:285). When a Warao shaman was initiated, his “death” was announced in a loud voice (Kirchhoff 1948a:880). The old shamans of the Tupinamba congregated to instruct the candidate and made him dance until he fell down unconscious. Forcing his mouth open, they inserted a funnel and made him swallow a cup of tobacco juice. This made the novice swoon and vomit blood, and the ordeal lasted for days (Biét 1664:385). Among the same Indians a woman was prepared for the office of soothsayer by the blowing of tobacco smoke over her body and by making her dance to exhaustion. In her unconscious state she was pronounced “dead” by the officiating shaman, who declared that he would soon bring her back to life again (Staden 1557). In a similar vein Aguaruna vision-seekers take tobacco enemas to “die repeated deaths,” Cuicuru neophytes are said to “die” (Dole 1964:55), and a Goajiro shamaness realizes that she may not return from the otherworld but may suffer a sudden death as a result of swallowing the juice of her tobacco paste or quid (Perrin pers. comm.).

The continuum of biphasic nicotine action within the body is experienced

mentally as a journey of the soul outside the body. Here is how a Tapirapé man described his journey to the house of Thunder (Wagley 1940:258; cf. 1977:209).

I smoked much and then I smoked again. I sang, I saw one large sun and it came toward me and disappeared. I saw many small suns. They came and they left. I saw Thunder. It was small and came (to the house) in a small canoe. It was Thunder's child (a *topu*). It wore a small headdress of parrot feathers. It had a small lip plug. I reached to pull out the lip plug but it left. [The shaman did not conquer the *topu* and he was shot down by an arrow while he was unconscious] . . . all was dark. I saw many suns. I travelled singing as I walked. I spent three days walking. I climbed a large mountain on the other side of the Araguaya. There it is that the sun comes up. I saw Kanawana. He was big and his body was covered with much hair. He had many red parrot feathers. There were many *topu* and many souls of shamans. I did not talk but came back. [If he had touched Thunder's rattle he would have stayed (died); but he was properly treated with tobacco smoke and returned to consciousness.]

Thus, along the celestial road the soul of the person in trance repeatedly encounters and escapes death. He may reach a crossroad and must decide whether to walk to the Land without Morning or the Land without Evening (Cariña, Andres 1938:339; Penard 1928:650). He must clear dangerous passages and evade death-dealing thrusts and blows. Finally, shamanic neophytes are overcome by the powers of disintegration and witness the dismemberment and eventual reconstitution of their bodies.

For the priest-shaman of the Warao this tobacco-mediated journey of the neophyte leads past stations where he smokes yet more tobacco, where he clears an abyss filled with hungry jaguars, snapping alligators, and frenzied sharks, all eager to devour him. He must pass places where demons armed with spears are waiting to kill him, where slippery spots threaten to unbalance, and giant raptors claw him. Finally, he must pass through a hole in an enormous tree with rapidly opening and closing doors. These *symplegades* are the actual threshold between life and death. Jumping through the clashing doors, he beholds the bones of those who went before him but failed to clear the gateway. Not finding his own bones among them he returns from the other-world restored to new life.

Or there is the initiatory journey of the dark shaman of the Warao. After fasting and smoking incessantly for a month, the novice in his ecstatic dream state meets a spirit who beats him across the neck with a heavy club. "I was like dead," reports the novice later. "But I did not die." And again the spirit kills the neophyte, but this time places him in a coffin. "But I was not really dead. I was lying there in my coffin when I discovered a small hole through which I escaped." Finally, toward the end of the initiation period, the novice is emaci-

ated and truly near death. In his trance the demonic spirit appears once more and leads him to his grave. This time it is a sarcophagus made of stone slabs. Inside it is cold and pitch dark. The foul stench of putrefaction is unbearable. He feels faint and terrified but when day breaks he discovers a crack between the stone slabs that cage him. Again he escapes and is made whole (Wilbert 1972a:64-65, 74-76).

Then there is the weather shaman of the Warao, who during initiation refrains from eating and drinking while heavily smoking tobacco from three-foot cigars. In his emaciated state the novice falls into a trance and meets a black giant of colossal proportions who swallows him. The neophyte experiences his passing through the giant's body as a long journey in the course of which he is transformed and eventually ejected to new life (Wilbert 1981b:131).

Without question the Warao, like other South American Indians, have clearly recognized the biphasic stimulant-convulsant and potentially deadly action of tobacco (nicotine). Considering it indispensable, hence inevitable, for their spiritual survival, they have incorporated this pharmacological phenomenon into a complex shamanic lore. But while all classes of Warao shaman make extensive use of tobacco, it is the light shaman (*bahanarotu*) who derives his political and religious power from the supreme Tobacco Spirit, whose tutelary assistants he carries in his breast. Feeding them for the length of his professional life with rich tobacco smoke, he is especially prone to suffer sudden attacks of nicotine-induced seizure discharges possibly through action on the hippocampus (Floris, Morocutti, and Ayala 1964). Known in Waraoan as *shinaka*, the noun for this phenomenon is derived from *shinakakitani*, "to cause someone to fall down," and is extended to mean not only sudden nicotine-induced seizures but any sickness of abrupt onset, including epilepsy. In fact, when I began fieldwork among these Indians in the 1950s, I assumed that since shamans and men in general were said to be the primary victims of seizures, I was confronted with a psychopharmacological phenomenon similar in kind to those that have been adduced—erroneously, I might add—to account for the institution of shamanism in other parts of the world. This, however, has proved wrong. Nor is epilepsy, contrary to what Im Thurn (1883:334) suggests of Macushi novices, considered by the Warao propitious to or a prerequisite of shamanic office (Eliade 1964:23-32; Radin 1937:132). Instead, the prototypical case of *shinaka* seizure was that suffered by the supreme Tobacco Spirit in primordial times, and all similar symptoms of "falling ill" are interpreted as a result of *bahana*-related illness.

As explained elsewhere, the wife of a light shaman is considered a shamaness in her own right and is referred to as *shinakarani*, "Mother of Seizure." Her position is modeled after the wife of the first light shaman, who, upon entering

the celestial House of Tobacco Smoke at the zenith, witnessed the supreme Tobacco Spirit—in the form of a swallow-tailed kite (*Elanoides forficatus*)—suffer a nicotine seizure. Pronouncing herself capable of healing such illness, she changed into a frigate bird (*Fregata magnificens*) and covered the Spirit with her body and wings, healing him. Recovering from the seizure, the Tobacco Spirit ordained her a healer of seizures and, by extension, of any sudden illness. Her title and office have come down through the ages to the present-day wives of high-ranking light shamans (Wilbert 1985:167, 170).

Until very recently, tobacco was used among the Warao only by men, who smoked it primarily in shamanic context. This explains, of course, the prevalence of nicotine seizures (if not of others) among the male population and why women, who never suffer from such affliction, are the ideal curers of the same. Considering that the patient, unless he ingests a fatal dose of nicotine, will recover from the attack according to the speedy process of nicotine metabolism, light shamanesses enjoy a high rate of success as healers and correspondingly high prestige in the society. They practice by bending over their convulsive or catatonic patient, restraining him, and otherwise seeing to it that he comes to no bodily harm. The woman communicates mentally with the tobacco spirits afflicting a shaman or a commoner. If the victim is her husband, she relates to the tobacco tutelary spirits in his breast, whom she considers her “children,” and asks them to release the patient. Because her status and role are firmly established, tobacco-using shamans place themselves confidently in the care of the Mother of Seizure. It is belief in the woman’s healing power that enables the shamans to continue associating with the Supernaturals in pursuit of their vital tasks. The light shaman continues to frequent the house of the supreme Tobacco Spirit to exercise his office for the protection of the women and children of the community and to assure the survival of his people (Wilbert 1985).

### *Shamanic Voice*

In addition to initiatory sickness, dismemberment, death, and resurrection shamans experience a renewal of their internal organs and viscera that marks their otherworldliness. Tobacco shamans in South America suffer similar bodily transformations, and nicotine action is peculiarly apt to intensify the experience not only mentally but physically.

One of the characteristics that distinguishes the shaman from the rest of the community is his changed voice. The tearing out of the vocal cords, the voice box, and the tongue is a recurring theme of shamanic initiation. These human organs must be replaced by others that produce sounds more appropriate for



spiritual communication.<sup>3</sup> To illustrate this point, Nimuendajú (1952:104) recounts the experience of Herndon, who, in 1851, happened upon a curing séance: "The tones were so low, so faint, so guttural, and at the same time so sweet and clear that I could scarcely believe they came from human throats; and they seemed fitting sounds in which to address spirits of another world."

Guttural and dark-timbered singing voices are especially typical of tobacco shamans, and beginning with their initiatory ordeal of transformation they strive to develop and maintain them throughout life. They vividly recall their novitiate, when after weeks and months of heavy smoking their vocal cords were recovered and replaced with those of a jaguar, other animals, or birds. Following the ordeal, the newly initiated is asked by his master to swallow small amounts of liquid food but is able to comply only with great effort and pain. His throat feels raw and his voice sounds hoarse, as he is experiencing the typical distress symptoms of a "smoker's throat," a consequence of heavy tobacco use. In addition to a painful throat, heavy smokers demonstrate a specific hoarseness (Fabricant 1946), which is caused by the local action of chemical agents in tobacco smoke rather than by the systemic effect of nicotine (Stevenson 1947). Besides the inhalation of tobacco smoke, shamans also use the simultaneous smoking and drinking of tobacco juice to try to acquire an "attractive" voice (Arawak and Carib, Coll 1903:525; Henfrey 1964:70; Swan 1958:170). The tobacco-chewing shaman of the Tucuna was said to have "a bumblebee in his throat which caused the sound" of a thick bamboo horn (Nimuendajú 1952:104).

In instances like this, special attention must be given to the caraña resin (*Protium heptaphyllum*), which in its gas phase Tucana shamans inhale independently while chewing tobacco but which many of their Amazonian colleagues mix into their smoking tobacco in the form of powder or granules. Inhaling caraña fumes coats the vocal cords of the practitioner and produces the husky speaking voice and low-registered singing voice tobacco shamans are expected to develop and eventually even to lose. I personally witnessed such a case of voice loss in a Warao shaman who saw himself obliged to step down from his high position and hand the sacred paraphernalia of the priest-shaman's office to his successor (Wilbert and Layrisse 1980:21).

### *Shamanic Vision*

Nothing distinguishes the shaman more than the paranormal sight which permits him to see the hidden and to foresee the future. During initiatory sickness

3. The widespread use of ventriloquism practiced by shamans is apparently a related phenomenon.

the novice's normal eyes are "exchanged" for a shaman's eyes endowed with visionary power. Tobacco shamanism has taken note of the effects of nicotine on the eye, and here again, while opening the mind's eye is certainly the principal objective of ritual tobacco use, the verifiable physiological changes in the organ confirm the shaman's visionary claims and authenticate attendant religious beliefs.

Distinguished by such extravisual ability, tobacco shamans are appropriately referred to as seers by the Machigenga (Baer 1984:200) and the Shipibo (Gebhart pers. comm.). The Sharpa drink tobacco juice to see the approaching enemy (Coriat 1943:111). The Trumai shamans practiced "seeing smoking" during the night to locate enemy war parties and to see the land of the dead (Quain, in Lévi-Strauss 1948*a*:346; Murphy and Quain 1955:63). To diagnose the mythical causes of illness, Jivaro shamans drink tobacco juice to see into the body of their patient (Harner 1973*a*, *b*:23), and Tucano shamans use cigars as their eyes (Hugh-Jones 1979:231), just as ocular motifs on Mande snuff tubes and Tucano cigar holders indicate the user's visual power (cf. Wassén 1965:28; Hartmann 1975*a*:145). Cuicuru shamans claim to use tobacco so they may see things that are hidden from other people (Dole 1964:54). Campa shamans search for good spirits which the human eye is capable of seeing in their true form only under the influence of psychotropic drugs, especially tobacco. (Weiss 1975:260). The Wapishana tobacco shaman sees the tribal ancestors (Mussolini 1944:139) and certain pathogenic agents (Farabee 1918:46, 87-88), whereas the Mashco hunter drinks tobacco juice to increase his adaptation to the dark and to be able to discern the silhouettes of game animals (Califano and Distel 1978:6). Mundurucú shamans smoke to see food (Murphy 1958:32, 40). Examples of this kind are myriad in South America, since shamans, through the use of tobacco, seek to sharpen their eyesight and heighten their shamanic vision to behold the imagery of the mind, be it in a special way of daydreaming with open eyes (Otomac, Humboldt 1822-27, 4:579) or in a general way through dreaming in sleep and in trance (Cooper 1949:534). Because of his visionary powers the shaman maintains a socially important position in his society, deeply influencing the lives of his fellowmen and the fate of the entire society.

Dreams are messages of the otherworld and reveal eternal truths to the tobacco shaman. "[The] source of the shaman's entire wisdom is his dreams," says Nimuendajú (1919-20:1004) of the Shipaya. Drinking tobacco juice, Jivaro men retire to a "dreaming hut," where they pass the night and tell each other their dreams come morning. They receive advice and instruction from the ancestors and in general communicate with good and evil spirits of the otherworld. Souls meet in dreams, and otherwise feared and evil spirits appear friendly in dream states of intoxication (Karsten 1935:443-45). Nicotine-

induced dreams are as real as experiences in the waking state. Men who meet in such dreams speak the truth and know more than in conscious life. The latter is unreal and mistrusted.

Visions received by the tobacco-smoking Indians of the province of Santa Marta were held to be absolute truths and were adhered to until death. As the missionaries were soon to realize, they were mystic truths of supernatural import that rivaled the messages of Christian mystics, but, being experienced by pagans, were false and of the devil and had to be eradicated (Aguado 1916–17, 1:797–98). How totally pervasive the tobacco “seers” visionary experience could be in traditional context becomes apparent in Shipibo-Conibo culture, where shamans smoke tobacco to procure complex images. These they pass on to the women of the tribe, who execute them on all possible media to veil their objective world with a web of artistic designs of deep transcendental meaning (Gebhart-Sayer 1984; 1985). The general mention of visions following tobacco use is very frequent in the literature. As to the nature of the things seen, authors make occasional reference to the spirits, ancestors, demons, lightning flashes, and a giant sun. Auditory hallucinations occurring simultaneously with visions include chanting and verbal messages. Unquestionably, however, tobacco ingestion is capable of provoking intense visionary experiences and of providing eschatological scenarios on a grand scale.

Related to the belief in the tobacco shaman’s visionary powers are the roles he plays in many South American societies as a diviner and a prophet. The Chaima of northeastern Venezuela burned bundles of tobacco leaves to foretell—through interpretation of the curls and spirals of the rising smoke—pending doom such as advancing enemies, approaching thunderstorms, and persecution by evil spirits (Cora 1972:195). Similarly, the shamans of the Goajiro were said by Nicholas (1901:629) to predict the onset of a looming conquest by the direction the cigar smoke takes upon leaving their mouths. The shamans of the Caquetio and Jirajara of northwestern Venezuela practiced divination with tobacco ash. After smoking in seclusion for three days, the shaman divined the outcome of battles by placing the ashes of his cigars on a dried maize leaf. “If the ash formed a curve, the enterprise would succeed, but if it remained straight, failure was certain.” Whether fishing or sowing, the men, to predict their luck on the hunt and success with amorous ventures, smoked cigars with the fire inside the mouth and inspected the ashes for the signs mentioned above (Fernández de Oviedo y Valdés 1851–55, 2:298). Aymara diviners look at the way their cigarettes burn to predict the successful or unsuccessful outcome of an event. Uneven burning and burning through the sides of the cigarette paper are bad signs; even-burning cigarettes predict good fortune (Hickman 1963:82). Interpreting a likely pharmacological effect of

nicotine rather than characteristics of cigarette burning or tobacco smoke and ashes, diviners of the Muisca of Colombia, according to Friar Pedro Simón (1882-92, 2:309), chewed and smoked tobacco. To discover by which way a thief had carried away his loot, they held out their outstretched fingers, each one of which they had identified with a possible escape route. The finger that twitched or trembled indicated the direction in which to search for the lost property (Pérez de Barradas 1950-51, 2:489). García (1936*b*:214) refers to the tobacco shamans of the Machigenga as prophets. Gifted with more than ordinary insight, they relate and interpret their otherworldly experiences to their fellowmen. The Yaruro, believing in their imminent extinction, are inspired by the prophetic vision of the tobacco-smoking shaman with hope for a better life in a world to come (Petrullo 1939:195).

The novice undergoing initiation to become a tobacco shaman needs little convincing to believe that through copious tobacco use his eyesight will be amplified by visionary power. He experiences changes in his vision due to the action of nicotine on the pupil. Mature tobacco shamans may suffer such a thoroughly impressive phenomenon as tobacco amblyopia, or dimness of vision, due to a bilateral retrobulbar neuropathy of the optic nerve with central scotoma.

Less spectacular changes in the pupil are the result of nicotine-stimulated responses to cholinergic and adrenergic autonomic nerve impulses on the iris and include contraction of the sphincter muscle (producing acute miosis) and marked contraction of the ciliary muscle for near vision. Additionally, in response to nicotine-mediated epinephrine release, adrenergic alpha receptor sites in the eye may respond by relatively strong contraction of the radial muscle of the iris (producing mydriasis), while beta receptors respond by weak relaxation of the ciliary muscle for far vision. Thus, although mydriasis through nicotine stimulation of the sympathoadrenal system counteracts miosis caused by the cholinergic effects of nicotine action, the latter is stronger than the former and allows for heightened near vision during the day (Koelle 1975:408). Contrarily, eyesight under conditions of advanced nicotine intoxication is better in the evening and at night than in the daytime (Mendenhall 1930:29; Nettleship 1879). Improvement of dark adaptation has also been noted as a consequence of nicotine administration (Bohné 1962:727), facilitated by the release of epinephrine or glycogen or both (Tromel, Davis, and Hendley 1951:83).

Tobacco is thus clearly experienced as a sight- and vision-altering drug that permits the tobacco shaman to behold the numinous world. To obtain visionary eyes of this kind, shamanic neophytes among the Barama Carib (Gillin 1936:173) and Manao (Métraux 1940*b*:242; 1948*f*:711), for example, must sub-

mit to the painful ordeal of having their sight changed through the external application of tobacco juice directly on the eye. As explained by the Indians of the Upper Amazon, this procedure is believed to make the novice shaman clear-sighted for the new world in which he has chosen to live (Métraux 1949c:590). For the same reason, tobacco juice and/or pepper is also applied to the eyes of hunters and their dogs among many tribes of Amazonia.

External application of tobacco to the eye has an initiatory purpose in a different context as well. Uninitiated eyes of travelers to unknown regions must be protected from spirit intrusion. Spirits are variously considered to inhabit rocks, hills, mountains, rapids, and similar landmarks. To prevent them from entering the body and the mind of the inexperienced traveler, tobacco juice is poured into his eyes to change them from vulnerable normal organs to eyes fit to behold the numen. The process of transformation becomes manifest when, upon receiving the stinging material on the eyeballs, there follows a hard-to-resist occlusion of the eyes. Only after the tears produced by the application subside is the initiate able to gaze unharmed at the spirit, on this first occasion and throughout life. Such is the practice among the Carib of Guiana when approaching the Arissaro hills or the Coomootie mountains (Brown 1877:30-31; Schomburgk 1836:229, 231). In a similar vein, Jivaro men place tobacco juice in the eyes to counteract harmful dreams (Steward and Métraux 1948a:625).

Night vision is said to be achieved in shamanic candidates among the Cariña by applying to the eyes a mixture of tobacco and ginger (*Zingiber officinale* L.). Only with eyes thus initiated can good and bad spirits be seen by the shaman, whose eventual goal is to admire his "celestial soul" in the pupils of the *maware* spirits (the reflection of the beholder). Accomplishing this represents the ultimate in shamanic clear-sightedness and perspicacity (Civrieux 1974:49-50).

Night vision and awareness which enables the shaman to walk about in the dark occur especially in a condition of tobacco amblyopia. This condition is probably the natural model for the association of certain forms of tobacco shamanism with underworld cosmology, and possibly one of the elements most specific to tobacco shamanism. A particularly well documented example from the Warao Indians of the Orinoco Delta provides a case in point.

Tobacco amblyopia is a sign of advanced nicotine intoxication (Larson, Haag, and Silvette 1961:591-610). Probably because of heretofore reduced female nicotine exposure, it has been diagnosed in the past in women (Uthhoff 1911:27) but mainly in men of forty to sixty years of age at an average low (Heaton, McCormick, and Freeman 1958), although higher than expected (Hedges 1957), frequency. Prolonged use of tobacco is a precondition of toxic

amblyopia (Doggart 1959), but the amount of tobacco consumed may vary considerably from case to case (Heaton, McCormick, and Freeman 1958). All common forms of tobacco use are said to lead to the disease (Groenouw 1892), and most authors believe that tobacco has to be smoked in order to produce it (Lautenbach 1898). In fact, its occurrence is most frequent in cigar smokers, as Gy (1913) indicated early on, and as Hedges (1955) confirmed by finding that all his patients with far-advanced tobacco amblyopia had been cigar smokers. In addition to smoking, tobacco chewing (Gy 1913; Meyerhof 1921) and tobacco snuffing (Duke-Elder and Scott 1971:146) have also been etiologically implicated in connection with the disorder. Thus, there may be different uses of tobacco and a plurality of causal factors involved in bringing on the disease. But "the existence of tobacco amblyopia may not be denied" (Silvette, Haag, and Larson 1960:96; Uthhoff 1911:27), nor may the fact that tobacco is its indispensable precondition (Heaton, McCormick, and Freeman 1958). Precipitating physical and psychological causes include general ill-health and mental exhaustion. Malnutrition and especially a lack of vitamin B<sub>12</sub> are commonly implicated as predisposing factors.

Tobacco amblyopia "is usually characterized by a gradual but sometimes by a sudden decrease of visual acuity, most prominent in the central field, especially for colored objects" (Volle and Koelle 1975:570). Dimness of vision due to tobacco amblyopia, however, does not imply blindness. Although both eyes are usually affected, the afflicted person has no difficulty in getting about. Only if tobacco consumption is not curbed and the patient remains untreated can the optic nerve atrophy and impair vision permanently. In other words, the action of nicotine causes primarily neural changes in the retina and only secondarily damage to the optic nerve.

Other visual symptoms typically experienced in connection with tobacco amblyopia are hemianopsia, night vision, and scotoma. Hemianopsia is caused by chronic tobacco poisoning and entails the loss of sight in half of the visual field (Schumpf-Pierron 1927). Sight "is better in the evening or in a dim or subdued light than in the daytime or in sunshine or in bright light" (Larson, Haag, and Silvette 1961:600). "A glittering haze" or "silvery mist" covers the objective surroundings during the daytime and disappears at dusk.

Color blindness is characteristic of tobacco amblyopia. Blurring of colors, silvery vision, and dimness of the "smoker's eye" leaves the sufferer in an undifferentiated world of washed-out colors and darkness. The central scotoma to red and green occurs most commonly, but central vision for green and blue is also frequently affected. Lyle (1905) found green to be affected first, followed by red and blue; yellow and white are less often affected (Hutchinson 1887), and white is sometimes perceived as blue during regression of the disease

(Bär 1906). Total loss of perception for red and green also occurs (Uthhoff 1886-87; Duke-Elder and Scott 1971:150). The latter cases may signify stages of advanced toxification beyond reversal of the condition (Treitel 1879). As indicated, however, discontinuance of nicotine usually leads to normalization of vision and full recovery. Under complete tobacco abstinence the defect improves within six weeks in mild to moderate cases and within two to three months in severe cases. Recovery is often preceded by a worsening of the toxic amblyopia after cessation of smoking (Traquair 1927, 1931). If subsequent to recovery increased nicotine administration is resumed, second attacks are known to occur (Berry 1887; Nettleship 1887). Moderate nicotine ingestion, though, is not harmful in this respect (Browne 1888).

Additional symptoms pertaining to the complex of tobacco amblyopia include fatigue, depression, anxiety, insomnia, pallor of the face, incapacity to recognize the faces of friends, and the perception of all people the sufferer meets as looking like corpses, yellow and waxy (Duke-Elder and Scott 1971: 148). There is a stale tobacco smell about the person, in addition to a "dry and fusty" odor. His hands are tremulous and he feels shaky. He experiences furring of the back of his tongue and suffers from a lack of appetite, constipation, and a depressed libido (Doyne 1889; Dunn 1910; Groenouw 1892; Ramsay 1895; Traquair 1931).

References to tobacco blindness are extremely rare in South American ethnographic literature. Heavy pipe smoking Tapirapé shamans were reported to go blind on ritual occasions (Wagley 1942:290), just as "blindness" was mentioned by Goeje (1967) as a stage of tobacco intoxication among shamans of Guiana. The most detailed information, however, relates to the office of dark shamanism among the Warao. Although I have personally not witnessed a case of "tobacco blindness" among these Indians, the available evidence suggests that its symptomatology has served as the blueprint for dark shamanism here and possibly elsewhere. Warao shamans are in general heavily addicted to nicotine. Ideally, it is incumbent upon a local community to supply their religious practitioners with amounts of tobacco large enough to allow them to smoke incessantly and to consume even larger quantities of the drug in the course of ever-recurring rituals. This is particularly true of the *hoarotú*, the dark shaman, whose office is dedicated to the Lord of the Underworld, situated at the extreme western end of the universe.

The origin story of dark shamanism begins with an old man named Miana, "darkened vision." Having two eyes, he was not blind (*muana*, "darkened eyes") but saw best at dusk and in the twilight. Bright daylight dazzled him and caused him to look with squinting eyes. Despite his dimmed vision, however, he walked freely along the black road of the dark underworld, where there are

no flowers and no colors except for black and white and yellow. Miana frequents only one half of the world, the western part of dusk and night, which includes the region between the zenith and the setting points of the summer and the winter suns.

Miana lived alone in his house at the zenith and begot a son whose name, like that of the Abode of Darkness in the western sector of the universe, was Hoebo. Miana's house is a black structure and a dark and dreadful place. Filled with the stench of rotting cadavers and filthy with a blood-soaked floor, it heralds doom for all souls passing through on their dreaded journey to the Land of the Dead. There are houses made of lead, iron, or aluminum; chairs, tables, and musical instruments of bone; and hammocks made of coagulated human blood. Miana's one-year-old grandson lies in one of them, and the child's mother rocks him to keep him from crying. From Miana's house a solitary path slippery with human blood leads straight to the Underworld, the Land of Darkness and Death in the west.

Miana and Hoebo smoke incessantly from long cigars which consist of curdled human blood wrapped in human skin. Hoebo's body is emaciated and of yellowish pallor as if ill; at least that is how the black shaman sees him approaching. Like Hoebo, the master of dark shamans, the *hoarotu* shaman is also recognizable by the paleness of his face and chest, especially after he has consumed a larger than normal quantity of tobacco in an effort either to "kill" or cure a person. To accomplish the former, the shaman sings a "darkened vision chant," which invariably begins with the invocation of Miana. The singing takes place in the solitude of the forest, while the shaman chews tobacco and simultaneously smokes some six cigars twenty or thirty centimeters in length (Barral 1964:148, 227). While he is smoking and chanting, the ends of the *kaidoko* snare which he usually wears invisibly below the sternum in his chest slowly begin to emerge from the corners of his mouth. The snare travels toward its victim, near or far, until it arrives at its destination. Then the shaman pulls heavily at his cigar, turns it about, and, holding the fire in his closed mouth, blows into it. Out come ribbons of smoke, which convey the magic bolt of smoke to the intended sacrifice. The bolt of smoke enters below the rib cage and searches for the heart. At this moment the tobacco snare closes around the neck of the victim, who gasps for air and feels the magic arrow enter his heart.

Similarly, to effect a cure, the shaman smokes five or six long cigars and simultaneously chews tobacco, while chanting not a "darkened vision chant" but a benevolent song to identify the *hoa* pathogen in the body of his patient. In a state of nicotine trance, he divines the nature of the illness-causing *hoa*, and once it is identified, his *kaidoko* snare of tobacco smoke pries it loose from the



victim. The pathogen jumps into the massaging hand of the curer, who blows it into the forest on a bolt of tobacco smoke. On occasion, the officiating shaman is unable to effect the cure and the patient is doomed. In such a case, the agonizing victim is asked for his opinion as to who may have caused his death. In order to verify the accusation, all dark shamans of the subtribal bands must stand in a line while their unsuccessful colleague of the band of the dead person examines their faces and especially their chests. An experienced shaman can detect the culprit not only by the pallor of his skin but by its yellowish, waxy color. Especially old dark shamans are believed to be capable of killing their own people and are ostracized from the community upon public conviction. The same evidence that caused the shaman's conviction ingratiates him in the eyes of Hoebro, his master spirit. When visiting him during the night, the shaman must present to him his (yellowish) chest, his (tremulous) hands, his (black) lips, and his (furring) tongue. These are well-known characteristics of active dark shamans and pertain to them just as do their fusty odor, which adheres to them from frequenting the stench-filled Land of the Dead, and a pronounced halitosis, which is said to be caused by smoking ritual cigars believed to be curdled human blood. Also, after excessive smoking, they are said to vomit serum and yellowish pieces of flesh of their victims, here or in the Land of the Dead. From their macabre house in the zenith, dark shamans are believed to travel to the Underworld via a black road, guided only by two beacons of white and yellow light. They travel this road when they have "sacrificed" a human for the Supreme Hoebro spirit and when they have to transport the cadaver, hanging from its knees down their back, into this world of twilight. This they do only periodically, after they have resisted the demands of the cannibalistic spirit for food on a number of occasions prior to giving in. Even experienced dark shamans dislike undertaking this journey to the Underworld and reduce their intake of tobacco sharply from episode to episode. Should they actually suffer from tobacco amblyopia they might experience an improvement of the symptoms in the interval and hesitate to precipitate a new attack of the awesome experience by excessive tobacco use prescribed for the occasion.

In any case, the symptomatology of tobacco amblyopia is easily recognizable in the described complex of traits and beliefs pertaining to Warao dark shamanism, the underlying pharmacological reality of which appears to have been recognized by these Indians and culturally realized into most complex eschatological belief systems of native South America (Wilbert 1972a:73-78; 1975:171-74).

To recapitulate, shamans who smoke and chew tobacco in excessive quantity derive their beliefs from Miana, an old man whose name describes the most

characteristic symptom of toxic amblyopia, dimness of vision. His condition, however, is terminologically clearly distinguished from that of blindness, *muana*, "darkened eyes." Miana has two useful eyes that give him night vision and allow him to walk about freely in a hemianoptic world of twilight. This underworld is lacking in color other than black, white, and yellow, the latter two being the colors less often affected by scotoma. Illuminated by white and yellow lights only, the objective world of dark shamanism is of an ivory color with osseous instruments and furniture and with structures variously described as being made of gray lead and iron or silvery aluminum. Active dark shamans are characterized by pallor of face and chest, recognition of people as yellowish, the smell of stale tobacco on breath, a fusty body odor, tremulous hands, and a furring of the dorsal side of the tongue. Of course, the symptomatic complex of toxic amblyopia is not necessarily experienced in its totality by any one practitioner at any one time. Rather, dark shamanism as a religious institution among the Warao most likely represents the cumulative experience of generations of shamans that culminated in a comprehensive understanding of the symptomatology of the disorder and the application of this wisdom to buttress an exacting system of shamanic belief.

Once fully initiated and endowed with the appropriate voice and sight, the tobacco shaman displays other characteristics that give evidence of his position apart from normal human beings: he eats little, he suffers no pain, he cures the sick, and he is very combative. All of these characteristics are common attributes of world shamanism, whence they may have arisen in the context of ascetic renunciation and drug-free ecstatic mysticism. In South American tobacco shamanism these same characteristic traits find much empirical confirmation through the specific action of nicotine.

## THE WAYS OF THE TOBACCO SHAMAN

### *Sacramental Food*

South American Indians consider tobacco a food, and one can find some tribes—Campa, Tapirapé, Tenetehara, and others—referring to their shamans as "tobacco eaters." In Mundurucú mythology cigarettes and tobacco smoke are spoken of as "human food" (Murphy 1958:108, 113; cf. Kruse 1946-49:318). The Bororo also refer to a cigar as "food" (Colbacchini 1925:337). Tapirapé novices "eat smoke" until they become unconscious (Wagley 1942:285), Mehináku shamans smoke to "fill their bellies" (Gregor 1977:337), and, craving a smoke, the Warao shaman complains about "his hurting stomach." The Chimane, on certain ritual occasions, eat small figurines made of tobacco powder

in the form of humans, jaguars, and sometimes toads. The ingestion of regular food is taboo for the duration of the rite (Riester 1976:305-06).<sup>4</sup> Examples of this kind are not infrequent in the ethnographic literature, and there are a good number of cases in which tobacco, food of shamans, becomes sublimated to a sacramental food of gods.

Tobacco users are aware of a relationship of similarity that exists between the intake of tobacco and the ingestion of food. Whatever other reasons may account for this phenomenon, a singularly convincing one lies in the pharmacological effects of nicotine on the gastrointestinal tract, largely due to parasympathetic stimulation. Like food, the drug diminishes and even abolishes hunger pangs by inhibiting the hunger contractions of the stomach (Daniélopolu, Simici, and Dimitriu 1925). Depression of these gastric contractions is caused by nicotine stimulation of the sensory nerve endings in the buccal cavity and the stomach mucosa. The duration of hunger inhibitions is apparently proportionate "to the intensity of the stimulation"—the stronger the tobacco, the longer the hunger depression (Carlson and Lewis 1914). But as Schnedorf and Ivy (1939) demonstrated, even a few puffs from a commercial cigarette may inhibit gastric contractions for a period of fifteen minutes to one hour.

The desire to eat is also reduced by the dulling effect of nicotine on the taste buds (Marti and Matasaru 1964). Furthermore, nicotine ingestion diminishes the feeling of hunger by elevating the blood sugar level, causing the liver to release stored carbohydrates, the abolition of hunger corresponding to the duration of nicotine hyperglycemia (Haggard and Greenberg 1934; Högler 1943; Wachholder 1948). In addition to its parasympathetic effects, nicotine may function as an appetite inhibitor by direct or indirect action on the hypothalamus (Walker 1953). Finally, nicotine triggers the release of epinephrine and, through its central nervous system excitatory action, depresses hunger. Quite evidently, then, the intake of nicotine emulates the ingestion of food by appeasing the hunger feeling. Conversely, cessation of nicotine consumption, like food abstention, induces the return of the feelings of stomach gnawing and emptiness (Chessick 1964).

The use among South American Indians of tobacco as an anorectic agent has been reported from the earliest (Tupinamba, Thevet [1557] 1928:158) to the most recent times (Siriono, Holmberg 1960:276; Yanoama, Biocca 1965, 2:231; Yupa, Paolisso pers. comm.).

4. The relatively widespread mythologem of people without anus and digestive tract who subsist on (tobacco) smoke may be related to the topic here discussed (Rivière pers. comm.; Wilbert 1974:14, 86-90).

Summarizing the early information available to him at the time, the Sevillian physician Monardes (1580) reported of New World tobacco use that

the indians used the tobacco to relieve thirst and also to relieve hunger and to be able to pass days without the necessity to eat or to drink. When they have to go for a long walk through the desert or other lonely place without water or food, they use small balls made of tobacco. They take the leaves (of tobacco) and chew them with a certain powder they prepared from burned Conchas de Almejas, and, chewing, they mix them until it is a mass, from which they prepare these little balls. . . . These are dried in the dark and afterwards they keep and use them in this form. [Cf. Elferink 1983:113-14]

In a way, one might have expected Neo-Indian farmers to regard as a food the leafy tobacco plants, an ingestible cultigen of their gardens. In fact, some societies, like the Yurumangui, have been reported to actually cook young tobacco leaves and eat them like vegetables (Arcila Robledo 1950:63). Equally obvious to the Indians, however, must have been the realization that tobacco, because of its pharmacological action, is a very special kind of food. A person may become "hungry" for tobacco just as for ordinary food, and up to a certain point might even substitute one for the other. But although it depresses hunger pangs, tobacco cannot still them entirely. Similarly, a person may resort to eating in an effort to overcome the craving for nicotine, but only tobacco can stop the yearning for the drug. Subjectively, then, there are two different kinds of hunger that respond to two specific ingesta, food and "soul food." Symbolically standing between the two foods, shamans function as food intermediaries, as Jackson (1983:197) has pointed out.

Religious practitioners among South American Indians are clearly aware of this duality and consider hunger for food characteristic of man and hunger for tobacco typical of spirits. Not only the personal tutelary spirits residing in a shaman's body but a host of spirits living in the outside world depend upon tobacco for their sustenance and on man, the only producer of tobacco preparations, for their survival. They come to him to trade meat and vegetable food for tobacco (Zerries 1968:259) or to receive tobacco as a gift. In any case, tobacco craving is regarded as symptomatic of the hunger sensation of Supernaturals and is transferred from the tobacco-using practitioner to the spirit world at large.

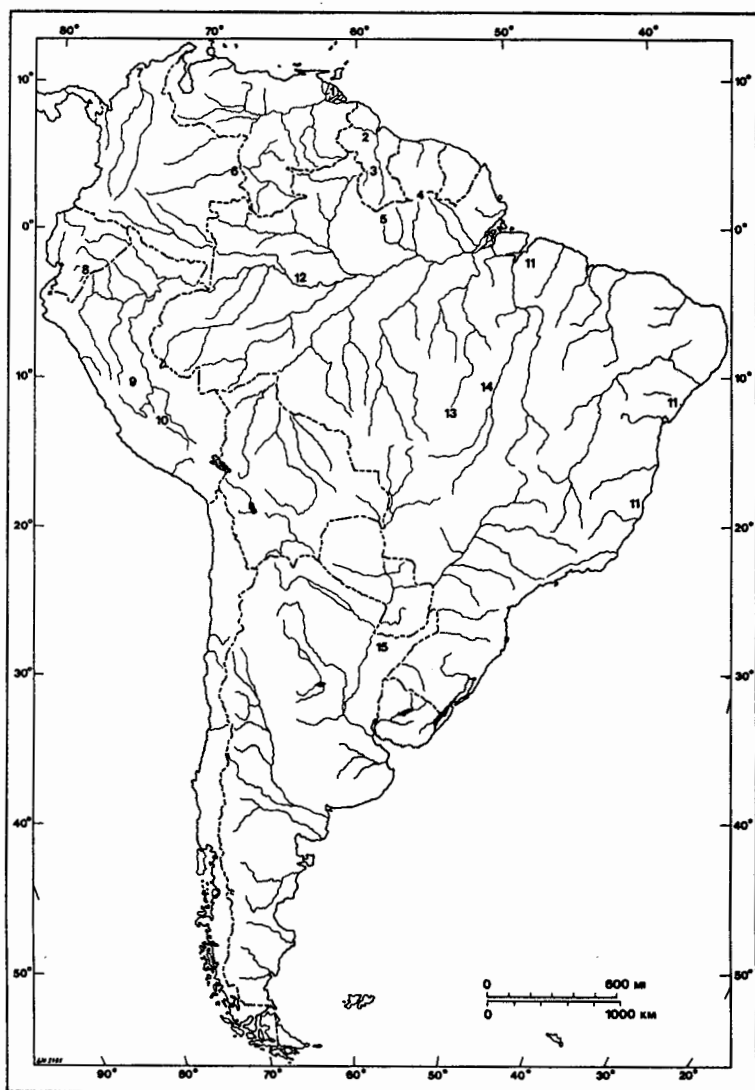
Lacking tobacco of their own, the Supernaturals are irresistibly attracted to man not just, let us say, because they enjoy the fragrance of tobacco smoke or the aroma of tobacco juice, but more basically to eat and to survive. Unfortunately, a scrutiny of the ethnographic literature gives the impression that had the idea been less exotic for Western observers or had investigators succeeded in penetrating indigenous ideology more deeply than they ordinarily did, we

might have learned more often about this existential reason, as it were, behind the spirits' predilection for tobacco. Scanty as the ethnographic record may be, tobacco as spirit food, nevertheless, has been documented for a good number of societies in lowland South America, which are widely spread and numerous enough to suggest that the concept is of long standing on the subcontinent and that tobacco must be added to the growing assortment of "Plants of the Gods" (Schultes and Hofmann 1979) (table 8; map 8).

To achieve the feeling of tobacco saturation in themselves and, so it is believed, through themselves in the Supernaturals, South American shamans resort to gastrointestinal and respiratory routes of nicotine administration. Thus, in order to consult with the Tobacco Spirit, imagined as an old man, the shaman of the Acawaio of Guiana drinks tobacco juice, keeping a calabash of the liquid at his side. "The Tobacco Spirit has the power to entice other spirits because no spirit can resist the attraction of tobacco—just as, the Acawaio confess, they themselves are unable to resist it either" (Butt Colson 1977:54). Through the medium of the shaman the arriving spirits can be heard gurgling, sucking, and spitting tobacco juice and saliva as they partake of the brew. Once satisfied, the otherworldly visitors allow themselves to be consulted by their benefactor. Taking tobacco juice via the nose, the shaman "separates quickly" his soul from his retching body and is transported by the Tobacco Spirit on an

TABLE 8 Tobacco: Food of Supernaturals

<i>Number</i>	<i>Tribe</i>	<i>Reference</i>
1	Warao	Wilbert 1972 <i>a</i> :62; <i>b</i> :111
2	Acawaio	Butt 1965-66:170; Butt Colson 1977:54
3	Macushi	Im Thurn 1883:336-40; Métraux 1944 <i>c</i> :161
4	Trio	Rivière (pers. comm.)
5	Waiwai	Fock 1963:126-27
6	Baniwa	Bödingner 1965:132; Saake 1958:273
7	Macana	Escalante 1955:115; Simón 1882-92,3:369-70
8	Jivaro	Harner 1973 <i>a</i> :163; <i>b</i> :24
9	Campa	Elick 1969:206-07; Tessmann 1930:93
10	Machigenga	Baer 1976:116-17; 1979:108-09, 115; 1984:201-04, 327; MS (1978); García 1935,17:179
11	Tupinamba	Léry 1951:196-97; Métraux 1928:260; 1950 <i>b</i> :72
12	Manao	Martius 1867:588
13	Mehináku	Gregor 1977:333, 339
14	Carajá	Koch 1900:114
15	Guaraní	Cadogan 1965:212



Map 8. Distribution of tobacco food of supernaturals. Approximate location of tribes.

ecstatic journey where, in miniature form, he associates with the Supernaturals. Shamanic healers of the Acawaio are assisted in their cures by the Tobacco Woman spirit, who placates the forest spirit by offering him "a drink of tobacco juice" (Butt 1965-66:170). Spirit helpers also rally around the Macushi shaman to lap up his tobacco juice and to effect a cure (Im Thurn 1883:336-50; Métraux 1944c:161). Trio shamans feed the spirit stones inside their ritual rattles with tobacco smoke (Rivière, pers. comm.), and tobacco is considered the sustenance of the Waiwai shaman's personal tutelary spirits (Fock 1963:126-27).

The Yuruparí spirit of Baniwa mythology lacks a mouth and is nourished by tobacco smoke blown over his body by assistants (Saake 1958:273). Buziraco, the patron spirit of the Macana shaman of northern Colombia, visits with the practitioner and his people on certain nocturnal occasions to wash his body with tobacco leaves soaked in water. He takes tobacco rapé into his mouth and blows it, presumably through the shaman's mouth, over the congregation of elderly people who have prepared for him an offering of their finest body ornaments. Ignoring the gifts, the spirit indicates that all he wants is tobacco in leaf and powder form, as this represents his favorite food (Escalante 1955:115; Simón 1882-92, 3:369-70).

In the Peruvian Montaña the Jivaro shaman seeks to reassure himself periodically of the benevolence of his spirit helpers, who appear to him under the influence of *Banisteriopsis* in "a variety of zoomorphic forms hovering over him, perching on his shoulders, sticking out of his skin, and helping to suck the patient's body" (Harner 1973a:163). Every four hours he drinks tobacco water in order to keep these spirits fed and to assure that they remain his willing helpers and do not desert him. The shaman of the Campa owns a sacred rock which he feeds a daily diet of tobacco syrup. This stone changes into a jaguar "daughter" when the shaman blows on it, and he himself is capable of changing into such a feline with the assistance of his spirit wife or female spirit helper who lives in the tubular bamboo tobacco syrup container (Elick 1969:206-07). As among so many Amazonian tribes, the souls of the good shamans proceed after death to another world where they live on tobacco smoke (Tessmann 1930:93). The Campa belief in jaguar stones is shared by their linguistically closely related southern neighbors the Machigenga, whose shamans obtain them from a male benevolent spirit in the course of their initiation. When blown upon, the stones turn into protective jaguar spirits that come to the shaman's assistance. The sacred stones receive a daily ration of tobacco, their food, which makes them swoon. Practitioners who neglect to feed the rock spirits are left by them to die. But keeping up with the feeding schedule of these Invisible Ones is easy for the shaman who regularly ingests tobacco, also his

proper food (Baer 1984:201–04, 327#858). Among the spirits visited by the shaman on ecstatic journeys are the masters of thunder and lightning. García (1935:179) explains that these weather gods nourish themselves exclusively on tobacco juice or black tobacco cakes (cf. Baer 1979:108).

The Tupinamba and Manao of Brazil place tobacco leaves inside their ritual rattles representing human heads and then burn the leaves inside the calabash. They hold communion with their spirits by inhaling the smoke that emerges through the head spirit's various orifices (Martius 1867:588; Métraux 1928:67, 72–73).

The Supernaturals of the Carajá include, among others, the tribal ancestors, whose nourishment is no longer natural but spiritual food, namely, tobacco. That is why tobacco is furnished as grave goods and why the spirits of the dead often solicit a sip of tobacco; they are starved. That is also the reason why they come to the shaman's assistance when he calls them (Koch 1900:114). Mehináku shamans of central Brazil are called smokers because they cure by blowing tobacco smoke over their patients. Tobacco and smoke are considered "the spirit's food." Shamans smoke to approach the spirit world and to heal. Curing séances are concluded by feeding the spirits with tobacco smoke (Gregor 1977:334–39). Finally the medicine man of the pre-Columbian Guaraní domesticated the spirits with offerings of tobacco (Cadogan 1965:212).

A common theme that emerges from this far-flung evidence of tobacco as spiritual food is that of interdependent reciprocity: Spirits depend on man for food, and man needs protection for his life, his health, and his goods, which can be granted only by the Supernaturals. Both groups are therefore eager to come, as the Guaraní put it, "to an understanding" (Cadogan 1965:212), and both avail themselves of the services of the shaman to accomplish their interdependent goals. Quite obviously this situation of reciprocity is conditioned by the phenomenon of nicotine dependency and the power that nicotine wields over the tobacco addict. The onset of nicotine craving and, eventually, the discomfort of withdrawal symptoms—nervousness, anxiety, and unnaturally rapid and disturbing heartbeat that follow abstinence from tobacco—are caused by the drop in the nicotine level in the practitioner's bloodstream. The "hunger" symptoms are as predictably experienced by the spirits (through the shaman) as the return of hunger pangs in an empty stomach (Guilford et al. 1966; Ejrup and Wikander 1959; Lucchesi, Schuster, and Emley 1967). Since sickness and ill-fortune are ever-recurring facts of the human condition, relief-seeking man will perpetually solicit the Supernaturals for protection; conversely, the Supernaturals must seek out man to survive.

A good example of this relentless tug-of-war between mutually dependent partners is provided by the Warao Indians, where much of a priest-shaman's



life is spent fulfilling the human end of the bargain. At the time of his initiation this shaman, called *wisiratu*, enters into a contractual arrangement with a patron deity, according to which he agrees to provide the god and his entourage with tobacco food for the duration of his earthly life. In return the god makes himself available to the shaman for consultation regarding the diagnosis of illness and is generally prepared to ward off misfortune from the shaman's community.

The supreme gods of the Warao, referred to as *kanobotuma*, "our grandfathers," reside on world-mountains situated at the four cardinal points. Other deities are located at the intercardinal and solstitial points along the *aitona*, the horizon, the end of the world, as well as at the nadir and the zenith. As explained earlier, with the exception of the cardinal god of the west, who lives on human hearts, livers, and blood, all other supreme beings eat tobacco smoke. They appreciate it especially when it has been perfumed with caraña incense (*Protium heptaphyllum*). At the time of his induction into the ranks of the priest-shamans, the novice pledges lifelong allegiance to one of the three cardinal gods of the North, the South, or the East and promises to feed him and his followers primarily and the others only secondarily. The young shaman returns from his initiatory journey carrying three pairs of tutelary spirits in his body; one pair resides in the lungs, one pair on each side of the stomach, and the third pair in the belly below the belt. The shaman addresses the spirits as "my sons" and nurtures them within his body from an embryonic stage to one of robust maturity. Whenever desirous of nourishment, be it by day or by night, the spirits trigger in the shaman a yearning for nicotine, so that "their father" starts feeding them by inhaling and swallowing tobacco smoke. The more they eat, the more mature the tutelary spirits become and the more powerful the shaman will be. The shaman's community and especially his patients see to it that his store of tobacco is adequate at all times, and they insist that he keep the spirits content and well disposed by incessant smoking. In a special demonstration of his generosity toward the spirit helpers within him, a ritual-performing priest-shaman is apt to attach six cigars laterally to his body, two behind the ears, two at the chest, and two at the waist. This demonstration of opulence assures the spirits (and the addicted shaman) a period of plenty and the practitioner's community a respite from illness and want.

In addition to the spirit helpers in his body, the priest-shaman also feeds a family of tutelary spirits which inhabit his sacred rattle in the form of quartz pebbles. The rattle spirits serve the shaman as a means of communication with the cardinal gods and with the world of Supernaturals at large. Reminiscent of previously mentioned practices among the Trio and the Tupinamba, Warao shamans retire frequently to their temples to feed the rattle spirits by blowing

tobacco smoke into the orifices of the instrument. Seating himself on his stool or box, the shaman lights one of the long cigars that are kept in the temple for this purpose, holds the rattle with both hands up to his mouth, and blows the smoke through the mouth slits into the calabash. As the interior of the "head" of the rattle fills up with tobacco smoke it begins to "awaken." The shaman shakes it three times vertically and then swings it horizontally. The rattle is now fully awake, its spirit stones inside satisfied and ready to help the shaman communicate with the gods. The chanting shaman informs the rattle spirits that one of the gods appeared to him in his dream, anxiety-ridden and afraid that he might suffer deprivation for lack of tobacco food. The shaman asks his rattle spirits to help him ascertain which one of the gods had appeared to him. He then implores the spirit and the rest of the spirit world to remain tranquil, assuring him that there is no need for concern, as he and his people will continue to provide for them. The shaman proceeds to feed tobacco smoke to the gods and their families of spirits, including the ancestral shamans, his predecessors, who went to reside with the gods after death. The Supernaturals express themselves as completely satisfied by belching loudly through the shaman. The fearful and threatening god who originally provoked the scene desists, and the people in the wakeful village, who are listening in on the chanted dialogue between their shaman and the gods, go back to sleep. They have been reassured of the spirits' protection and relax in the knowledge that the powers will not resort to killing their children in order to remind them of their obligation (Wilbert 1974a:90-93).

It is important to remember that the Warao Indians cannot grow tobacco in the swamps of the Orinoco and that they rely entirely on importing the drug from Indians and peasants from beyond the boundaries of the Orinoco Delta on the mainland and the island of Trinidad. In traditional times trading expeditions were infrequent and uncertain, so that the spirit's (shaman's) fear of anticipated craving and withdrawal anxiety was well founded and proportionate to the state of "maturation" which his corporal spirits had attained (that is, the more nicotine-addicted he had become). Consequently, the need to assure himself of a steady supply of the drug was one of the shaman's principal preoccupations, and motivating his people to manufacture trade goods and to carry out the dangerous overland and overseas trading expeditions was foremost in his mind.

Warao recognize lower and higher ranking priest-shamans. The most prestigious *wisiratu* of Warao communities in the central part of the Orinoco Delta are the guardians of the sacred rock crystal which represents the son of any of the cardinal gods except that of the West. In primordial times an ancestral shaman, anguished by death and pain in his community, undertook a perilous

pilgrimage to one of the sacred world-mountains to bring the wretched state of mankind to the attention of the Supreme Spirit and to beg him to come and dwell in their midst rather than on his distant mountain. The cardinal god agreed to do so in the form of the sacred rock crystal. Taking pity on the shaman and his people, he promised to be their protector and refrain from inflicting his diseases on them if they would agree to supply him with tobacco food for all time to come. Ever since this first encounter ranking priest-shamans keep a sacred crystal in their temples as a gift of the god of either the North, the South, or the East, depending on which one of the three Grandfather spirits according to local tradition has been visited on the primordial pilgrimage.

To assure himself and his congregation of the protection of the sacred rock, the keeper of the stone must fulfill the promise to supply abundant sacrificial tobacco smoke. Thus the priest-shaman of the highest rank incessantly smokes cigars some fifty to seventy centimeters in length and containing several leaves of tobacco sprinkled with *caraña* resin. To feed the rock spirits, the smoker enters the temple and blows the smoke over the crystal lying in a half-calabash within a tabernacle basket.

Finally, in order to feed the cardinal gods directly, the priest-shaman rolls one of his long cigars, placing several wads of tobacco with *caraña* inside. He holds the long cigar skyward, pointing it in the direction of the god destined to receive the tobacco (fig. 31). All the while the shaman either inhales, hyperventilating through the nose and the loosely applied lips, or he swallows the smoke. This is done by rapid puffs so that a flame appears at the tip of the cigar, created by the generated heat aided by *caraña* resin held to the burning end. The intoxicating effect of this sudden large dose of nicotine manifests itself in a stuporlike calm that befalls the smoker. It induces a trance state in which the shaman is elevated to a house on the sacred mountain of his guardian deity and from which vantage point he enters into deep communications with the Supreme Spirit. Returning from his celestial journey, the shaman relays some of his sublime experience to the people; they listen to his chanted report, pay attention to the spirit's advice, and share the psychic energy emanating, through the shaman, from their contented god (Wilbert 1972a:61-65).

It becomes clear at this point that far from being an empty game of make-believe, tobacco serves the Warao as an important catalyst of energy exchange between heaven and earth. The acquisition of tobacco requires an inordinate investment of physical energy that is expended in the preparation of trade goods (the manufacturing of hammocks and baskets, the catching of colorful birds, and the training of hunting dogs) and long-distance trading expeditions. High-energy inputs are also demanded of the shaman and his people. He



Fig. 31. Warao shaman offering tobacco smoke to the directional gods.

officiates during protracted public ceremonies which demand the active participation of the community in intensive preparatory work as ritual actors and dancers. Frequent therapeutic séances are equally energetic, the shaman shaking a rattle of several pounds for hours on end, during which time the community is expected to forgo sleep. In exchange for these and other energy expenditures surrounding the feeding of the gods, psychic energy is released by the spirits to permeate the lives of the faithful and to enable them to endure the vicissitudes of the human condition.

Of course the exchange of spiritual food between mankind and the Super-

naturals is not peculiar only to the tobacco religion of South American Indians, although the concept of gods being dependent upon man for their wellbeing and the associated idea of reciprocity between coequals certainly differs fundamentally from, for example, Judeo-Christian concepts. What gives man the status to function as partner of the gods is that he controls the power of the tobacco alkaloid. Whether conceptualized as a divine food or simply as a recreational drug, it is believed indispensable to the welfare of the gods and, in the hands of man, an inexorable tool of coercion.

A close parallel to the South American example of this form of tobacco religion occurs in North America, where the Gitche Manitou, or Great Spirit, complex of the Woodland Indians is equally based on the intoxicating effects of the tobacco plant. In fact, so close are the parallels that it is hard to think of them as independent inventions. Here, as in Warao mythology, the Great Spirit lives in the sky world but is accessible to man. He is concerned about mankind and greatly troubled when he receives, in mythic time, the visit of a vision-seeking man who complains to him about the shortness of human life, the uncertainty of the future, constant necessity, sickness, infirmity, and humiliation. The Great Spirit promises to help him and his people as do the manitous of the four winds and the Grandfather spirits residing in rocks, graves, and waterfalls. They all promise to bestow their blessings on mankind and to take care of the people as long as they are mindful of them.

To be mindful of the Supernaturals meant offering them tobacco. Originally in the hands of the manitous, tobacco was not man's to give. But to demonstrate their sincerity, the manitous surrendered tobacco and put themselves at the mercy of man. "Only, whenever they offer us smoke, then only shall we smoke," declared the manitous. "We whom they call 'manitous' shall desire it of them." In those days of old the Great Manitou said, "I did not even save a single pipeful for myself. Verily, in return we shall think of their lives whenever they worship us sacrificing tobacco and dogs" (Michelson 1932:127).

The tobacco that mankind received from the manitous was *Nicotiana rustica*, whose intoxicating effect was commented on by early travelers as being so strong that the Indians became intoxicated by it. The Woodland Indians, when they first made its acquaintance, must have felt the resulting euphoria to be magical, and they attributed to the spirits the same yearning for the smoke which they felt themselves. Therefore, when Gitche Manitou presented mankind with this powerful herb, he was allowing them a tool with which to coerce the Supernaturals, from the lowest to the highest (Underhill 1965:185-86; cf. Winnebago, Radin 1915-16:66).

As is well known, the manitous received the tobacco offerings in the form of smoke drawn from a ceremonial pipe and directed in solemn puffs to the

four cardinal directions; sometimes two additional puffs were directed toward the nadir and the zenith. Although not explicitly identified as food by the Woodland Indians, the Karuk explicitly "fed it" to the Mountain spirit (Harrington 1932a:75). In any case, tobacco is considered a commodity indispensable for the welfare of the manitous. As in the case of the South American Indians, it serves the purpose of engaging the gods and man in a partnership of compelling mutuality commensurate in intensity with the power of the addictive drug it contains. The function of the tobacco shaman is to serve as the intermediary through whom the divine energies of the universe are made accessible to man. Without his intervention the world would come to an end, as man cannot persist without the gods and the gods cannot do without human beings.

### *Magical Heat*

Attesting to their superhuman state, shamans display an insensitivity to heat and pain. According to Eliade (1964:477), "There is every reason to believe that the use of narcotics was encouraged by the quest for 'magical heat.'" As a therapeutic analgesic tobacco preparations are administered by the shaman to his patients. Using a shamanic technique intended to demonstrate his "spirit condition," the tobacco shaman, in assimilating the magical heat of his sacred cigar, makes himself insensitive to the fire outside. The Mbyá-Guaraní word for tobacco means "to heat and protect oneself" (Cadogan 1958:93), and once the tobacco spirit has entered his body, the Tenetehara shaman no longer feels the fire (Lopes 1934:162). In trance, he can put out a cigar against his body and is said to be able to walk over live coals or swallow embers. To quote an eyewitness report from the Guahahara (Snethlage 1928:384):

Then a giant cigar was delivered and he [the chief] pulled several times on it. After that he repeated his dance even more arduously while I took the opportunity to sample the cigar. It did not exactly agree with me, the nerves of my buccal cavity became immediately desensitized. The chief, however, took advantage of every pause in the increasingly wilder dance to smoke intensively. As it turned out, he needed it badly. Because now a big bonfire was lit, about which the red brown fellows hopped fully intoxicated. Suddenly the chief squatted down and, imitating the call of the *cururú* toad (*Pipa americana*), hopped about in the embers. He picked up a coal, fanned it while holding it in his mouth, and then swallowed it slowly. It was one but not the climax of the dance which continued through the night without interruptions. And the swallowing of hot embers was repeated again and again. [My translation]

Based on his own experience, the author believed that the numbing effect of the intoxicant on the Indian's inner mouth enabled him to perform the

feat of repeated fire swallowing. What must have aided the tobacco shaman in his quest for magical heat is the circumstance of increased liberation of nor-epinephrine through nicotinic action. The drop in skin temperature and increased perspiration enabled him to withstand heat better than a person not using tobacco and may account for his demonstrated mastery of fire. Vaso-constriction, of course, is also helpful in the treatment of wounds and other skin lesions. In any case, South American tobacco shamans, like shamans and magicians elsewhere, are masters of fire and pain, and central nervous system effects assist them in authenticating their ordained state.

### *Healing*

Healing of the sick is an essential function of shamans anywhere (fig. 32). To carry out their office, South American tobacco shamans ingest diverse tobacco preparations to contact the omniscient spirit world or they apply them topically to the body of their patient. In the former case, the tobacco shaman enters into a trance, in the course of which the soul leaves his body to consult with spirits and ancestral shamans concerning the cause and cure of his patient. His temporary death is essentially the same experience he underwent at the time of his initiation, and there is no doubt, as we have seen, that the ingestion of nicotine can aid the shaman in accomplishing his celestial journey at will. He steps across the threshold of his earthly existence and, in levitation, associates with the spirit world, the dead, rapacious birds, and were-jaguars.

Motifs of avian spirits connected with tobacco use have repeatedly been documented in the ethnographic section, especially in conjunction with snuffing paraphernalia and tube pipes. A pertinent example of a specific tobacco bird-spirit is the swallow-tailed kite (*Elanoides forficatus*) of the Acawaio and the Warao. But winged felines and flying horse mounts belong to the same category of levitations experienced by the shaman in ecstatic tobacco trance. Many sicknesses, according to shamanic theory, are caused by soul loss through spirit intrusion, and shamanic flight is indispensable to the healer, whose task it is to recapture the soul and to extract the pathogen after learning its nature from the spirits of the otherworld. Extraction of the cause of sickness from the body of the sufferer is accompanied by massaging and ritual blowing, which in tobacco shamanism is accomplished by adding tobacco preparations of various kinds to the treatment (Lublinski 1920-21:255-63). In addition, tobacco may be administered to purge the patient, fortify him, calm him down, or clear his mind (Stahl 1925:121-22).

Extraction of disease agents through application of tobacco has a natural model in the already mentioned use of the plant as an insecticide on seed stock



Fig. 32. Warao shaman in nicotine-induced trance healing a patient.



and the human body. From there it is only a small step to presume it to be useful also against pathogens of various natural and supernatural causes of illness. This becomes especially apparent in the tobacco shaman's practice of applying tobacco preparations to the skin and outer mucosa of the patient. While the techniques of blowing and massaging remain largely the same as in drug-free shamanism, I suggest that in addition to their significant psychological effect, tobacco fumigations and rubbings also contribute certain benefits specific to nicotine therapy.

As a method of nicotine administration, the topical application of tobacco preparations to the human body is commonly considered a means of magic and ritual curing. But in contemplating the practice among South American Indians of applying tobacco directly to the skin, Steinen (1894:347) observed early on that "perhaps if a patient is blown upon for a long period of time with thick clouds of smoke a slight drowsiness is aimed at." His contemporary Koch-Grünberg (1915-17:65) went further when he suggested that "the blowing of tobacco smoke and the methodical stroking of the body are bound to exercise gradually an intoxicating effect and can contribute, especially in the case of fever, to the cure." As a rule, however, authors seem to have contented themselves with simply referring to the "efficacy of tobacco" in smoke blowing, relating it to the pneumatic power of the shaman.

Following up on Steinen's and especially on Koch-Grünberg's suggestion, I reiterate here that the skin, next to the gastrointestinal and the respiratory tracts, is an important route of drug administration. Percutaneous absorption of nicotine by passive diffusion is readily accomplished and leads to local and systemic effects. This is true for passage through the intact skin, the broken skin, and the external mucous membranes. Making use of this route of administration, South American Indians apply tobacco smoke, juice, powder, and leaves not only as an insecticide and vermifuge and for purposes of fertility and fecundity, but also for pain relief and healing. The understanding of nicotine action through topical administration is apt to increase the appreciation of the practice as something more than naïve doctoring.

As indicated, tobacco smoke blowing in curing is an age-old form of ritual blowing of almost universal distribution in native South America (figs. 33, 34). Smoke makes the life-giving breath of the shaman visible to the sufferer, and authors often comment on the psychological importance of this tangible evidence of the healing power. Explains Métraux (1949c:592): "The shaman's power often was identified with his breath or with tobacco smoke, which materialized his breath and added to it the efficacy of tobacco. The purifying and strengthening power of breath and tobacco smoke played an important part in magic treatments and other magic rites."



Fig. 33. Tupinamba curing by tobacco smoke blowing.

But authors have also been impressed by the “clouds,” “big puffs,” and “mouthfuls” of smoke which shamans blow “repeatedly” over their patients, directing the smoke through their funneled hands or through hollow jaguar bones (Macushi, Appun 1871, 2:347) in such a way that it lingers for a while either curling over the skin or captured under the shaman’s massaging hands. In the words of one observer (Fejos 1943:91):

The shaman takes deep puffs until about a quarter of the cigar is consumed and then starts to blow large mouthfuls of smoke over the afflicted part of the patient’s body. He places his lips close to the skin of his patient and lets the smoke roll out from his mouth so that the smoke will hover over the diseased area for some time. After the smoke has rolled away, the shaman repeats the process until he believes that the patient’s skin has been “softened” sufficiently for the magic darts to be “sucked out.” The time needed to soften the skin of the

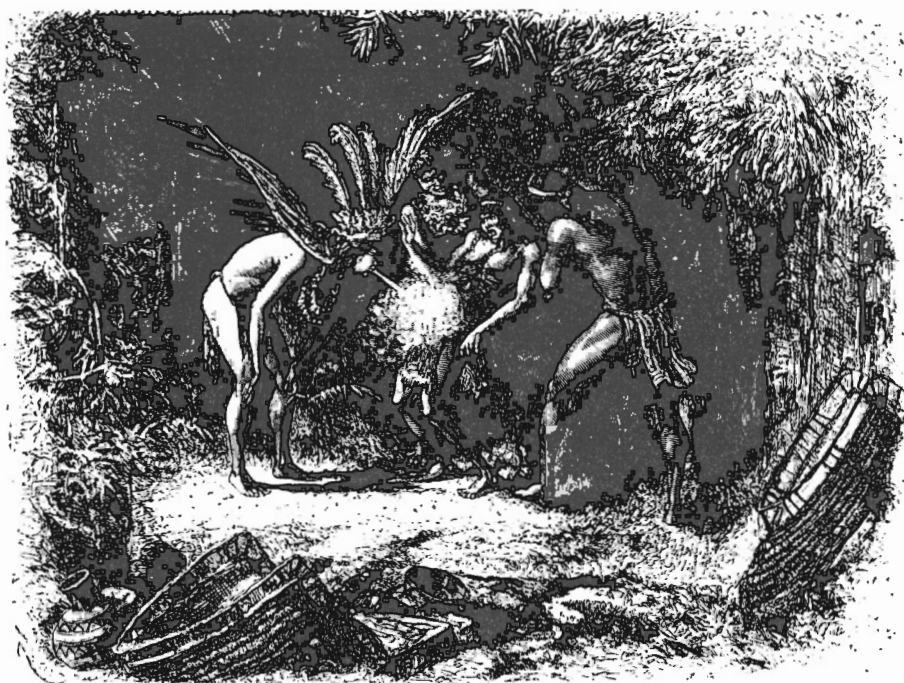


Fig. 34. Rucuyen Indian treated by tobacco smoke blowing. Note the continuity of the procedure from the Tupinamba of the sixteenth century (fig. 33) to the Rucuyen in the nineteenth century.

patient varies greatly according to the disease since "the darts are not all of the same strength."

As in this case of Yagua healing, South American tobacco curers may focus on specifically affected regions of the body—a wound or a tooth cavity throbbing with pain—or they may fumigate the entire body of the patient. In addition, smoke is blown on the crown of the head and into the face, eyes, nose, and mouth. It is rubbed and massaged onto the skin and made to waft over the body. Fumigating patients like this is said to calm the pain, cure, and restore vitality, revive the "dead," and exorcize evil. Whatever psychological benefits may accrue from this action in curing, both healer and patient expect it to function as an antiseptic and an analgesic. For the Cayapó, writes Banner (1961:39), "tobacco . . . is the first remedy used to disinfect wounds and bruises." The Desana clean wounds by rubbing them with strong tobacco juice (McGovern

1927:188). The Chamacoco place plasters of chewing tobacco on the open wound to calm the pain (Balduis 1931:143), Caribbean Caribs rubbed tobacco juice into the cuts of men undergoing scarification (Métraux 1949a:373), and Kalapalo shamans "blow tobacco smoke on newly pierced ears" to alleviate the pain (Basso 1973:67, 69). A similar purpose may be behind the practice of blowing smoke on the bites inflicted by ants on the chest of an initiate (Piaroa, Métraux 1949a:373; Gheerbrant 1952:139), or of blowing upon snakebites (Palikur, Arnaud 1970:16), spider bites (Orinoco Indians, Gumilla 1882, 2:136), mosquito and other insect bites (Yagua, Girard 1958:47), and scorpion stings (Carib, Luzardo 1971:14; Tacana, Hissink 1964:171). The Tupinamba consider tobacco smoke quite generally beneficial for the healing of wounds (Purchas 1906:479).

As an analgesic, tobacco smoke is also administered against toothache and after tooth extractions (Yupa, Reichel-Dolmatoff 1945b:73). The Tunebo place a piece of green tobacco leaf in the cavity (Rochereau 1961:101), and the Campa apply cotton boiled with tobacco for the same purpose (Grandidier 1861:140). Tobacco smoke is blown into the open mouth of the Aparai patient as described by Speiser (1926:183-84) in vivid detail:

Soon after our arrival in the village Joa [*sic*] developed a terrible dental root infection. . . . [Potu] . . . quietly lit a cigarette making it burn strongly. . . . Suddenly Joa came to squat in front of him. . . . Now Potu turned the cigarette about in his mouth and blew a strong jet of smoke into Joa's painfully opened mouth. . . . This treatment was repeated about ten times, and followed by a pause during which Potu energetically pulled on his cigarette to get it strongly burning again. Then he blew large clouds of smoke into his cupped hands, spat into them and waved them as before over Joa's face. Also this was repeated about ten times. [My translation]

Similarly, in an attempt to fumigate a hollow tooth, a Chiriguano curer blows tobacco and repeatedly spits nicotine-laden sputum on the cheek of the patient until his cigarette is smoked down (García Rosquellas 1946). Adds the author, "The fact is that the patient was cured," suggesting that toothache is widely held to be caused by gnawing worms so that in a case like this tobacco is believed to act as a vermifuge. The opinion that tobacco chewing preserves the teeth is widespread in South America (Yanoama, Knobloch 1967?:74; Polykrates 1969:140; Goajiro, Chibcha, Julián 1980:35; Abipon, Dobrizhoffer 1822, 2:219-20).

In addition to its use on open wounds, tobacco blowing is practiced also over intact skin for a variety of reasons, especially for curing. Explain the Mehináku: "The smoke blown by the shaman slips under the patient's skin, destroys the *kauki*, and thereby restores health" (Gregor 1977:334). In general,

tobacco smoke is believed to have easy access to the human body via the skin because it seeks out the pathogenic spirits inside the patient, who take pleasure in partaking of the drug.

A variation of tobacco smoke blowing is ritual spit blowing of tobacco smoke, rapé, chewed tobacco, and juice. On the South American continent and in the Caribbean in general spit blowing is of wide distribution (cf. Weiss 1969:461, 490–91) and is practiced for the same reasons as tobacco spit blowing, that is, to avert evil, storms, and floods, to initiate shamans, and to cure disease. According to Armstrong and Métraux (1948:383), the rubbing of tobacco-laden spittle over a suffering patient is a common therapeutic method among the Goajiro. Explains Steinen (1886:300; 1894:345) for the Bacairi and other tribes of central Brazil, “the ailing body is fumigated with billowing clouds of smoke, simultaneously spat at, and intermittently kneaded powerfully under the moaning of the curer—not the patient—that echoes loudly through the village. All this takes a long time; the curer allows himself only a few rest periods while he massages, loudly groaning, and passionately smoking.” [My translation]

Upon chewing tobacco for a long period of time, Goajiro shamans begin to swoon and to suffer the toxic effects of the drug. In this state they discharge large expectorations on the afflicted part of their patient, ceaselessly massaging the painful region with the mixture of spittle saturated with chewing tobacco (Barranquilla 1946:166; Turrado Moreno 1950:49). Similarly, the Catio shaman blows tobacco smoke over the stomach or the entire body and massages the patient suffering from colic with chewed tobacco (Hernández de Alba 1948a:325). The same method is practiced by the Barí (Caballero 1981:343), who may mix the tobacco paste with caraña resin (*Protium heptaphyllum*). Using tobacco and hallucinogens, Campa shamans enter into a trance state before they spit tobacco- and coca-saturated saliva into their hands to massage it into their patient (Torre López 1969:8–10). Farabee (1924:190) observed a Parucoto curer smoke vigorously and then open his mouth wide to expectorate on the head and upper body of a young patient.

The practice of using tobacco powder rather than juice or smoke is also associated with spit blowing, as in certain rituals that took place in Mocana temples, where religious practitioners blew rapé over the congregation (Torre López 1969:8/3). Tucano mythology tells of a child “brought back to life” through the action of rapé blowing (Rodríguez Lamus 1966:3). Tacana mythology narrates the case of a hunter whose body was rubbed with tobacco powder to cure him of fever. Shamanic novices are revived from their symbolic initiatory death by having their bodies rubbed with tobacco powder (Hissink and Hahn 1961:319, 394).

Finally, nicotine is administered cutaneously through the application of wet tobacco leaves to the naked body. Farabee (1922:140) reports that for certain ailments the Shipibo shaman soaks the leaves before placing them on the patient's ailing body part. The Machigenga put young tobacco leaves on their chest for colds (Steward and Métraux 1948a:548), and the rubbing of the body with wet tobacco leaves is reported among the Mocana of Colombia (Escalante 1955:115) as typical behavior of certain Supernaturals.

To the modern reader, the methods of cutaneous tobacco application described here may appear exotic and crude. Yet many of them were practiced by members of the Western medical profession. Not until the second half of the nineteenth century did tobacco disappear from the United States pharmacopoeia (Larson and Silvette 1965; Stewart 1967:246), and it is probably safe to say that tobacco remedies continue to be used in folk medicine to the present day (Brandon 1976:218, 219).

Looking at the diverse methods of cutaneous tobacco administration, one can recognize—in the practice of general and directed smoke blowing (over abraded skin); spit blowing with tobacco juice, nicotine-laden saliva, and tobacco powder; saliva massages; juice ablutions; rapé and leaf plasters; and tooth compacts—attempts at maximizing the amount and the contact intensity of drug application.

The application of tobacco preparations to open wounds, bites, and stings represents no special passage problem, as the nicotine reaches the exposed subcutaneous tissues unencumbered by the epidermal barriers.

Tobacco products applied to the intact skin as liquids, powders, and plasters are also conducive to nicotine absorption. However, administration of the drug from tobacco smoke would seem to be impeded by the unabraded skin, unless the nicotine in smoke should be retained by the body perspiration of the patient. In any case, blowing clouds of smoke for extended periods of time over the entire body and particularly into the face of the patient does involve the respiratory and gastrointestinal routes, and nicotine amounts large enough to affect the central nervous system are probably ingested by the patient in addition to whatever percutaneous absorption may occur.

In the case of solutes, passage of nicotine through increased contact intensity is considerably enhanced. Spit blowing, saliva massages, and ablutions (especially of open wounds) with nicotinic media are all pertinent in this connection. The therapeutic dose of tobacco was given by Gutiérrez Muro (1934) to be a decoction of as low as 1 percent for lotions.

Most effective is the local application of rapé plasters and wet tobacco and tobacco leaves. Snuff plasters applied over neuralgic areas are effective analgesics (Somervail 1839). Plasters of tobacco leaves are very potent in the same

way and are capable of delivering locally enough nicotine to cause more or less acute poisoning (Weizenecker and Deal 1970). Also the efficacy of green tobacco plugs or nicotine-laden cotton balls inserted into the hollow of an aching tooth ought not be underestimated. Functioning like sustained-release preparations for parenteral administration, they deliver the drug in situ, promptly, and over a period of time; but they may also result in severe nicotine poisoning (Chapman 1880). The absorption of minute quantities of nicotine produces the sympathetic release of norepinephrine from the skin tissues with local effect, and the concomitant reduction in skin temperature may very well be experienced by the patient as soothing and at least a temporary relief from pain.

It seems fairly well established by the foregoing discussion that tobacco is a strong ally of the shaman, whose healing power and general authority depend on the degree to which he is able to convince his fellowmen of his status. The farmer whose seed is made to bear healthy crops or the patient whose body is cleansed of infestations and relieved of pain will put increased faith in his shaman's extra status and pneumatic powers. His breath and smoke blowing on plants and animals and on man and his tools are life-giving; they restore vitality to the sick and supposedly to the dead and avert danger from visible enemies like thunderstorms and from invisible adversaries of the spirit world.

### *Combative Champion*

Like shamans in general, South American tobacco shamans assume a daring posture of combativeness against the powers of disintegration such as evil spirits, sorcerers, sterility, sickness, and death. This stance becomes clearly manifested in the widespread shaman-jaguar transformation complex in which tobacco and hallucinogens play an instrumental role (Steward 1949:707).

In explaining the sacrificial process of dark magic and the peculiar method of transporting the "cadaver" hanging from its knees down the shaman's back, Warao informants emphasize how with every step the victim's dangling head bounces against the heels of the striding soul-bearer. It is a sign of power and elevated status, comparable to the ankle-length rear hem of the loincloth that shamans wear in festive pomp. Both the hanging victim of the shaman and the hanging end of the shamanic loincloth have been likened by the Indians to the tail of a jaguar, the form of which animal shamans in many South American societies are believed to be able to adopt. One is reminded here of the Aruacay warriors, who wore jaguar tails in battle (Kirchhoff 1948e:489), or of the lord of Tunja, a famous priest who was called the long-tailed chief by the Spaniards because he had a long tail, like a jaguar's or a puma's, which he dragged on the

ground (Simón 1882-92, 5:191; Reichel-Dolmatoff 1975:44). One may also think of the Tucano, Witoto, and other jaguar-men (Arecuna) who wear jaguar garments which they can don or shed depending on the occasion (Reichel-Dolmatoff 1975:124-25; Walter 1956:139; Whiffen 1915:182).

Of course a thorough case need not be made here for the relationship that exists in South American ideology between the shaman and the jaguar (Reichel-Dolmatoff 1975; Walter 1956; Weiss 1969:485). For as Furst (1968:154) has pointed out, "If one concept cutting across geographic, linguistic, and cultural boundaries among South American Indians can be singled out, it is that of qualitative identity between jaguars and shamans and accordingly their interchangeability of form." In Bora, Ocaina, and Witoto thinking, jaguars are even the naguals of the shamans (Girard 1958:132-33). At the time of initiation a novice undergoes a protracted period of fasting during which tobacco juice is his principal sustenance. To the same extent that the man becomes emaciated his jaguar double in the forest suffers from severe hunger and thirst. Jaguars being alter egos of shamans, one can never be sure whether a jaguar is really an animal or, rather, a man.

The intimate relationship between the shaman and the jaguar is clearly exemplified by Campa concepts and beliefs. To become one of their jaguar shamans, a novice must ingest an initial dose of tobacco jelly and learn the song of tobacco. When the tobacco "reaches his heart," he receives a vision and meets the old woman Tobacco Spirit, whom he asks for one of her daughters. Animals will appear to him in human form pretending to be the jaguar girl he asked for. But if he wants to become a true jaguar shaman and healer, he sees through the sham and lets all disguised animals pass by, until he hears a jaguar roar in the night-darkened jungle. This is the old woman's daughter whom he must go out to meet in the forest. The jaguar attacks the novice and tears him to pieces. If the young man endures the ordeal without retreating, his body will become whole again and his jaguar tormentor will turn into a beautiful young woman.

From the union of this were-jaguar woman and the novice—who has become a full-fledged shaman in the process of being dismembered—are born several sons and daughters. It is for that reason that a Campa shaman refers to his tube of *ambíl* as "my wife." He is the husband of a jaguar woman and the son-in-law of a jaguar Mistress of Tobacco. The teacher of the young shaman is his father-in-law. The old woman-jaguar the novice met at the time of his initiation has been a beautiful young jaguar-girl whom his mentor met on the occasion of his own initiation into office. The power of Campa jaguar shamanism is thus passed on through the spiritual family from the older shaman and his jaguar-wife to the former's human son-in-law and the latter's jaguar daugh-



ter. Being part of this spiritual family, Campa jaguar shamans often neglect their worldly wives and families and feel closer to their spiritual kin. Daughters born into the shaman's spiritual family live as jaguars with their mothers in company with other jaguar-women. Sons stay with their fathers and in their telluric existence take on the form of stones. During the absence of the shaman from his home, these jaguar stones protect the traveling shaman's wife from being devoured by some other were-jaguar in search of human flesh. They turn into jaguars during the night to guard the house. The shaman feeds them tobacco jelly, and they are believed to move about in the form of stones so as to reach the *ambil* that is placed near them. Even after the shaman has died, his human wife will continue feeding tobacco jelly to her jaguar foster-sons.

Campa jaguar shamans can adopt a jaguar form upon embarking on their far-flung journeys in search of food. Human food does not nourish them when they are in jaguar form. Rather, were-jaguars of this kind eat people, which appear to them as peccary. They travel long distances so as to avoid eating their friends and kin. Especially during the months of March through June were-jaguars are on the prowl in search of children or in shamanic terms young "peccary"; and again, as jaguars, shamans are unable to distinguish their own human children from others. Thus, when in the form of jaguars, shamans *are* jaguars: they see like them and they think like them. There are, however, different kinds of jaguars which shamans may become. The most feared of all is the cloud jaguar, who drains people of their strength until they fall asleep. Cloud jaguars can also enter houses through the spaces of the split-palm walls, so that there is no defense against them other than a powerful shaman (Elick, pers. comm.).

A closer affinity between jaguar and shaman is hardly conceivable, and tobacco, like other mind-altering drugs, is an important agent of the jaguar shaman transformation complex of South America. For instance, Cariban-speaking tribes throughout the greater Guiana region smoke "tiger tobacco" to become endowed with the power of the jaguar (Wilbert 1981a:67). These were the cannibalistic and slave-taking Indians whom the Arawak, Saliva, and Guahibo of the Orinoco plains knew as "Carib-Jaguars" (Gumilla 1955:83; Reichel-Dolmatoff 1944:448; 1972:55) and whom the Warao greatly feared for their alleged ability to transform themselves into such dangerous animals. The Cariban Waiwai drink tobacco juice to associate with jaguars (Métraux 1950a:65), and so do novice shamans of the Barama-Carib, until a giant jaguar appears and causes them to turn into jaguars themselves, prowling about the floor and growling like felines (Gillin 1936:171). There are many other similar examples, especially from Amazonia, where *Nicotiana* figures as a transformation agent side by side with *Anadenanthera*, *Banisteriopsis*, *Trichocereus pachanoi* (San

Pedro cactus), and *Virola* in the were-jaguar complex and lycanthropy in general (Métraux 1944b:335-36).

Several explanations come to mind to help account for this tobacco shaman-jaguar relationship. On the one hand, there is a perceived analogous nature of the plant, the animal, and the human actors involved, which strengthens the belief in their essential identity. The Campa identify tobacco etiologically with the jaguar (Elick, pers. comm.). The Acawaio, as pointed out, call a particularly strong tobacco tiger tobacco because they liken the jaguarlike mottling on the leaves of the plant to the spots on the coat of a large species of jaguar (Butt Colson 1977:53). Similarly, on a plane of natural modeling, jaguars relate to shamans in their sensitivity to plant intoxicants. They have been known to chew the stems of *Banisteriopsis caapi*, and Reichel-Dolmatoff (1975: 121) suspects the Tucano to have witnessed jaguars undergoing drug-induced convulsions. Although there is no evidence to document the eating of tobacco plants by jaguars, they do eat vegetable matter in order to regurgitate compact balls of shedded hair that accumulates in their stomachs. Balls of hair play an important role in South American shamanism as magic objects and pathogenic projectiles, and like magical darts which sorcerers produce from their bodies, hair balls brought up by felines from their stomachs may have served as additional evidence for the qualitative equivalence between the shaman and the jaguar.

On the other hand, there are several tobacco-related characteristics of the tobacco shaman that must have likened him to the jaguar. I am thinking of acuteness of vision, night vision, wakefulness, a caraña-masked raspy voice, a furred or rough tongue, and a pungent body odor. Thus, the shamanic neophyte, who through ingestion of tobacco receives acute near vision during the day, and the mature shaman, who as a result of advanced nicotine intoxication obtains night vision and improved capability of distinguishing large shapes in the dark, need little convincing to consider themselves related to such keen-eyed animals as the felines or, for that matter, to such Masters of Tobacco as the swallow-tailed kite (*Elanoides forficatus*) of the Acawaio and Warao (Wilbert 1985), the urubu vulture (*Sarcoramphus papa*) of the Münkü (Moura 1960:52-53), and to such night-hunters as the bat Tobacco Spirit of the Sanemá (Wilbert 1972b:59), or the kinkajou (*Potos flavus*) of the Bacairi (Steinen 1886:310-11, 327-28). Like the latter two and the jaguar, shamans are hunters who stalk their prey preferably at night and, perhaps more often than not, in the darkness of an amblyopic condition of nicotine poisoning.

Peculiar to jaguar-men is the adoption of either a defensive or an aggressive mode of behavior, although both modes can be fiercely combative. In their protective mode, were-jaguars are powerful chiefs, priests, and gods who

defend their territorial boundaries and subjects and have been engaged in doing so in native South America and Mesoamerica since remote prehistoric times (Furst 1968; Reichel-Dolmatoff 1975). They are a different race of intermarrying human and animal people (Coe 1965:14; Grove 1970:17-18), or the result of human encounters with the Giant Jaguar, on which awesome occasion they were transformed by having their bodies penetrated by the spirit (Roe 1982:213).

When dominated by their aggressive mode of being, jaguar-men are were-jaguars, who fight and destroy their human and spiritual adversaries on earth and in the sky. The Catio picture them as personages with a human body and feline head and claws. Machigenga shamans, after excessive smoking, turn into jaguar aggressors to pursue and kill humans (Baer 1979:108-09, 119). Jaguar shamans of the Mojo are men who have been wounded by jaguars and who take trophies of jaguars they kill. They fight evil spirits and engage in bloody battles even with the supreme Jaguar Spirit himself (Métraux 1948c:422, 423). Also Campa shamans fight great supernatural battles and turn into jaguars after they die as a result of the lust for killing witches (Tessmann 1930). Were-jaguars cannibalize their enemies, abduct them into slavery, and rape their women, whose faces they scratch bloody (Campa, Elick MS; Carib, Gumilla 1955:83).

As important as the aforementioned natural or nicotine-induced analogies are, they seem, nevertheless, insufficient to account fully for the jaguar transformation complex of South America. Rather, I submit, they ought best be understood as parts of a more complex ideology which, based on the psychotropic effects of nicotinic action, make it possible—and plausible—for the shaman not merely to enact but in fact to live his essential jaguariness. Thus, shamans are not so much concerned with “seeing” as with “vision,” and they engage less in physical combat than in aggression of the mind acted out in a hallucinatory sense and dimension. Accordingly, I suspect it is the mind-altering effect of nicotine action that lies at the core of tobacco shamanism in general and of the jaguar transformation complex in particular. To understand this belief complex one ought to consider not only the direct peripheral and central action of the tobacco alkaloid on the human body but also its indirect effects as a liberating agent of epinephrine, norepinephrine, and serotonin, among other compounds known to be implicated in the alteration of mood and affective states (Larsson 1985:10, table 1). Finally, jaguar-men practice within a learned ideational context in which they experience real or imagined dangers as stark realities, and in the face of which they have been enculturated to take a stand and fight rather than to desist. Taken together, these nicotine-associated physiological, neuropsychological, and cultural factors seem to

constitute the essential ingredients of were-jaguar shamanism in South America.

Although several previously mentioned hallucinogens and *Nicotiana* have all been implicated in the were-jaguar complex, nicotine is often considered of lesser significance than hallucinogenic compounds. In fact, however, nicotine, in appropriate dosages, is particularly well suited to produce in the shaman the chemical changes that activate the attack behavior of his jaguar-self. First, certain organic changes mentioned earlier (eyesight, voice, body odor, etc.) are recognized by the Indians as jaguar characteristics. Second, the cholinergic, preganglionic fibers of the sympathetic nervous system are induced to stimulate the adrenal medulla to discharge the arousal hormones epinephrine and norepinephrine, which mobilize the shaman's body for emergency reaction (Mansfeld 1908; Schievelbein and Werle 1967:82). Third, the nicotine-induced, generalized arousal is channeled by the appropriately enculturated shaman into such specific jaguar-man behavior as display of anger, hostility, and sexual aggressiveness. Hence, the psychological meaning of the "quiet epinephrine alert" is as important as the physiological effects of the drug in determining whether jaguar metamorphosis or related behavior will occur or not. Stated differently, the chemical activities provide the shaman with a generalized feeling that may or may not be endowed by him with the specific meaning of were-jaguar shamanism, depending on the prevailing patterns of culture in which he operates. This could be the reason why throughout the ethnographic literature we learn of protracted periods of shamanic preparation during which the master spends much more time on constructing in the mind of the aspirant an *intelligence de milieu* in which to practice than on instructing him about the pharmacological effects of the drug. It is also a well-known fact that fieldworkers who remain largely outside of the cultural landscape of their target society very rarely have drug experiences similar to those of their informants. Be this as it may, I am arguing here that besides physiological changes (Cannon 1914, 1929, 1932; Frankenhaeuser 1975:209, 222; Rothballer 1959:510), nicotine-mediated epinephrine release is capable of producing "the organic state typical of emotion" (Landis and Hunt 1932:467). Certainly one could argue that in some shamans nicotine-induced emotions like the emotional state achieved by administration of exogenous epinephrine (in laboratory tests) may not be genuine but "cold" feelings only similar to the emotions experienced in real-life stress. That is to say, in the case of both the shaman and the test subject the emergency function of epinephrine is physiologically realized, but in the absence of real physical danger is experienced only as an emotional state reminiscent of the fight or flight response (cf. Frankenhaeuser

1971:243). Beyond this, however, I venture to suggest that it is entirely possible that, in many cases, tobacco shamans confront their supernatural adversaries in a true sense of reality, quite different from that of a test person under laboratory conditions. Shamans think of pathogenic agents or meteorological phenomena like thunder and lightning as real natural and supernatural threats with no "as ifs" about them. Also, the doses of nicotine-mediated epinephrine in the shaman may be larger than the relatively small amounts (0.5–1.5 mg) of exogenous epinephrine commonly injected into clinical test subjects. Thus, in the case of tobacco shamanism, rather than just "as if" emotions, there may occur emotional changes which, together with the physiological changes, complete rather than simply condition the shaman's transformation into a were-jaguar.

Experienced shamans seem to be able to regulate their nicotine intake properly so as not to cross the phasic stimulant-depressant threshold of catecholamine discharge (Stewart and Rogoff 1919). The adrenal hormones increase the firing rate of the sympathetic nerve cells and perpetuate the primed state, causing more hormones to be secreted. Too much nicotine may produce physical paralysis but also a continued mental arousal, and shamans officiating under the influence of the nicotine-mediated sympathoadrenal reactions often maintain their overt or covert attack behavior for prolonged periods of time. In a state of increased wakefulness—also an epinephrine-mediated response—the jaguar-man takes repeated doses of nicotine to maintain an energized level of high arousal until his "battle" is fought and his body collapses in exhaustion, to adopt once again its human form. Nicotine thus provides the transformational modality and the specific antagonistic dimension of the culturally modulated were-jaguar complex of South American shamanism.

Finally, in connection with the discussion of combative shamanism one would wish to know more about the action of nicotine-mediated serotonin release in the brain (Schievelbein, Werle, and Jacoby 1961:603; Schievelbein, Surberg, and Werle 1962:53; Schievelbein and Werle 1962). Pharmacological experiments have provided evidence for the important function that brain serotonergic neurons appear to have in predatory aggression between animals of different species and possibly irritable aggression among intra- or interspecies animals provoked by an aversive stimulus (Eichelman and Thoa 1973; see also Chase and Murphy 1973:186, 189–90; Valzelli 1981:43). Improved knowledge of the effect of nicotine-stimulated liberation of serotonin (possibly followed by a depression of brain serotonin below baseline) and of norepinephrine and epinephrine on aggression and sleep processes, dreaming, and hallucinating (Hoffer 1957) should open up promising avenues of research into the mind-altering capacity of nicotine in the service of tobacco shamans and,

more generally, into the nature of nicotine as a drug with potentially hallucinogenic properties.

To display aggressiveness tobacco shamans do not necessarily have to identify with were-jaguars. Internal and external foes are also engaged by shamans in their roles as healers, sorcerers, and weather shamans. Speaking of the last, Karsten (1964:205) says of the Shipibo practitioner, "When he blows smoke towards them with his powerful magic pipe . . . he is believed to be able to dispel the evil demons . . . operating in these atmospheric phenomena or to compel them to take another course." Blowing tobacco smoke against approaching storms and clouds is a widespread phenomenon in South America and the Caribbean (cf. Weiss 1975:490) and can be accompanied by waving hand motions to hasten them away (Itene, Snethlage 1937:68), by hand motions and the utterance of an appropriate spell (Wapishana, Farabee 1918:120; Warao, Wilbert 1981*b*:131), or by more overtly aggressive gesticulations with arrows and loud incantations (Carajá, Ehrenreich 1891:33). Spit-blowing against approaching weather is a common practice of rain shamans, and "for maximum efficacy the mouth should first be filled with tobacco juice by chewing a green tobacco leaf," explains Weiss (1969:461) of the Campa. The Araona shaman spit-blows tobacco juice from chewing toward the sky or into the river to avert a storm or flood (Métraux 1942:44). Weather shamans also blow tobacco smoke toward the sky to attract the rain clouds (Chiriguano, Métraux 1930:343; Araucano, Hilger 1966:72; Yagua, Omagua, Cocama, Girard 1958:46, 180, 196). But whatever the chosen mechanism may be, the weather shaman's action ought not to be interpreted as a fight with the wind, rain, and clouds but with numina whose manifestation they are. Thus while the tobacco smoke may be considered within the context of homeopathic magic, the nicotine action on the nervous system of the shaman makes the personification of the weather phenomena possible and the shaman's role as a mediator between heaven and earth credible. More often than not, the shaman who takes up his position against the weather steps out to confront Thunder, the chief of clouds, as the Bora refer to him (Girard 1958:99-101). Witoto practitioners lick *ambil* and recite creation myths before they dare to confront their creator spirit in his manifestation of Thunder and Lightning, and they may offer "human sacrifice" to this Master of Rain by putting a spell on a person to cause him to be killed by a ferocious animal (Girard 1958:69-71). A particularly telling example of the physical and mental engagement of the weather shaman as a combatant aggressor and defendant is appreciated in the drama of the annual Thunder ceremony of the Tapirapé of central Brazil (Wagley 1977:200-11).

Each year in January, when there are heavy thunderstorms, the Tapirapé shamans and a few courageous laymen conducted the Thunder ceremony to

protect their people from the dangers of Thunder and Lightning. Like many Tupí peoples, the Tapirapé considered Thunder a powerful supernatural who lives in his sky-house accompanied by a retinue of deceased shamans, messengers, and fiercely aggressive creatures called *tobu*.

The Thunder ceremony represented a four-day combat of the shamans against Thunder and his followers. The men swallowed smoke from their long pipes, sang, and danced in "frenzied intoxication" until they fell in trance and were transported to the house of Thunder (figs. 35-38). Some of the men were struck down by the enemy's arrows, revived by having tobacco smoke blown and massaged over their bodies, and rejoined the fight, which was characterized by pronounced violence. The thoroughly intoxicated men pranced in procession through the houses of the village, which were arranged along the periphery of an oval village plan and which could be entered and exited through side doors. Commoners, novice shamans, and seasoned practitioners swallowed repeated doses of smoke and moved about in clouds of spewed-out smoke. They vomited, suffered violent seizures, staggered blindly through the houses, and some had to be removed from the battleground in cataleptic rigidity on the shoulders of their comrades.

At the end of the raucous ceremony of brandished knives and weapons, stomping circumambulation, and repeated intoxications, the men of the village, facing north in the direction of the house of Thunder, had their heads touched by the shaman with the ceremonial rattle. The women and children were also touched this way and protected from the danger of Thunder, who retired to his house until the following year.

Thus whether as were-jaguars or as simply human fighters, tobacco shamans, upon confronting the enemies on earth, in the sky, and in the other-world, after negotiating dangerous passages and overcoming pathogenic agents and other perils typical of shamanic practice, return from their ecstatic warpath reassured of having affirmed once again their role and office (Baer 1969a).

The preceding presentation of native tobacco use in South America and its relationship to shamanism has demonstrated the important role the drug has played in indigenous life and culture. In terms of geographic reach and cultural penetration tobacco has few, if any, rivals among psychotropic plants in pre- and postindustrial societies.

Although wild *nicotianas* are predominantly plants of the temperate zone, cultivated species prevail under a wide variety of climatic conditions, tropical climates included. This adaptive property is, of course, the biological prerequisite for the far-flung range of tobacco plants.



Fig. 35. Tapirapé thunder ceremony. Shaman in nicotine trance challenges Thunder.



Fig. 36. Tapirapé thunder ceremony. Shaman experiencing the onset of nicotine intoxication is struck down by spirit of Thunder.

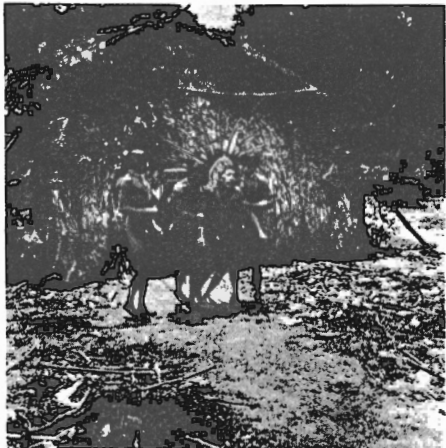


Fig. 37. Tapirapé thunder ceremony. Shaman overcome by nicotine intoxication is struck down by Thunder.



Fig. 38. Tapirapé thunder ceremony. Participant suffering nicotine-induced cataleptic rigidity is carried on the shoulders of assistants.



A second major reason for the dispersal of at least the tobacco cultigens is the fact that nicotine, their principal active ingredient, is a drug of powerful psychological and moderate physical dependence. Traditional ethnographic and modern statistical evidence of tobacco consumption throughout the Americas and the world clearly manifests the power tobacco is apt to wield over the dependent user as a magico-religious and, especially, as a hedonistic drug.

Returning to the principal hypothesis of this study, I trust to have mustered sufficient evidence to identify yet a third causal factor for the phenomenal dissemination of tobacco and for its prominence, since prehistoric times, in American Indian tradition. Rather than botanical or strictly pharmacological in kind, this factor combines physiological and cultural conditions of tobacco use and has resulted in the propagation of tobacco as a faith-confirming, that is, life-ordaining, drug. The extraordinary dynamic power of this agent of diffusion is evident in the rather strikingly similar tobacco ideology of American Indians that coincides with the limits of tobacco distribution in the New World. Stringing together, for the present study, the hundreds of documentary fragments may, to paraphrase Huxley (1963:84), at best have only outlined the boundaries of this far and largely still uncharted continent of the Indian's mind. However, though late in time, multidisciplinary case studies by botanists, pharmacologists, and anthropologists remain distinctly possible in Amazonia. Conceivably, a deeper understanding of tobacco ethnobotany may thus yet be attained.

## *Bibliography*

THE BIBLIOGRAPHY CONTAINS REFERENCES, IN A TOTAL OF TEN LANGUAGES, to many kinds of works, some dating to the sixteenth century. To the extent possible sources were examined firsthand and all pertinent publication data recorded. In other cases secondary references were relied upon and the bibliographic data verified with corroborative materials.

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CAPITALIZATION AND ACCENTUATION: Names of tribes and groups of people, series titles, and collection titles are capitalized. Accents have been added where appropriate if they do not appear in the original work.

ABBREVIATIONS: United States Government Printing Office is abbreviated to U.S. Government Printing Office.

ALPHABETIZATION: Words with å, ä, ö, ü, etc. are alphabetized as though lacking the diacritical marks.

TRANSLATIONS: Terms such as "new series," "volume," and "number" are generally given in English.

Ackerknecht, Erwin H.

- 1949 Medical Practices. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 5 *The Comparative Ethnology of South American Indians*, 621-43. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.

Acosta Saignes, Miguel

- 1952 El área cultural prehispánica de los Andes Venezolanos. *Archivos Venezolanos de Folklore* 1(1):45-72. Caracas.
- 1954 *Estudios de etnología antigua de Venezuela*. Caracas: Instituto de Antropología y Geografía, Facultad de Humanidades y Educación, Universidad Central de Venezuela.
- 1958 Origen de algunas creencias venezolanas. *Boletín Indigenista Venezolano* 3-5(1-4):171-95. Caracas.

Acaña, Christoval de. See Fernández, Juan Patricio

Aguado, Pedro de

- 1916-17 *Historia de Santa Marta y Nuevo Reino de Granada*. Prólogo, notas y comentarios por Jerónimo Bécker. 2 vols. Madrid: Establecimiento Tipográfico de Jaime Ratés.
- 1963 *Recopilación historial de Venezuela*. (Fuentes para la historia colonial de Venezuela.) Biblioteca de la Academia Nacional de la Historia, 62-63. Caracas.

Ahlbrink, W.

- 1931 *Encyclopaedie der Karaïben, behelzend taal, zeden en gewoonten dezer Indianen*. Verhandelingen der Koninklijke Akademie van Wetenschappen te Amsterdam. Afdeeling Letterkunde n.s. 27(1). Amsterdam.

Alanis, Rodolfo

- 1947 *Material arqueológico de la civilización diaguita*. La Rioja, Argentina: Museo Arqueológico Regional "Inca Huasi."

Alcácer, Antonio de

- 1964 *Los Bari: cultura del pueblo Motilón*. . . . Bogotá: Centro Capuchino de Historia y Antropología.

Alfaro de Lanzone, Lidia C.

- 1969 Inferencias culturales a través de una pipa ceremonial. *Proceedings of the 38th International Congress of Americanists* 1:435-41. Stuttgart-Munich. 1968.

- Allen, Paul H.  
1947 Indians of Southwestern Colombia. *Geographical Review* 37:568-82.
- Altschuler, Milton  
1964 The Cayapa: A Study in Legal Behavior. Ph.D. dissertation, University of Minnesota.
- Alvarez, J.  
1946 Creencias y tradiciones Mashcas. *Misiones Dominicanas del Perú* 27:10-15. Lima.
- Ambrosetti, Juan B.  
1899 *Notas de arqueología Calchaqui*. Ser. 1. Buenos Aires: Imprenta y Litografía "La Buenos Aires."
- Ameghino, Florentino  
1915 *La antigüedad del hombre en La Plata*. Obras Completas y Correspondencia Científica, vol. 3. Buenos Aires: Edición Oficial . . . dirigida por A. J. Torcelli.
- Andres, Friedrich  
1938 Die Himmelsreise der caraïbischen Medizinmänner. *Zeitschrift für Ethnologie* 70(3-5):331-42.
- Anghera, Peter Martyr d' [Anghiera, Pietro Martire d']  
[1511] *De orbe novo: The Eight Decades of Peter Martyr d'Anghera*. Translation, notes and introduction by Francis Augustus MacNutt. 2 vols. New York and London: G. P. Putnam's Sons. (First Decade published in 1511.)  
1912
- Anonymous  
1865 Ethnographische Schilderungen aus dem Gebiete des Amazonenstroms. *Globus* 8:8-15.
- Anonymous [Eugenio Rebuchon]  
1908 Estudio de Rebuchon. Primera parte. Capítulo 1. In *Colección de leyes, decretos, resoluciones i otros documentos oficiales referentes al Departamento de Loreto*, 431-34. Carlos Larrabure i Correa, ed. Vol. 13. Edición Oficial. Lima: Imp. de "La Opinión Nacional."
- Anonymous [Serrano y Sanz, Manuel, ed.]  
1928 *Relaciones históricas de las misiones de padres Capuchinos de Venezuela, siglos XVII y XVIII*. Madrid: Librería General de V. Suárez.
- Anonymous  
1940 Missão Rondon. Date of report 1916. *Jornal do Comércio*. Rio de Janeiro.
- Anonymous  
1956 Mitología Machiguenga: los Seripigari. *Misiones Dominicanas del Perú* 37(217):225-26. Lima.
- Aparicio, Francisco de  
1948 The Archaeology of the Paraná River. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 57-67. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Appun, Karl [Carl] Ferdinand  
1871 *Unter den Tropen: Wanderungen durch Venezuela, am Orinoco, durch Britisch Guyana und am Amazonenstrom in den Jahren 1849-1868*. 2 vols. Jena: H. Costenoble.  
1872 *Reis door Venezuela . . . Arnhem: J. Voltelen*.

- 1961 *En los trópicos*. Translated by Federica de Ritter. Colección Ciencias Sociales, 1. Ediciones de la Biblioteca. Caracas: Universidad Central de Venezuela.
- Arcila Robledo, Georgio  
1950 *Las misiones franciscanas en Colombia*. Bogotá: Imprenta Nacional.
- Argumosa, J. A. de  
1963 La anestesia en la medicina aborigen. *Boletín Indigenista Venezolano* 8(1-4):129-54.
- Århem, Kaj  
1981 *Makuna Social Organization: A Study in Descent, Alliance, and the Formation of Corporate Groups in the Northwestern Amazon*. Uppsala: Academiae Upsaliensis. Distributed by Almqvist & Wiksell International, Stockholm.
- Armellada, Cesáreo de  
1946 *Cómo son los indios Pemones de la Gran Sabana: estudio etnográfico*. Caracas: Editorial Elite.
- Armellada, Cesáreo de, and B. de Matallana  
1942 Exploración del Paragua. *Boletín de la Sociedad Venezolana de Ciencias Naturales* 8(53):61-110. Caracas.
- Armentia, Nicolás  
1883 *Diario de sus viajes a las tribus comprendidas entre el Beni y Madre de Dios y en el arroyo de Ivon en los años de 1881 y 1882*. La Paz: Tipografía Religiosa.  
1885 *Exploración oficial mandada efectuar del "Madre de Dios" en 1884*. La Paz: Imprenta de "El Nacional" de I. V. Vila.
- Armitage, Alan K., C. T. Dollery, C. F. George, T. H. Houseman, P. J. Lewis, and D. M. Turner  
1975 Absorption and Metabolism of Nicotine from Cigarettes. *British Medical Journal* 4(5992):313-16. London.
- Armitage, Alan K., Colin Dollery, Terry Houseman, Eva Kohner, Peter J. Lewis, and David Turner  
1978 Absorption of Nicotine from Small Cigars. *Clinical Pharmacology and Therapeutics* 23(2):143-51. St. Louis.
- Armitage, Alan K., G. H. Hall, and C. M. Sellers  
1969 Effects of Nicotine on Electrocortical Activity and Acetylcholine Release from the Cat Cerebral Cortex. *British Journal of Pharmacology* 35(1):152-60. London.
- Armstrong, John M., and Alfred Métraux  
1948 The Goajiro. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 369-83. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Arnaud, Expedito  
1961 Breve informação sôbre os índios Asurini e Parakanan: rio Tocantins, Pará. *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 11. Belém.  
1966 Os índios Galibí do rio Oiapoque. *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 30. Belém.

- 1970 O xamanismo entre os índios da região Uaçá (Oiapoque-Território do Amapá). *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 44. Belém.
- 1971 Os índios Oyampik e Emerilon (rio Oiapoque). *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 47. Belém.
- Ashton, Heather, and Rob Stepney  
1982 *Smoking: Psychology and Pharmacology*. London and New York: Tavistock Publications.
- Azara, Félix de  
1809 *Voyages dans l'Amérique Méridionale . . . depuis 1781 jusqu'en 1801*. 4 vols. Vols. 3-4 are translated from the author's *Apuntamientos para la historia natural de los pájaros del Paraguay y rio de la Plata*. Madrid: 1802-05. Paris: Dentu.
- Badano, Victor M.  
1945 *Pipas patagónicas de la colección Alemandri*. Universidad Nacional de Córdoba. Publicaciones del Instituto de Arqueología, Lingüística y Folklore "Dr. Pablo Cabera" no. 12. Córdoba, Argentina: Imprenta de la Universidad.
- Badet, Charles. See Badet, Henri
- Badet, Henri  
1951 *Charmeur d'Indiens: le Général Rondon*. Paris: Nouvelles Éditions Latines.
- Baer, Gerhard  
1969a Ein besonderes Merkmal der südamerikanischen Schamanen. *Zeitschrift für Ethnologie* 94(2):284-92.
- 1969b Reise und Forschung in Ost-Peru. *Verhandlungen der Naturforschenden Gesellschaft in Basel* 80(2):327-86.
- 1976 A Particular Aspect of Matsigenka Shamanism (Eastern Peru): Male-Female Ambivalence. *Proceedings, 41st International Congress of Americanists* 3:114-21. Mexico City. 1974.
- MS Religion and Symbols: A Case in Point from Eastern Peru. Paper presented at the 10th Congress of Anthropological and Ethnological Sciences. Post-Plenary Session. Religion. December 19-21, 1978. Madras.
- 1979 Religión y chamanismo de los Matsigenka. *Amazonia Peruana* 2(4):101-38.
- 1984 *Die Religion der Matsigenka, Ost-Peru*. Basel: Wepf.
- 1986 "Der vom Tabak Berauschte"—Zum Verhältnis von Rausch, Ekstase und Wirklichkeit. *Verhandlungen der Naturforschenden Gesellschaft zu Basel* 96:67-84. Basel.
- Baer, Gerhard, and Wayne W. Snell  
1974 An Ayahuasca Ceremony among the Matsigenka (Eastern Peru). *Zeitschrift für Ethnologie* 99(1-2):63-80.
- Baillard, B., pseud. See Prade, Jean Le Royer, sieur de
- Baldus, Herbert  
1931 *Indianerstudien im nordöstlichen Chaco*. Leipzig: C. L. Hirschfeld.
- 1937a *Ensaio de etnologia brasileira*. Prefacio de Affonso de E. Taunay. Ser. 5 Brasileira vol. 101. São Paulo: Companhia Editora Nacional.

- 1937*b* Os grupos de comer e os grupos de trabalho dos Tapirapé. In his *Ensaio de etnologia brasileira*. Prefacio de Affonso de E. Taunay. Ser. 5 Brasileira vol. 101. São Paulo: Companhia Editora Nacional.
- 1950 Lendas dos índios Tereno. *Revista do Museu Paulista* n.s. 4:217-32. São Paulo.
- 1952 Breve notícia sôbre os Mbyá-Guaraní de Guarita. *Revista do Museu Paulista* n.s. 6:479-88. São Paulo.
- 1960*a* *The Tapirapé: A Tupi Tribe of Central Brazil*. Translated by Ariane Brunel. New Haven, Conn.: Human Relations Area Files.
- 1960*b* *Estórias e lendas dos índios*. Antologia Ilustrada do Folclore Brasileiro. Estórias e Lendas I. São Paulo: Literart.
- 1964 O xamanismo na aculturação de uma tribo Tupi do Brasil central. *Revista do Museu Paulista* n.s. 15:319-27. São Paulo.
- Banner, Horace
- 1961 O índio Kayapó em seu acampamento. *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 13.
- Baquet, M. A.
- 1890 Les indiens Parécis. Traditions et mythologie des indiens du Brésil. *Bulletin de la Société Royale de Géographie d'Anvers* 15:187-97. Antwerp.
- Bär, K.
- 1906 Untersuchungen bei Tabak-Alkohol-Amblyopic. *Archiv für Augenheilkunde* 54:391-99. Wiesbaden.
- Barbosa Rodrigues, João
- 1882 Tribu dos Tembés. *Revista da Exposição de Anthropologica Brasileira*, 32. Rio de Janeiro.
- Barbrooke-Grubb, Wilfred. See Grubb, Wilfred Barbrooke
- Barker, James
- 1953 Memoria sobre la cultura de los Guaiika. *Boletín Indigenista Venezolano* 1(3-4):433-91.
- Barlaeus, Caspar
- 1659 *Brasilianische Geschichte bey Achtjähriger in selbigen Landen geführter Regierung seiner Fürstlichen Gnaden Herrn Johann Moritz Fürstens zu Nassau u. Erstlich in Latein durch Casparem Barlaeum Beschrieben und jetzo in Teutsche Sprach vbergesetzt. . . .* Cleve: Gedruckt bey Tobias Silberling.
- Baro, Roulox
- 1651 Relation du voyage de Rovlox Baro, interprete et ambassadeur ordinaire de la compagnie des Indes d'Occident, de la part des illustissimes seigneurs des Prouinces Vnies au pays des Tapuies dans la terre ferme du Brasil. Commencé le troisieme avril 1647 & finy le quatorziesme Iuillet de la mesme année. Traduit d'hollandais en françois par Pierre Paray en Charolois. In *Relations veritables et curieuses de l'isle de Madagascar, et du Bresil. Avec l'histoire de la derniere guerre faite au Bresil, entre les Portugais & les Hollandois. Trois relations d'Egypte, & vne du royaume de Perse*, part 1:197-307. Augustin Covrbé, comp., Claude-Barthélemey Morisot, ed. 2 parts in 1 vol. Paris: Avgvstin Courbé.

- Barral, Basilio María de  
 1964 *Los indios Guaraúnos y su cancionero: historia, religión y alma lírica*. Madrid: Departamento de Misionología Española, Consejo Superior de Investigaciones Científicas.
- Barral, J. A.  
 1847 Note sur la formule de la nicotine. *Annales de Chimie et de Physique* ser. 3, 20:345-53. Paris.
- Barranquilla, José Agustín de  
 1946 *Así es la Guajira*. Barranquilla: Emp. Litográfica.
- Barré, Nicolas  
 1557 *Copie de quelques lettres sur la navigation du chevalier de Villegaignon es terres de l'Amerique oultre l'Aequinoctial, iusques souz le tropique de Capricorne: cōtenant sommairement les fortunes encourues en ce voyage, avec les meurs & façons de viure des sauuages du pais: enuoyées par vn des gens dudict Seigneur*. Paris: Chez Martin le Jeune.
- Barrère, Pierre [Barrere, Peter]  
 1743 *Nouvelle relation de la France équinoxiale, contenant la description des côtes de la Guiane; de l'isle de Cayenne; le commerce de cette colonie; les divers changements arrivés dans ce pays; & les moeurs et coûtumes des différents peuples sauvages qui l'habitent*. . . . Paris: Piget.
- 1751 *Neue Beschreibung von Guiana*. . . . In *Neue Reisen nach Guiana, Peru und durch das südliche America, Worin die Merkwürdigkeiten dieser Länder nebst den Sitten und Gewohnheiten der Einwohner beschrieben werden*, 1-178. Peter Barrere, Bouguer and de la Condamine. Translated. Gocttingen: Verlegts Abram Vandenhoecks seel. Wittwe.
- Barreto, Felicitas  
 1960 *Danzas indígenas del Brasil*. Traducción por Alberto Estrada Quevedo. Mexico City: Instituto Indigenista Interamericano.
- Barrett, Samuel Alfred  
 1925 *The Cayapa Indians of Ecuador*. 2 vols. Indian Notes and Monographs. Miscellaneous no. 40. New York: Museum of the American Indian, Heye Foundation.
- Basso, Ellen B.  
 1973 *The Kalapalo Indians of Central Brazil*. New York: Holt, Reinhart and Winston.
- Bates, Henry Warner  
 1864 *The Naturalist on the River Amazons: A Record of Adventures, Habits of Animals, Sketches of Brazilian and Indian Life, and Aspects of Nature under the Equator, during Eleven Years of Travel*. 2d ed. London: J. Murray.
- 1975 *The Naturalist on the River Amazons: A Record of Adventures, Habits of Animals, Sketches of Brazilian and Indian Life, and Aspects of Nature under the Equator, during Eleven Years of Travel*. 4th ed. New York: Dover Publications.
- Baucke, Florian [Florian]  
 1870 *Pater Florian Baucke, ein Jesuit in Paraguay (1748-1766), nach dessen eigenen Aufzeichnungen*. Andreas Kobler, ed. Regensburg: Pustet.



- 1942-44 *Hacia allá y para acá (una estada entre los indios Mocobíes, 1749-1767)*. 5 vols. Traducción por Edmundo Wernicke. Publication no. 324. Buenos Aires: Universidad Nacional de Tucumán.
- Becher, Hans
- 1957 Bericht über eine Forschungsreise nach Nordbrasilien in das Gebiet der Flüsse Demini und Aracá. *Zeitschrift für Ethnologie* 82(1):112-20.
- 1959 Algumas notas sobre a religião e a mitologia dos Surára. *Revista do Museu Paulista* n.s. 11:99-107. São Paulo.
- 1960 *Die Surára und Pakidái. Zwei Yanonámi-Stämme in Nordwestbrasilien*. . . Mit Anhang: *Über die Sprache der Surára und Pakidái von Aryon Dall'Igna Rodrigues*. Museum für Völkerkunde. Mitteilungen no. 26. Hamburg: Kommissionsverlag Cram de Gruyter.
- Becker-Donner, Etta
- 1955 Notizen über einige Stämme an den rechten Zuflüssen des Río Guaporé. *Archiv für Völkerkunde* 10:275-343. Vienna.
- Bellizzi, Ataliba Macieira
- 1958 *Pesquisas antropométricas nos índios Mawé, Karajá e Kayapó*. Rio de Janeiro: Sede da Sociedade Editora e Gráfica.
- Bennett, Wendel C.
- 1946a The Andean Highlands: An Introduction. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 1-60. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1946b The Atacameño. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 599-618. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Benzoni, Girolamo
- [1565] *La historia del mundo nuevo*. Traducción y notas de Marisa Vannini Gerulewicz. Estudio preliminar de Leon Croizat. Biblioteca de la Academia Nacional de la Historia, 86. "Fuentes para la historia colonial de Venezuela." Caracas: Academia Nacional de la Historia.
- Bernal Villa, Segundo
- 1953 Aspectos de la cultura Pacz: la fiesta de San Juan en Calderas, Tierradentro. *Revista Colombiana de Folklore* 2(2):117-221. Bogotá.
- 1954 Medicina y magia entre los Paeces. *Revista Colombiana de Antropología* 2(2):219-64. Bogotá.
- Berry, G. A.
- 1887 Toxic Amblyopia. *Transactions of the Ophthalmological Society of the United Kingdom* 7:91-92.
- Bertoni, Moisés Santiago
- 1956 *La civilización Guaraní*. . . II. Religión y Moral. Asunción and Buenos Aires: Editorial Indoamericana.
- Bertonio, Ludovico
- 1879a *Vocabulario de la lengua aymara*. Publicado de nuevo por Julio Platzmann. Edición facsimiliaria. 2 vols. Leipzig: Teubner.

- [1603] *Arte de la lengua aymara*. Compuesto por el P. Ludovico Bertonio, publicada de nuevo por Julio Platzmann. Edición facsimilaria. Leipzig: B. G. Teubner. (Reprint of *Arte y grammatica muy copiosa de la lengua aymara*. . . . Rome: Luis Zannetti, 1603.)
- 1879*b*
- Biét, Antoine  
1964 *Voyage de la France équinoxiale en l'isle de Cayenne, entrepris par les françois en l'anne'e M.DC.LII*. . . . Diuisé en trois livres. Paris: François Clovzior, dans la cour du palais proche l'hostel du premier president.  
1896 Les Galibis. Aristide Marre, ed. *Revue de Linguistique* 29:220-48, 261-338.
- Biocca, Ettore  
1965 *Viaggi tra gli Indi: alto rio Negro, alto Orinoco. Appunti di un biologo*. 4 vols. Vol. 2 *Gli indi Yanoáma*. Rome: Consiglio Nazionale delle Ricerche.  
1969 See Valero, Helena
- Bird, Junius B., John Hyslop, and Milica Dimitrijevic Skinner  
1985 *The Preceramic Excavations at the Huaca Prieta, Chicama Valley, Peru*. Anthropological Papers of the American Museum of Natural History. Vol. 62, part 1. New York.
- Birket-Smith, Kaj  
1929 Drinking Tube and Tobacco Pipe in North America. *Ethnologische Studien* 1(1-2):29-39. Leipzig, Halle, 1929-31.
- Bishop, W. J.  
1949 Some Early Literature on Addiction with Special Reference to Tobacco. *British Journal of Addiction* 46:49-65. Harlow.
- Bittmann Simons, Bente  
1965-66 Notes on Anchor Axes from Brazil. *Revista do Museu Paulista* 16:321-58. São Paulo.
- Bödinger, Ute  
1965 *Die Religion der Tukano im nordwestlichen Amazonas*. Kölner Ethnologische Mitteilungen no. 3. Cologne: Kölner Universitäts-Verlag.
- Boggiani, Guido  
1895 *I Caduvei (Mbayá o Guaycurú): viaggi d'un artista nell'America Meridionale*. Con prefazione ed uno studio storico ed etnografico del Dott. G. A. Colini. Rome: Ermanno Loescher.
- Boglár, Lajos  
1971 Chieftainship and the Religious Leader: A Venezuelan Example. *Acta Ethnographica Academiae Scientiarum Hungaricae* 20(3-4):331-37. Budapest.
- Bohné, G.  
1962 Der Einfluss des Rauchens auf spezielle für den Kraftfahrer wichtige Sinnesleistungen des Auges. *Klinische Monatsblätter für Augenheilkunde* 140(5):717-29. Stuttgart.
- Bolinder, Gustaf  
1917 Einiges über die Motilon-Indianer der Sierra de Perijá (Kolumbien, Südamerika). *Zeitschrift für Ethnologie* 49(1):21-51.

- 1925 *Die Indianer der tropischen Schneegebirge: Forschungen im nördlichsten Südamerika*. Stuttgart: Strecker und Schröder.
- 1957 *Indians on Horseback*. London: Dennis Dobson.
- 1958 *We Dared the Andes: Three Journeys into the Unknown*. Translated by Elsa Kruuse. London and New York: Abelard-Schuman.
- Boman, Eric  
1927-32 Pipas de fumar de los indígenas de la Argentina. *Anales del Museo Nacional de Historia Natural de Buenos Aires* 35:309-41.
- Bondeson, Wolmar E.  
1972 Tobacco from a Tiahuanacoid Culture Period. *Etnologiska Studier* 32: 177-84. Gothenburg.
- Bourne, Benjamin Franklin  
1853 *The Captive in Patagonia; or, Life among the Giants. A Personal Narrative*. Boston: Gould and Lincoln.
- Bourne, Edward Gaylord  
1907 Columbus, Ramon Pane and the Beginnings of American Anthropology. *Proceedings of the American Antiquarian Society* n.s. 17:310-48. 1906.
- Bozzoli de Wille, María Eugenia  
1975 *Localidades indígenas costaricenses*. 2d ed. Publicaciones de la Universidad de Costa Rica. Serie Misceláneas no. 133. San José: Editorial Universitaria Centroamericana.
- Branco, José Moreira Brandão Castelo  
1950 O gentio Acreano. *Revista do Instituto Histórico e Geográfico Brasileiro* 207:3-78.  
1956 Nos vales do Xingu e do Tapajós. *Revista do Instituto Histórico e Geográfico Brasileiro* 231:3-137.
- Brandon, Elizabeth  
1976 Folk Medicine in French Louisiana. In *American Folk Medicine: A Symposium*, 215-34. Wayland D. Hand, ed. Center for the Study of Folklore and Mythology, University of California, Los Angeles. Publication 4. Berkeley: University of California Press.
- Bray, Warwick, and Collin Dollery  
1983 Coca Chewing and High-Altitude Stress: A Spurious Correlation. *Current Anthropology* 24,3:269-74.
- Brett, William Henry  
1851 *Indian Missions in Guiana*. London: George Bell.  
1868 *The Indian Tribes of Guiana: Their Condition and Habits. With Researches into Their Past History, Superstitions, Legends, Antiquities, Languages. . .* London: Bell and Daldy.  
1881 *Mission Work among the Indian Tribes in the Forests of Guiana*. London: Society for Promoting Christian Knowledge. New York: E. & J. B. Young.
- Brettes, Joseph de  
1903 Les indiens Arhouaques-Kaggabas. *Bulletins et Mémoires de la Société d'Anthropologie de Paris* séries 5, 4(3):318-57.
- Briceno Iragorry, Mario  
1946 Procedencia y cultura de los Timoto-Cuycas. *Acta Venezolana* 2(1-4):1-23. Caracas. 1946-47.

- Brinton, Daniel Garrison  
1891 *The American Race: A Linguistic Classification and Ethnographic Description of the Native Tribes of North and South America*. New York: N. D. C. Hodges.
- Brooks, Jerome Edmund  
1952 *The Mighty Leaf: Tobacco Through the Centuries*. Boston: Little, Brown.
- Brooks, Jerome Edmund, ed.  
1937-52 *Tobacco: Its History Illustrated by the Books, Manuscripts, and Engravings in the Library of George Arents, Jr.* Introductory Essay, Glossary, and Bibliographic Notes by Jerome E. Brooks. 5 vols. New York: Rosenbach.
- Brown, Charles Barrington  
1876 *Canoe and Camp Life in British Guiana*. London: E. Stanford. (2d ed.  
1877 1877.)
- Browne, E. A.  
1888 Optic Atrophy in Three Brothers (Smokers). *Transactions of the Ophthalmological Society of the United Kingdom* 8:235-39. London.
- Bruch, Carlos, and Félix Faustino Outes. See Outes, Félix Faustino, and Carlos Bruch
- Bruhln, Jan G., Bo Holmstedt, Jan-Erik Lindgren, and S. Henry Wassén  
1976 The Tobacco from Niño Korin: Identification of Nicotine in a Bolivian Archaeological Collection. *Årstryck 1976*, 45-48. Gothenburg: Göteborgs Etnografiska Museum.
- Brÿ, Iohanne Theodoro de  
1592 *Florilegium novum, hoc est: variorum maximeque variorum florum ac plantarum singularium una cum suis radicibus & cepis, eicones diligenter aere sculptae & ad vivum ut plurimum expressae. New Blumbuch darinnen allerhand schöne Blumen vnd frembde Gewächs, mit ihren Wurtzeln vnd Zwiebeln, mehrer theils dem Leben nach in Kupffer fleissig gestochen, zu sehen seind.* Exhibitum nuper. [Frankfurt?]: A Iohanne Theodoro de Brÿ.
- Büchnero, D. Andrea Elia. See Fravenknecht, Io. Iacobvs
- Bueno, Ramón  
1933 *Apuntes sobre la provincia misionera de Orinoco e indígenas de su territorio, con algunas otras particularidades. . .* Prólogo, monseñor Nicolás E. Navarro. Caracas: Tipografía Americana.
- Builes, Miguel Angel  
1951 *Cuarenta días en el Vaupés, del 14 de octubre al 25 de noviembre de 1950*. Medellín, Colombia: Impr. Departamental de Antioquia.
- Bürger, Otto  
1922 *Venezuela: Ein Führer durch das Land und seine Wirtschaft*. Leipzig: Dieterich.
- Burn, Joshua Harold  
1962 *Drugs, Medicines and Man*. New York: Charles Scribner's Sons.
- Butt, Audrey J.  
1956 Ritual Blowing: Taling as a Causation and Cure of Illness among the Akawaio. *Timehri* 35:37-52. Georgetown, British Guiana.  
1961-62 Symbolism and Ritual among the Akawaio of British Guiana. *Nieuwe West-Indische Gids* 41:141-61. Utrecht.  
1962 Réalité et idéal dans la pratique chamanique. *L'Homme* 2(3):5-52. Paris.

- 1965-66 The Shaman's Legal Role. *Revista do Museu Paulista* 16:151-86. São Paulo.
- Butt Colson, Audrey J.  
 1971 Hallelujah among the Patamona Indians. *Antropológica* no. 28:25-58. Caracas.  
 1973 Inter-Tribal Trade in the Guiana Highlands. *Antropológica* no. 34. Caracas.  
 1977 The Akawaio Shaman. In *Carib-Speaking Indians: Culture, Society and Language*, 43-65. Ellen B. Basso, ed. Tucson: University of Arizona Press.
- Caballero, Dionisio Castillo. See Castillo Caballero, Dionisio
- Cabot, Thomas D.  
 1939 The Cabot Expedition to the Sierra Nevada de Santa Marta of Colombia. *Geographical Review* 29(4):587-621.
- Cadogan, León  
 1949 Síntesis de la medicina racional y mística Mbyá-Guaraní. *América Indígena* 9(1):21-35.  
 1958 The Eternal Pindó Palm and Other Plants in Mbyá-Guaraní Myth and Legend. *International Congress of Americanists. Miscellanea Paul Rivet, Octogenario Dicta* 2:87-96. Publicaciones del Instituto de Historia, ser. 1, no. 50. Mexico City: Universidad Nacional Autónoma de México.  
 1965 A Search for the Origins of Ojeo, Ye-jharú or Tupichúa. *Anthropos* 60:209-19.  
 1971 *Ywyra Ñe'ery: fluye del árbol la palabra*. Centro de Estudios Antropológicos de la Universidad Católica. Asunción: "Nuestra Señora de la Asunción."
- Caella, P. Plácido de  
 1945 Tabaco en las tribus Siona. *Amazonia Colombiana Americanista* 3(9-10):39. Sibundoy.
- Califano, Mario, and Alice Fernández Distel  
 1978 L'emploi du tabac chez les Mashco de l'Amazonie sud-occidentale du Pérou. *Bulletin de la Société Suisse des Américanistes* 42:5-14. Geneva.  
 1980 Der Gebrauch des Tabaks bei den Mashco im peruanischen Amazonasgebiet. *Anthropos* 75(5-6):951.
- Camara Cascudo, Luis da. See Cascudo, Luis da Camara
- Campana, Domenico del  
 1902 Notizie intorno ai Ciriguani. *Archivio per l'Antropologia e l'Etnologia* 32:17-144. Florence.  
 1903 Contributo all'etnografia dei Toba. *Archivio per l'Antropologia e l'Etnologia* 33(2):286-322. Florence.
- Campbell, Joseph  
 1974 *The Mythic Image*. Princeton, N.J.: Princeton University Press.
- Cámpos, Daniel  
 1888 *De Tarija a la Asunción: expedición boliviana de 1883*. Buenos Aires and La Plata: Imprenta, Litografía y Encuadernación de Jacobo Preuser.
- Canals Frau, Salvador  
 1953 *Las poblaciones indígenas de la Argentina: su origen, su pasado, su presente*. Buenos Aires: Editorial Sudamericana.

- Cannon, Walter Bradford  
 1914 The Emergency Function of the Adrenal Medulla in Pain and the Major Emotions. *American Journal of Physiology* 330(2):356-70. Boston.  
 1929 *Bodily Changes in Pain, Hunger, Fear and Rage: An Account of Recent Researches into the Function of Emotional Excitement*. 2d ed. New York and London: D. Appleton.  
 1932 *The Wisdom of the Body*. New York: W. W. Norton.
- Cano, J.-P., J. Catalin, R. Badré, C. Dumas, A. Viala, and R. Guillerme  
 1970 Détermination de la nicotine par chromatographie en phase gazeuse. II. Applications. *Annales Pharmaceutiques Françaises* 28(11):633-40. Paris.
- Cantani, Arnaldo  
 1869 *Manuale di materia medica e terapeutica*. F. Vallardi, ed. 2 vols. Published in parts. Milan. [n.p.]
- Cardim, Fernão  
 1906 See Purchas, Samuel  
 1939 *Tratados da terra e gente do Brasil*. Introduções e notas de Baptista Cactano, Capistrano de Abreu e Rodolfo Garcia. 2d ed. São Paulo: Companhia Editora Nacional.
- Cardona, Miguel  
 1964 *Temas de folklore venezolano*. Caracas: Dirección de Cultura y Bellas Artes, Ministerio de Educación.
- Cardús, José  
 1886 *Las misiones Franciscanas entre los infidels de Bolivia: descripción del estado de ellas en 1883 y 1884 con una noticia sobre los caminos y tribus salvajes, una muestra de varias lenguas, curiosidades de historia natural, y un mapa para servir de ilustración*. Barcelona: Librería de la Inmaculada Concepción.
- Carlson, A. J., and J. H. Lewis  
 1914 Contributions to the Physiology of the Stomach. XIV. The Influence of Smoking and of Pressure on the Abdomen (Constriction of the Belt) on the Gastric Hunger Contractions. *American Journal of Physiology* 34:149-54. Boston.
- Carneiro, Robert [Roberto] Leonard  
 1962 The Amahuaca Indians of Eastern Peru. *Explorers Journal* 40(4):26-37.
- Carneiro, Robert [Robert Leonard], and Gertrude E. Dole  
 1956-57 La cultura de los indios Kuikurus del Brasil central. *Runa* 8(2):169-202. Buenos Aires.
- Cartagena, Padre Alberto de  
 1942 *Datos preliminares sobre el tabaco y la coca entre los Yukunas y Mirañas*. La Pedrera.  
 1953 Palabras indígenas relacionadas con los "apuntes sobre el baile" de algunas tribus en la región suroriental de Colombia. *Amazonia Colombiana Americanista* 5(17-19):26-33. Sibundoy.
- Cartier, Jacques  
 1545 *Brief recit, & succincte narration . . . de la navigation faicte es ysles de Canada, Hochelage & Saguenay & autres. . .* Paris: P. Roffet & A. Le Clerc.

- Carvalho, José Candido de Mello  
 1955 *Notas de viagem ao rio Paru de Leste*. Publicações Avulsas do Museu Nacional no. 14. Rio de Janeiro.
- Carvalho, José Candido de Mello, Pedro E. de Lima, and Eduardo Galvão  
 1949 *Observações zoológicas e antropológicas na região dos formadores do Xingu*. Introdução de H. A. Torres. Rio de Janeiro: Impr. Nacional.
- Cascudo, Luis da Camara  
 1936 *Em memoria de Stradelli. Biographia. Jornadas geographicas. Tradições. Depoimentos. Bibliographia de Stradelli*. Manaus: Livraria Classica.
- Casimir de Brizuela, Gladys  
 1973 *Síntesis de arqueología*. Panama City: Editorial Universitaria.
- Caspar, Franz  
 1952a *Die Tuparí, ihre Chicha-Braumethode und ihre Gemeinschaftsarbeit. Zeitschrift für Ethnologie* 77(2):254-60.  
 1952b *Tuparí: Unter Indios im Urwald Brasiliens*. Braunschweig: Friedr. Vieweg & Sohn.  
 1953 *Some Sex Beliefs and Practices of the Tupari Indians (Western Brazil). Revista do Museu Paulista* 7:203-48. São Paulo.  
 1956 *Tupari*. Translated by Eric Northcott. London: G. Bell and Sons.  
 1957 *A aculturação da tribo Tuparí. Revista de Antropologia* 5:145-71. São Paulo.  
 1975 *Die Tuparí: Ein Indianerstamm in Westbrasilien*. Monographien zur Völkerkunde, 7. Berlin and New York: Walter de Gruyter.
- Castellanos, Juan de  
 [1589] *Elegías de varones ilustres de Indias*. 2d ed. Biblioteca de Autores Españoles. . . . Vol. 4. Part 1 is reprinted from the first edition. Madrid, 1589. Parts 2 and 3 are here printed for the first time. B. C. Aribau, ed. Madrid: Impr. de la Publicidad, cargo de M. Rivadeneyra.  
 1886 *Historia del nuevo reino de Granada*. Publicada por primera vez, D. Antonio Paz y Mélia. 2 vols. Madrid: A. Pérez Dubrull.
- Castellví, Marcelino de, with Jorge R. Delgado V.  
 1941-44 *Materiales etnobotánicos sobre tabaco y la coca: sus nuevas areas. Amazonia Colombiana Americanista* 2(4-6):161-62. Sibundoy.
- Castelnau, Francis, comte de  
 1850-59 *Expédition dans les parties centrales de l'Amérique du Sud, de Rio de Janeiro à Lima, et de Lima au Para: exécutée par ordre du gouvernement français pendant les années 1843 à 1847*. 7 parts in 12 vols. Paris: P. Bertrand.
- Castillo B., Gabriel S. del  
 1961 *La medicina primitiva entre los Shimacos. Perú Indígena* 9(20-21):83-94.
- Castillo Caballero, Dionisio  
 1981 *Los Barí: su mundo social y religioso*. Salamanca: Naturaleza y García.
- Castro, Eugenio de  
 1941 *Ensaio da geographia linguistica*. 2d ed. augm. da *Geographia linguistica e cultura brasileira*. Rio de Janeiro, 1937. São Paulo: Companhia Editora Nacional.

- Cerioli, Gaspare  
1807 Transunto d'una memoria ms. contenente l'analisi del tabacco, con alcune osservazioni relative al uso medico. *Nuova Scelta d'Opuscoli Interessanti Suelle Scienze e Sull'Arti*, 205-58. Milan.
- Chaffanjon, Jean  
1889 *L'Orénoque et le Caura: relation de voyages exécutés en 1886 et 1887*. Paris: Hachette.
- Chagnon, Napolcon A.  
1968 *Tanomamö, the Fierce People*. New York: Holt, Rinehart and Winston.
- Chapin, Mac, comp.  
1970 *Pab Igala: historias de la tradición Kuna*. Panama City: Centro de Investigaciones Antropológicas, Universidad de Panamá.
- Chapman, F. R.  
1880 Effects of Tobacco. *Lancet* 1:388. London.
- Chase, Thomas N., and Dennis L. Murphy  
1973 Serotonin and Central Nervous System Function. *Annual Review of Pharmacology*, 181-97. Henry W. Elliott, ed. Vol. 13. Palo Alto, Calif.: Annual Review Inc.
- Chaves Ch., Milciades  
1946 Mitos, leyendas y cuentos de la Guajira. *Boletín de Arqueología* 2(4):305-32. Bogotá.  
1947 Mitología Kágaba. *Boletín de Arqueología* 2(5-6):423-520. Bogotá.  
1953 La Guajira, una región y una cultura de Colombia. *Revista Colombiana de Antropología segunda época* 1(1):123-95. Bogotá.
- Chervin, Arthur  
1907-08 *Anthropologie bolivienne*. 3 vols. Vol. 1 *Ethnologie, démographie, photographie, métrique*. Paris: Imprimerie Nationale le Soudier.
- Chessick, R. D.  
1964 The Problem of Tobacco Habituation. *American Medical Association Journal* 188(10):932-33. Chicago.
- Chiara, Vilma  
1961-62 Folclore Krahó. *Revista do Museu Paulista* n.s. 13:333-75. São Paulo.
- Chinachoti, Ninart, and Prasan Tangchai  
1957 Pulmonary Alveolar Microlithiasis Associated with the Inhalation of Snuff in Thailand. (Entry in the Case Report Section). *Diseases of the Chest* 32(6):687-89. Chicago.
- Chrétien, Père Jean  
1957 Moeurs et coutumes des Galibi d'après une lettre inédite, écrite en 1725. *Journal de la Société des Américanistes* n.s. 46:45-66.
- Church, Georg Earl  
1912 *Aborigenes of South America*. Clements R. Markham, ed. London: Chapman and Hall, Ltd.
- Civricux, Marc de  
1959 Datos antropológicos de los indios Kúnu-hána. *Antropológica* no. 8:85-146. Caracas.  
1970 Los últimos Coaca. *Antropológica* no. 26. Caracas.



- 1974 *Religión y magia Kari'ña*. Caracas: Instituto de Investigaciones Históricas, Universidad Católica "Andrés Bello."
- 1980 *Watunna: An Orinoco Creation Cycle*. Edited and translated by David M. Guss. San Francisco: North Point Press.
- Clastres, Pierre  
1974 *Le grand parler: mythes et chants sacrés des indiens Guarani*. Paris: Éditions du Seuil.
- Coe, Michael D.  
1965 *The Jaguar's Children: Pre-Classic Central Mexico*. New York: Museum of Primitive Art.
- Colbacchini, Antonio P.  
1925 *I Bororos orientali, "Orarimugudoge" del Matto Grosso, Brasile*. Contributi Scientifici delle Missioni Salesiane del Venerabile Don Bosco no. 1. Torino: Società Editrice Internazionale.
- Colbacchini, Antonio P., and César Albisetti  
1942 *Os Boróros orientais, orarimogodóque do planalto oriental de Mato Grosso*. Contribuições Científicas da Missão Salesiana de Mato Grosso aos Estudos de Etnografia e Etnologia Brasileira. São Paulo: Companhia Editora Nacional.
- Coll, C. van  
1903 *Gegevens over land en volk van Suriname. Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indië* 55:451-650. The Hague.
- Colón, Fernando  
1959 *The Life of the Admiral Christopher Columbus by His Son, Ferdinand*. Translated and annotated by Benjamin Keen. New Brunswick, N.J.: Rutgers University Press.
- Columbus, Ferdinand [Colombo, Fernando]. See Colón, Fernando
- Comajuncosa, Antonio  
1884 *El colegio Franciscano de Tarija y sus misiones: noticias históricas recogidas por dos misioneros del mismo colegio*. Written by Antonio Comajuncosa in 1810. . . . Now first published with introduction, notes, and continuation to 1882, by A. M. Corrado. Preface signed: Fr. Alejandro M. Corrado. Quaracchi near Florence [cerca de Florencia]: Tip. del Colegio de S. Buena-Ventura.
- Cook, William Azel  
1909 *Through the Wilderness of Brazil by Horse, Canoe and Float*. New York: American Tract Society.
- Cooper, John M.  
1946a *The Patagonian and Pampean Hunters*. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 1 *The Marginal Tribes*, 127-68. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1946b *The Araucanians*. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 687-760. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.

- 1949 Stimulants and Narcotics. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 5 *The Comparative Ethnology of South American Indians*, 525-58. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Cora, María Manuela de  
1972 *Kuai-Mare: mitos aborígenes de Venezuela*. Caracas: Monte Avila.
- Coriat G., Juan E.  
1943 *El hombre del Amazonas y ensayo monográfico de Loreto*. 2d ed. Lima: Imprenta Librería Coriat.
- Cors, José  
1957 Apuntes de Guarayos. *Universidad Mayor de San Francisco Xavier, Instituto de Sociología Boliviana* 17:99-165. Sucre.
- Coudreau, Henri [Henry] Anatole  
1886-87 *La France équinoxiale*. 2 vols. and atlas. Vol. 1 *Études sur les Guyanes et l'Amazonie*, 1886. Vol. 2 *Voyage à travers les Guyanes et l'Amazonie*, 1887. Paris: Challamel aîné.  
1893 *Chez nos Indiens: quatre années dans la Guyane Française (1887-1891)*. Paris: Librairie Hachette.  
1897a *Voyage au Xingú, 30 mai 1896-26 octobre 1896*. . . . Paris: A. Lahure.  
1897b *Voyage au Tapajoz (28 juillet 1895-7 janvier 1896)*. Paris: A. Lahure.
- Cox, Guillermo E.  
1863 *Viaje en las regiones septentrionales de la Patagonia, 1862-1863*. Santiago: Imprenta Nacional.
- Creighton, D. E.  
1973 Tobacco Smoke Retention. Paper presented at Conference on Aerosol Physics. Southampton: British American Tobacco Co., Ltd.
- Crevaux, Jules Nicolas  
1883 *Voyages dans l'Amérique du Sud*. . . . Paris: Hachette.
- Creyer, Philip E., Morey W. Haymond, Julio V. Santiago, and Suresh D. Shah  
1976 Norepinephrine and Epinephrine Release and Adrenergic Mediation of Smoking-Associated Hemodynamic and Metabolic Events. *New England Journal of Medicine* 295(11):573-77.
- Cunningham [first name unknown]  
1836 Effects of Intestinal Irritation on the Surface of the Body. *Boston Medical and Surgical Journal* 15(19):302-03.
- Cuzin, J.  
1966 Alkaloid-like Compounds in Tobacco Smoke. (Translation from the German.) *Abhandlungen der Deutschen Akademie der Wissenschaften zu Berlin, Klasse für Chemie, Geologie und Biologie* 3:171-72.
- Dale, H. H., and P. P. Laidlaw  
1912 The Significance of Suprarenal Capsules in the Action of Certain Alkaloids. *Journal of Physiology* 45:1-26. London and Edinburgh. 1912-13.
- Dance, Charles Daniel  
1881 *Chapters from a Guianese Log-Book; or, The Folk-Lore and Scenes of Seacoast and River Life in British Guiana*. . . . Georgetown, Demarara: The Royal Gazette Establishment.

- Daniel, João  
 1841 *Thesouro descoberto no maximo rio Amazonas. Jornal do Instituto Historico e Geographico Brasileiro* 3(9):39-52, 3(10):158-83, 3(11):282-97, 3(12):422-41. Rio de Janeiro.
- 1858 *Thesouro descoberto no maximo rio Amazonas. Jornal do Instituto Historico e Geographico Brasileiro* 2d ed. 2(7):329-64, 2(8):447-500. Rio de Janeiro, 1840.
- Daniélopolu, D., D. Simici, and C. Dimitriu  
 1925 Action du tabac sur la motilité de l'estomac étudié, chez l'homme, à l'aide de la méthode graphique. *Comptes Rendus Hebdomadaires de la Société de Biologie et de Ses Filiales* 92:535-38.
- Darbois, Dominique  
 1956 *Yanamale, Village of the Amazon*. Translated by Joan Selby-Lowndes. London: Collins.
- Davidson, Judith  
 MS Fieldnotes on Tobacco Use Among the Aguaruna.
- Demersay, Alfred  
 1860-64 *Histoire physique, économique et politique du Paraguay et des établissements des Jésuites*. 2 vols. Paris: L. Hachette.
- De Rios, Marlene Dobkin  
 1984 *Hallucinogens: Cross-Cultural Perspectives*. Albuquerque: University of New Mexico Press.
- Díaz, José Antonio  
 1861 *El agricultór venezolano, ó lecciones de agricultura práctica nacional*. Caracas: Imprenta Nacional de M. de Briceño.
- Díaz Castañeda, C.  
 1912 (Hechos y costumbres de los Cunibos.) Ligeros apuntes históricos sobre los indios Cunibos, Masisea. *Historia de las Misiones Franciscanas y Narración de los Progresos de la Geografía en el Oriente de Perú* 1:297-320.
- Dickson, Sarah Augusta  
 1954 *Panacea or Precious Bane: Tobacco in Sixteenth Century Literature*. Arents Collection. Publication number 5. New York: New York Public Library.
- Dickson, Sarah Augusta, and Perry Hugh O'Neil, comps.  
 1958-69 *Tobacco: A Catalogue of the Books, Manuscripts and Engravings Acquired since 1942 in the Arents Tobacco Collection at the New York Public Library from 1507 to the Present*. Parts 1-8 compiled by Sarah Augusta Dickson. Part 9 compiled by Perry Hugh O'Neil. Part 10 compiled by Sarah Augusta Dickson and Perry Hugh O'Neil. Arents Tobacco Collection. Publications numbers 7-12. New York: New York Public Library.
- Dijour, Elisabeth  
 1933 Les cérémonies d'expulsion des maladies chez les Matakó. *Journal de la Société des Américanistes de Paris* n.s. 25(2):211-17.
- Diniz, Edson Soares  
 1972 *Os índios Makuxi do Roraima: sua instalação na sociedade nacional*. Coleção Teses no. 9. Marília, Brasil: Faculdade de Filosofia, Ciências e Letras de Marília.

- Dirks, Servais  
1879 Explorations du fleuve des Amazones, faites par les Franciscains du Pérou (1633-1650). *Proceedings of the 3rd International Congress of Americanists* 1:112-42. Brussels. 1879.
- Disselhoff, Hans Dietrich, and Otto Zerris  
1974 *Die Erben des Inkareiches und die Indianer der Wälder*. Berlin: Safari-Verlag.
- Dobkin de Rios, Marlene. See De Rios, Marlene Dobkin
- Dobrizhoffer, Martin  
1783-84 *Geschichte der Abiponer, einer berittenen und kriegerischen Nation in Paraguay*. . . . Aus dem Latinischen übersetzt von A. Kreil. 3 vols. Vienna: Joseph Elder von Kurzbek.  
1822 *An Account of the Abipones, an Equestrian People of Paraguay*. Translated by Sara Coleridge. 3 vols. London: John Murray.
- Doggart, James H.  
1959 Smoking as a Factor in Visual Disturbance. *Practitioner* 182(1088):204-11. London.
- Dole, Gertrude E.  
1964 Shamanism and Political Control among the Kuikuru. In *Beiträge zur Völkerkunde Südamerikas*. Völkerkundliche Abhandlungen vol. 1. Hannover: Kommissionsverlag Münstermann-Druck GMBH.
- Domville-Fife, Charles William  
1926 *Unter Wilden am Amazonas: Forschungen und Abenteuer bei Kopffägern und Menschenfressern*. Leipzig: F. A. Brockhaus.
- Don, George  
1831-38 *A General History of the Dichlamydeous Plants*. Vol. 4. *Corolliflorae*, 1838. 4 vols. London: J. G. and F. Rivington.
- D'Orbigny, Alcide. See d'Orbigny, Alcide Dessalines
- Dovay, Leon  
1890 Contribution à l'Américanisme du Cauca (Colombie). *Proceedings of the 7th International Congress of Americanists*, 753-786. Berlin. 1888.
- Doyné, Robert W.  
1889 Observations on Tobacco Amblyopia. *Royal London Ophthalmic Hospital Reports* 12(1):51-58.
- Duke-Elder, Stewart, and George I. Scott  
1971 Toxic Amblyopia. In *System of Ophthalmology*. Stewart Duke-Elder, ed. Vol. 12 *Neuro-Ophthalmology*. London: Henry Kimpton.
- Dumont, Jean Paul  
1976 *Under the Rainbow: Nature and Supernature among the Panare Indians*. The Texas Pan American Series. Austin: University of Texas Press.
- Dunn, P.  
1910 Tobacco Amblyopia. *Hospital* 48:105-07. London.
- Dupouy, Walter  
1967 Aspectos folklóricos del uso del chimó. *Archivos Venezolanos de Folklore* 8:387-405. Caracas.

- Duque Gómez, Luis  
 1945 El Instituto Etnológico y el Servicio de Arqueología en 1945. *Boletín de Arqueología* 1(3):209-27. Bogotá.
- Ehrenreich, Paul  
 1891 Beiträge zur Völkerkunde Brasiliens. *Veröffentlichungen aus dem Königlichen Museum für Völkerkunde* 2(1-2). Berlin.  
 1892 Südamerikanische Stromfahrten. *Globus* 62(1):1-4, 62(3):33-40, 62(5):70-71, 62(7):100-06, 62(9):133-40, 62(12):181-86, 62(14):214-21, 62(17):259-64, 62(21):326-31. Brunswick.  
 1904 Die Ethnographie Südamerikas im Beginn des XX. Jahrhunderts, unter besonderer Berücksichtigung der Naturvölker. *Archiv für Anthropologie* n.s. 3(1):39-75. Brunswick.  
 1949 Contribuições para a etnologia do Brasil. (Translation) *Revista do Museu Paulista* n.s. 2:7-135. São Paulo.
- Eichelman, Burr S., Jr., and Nguyen B. Thoa  
 1973 The Aggressive Monoamines. *Biological Psychiatry* 6(2):143-64. New York.
- Ejrup, B., and P. Å. Wikander  
 1959 Försök med nikotin, lobelin och placebo. *Svenska Läkartidningen* 56(29):2025-34. Stockholm.
- Elferink, Jan G. R.  
 1983 The Narcotic and Hallucinogenic Use of Tobacco in Pre-Columbian Central America. *Journal of Ethnopharmacology* 7:111-22. Lausanne.
- Eliade, Mircea  
 1964 *Shamanism: Archaic Techniques of Ecstasy*. Translated by Willard R. Trask. Bollingen Series vol. 76. New York: Bollingen Foundation.
- Elick, John William  
 MS The Campa Sheripeari. Field Report no. 1.  
 1969 An Ethnography of the Pichis Valley Campa of Eastern Peru. Ph.D. dissertation, University of California, Los Angeles.
- Énault, Louis  
 1867 *L'Amérique Centrale et Méridionale*. Paris: F. de P. Mellado.
- Engrácia de Olivera, Adélia  
 1970 Os índios Jurúna do alto Xingu. *Dédalo. Revista de Arqueologia e Etnologia* 6(11-12). São Paulo.
- Ernst, Adolf  
 1886 Ethnographische Mitteilungen aus Venezuela. *Zeitschrift für Ethnologie* 18:514-45.  
 1889 On the Etymology of the Word Tobacco. *American Anthropologist* 2:133-42.  
 1890 De l'emploi de la coca dans les pays septentrionaux de l'Amérique du sud. *Proceedings of the 7th International Congress of Americanists*, 230-43. Berlin. 1888.
- Escalante, Aquiles  
 1955 *Los Mocaná: prehistoria y conquista del departamento del Atlántico, Colombia*. Divulgaciones etnológicas 4(6). Barranquilla.

- Escragnolle Taunay, Affonso d' [Visconde de Taunay]  
 1931 *Entre os nossos índios: Chanés, Terenas, Kinikinaus, Guanás, Laianas, Guatós, Guaycurús, Caingangos*. São Paulo: Comp. Melhoramentos de São Paulo (Weiszflog Irmãos Incorporada).
- Espinosa, Lucas Pérez  
 1935 *Los Tupí del oriente peruano, estudio lingüístico y etnográfico*. Publicaciones de la Expedición Iglesias al Amazonas. Sección de Antropogeografía. Lingüística. Madrid: Impr. de Librería y Casa Editorial Hernando S. A.  
 1955 *Contribuciones lingüísticas y etnográficas sobre algunos pueblos indígenas del Amazonas peruano*. Madrid: Consejo Superior de Investigaciones Científicas, Instituto Bernardino de Sahagún.
- Estienne, Charles  
 1570 *L'agriculture et maison rustique*. Paris: Chez Jacques Du-Puys.
- d'Évreux, Yves  
 1864 *Voyage dans le nord du Brésil fait durant les années 1613 et 1614*. Publié, d'après l'exemplaire unique conservé à la Bibliothèque impériale de Paris, avec une introduction et des notes par M. Ferdinand Denis. . . . Leipzig and Paris: Librairie A. Franck.
- Fabre, René, R. Truhant, and M. T. Régnier  
 1957 *Traitement d'urgence des intoxications*. Paris: G. Doin.
- Fabricant, Noah D.  
 1946 Smoker's Throat. Listed under Clinic-of-the-Month. 1. *The Eye, Ear, Nose & Throat Monthly* 25(6):312-13. New York.
- Falkner, Tomás  
 1911 *Descripción de la Patagonia*. Traducción por Samuel A. Lafone Quevedo. *Vida entre los Patagones*, por G. Ch. Musters. Traducción por Arturo Costa Alvarez. Buenos Aires: Imprenta de Coni Hermanos.  
 1935 *A Description of Patagonia and the Adjoining Parts of South America*. Introduction and notes by Arthur E. S. Neumann. Chicago: Armann and Armann.
- Farabee, William Curtis  
 1918 *The Central Arawaks*. Anthropological Publications vol. 9. Philadelphia: University Museum, University of Pennsylvania.  
 1919 The Apalaih. *Museum Journal*. 10(3):102-16. Philadelphia: University Museum, University of Pennsylvania.  
 1922 *Indian Tribes of Eastern Peru*. Papers of the Peabody Museum of American Archaeology and Ethnology vol. 10. Cambridge: Harvard University Museum.  
 1924 *The Central Caribs*. Anthropological Publications vol. 10. Philadelphia: University Museum, University of Pennsylvania.
- Faron, Louis C.  
 1968 *The Mapuche Indians of Chile*. New York: Holt, Rinehart and Winston.
- Feinhandler, Sherwin J., Harold C. Fleming, and Joan M. Monahan  
 1979 Pre-Columbian Tobaccos in the Pacific. *Economic Botany* 33(2):213-26.
- Fejos, Paul  
 1943 *Ethnography of the Yagua*. Viking Fund Publications in Anthropology no. 1. New York: Viking Fund, Inc.

Fermin, Philipp

- 1775 D. Philipp Fermin's ausführliche historisch-physikalische *Beschreibung der Kolonie Surinam*. Auf Veranlassung der Gesellschaft Naturforschender Freunde in Berlin. Aus dem Französischen übersetzt, und mit Anmerkungen begleitet. 2 vols. in 1. Berlin: Bei Joachim Pauli, Buchhändler.

Fernandes, Eurico

- 1948 Contribuição ao estudo etnográfico do grupo Aruak. *Acta Americana* 6(3-4):200-21. Mexico City.

Fernandes, Floristan

- 1963 *Organização social dos Tupinambá*. 2d ed. Corpo e Alma do Brasil no. 2. São Paulo: Difusão Européia do Livro.

Fernández, Juan Patricio. 1729. See Vandiera, Domenico, of Siena

Fernández, Juan Patricio

- 1895 *Relación histórica de las misiones de indios Chiquitos que en el Paraguay tienen los padres de la Compañía de Jesús*. Reimpresa fielmente según la primera edición que sacó à luz el P. G. Herrán, en 1726. Madrid: V. Suárez.

Fernández de Oviedo, Gonzalo. 1851-55 and 1944. See Oviedo y Valdés, Gonzalo

Fernández de

Fernández de Oviedo, Gonzalo

- 1924 Escenas indígenas de Guanacaste. *Revista de Costa Rica* 5(8):197-200. San José.

Figueiredo, Napoleão

- 1961 A festa dos "Coletores" entre os Aramagóto. *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 15. Belém.

Fikenscher, L. H.

- 1958 Nicotine, een nieuw alkaloid van de coca plant [Nicotine Isolated from *Erythroxylum coca*]. *Pharmaceutisch Weekblad* 93(21):932-33. Amsterdam.

Floris, V., C. Morocutti, and G. F. Ayala

- 1964 Effects of Nicotine on the Cortical, Thalamic and Hippocampal Electrical Activity in Rabbits. *Journal of Neuropsychiatry* 5(4):247-51. Chicago.

Flury, Lázaro

- 1956 Danzas, costumbres y creencias de los indios del Gran Chaco. *América Indígena* 16(2):111-21. Mexico City.

Fock, Niels

- 1963 *Waiwai: Religion and Society of an Amazonian Tribe*. With appendices by Fridolin Weis Bentzon and Robert E. Hawkins. Etnografisk række no. 8. Copenhagen: National Museum.

Fonseca, José Pinto da

- 1867 Cópia: da carta que o alferes José Pinto da Fonesca escreveu ao Exm. General de Goyazes, dando-lhe conta do descobrimento de duas nações de índios, dirigida do sitio onde portou. *Jornal do Instituto Historico e Geographico Brasileiro* 2d series 8:376-88. Rio de Janeiro.

Fontana Company, Mario Antonio

- 1936 *Una pipa de cerámica prehispánica con decoración grabada del Uruguay*.

Tercer Congreso Internacional de Historia y Geografía de América, Buenos Aires. Montevideo: Imprenta "El Siglo Ilustrado."

- Fortique, José Rafael  
1971 *Aspectos médicos en la obra de Gumilla*. [Caracas?: Tall. de Italgrafica.]
- Franke, F. E., and J. E. Thomas  
1936 The Treatment of Acute Nicotine Poisoning. *American Medical Association Journal* 106(7):507-12. Chicago.
- Frankenhäuser, Marianne  
1971 Behavior and Circulating Catecholamines. *Brain Research* 31(2):241-62. Amsterdam.  
1975 Experimental Approaches to the Study of Catecholamines and Emotion. In *Emotions—Their Parameters and Measurement*, 209-34. Lennart Levi, ed. New York: Raven Press.
- Fravenknecht, Io. Iacobvs  
1746 Dissertatio inavgyralis medico-chemica de genvinis viribvs *Tabaci* ex principiis eius constitvtivis demonstratis. Praeside D. Andrea Elia Büchnero. Halle on the Saale [Halaē Magdebvrgicae]: Litteris Hendelianis.
- Freyre, Gilberto  
1963 *The Masters and the Slaves (Casa Grande e Senzala): A Study in the Development of Brazilian Civilization*. Translated by Samuel Putnam. 2d ed. New York: Knopf.
- Friel, G. Protásio [Protasius]  
1953 Kamáni: costumes e preceitos dos índios Kachúyana a respeito do curare. *Revista do Museu Paulista* n.s. 7:257-74. São Paulo.  
1957 Zur linguistisch-ethnologischen Gliederung der Indianerstämme von Nord-Pará. *Anthropos* 52:509-63.  
1960 Os Tiriyo (Notas preliminares). *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 9. Belém.  
1961 Morí—a festa do rapé: índios Kachúyana: rio Trombetas. *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 12. Belém.  
1968 *Os Xikín: equipamento e técnicas de subsistência*. Publicações Avulsas no. 7. Belém: Museu Paraense Emílio Goeldi.  
1973 *Os Tiriyo: seu sistema adaptativo*. Völkerkundliche Abhandlungen vol. 5. Hannover: Kommissionsverlag Münstermann-Druck K.G.
- Frödin, Otto, and Erland Nordenskiöld  
1918 Über Zwirnen und Spinnen bei den Indianern Südamerikas. *Göteborgs Kungliga Vetenskaps- och Vitterhets-Samhälles Handlingar* 4th series 19(3). Gothenburg: W. Zachrissons Boktryckeri A.B.
- Froidevaux, Henri M.  
1901 Les "Lettres édifiantes" et la description de la Mission de Kourou. *Journal de la Société des Américanistes* 3(2):177-85.
- Fry, Carlos  
1889 *La gran región de los bosques: o, ríos peruanos navegables: Urubamba, Ucayali, Amazonas, Pachitea y Palcazu*. 2 vols. Lima: Imprenta de Benito Gil, vol. 1. Imprenta del Universo de Carlos Prince, vol. 2.  
1907 Diario de los viajes i exploraciones de los ríos Urubamba, Ucayali, Amazonas, Pachitea i Palcazu 1886-1888. In *Colección de leyes, decretos,*



*resoluciones i otros documentos oficiales referentes al departamento de Loreto*, 369-589. Carlos Larrabure i Correa, ed. Vol. II. Lima: Oficina Tipográfica de "La Opinión Nacional."

Fulop, Marcos

1954 Aspectos de la cultura Tukana: Cosmogonía. *Revista Colombiana de Antropología* 3:97-137.

Furlong, Charles Wellington

1915 The Red Men of the Guiana Forests. *Harper's Monthly Magazine* 131: 527-37.

Furst, Peter T.

1968 The Olmec Were-Jaguar Motif in the Light of Ethnographic Reality. In *Dumbarton Oaks Conference on the Olmec*, 143-74. Elizabeth P. Benson, ed. 1967. Washington, D.C.: Dumbarton Oaks Research Library and Collections, Trustees for Harvard University.

1976 *Hallucinogens and Culture*. San Francisco: Chandler & Sharp.

Furst, Peter T., and Michael D. Coe

1977 Ritual Enemas. *Natural History* 86(3):88-91.

Gaede, Dietrich

1940 Über die Nikotinaufnahme aus Kautabak. *Naunyn-Schmiedebergs Archiv für Experimentelle und Pathologische Pharmakologie* 197(1):72-77. Berlin. 1940-41.

Galt, Francisco L.

1905 El clima i patología de la región Amazónica por el cirujano de la "Comisión hidrográfica." Informe 17 de julio de 1873. In *Colección de leyes, decretos, resoluciones i otros documentos oficiales referentes al Departamento de Loreto*, 336-74. Carlos Larrabure i Correa, ed. Vol. 7. Lima: Oficina Tipográfica de "La Opinión Nacional."

Galvão, Eduardo Eneas

1953 Cultura e sistema de parentesco das tribos de alto rio Xingu. *Boletim do Museu Nacional* n.s. Antropologia no. 14. Rio de Janeiro.

1959 Aculturação indígena no rio Negro. *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 7. Rio de Janeiro.

1960 Áreas culturais indígenas do Brasil: 1900-1959. *Boletim do Museu Paraense Emílio Goeldi* n.s. Antropologia no. 8. Rio de Janeiro.

Gálvez G., María Albertina

1952 *Con los indios Cunas de Panamá*. Biblioteca de Cultura Popular vol. 31. Guatemala: Ministerio de Educación Pública.

García, Secundino

1935 Mitología Machiguenga: Los espíritus buenos. *Misiones Dominicanas del Perú* 17(90):170-79. Lima.

1936a Mitología Machiguenga: muerte y destino de los Machiguengas. *Misiones Dominicanas del Perú* 18(95):131-39. Lima.

1936b Mitología Machiguenga: los Scribepári. *Misiones Dominicanas del Perú* 18(97):212-19. Lima.

1937a Mitología Machiguenga: los brujos. *Misiones Dominicanas del Perú* 19(98):11-14. Lima.

- 1937*b* Por la hidrografía del país: expedición misional al río Koshireni. *Misiones Dominicanas del Perú* 19(102):180–87. Lima.
- García Rosquellas, Rafael  
1946 Los Chiriguano de Bolivia. *Veritas* 16(183):262–68. Buenos Aires.
- Garcilaso de la Vega, el Inca  
1609 *Primera parte de los comentarios reales, que tratan del origen de los Incas, reyes que fueron del Perú*. . . . Lisbon: Pedro Crasbeeck. [Colophon. 1608.]  
1723 *Primera parte de los comentarios reales, que tratan, de el origen de los Incas, reyes, que fueron del Perú, de su idolatría, leyes, y gobierno, en paz, y en guerra: de sus vidas, y conquistas: y de todo lo que fue aquel imperio, y su republica, antes que los Españoles pasaran, à él*. 2d ed. Madrid: En La Oficina Real, y à costa de Nicolas Rodriguez Franco.  
1941–46 *Comentarios reales de los Incas*. 2d ed. 6 vols. Vol. 1. 1941. Lima: Gil, S. A.  
1973 *Comentarios reales de los Incas*. Selección, prólogo y notas de Nuria Nuiry. Colección Literatura Latinoamericana no. 65. Havana: Casa de las Américas.
- Gasché, Jürg  
1971 Quelques prolongements sociaux des pratiques horticoles et culinaires chez les indiens Witoto. *Journal de la Société des Américanistes* 60:317–27. Paris.
- Gebhart, Angelika  
MS Fieldnotes on Tobacco Use Among the Shipibo.
- Gebhart-Sayer, Angelika  
1984 *The Cosmos Encoiled: Indian Art of the Peruvian Amazon*. New York: Center for Inter-American Relations.  
1985 The Geometric Designs of the Shipibo-Conibo in Ritual Context. *Journal of Latin American Lore* 11(2):143–75.
- Gheerbrant, Alain  
1952 *L'Expédition l'Orénoque—Amazone, 1948–1950*. Paris: Gallimard.  
1953 *Welt ohne Weisse*. 2d ed. Wiesbaden: [Brockhaus?].
- Ghisletti, Louis V.  
1954 *Los Muiskas: una gran civilización precolombiana*. 2 vols. Biblioteca de Autores Colombianos nos. 73–74. Bogotá: Editorial ABC.
- Gibbon, Lardner. See Herndon, Wm. Lewis, and Lardner Gibbon
- Gibbon, Lardner, and Wm. Lewis Herndon. See Herndon, Wm. Lewis, and Lardner Gibbon
- Gibs, R. D.  
1974 *Chemotaxonomy of Flowering Plants*. 4 vols. McGill-Queen's University Press. Montreal.
- Gilij, Filippo Salvatore  
1780–84 *Saggio di storia americana; o sia, Storia naturale, civile e sacra de regni, e delle provincie Spagnuole di Teera-Ferna nell'America meridionale*. Consecrata alla Santità di N. S. Papa Dio Sesto, Felicemente Regnante. 4 vols. Rome: Luigi Perego Erede Salvioni, Stampator Vaticano nella Sapienza e con licenza de' superiori.

## Gillin, John

- 1934 Crime and Punishment among the Barama River Carib of British Guiana. *American Anthropologist* n.s. 36(3):331-44.
- 1936 *The Barama River Caribs of British Guiana*. Papers of the Peabody Museum of American Archaeology and Ethnology 14(2). Museum Publication. Cambridge: Harvard University.
- 1948 Tribes of the Guianas. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 799-860. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.

## Ginés, Hno., and Felipe Matos

- 1953 Algunos datos etnobotánicos. In *La región de Perijá y sus habitantes*, 341-43. Sociedad de Ciencias Naturales La Salle. Maracaibo: Publicaciones de la Universidad del Zulia.

## Ginés, Hno., Ernesto Foldats, and Felipe Matos

- 1953 Florula de la cuenca del río Negro, Perijá. In *La región de Perijá y sus habitantes*, 345-549. Sociedad de Ciencias Naturales La Salle. Maracaibo: Publicaciones de la Universidad del Zulia.

## Girard, Rafael

- 1958 *Indios selváticos de la Amazonía peruana*. Mexico City: Libro Mex.

## Girault, Louis

- 1966 Classification vernaculaire des plantes médicinales chez les Callawaya, médecins empiriques (Bolivie). *Journal de la Société des Américanistes* 55(1):155-200.

## Godói, Manuel Pereira de

- 1967 Cachimbos Tupis-Guaranis de Pirassununga. In *Indian Tribes of Aboriginal America*, 314-22. Selected Papers of the 29th International Congress of Americanists. Sol Tax, ed. New York: Cooper Square.

## Goetje, Claudius Henrious de

- 1906 Bijdrage tot de ethnographie der Surinaamsche indianen. Supplement to *Internationales Archiv für Ethnographie* vol. 17. Leiden.
- 1910 Beiträge zur Völkerkunde von Surinam. *Internationales Archiv für Ethnographie* 19:1-34. Leiden.
- 1929-30 A. Ph. Penard over inwijding en wereldbeschouwing der Karaïben. *De West-Indische Gids* part 12, 11:275-86. The Hague. 1930.
- 1941 De Oayana-indianen. *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indië* 100:71-125. The Hague.
- 1942 De inwijding tot medicijnman bij de Arawakken (Guyana) in tekst en mythe. *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indië* 101:211-76. The Hague.
- 1943 Philosophy, Initiation and Myths of the Indians of Guiana and Adjacent Countries. *Internationales Archiv für Ethnographie* vol. 44. Leiden.
- 1967 The Physical World, the World of Magic, and the Moral World of Guiana Indians. In *Indian Tribes of Aboriginal America*, 266-70. Sol Tax, ed. Selected Papers of the 29th International Congress of Americanists. New York. 1949. New York: Cooper Square.

- Goldman, Irving  
 1940 Cosmological Beliefs of the Cubeo Indians. *Journal of American Folk-Lore* 53(210):242-47.  
 1948 Tribes of the Vaupes-Caqueta Region. *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 763-98. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
 1963 *The Cubeo Indians of the Northwest Amazon*. Illinois Studies in Anthropology no. 2. Urbana: University of Illinois Press.  
 1968 *Los Cubeo, indios del noroeste del Amazonas*. Versión castellana de Sergio Senties. Ediciones Especiales no. 49. Mexico City: Instituto Indigenista Interamericano.
- Gomara, Francisco López de  
 1811 *Conquista de Méjico*. Madrid.
- González, Gustavo R.  
 1967 *Mitos, leyendas y supersticiones Guaraníes del Paraguay*. Asunción: [n. p.].
- González, Juan Natalicio  
 1942 *Vida, pasión y muerte de Güyrá Verá*. Colección Problemas Americanos, dirigida por N. Freitas no. 8. Buenos Aires: Talleres Gráficos "Augusta," C. Marcello.  
 1958 *Ideología Guaraní*. Ediciones Especiales no. 37. Mexico City: Instituto Indigenista Interamericano.
- Goodman, Louis S., and Alfred Gilman, eds.  
 1975 *The Pharmacological Basis of Therapeutics*. 5th ed. New York: Macmillan.
- Goodman Gilman, Alfred, Louis S. Goodman, Theodore W. Rall, and Ferid Murad  
 1985 *The Pharmacological Basis of Therapeutics*. 7th ed. New York: Macmillan.
- Goodspeed, Thomas Harper  
 1954 *The Genus Nicotiana: Origins, Relationships, and Evolution of Its Species in the Light of Their Distribution, Morphology, and Cytogenetics*. *Chronica Botanica* 16(1-6). Parts 1-5 T. H. Goodspeed. Part 6 T. H. Goodspeed, H-M. Wheeler, and Paul H. Hutchinson. Waltham, Mass.: Chronica Botanica Company.
- Gornés MacPherson, Martín José  
 1933 *De la conquista a nuestros días, historia del tabaco*. Caracas: Editorial "Elite."
- Grain, José María  
 1942 Pueblos primitivos—los Machiguengas. *Proceedings of the 27th International Congress of Americanists* 2:239-44. Lima. 1939.
- Grandidier, Ernest  
 1861 *Voyage dans l'Amérique du Sud: Pérou et Bolivie*. Paris: Michel Lévy Frères.
- Granja, Julio César  
 1942 *Nuestro oriente: de unas notas de viaje*. Quito: Imprenta de la Universidad.
- Gregor, Thomas  
 1977 *Mehinaku: The Drama of Daily Life in a Brazilian Indian Village*. Chicago: University of Chicago Press.

Grelier, Joseph

- 1954 *Aux sources de l'Orénoque*. Préface du Charles Jacob. Paris: La Table Ronde.  
 1957 *To the Source of the Orinoco*. Translated by H. A. G. Schmuckler. London: Herbert Jenkins.

Gritz, Ellen R., Vivian Baer-Weiss, Neal L. Benowitz, Helen van Vunakis, and Murray E. Jarvik

- 1981 Plasma Nicotine and Cotinine Concentrations in Habitual Smokeless Tobacco Users. *Clinical Pharmacology and Therapeutics* 30(2):201-09. St. Louis.

Groenouw [first name not available]

- 1892 Ueber die Intoxicationsamblyopie. *Albrecht von Graefe's Archiv für Ophthalmologie* 38(1):1-70. Leipzig.

Grove, David C.

- 1970 *The Olmec Paintings of Oxtotitlan Cave, Guerrero, Mexico*. Studies in Pre-Columbian Art and Archaeology no. 6. Washington, D.C.: Dumbarton Oaks, Trustees for Harvard University.

Grubb, Wilfred Barbrooke

- 1904 *Among the Indians of the Paraguayan Chaco: A Story of Missionary Work in South America*. London: Charles Murray, South American Missionary Society.  
 1911 *An Unknown People in an Unknown Land: An Account of the Life and Customs of the Lengua Indians of the Paraguayan Chaco, with Adventures and Experiences Met with During Twenty Years' Pioneering and Exploration amongst Them*. H. T. Morrey Jones, 2d ed. London: Seeley & Co. Limited.

Gudiño Kramer, Luis

- 1945 *Médicos, magos y curanderos*. 2d ed. Colección Buen Aire. Buenos Aires: Emecé Editores.

Guevara, Tomás

- 1911 *Folklore Araucano: refranes, cuentos, cantos, procedimientos industriales, costumbres prehispánicas*. Santiago: Imprenta Cervantes.

Guevara, Tomás, and Aureliano Oyarzún

- 1912 El tabaco y las pipas prehistóricas de Chile. *Proceedings of the 17th International Congress of Americanists*, 414-37. Buenos Aires. 1910.

Guilford, J. S., et al.

- 1966 *Factors Relating to Successful Abstinence from Smoking: Final Report*. Pittsburgh: American Institutes for Research.

Guinnard, Auguste

- 1864 *Trois ans d'esclavage chez les Patagons: récit de ma captivité*. Paris: P. Brunet.

Gumilla, José [Joseph]

- 1882 *El Orinoco ilustrado: historia natural, civil y geográfica de las naciones situadas en las riberas del río Orinoco*. 2 vols. in 1. Barcelona: Imprenta de la viuda é hijos de J. Subirana.

- [1741] *El Orinoco ilustrado: historia natural, civil y geográfica de este gran río*. Bogotá: Editorial ABC. (First edition published Madrid, 1741.)  
 1955

## Gusinde, Martin

- 1931 *Die Feuerland Indianer*. Vol. 1. *Die Selk'nam; vom Leben und Denken, eines Jägervolks auf der grossen Feuerlandinsel*. 2 vols. in 3. 1931-39. Mödling bei Wien: Verlag der Internationalen Zeitschrift "Anthropos."

## Gutiérrez de Pineda, Virginia

- 1948 Organización social en la Guajira. *Revista del Instituto Etnológico Nacional* 3(2). Bogotá. 1950.

## Gutiérrez Muro, Fermín

- 1934 Tabaquismo. *Clínica y Laboratorio* 24:217-30. Zaragoza.

## Gy, A.

- 1913 La vision et l'audition dans l'intoxication tabagique chronique. *Revue d'Hygiène et de Thérapeutique Oculaires* 7:49-53. Paris.

## Haggard, Howard W., and Leon A. Greenberg

- 1934 The Effects of Cigarette Smoking upon the Blood Sugar. *Science* n.s. 79(2042):165-66.

## Hammilton, D. W.

- 1957 The Use of Alkaline Admixtures with Narcotic Plants. Manuscript, Library of Economic Botany, Harvard Botanical Museum, Cambridge, Mass.

## Hamy, E.-T.

- 1884 La pipe du King's Mound d'Ashland. *Décades américaines* II. *Revue d'Ethnographie* 3:60-67. Paris.

- 1907 Les Indiens de Rasilly. *Journal de la Société des Américanistes de Paris* n.s. 5(1):21-52.

## Hancveld, G. T.

- 1965 A Curious Smoking Habit in the Caribbean Region. *Tropical and Geographical Medicine* 17(2):186-87. Haarlem.

## Hanke, Wanda

- 1939 Costumbres y creencias indígenas relacionadas con la muerte. *Revista Geográfica Americana* 11(68):363-68. Buenos Aires.

- 1947 Dioses y hombres de la selva. *Histonium* 8:603-07. Buenos Aires.

- 1956 Beitrag zur Kultur der Caiuás. *Zeitschrift für Ethnologie* 81(2):218-35.

## Hardenburg, Walter Ernest

- 1912 *The Putumayo, the Devil's Paradise: Travels in the Peruvian Amazon Region and an Account of the Atrocities Committed upon the Indians Therein*. By W. E. Hardenburg, ed., and with an introduction by C. Reginald Enock. . . together with extracts from the report of Sir Roger Casement confirming the occurrences. London and Leipzig: T. Fisher Union.

## Harner, Michael J.

- 1962 Jívaro Souls. *American Anthropologist* 64(2):258-72.

- 1972 *The Jívaro: People of the Sacred Waterfalls*. Garden City, N.Y.: Doubleday.

- 1973a *Hallucinogens and Shamanism*. Michael J. Harner, ed. London, Oxford, and New York: Oxford University Press.

- 1973*b* The Sound of Rushing Water. In *Hallucinogens and Shamanism*, 15-27. Michael J. Harner, ed. London, Oxford, and New York: Oxford University Press.
- Harrington, John P.  
 1932*a* *Tobacco among the Karuk Indians of California*. Smithsonian Institution. Bureau of American Ethnology. Bulletin 94. Washington, D.C.: U.S. Government Printing Office.  
 1932*b* *Karuk Indian Myths*. Smithsonian Institution. Bureau of American Ethnology. Bulletin 107. Washington, D.C.: U.S. Government Printing Office.
- Hartmann, Günther  
 1974 Zigarrenhalter Nordwest-Brasiliens. *Ethnologische Zeitschrift Zürich* no. 1. Festschrift Otto Zerries, 177-89. Bern.  
 1975*a* Sitzbank und Zigarrenhalter. *Tribus* vol. 24. Stuttgart.  
 1975*b* Zigarrenhalter bei Naturvölkern Südamerikas. *Umschau* 75(21):668-69. Frankfurt am Main.  
 1981 Tabak bei südamerikanischen Indianern. In *Rausch und Realität: Drogen im Kulturvergleich*. Gisela Völger, ed. *Ethnologica* n.s. 9(1):224-35. Cologne.
- Hartt, Carlos Frederico  
 1881 Contribuições para a ethnologia do valle do Amazonas. *Archivos do Museu Nacional* 6:1-174. Rio de Janeiro. 1885.
- Hartwich, Carl  
 1911 *Die menschlichen Genussmittel, ihre Herkunft, Verbreitung, Geschichte, Anwendung, Bestandteile, und Wirkung*. Leipzig: C. H. Tauchnitz.
- Hawkins, Sir Richard  
 [1622] *The Observations of Sir Richard Hawkins Knight, in his Voyage into the South Sea. Anno Domini, 1593*. Reprint of the 1622 edition. London: Hakluyt Society.  
 1847
- Hawtreay, Seymour H. C.  
 1901 The Lengua Indians of the Paraguayan Chaco. *Journal of the Anthropological Institute of Great Britain and Ireland* 31:280-99.
- Heaton, J. M., A. J. A. McCormick, and A. G. Freeman  
 1958 Tobacco Amblyopia: A Clinical Manifestation of Vitamin-B12 Deficiency. *Lancet* 2(7041):286-90. London.
- Hedges, H. S.  
 1955 Eye Damage by Tobacco. *Virginia Medical Monthly* 82:544-45. Richmond.  
 1957 Tobacco Amblyopia. *Medical Times* 85(10):1151-52. Manhasset.
- Hegnauer, R.  
 1973 *Chemotaxonomie der Pflanzen. Eine Übersicht über die Verbreitung und die systematische Bedeutung der Pflanzenstoffe*. Vol. 7. Basel: Birkhäuser Verlag.
- Heiser, Charles Bixler, Jr.  
 1969 *Nightshades: The Paradoxical Plants*. San Francisco: W. H. Freeman.
- Hellmuth, Nicholas M.  
 1985 Principal Diagnostic Accessories of Maya Enema Scenes. In *Ritual*

- Enemas and Snuffs in the Americas*, 137-47. Peter A. G. M. de Smet, ed. Latin American Studies, vol. 33. Center for Latin American Research and Documentation. Amsterdam: Dordrecht.
- Helms, Mary W.  
1979 *Ancient Panama: Chiefs in Search of Power*. Austin and London: University of Texas Press.
- Henfrey, Colin  
1964 *The Gentle People: A Journey among the Indian Tribes of Guiana*. London: Hutchinson.
- Hermstädt, S. F.  
1822 Bemerkungen über das Nicotianin, einen eigenthümlichen Bestandteil in den verschiedenen Arten des Tabaks. *Abhandlungen der Königlichen Akademie der Wissenschaften, Phys. Klasse* 7:47-54. Berlin. 1820-21.
- Hernández de Alba, Gregorio  
1936 Historia y etnografía de las tribus Goajiras. *Boletín de Historia y Antigüedades* 23(257):9-44. Bogotá.  
1946 The Highland Tribes of Southern Colombia. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 915-60. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1948a The Cultures of Northwest South America: Sub-Andean Tribes of the Cauca Valley. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 297-327. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1948b Tribes of the North Colombia Lowlands. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 329-38. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1948c The Achagua and Their Neighbors. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 399-412. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1948d Tribes of Northwestern Venezuela. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 469-74. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Herndon, William Lewis, and Lardner Gibbon  
1853-54 *Explorations of the Valley of the Amazon*. 2 vols. Vol. 1 by Herndon. Vol. 2 by Gibbon. Washington, D.C.: Robert Armstrong (vol. 1 in 1853) and A. O. P. Nicholson (vol. 2 in 1854).
- Herrera, Leonor, and Marianne Cardale de Schimpff  
1974 Mitología Cuna: los Kalu, según Don Alfonso Díaz Granados. *Revista Colombiana de Antropología* 17:201-47. Bogotá.
- Herzog, Th.  
1910 Beiträge zur Kenntnis von Ostbolivien. *Dr. A. Petermanns Mitteilungen aus Justus Perthes' Geographischer Anstalt* 56(1):194-200. Gotha.



- Hickman, John Marshal  
 1963 The Aymara of Chinchera, Peru: Persistence and Change in a Bicultural Context. Ph.D. dissertation, Cornell University, Ithaca, N.Y.
- Hilbert, Peter Paul  
 1968 *Archäologische Untersuchungen am mittleren Amazonas*. Marburger Studien zur Völkerkunde vol. 1. Berlin: Dietrich Reimer Verlag.
- Hilger, Sister M. Inez  
 1957 *Araucanian Child Life and Its Cultural Background*. Publication 4297. Smithsonian Miscellaneous Collections vol. 133. Washington, D.C.: U.S. Government Printing Office.  
 1966 *Huenum Ñamku: An Araucanian Indian of the Andes Remembers the Past*. Norman: University of Oklahoma Press.
- Hissink, Karin  
 1964 Heilmittel und Heilmethoden bei den Tacana-Indianern. In *Beiträge zur Völkerkunde Südamerikas*, 163-76. Hans Becher, ed. Völkerkundliche Abhandlungen no. 1. Hannover: Niedersächsisches Landesmuseum, Abteilung für Völkerkunde.
- Hissink, Karin, and Albert Hahn  
 1961 *Die Tacana*. Vol. 1. *Erzählungsgut* mit einer spanischen und einer englischen Zusammenfassung. Stuttgart: W. Kohlhammer.
- Hoffer, A.  
 1957 Epinephrine Derivates as Potential Schizophrenic Factors. *Journal of Clinical and Experimental Psychopathology and Quarterly Review of Psychiatry and Neurology* 18(1):27-60. Northfield, Ill.
- Högler, F.  
 1943 Zur Frage der Nikotinschädigung. *Wiener Medizinische Wochenschrift* 93(20-21):309-12. Vienna.
- Hohenthal, W. D., Jr.  
 1960 As tribos indígenas do médio e baixo São Francisco. *Revista do Museu Paulista* n.s. 12:37-86. São Paulo.
- Holmberg, Allan R.  
 1948 The Siriono. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest People*, 445-63. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
 1950 *Nomads of the Long Bow: The Siriono of Eastern Bolivia*. Smithsonian Institution. Institute of Social Anthropology. Publication no. 10. Washington, D.C.: Government Printing Office.  
 1960 Reprint of the 1950 edition of *Nomads of the Long Bow: The Siriono of Eastern Bolivia*. Chicago: Syllabus Division, The University of Chicago Press.
- Holmer, Nils M., and Henry S. Wassén  
 1963 Dos cantos shamanísticos de los indios Cunas. *Etnologiska Studier* 27:1-151. Gothenburg.
- Holmer, Nils M., and Henry Wassén, eds.  
 1947 *Mu-Igala or the Way of Muu: A Medicine Song from the Cuna Indians of Panama*. Translation and comments by Nils Holmer and Henry Was-

- sén, after an original record by the Cuna Indian Guillermo Haya. Gothenburg: Erlanders Boktryckeri Aktiebolag.
- Holmstedt, Bo, and Jan-Erik Lindgren  
1967 *Chemical Constituents and Pharmacology of South American Snuffs. In Ethnopharmacologic Search for Psychoactive Drugs*, 339-73. Daniel H. Efron, ed. Public Health Service Publication no. 1645. Washington, D.C.: U.S. Government Printing Office.
- Holzman [Holzmann, Holzrman], Günther  
1952 *La tribu Mashca. Misiones Dominicanas del Perú* 33(193):[143-44]. Lima.
- Hopp, W.  
1958 *Sterben—wenn nötig, töten—nie. Vom Leben, von den Sitten und den Gebräuchen der heutigen Waldindianer*. Berlin: Safari-Verlag.
- Hoppe, Heinz August  
1975 *Drogenkunde*. 2 vols. Vol. 1 *Angiospermen*. Berlin: Walter de Gruyter.
- Horton, Donald  
1948 *The Mundurucú. In Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 271-82. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Horton, Philippa  
1981 *A Taxonomic Revision of Nicotiana (Solanaceae) in Australia. Journal of the Adelaide Botanical Gardens* 3(1):1-56.
- Hugh-Jones, Christine  
1979 *From the Milk River: Spatial and Temporal Processes in Northwest Amazonia*. Cambridge Studies in Social Anthropology, 26. Cambridge and New York: Cambridge University Press.
- Hultkranz, Åke  
1979 *The Religions of the American Indians*. Translated by Monica Setterwall. Berkeley and Los Angeles: University of California Press.
- Humboldt, Alexander von  
1822-27 *Personal Narrative of Travels to the Equinoctial Regions of the New Continent During the Years 1799-1804 by Alexander de Humboldt and Aimé Bonpland*. Translated by Helen Maria Williams. 2d ed. 6 vols. London: Longman, Hurst, Rees, Orme, Brown, and Green.
- 1859-60 *Reise in die Aequinoctial-Gegenden des neuen Kontinents*. In deutscher Bearbeitung von Hermann Hauff. Nach der Anordnung und unter Mitwirkung des Verfassers. Einzige von A. v. Humboldt anerkannte Ausgabe in deutscher Sprache. 4 vols. Stuttgart: J. G. Cotta'scher Verlag.
- 1941-42 *Viaje a las regiones equinociales del Nuevo Continente hecho en 1799, 1800, 1801, 1802, 1803 y 1804 por A. de Humboldt y A. Bonpland*. Redactado por Alejandro de Humboldt. 5 vols. Vol. 1-3, Libros 1-6 (apéndice y suplementos), traducción de Lisandro Alvarado. 1941. Vol. 4, Libro 7, traducción de Lisandro Alvarado. Libro 8, traducción de Eduardo Röhl. 1942. Vol. 5, Libro 9, traducción de José Nucete-Sardi. Suplemento, versión de Lisandro Alvarado. 1942. Biblioteca Venezolana de Cultura. Colección "Viajes y Naturaleza." Caracas: Escuela Técnica Industrial.

- Hunziker, Armando T.  
 1979 South American Solanaceae: A Synoptic Survey. In *The Biology and Taxonomy of the Solanaceae*, 49–85. J. G. Hawkes, R. N. Lester, and A. D. Skelding, eds. Linnean Society Symposium Series, No. 17. London: Academic Press.
- Hurault, Jean  
 1968 *Les indiens Wayana de la Guayane Française, structure sociale et coutume familiale*. Mémoires no. 3. Paris: Office de la Recherche Scientifique et Technique Outre-Mer.
- Hutchinson, J.  
 1887 Toxic Amblyopia. *Transactions of the Ophthalmological Society of the United Kingdom* 7:61–67. London.
- Hutchinson, Thomas J.  
 1865 On the Chaco and Other Indians of South America. *Transactions of the Ethnological Society of London* n.s. 3:321–34.
- Huxley, Aldous  
 1963 *The Doors of Perception and Heaven and Hell*. New York: Harper & Row.
- Huxley, Francis  
 1953 In the Brazilian Jungle. *Geographical Magazine* 25(11):553–63. London.  
 1957 *Affable Savages: An Anthropologist among the Urubu Indians of Brazil*. New York: Viking Press.
- Igualada, Bartolomé de  
 1938 Descubrimientos de nuevas tribus indígenas. Tres emocionantes exploraciones misionales en el río Cahuinari. *Boletín de Estudios Históricos* año XI 7(83). Pasto.
- Im Thurn, Everard Ferdinand  
 1883 *Among the Indians of Guiana: Being Sketches Chiefly Anthropologic from the Interior of British Guiana*. London: K. Paul, Trench & Co.
- Innes, Ian R., and Mark Nickerson  
 1975 Norepinephrine, Epinephrine, and the Sympathomimetic Amines. In *The Pharmacological Basis of Therapeutics*, 477–513. Louis S. Goodman and Alfred Gilman, eds. 5th ed. New York: Macmillan.
- Izaguirre Ispizua, Bernardino  
 1922–29 *Historia de las misiones Franciscanas y narración de los progresos de la geografía en el oriente del Perú: relatos originales y producciones en lenguas indígenas de varios misioneros . . . 1619–1921*. 14 vols. Vols. 13–14 have title *Historia de las misiones Franciscanas en el oriente del Perú y producciones en lenguas indígenas de varios misioneros . . . 1619–1921*. Vol. 1. 1922. Lima: Talleres Tipográficos de la Penitenciaría. (Vols. 3–4 have imprint Cajamarca: Tipografía “San Antonio.” Vol. 9 has imprint Lima: Gil. Vol. 13 has imprint Lima: Imp. Arguedas. Vol. 14 has no imprint.)  
 1927 Descripción histórico-etnográfica de algunas tribus orientales del Perú. *Boletín de la Sociedad Geográfica de Lima* 44(1–2):1–36.
- Jackson, Jean Elizabeth  
 1983 *The Fish People: Linguistic Exogamy and Tukanoan Identity in Northwest Amazonia*. Cambridge Studies in Social Anthropology no. 39. Cambridge and New York: Cambridge University Press.

- Jackson, Kirby E.  
1941 Alkaloids of Tobacco. *Chemical Reviews* 29(1):123-97. Baltimore.
- Jahn, Alfredo  
1914 Parauhanos und Guajiros und die Pfahlbauten am See von Maracaibo. *Zeitschrift für Ethnologie* 46(2-3):267-83, 536.  
1927 *Los aborígenes del Occidente de Venezuela, su historia, etnografía y afinidades lingüísticas*. Caracas: Litografía y Tipografía del Comercio.
- Jangoux, Jacques  
1978 Preliminary Observations on Shamanism, Curing Rituals and Propitiatory Ceremonies among the Asurini Indians of the Middle Xingu in Brazil. Separatas do *Arquivo de Anatomia e Antropologia*. Instituto de Antropologia Professor Souza Marques, 3 ano 3.
- Janiger, Oscar, and Marlene Dobkin de Rios  
1973 Suggestive Hallucinogenic Properties of Tobacco. *Medical Anthropology Newsletter* 4(4):6-11.  
1976 Nicotiana an Hallucinogen. *Economic Botany* 30(2):149-51.
- Jerez, Hipólito  
1952 *Los Jesuitas en Casanare*. Bogotá: Prensas del Ministerio de Educación Nacional.
- Jiménez A., Edith  
1945 Los Chibcha. *Boletín de Arqueología* 1(2):119-31. Bogotá.
- Jiménez de la Espada, Marcos  
1880 *El Iza ó Putumayu*. Del Boletín de la Sociedad Geográfica de Madrid. Madrid: Imprenta de Fortanet.  
1889 *Noticias auténticas del famoso río Marañón y misión apostólica de la Compañía de Jesús de la provincia de Quito en los . . . bosques de dicho río escribidas por los años de 1738 un misionero de la misma compañía, y las publica ahora por primera vez. . .* Madrid: Establecimiento Tipográfico de Fortanet.
- Johnson, Frederick  
1948 The Caribbean Lowland Tribes. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 231-51. Smithsonian Institution, Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Josa, Fortunato Pietro Luigi  
1888 *The Apostle of the Indians of Guiana: A Memoire of the Life and Labours of the Rev. W. H. Brett, B.D., for Forty Years a Missionary in British Guiana*. London: Wells Gardner, Darton.
- Julián, Antonio  
1980 *La perla de la América, provincia de Santa Marta*. Biblioteca de Historia Nacional vol. 141. Bogotá: Academia Colombiana de Historia.
- Kamen-Kaye, Dorothy  
1971 Chimó: An Unusual Form of Tobacco in Venezuela. *Botanical Museum Leaflets* 23(1):1-59. Harvard University. 1971-74.  
1975 Chimó—Why not? A Primitive Form of Tobacco Still in Use in Venezuela. *Economic Botany* 29(1):47-68.

Kappler, August

- 1887 *Surinam, sein Land, seine Kolonisation, Bevölkerung und seine Kultur-Verhältnisse mit Bezug auf Kolonisation*. Stuttgart: J. G. Cotta'sche Verlagsbuchhandlung.

Karsten, Sigfrid Rafael

- 1920a Ideas and Customs Relating to Agriculture among the Jibaros and Canelos Indians of Eastern Ecuador. In his *Contributions to the Sociology of the Indian Tribes of Ecuador*, 1-35. Acta Academiae Aboensis. Humaniora 1(3). Turku [Åbo].
- 1920b *Studies in South American Anthropology*. Översigt av Finska Vetenskaps-Societetens Förhandlingar Bd. 62 avd. B., no. 2. Helsinki. 1919-1920.
- 1920c *Beiträge zur Sittengeschichte der südamerikanischen Indianer: Drei Abhandlungen*. Acta Academiae Aboensis. Humaniora 1(4). Turku [Åbo].
- 1922 The Religion of the Jibaro Indians of Ecuador. *Boletín de la Academia Nacional de Historia* 3:124-45. Quito.
- 1926 *The Civilization of the South American Indians, with Special Reference to Magic and Religion*. Dr. Edward Westermarck, preface. London: K. Paul, Trench, Trubner; New York: Alfred A. Knopf.
- 1932 *Indian Tribes of the Argentine and Bolivian Chaco: Ethnological Studies*. Societas Scientiarum Fennica. Commentationes Humanarum Litterarum 4(1). Helsinki.
- 1935 *The Head-Hunters of Western Amazonas: The Life and Culture of the Jibaro Indians of Eastern Ecuador and Peru*. Societas Scientiarum Fennica. Commentationes Humanarum Litterarum 7(1). Helsinki.
- 1955a Zur Psychologie des indianischen Medizinmannes. *Zeitschrift für Ethnologie* 80(2):170-77.
- 1955b Los indios Shipibo del río Ucayali. *Revista del Museo Nacional* 24:154-73. Lima.
- 1964 *Studies in the Religion of the South American Indians East of the Andes*. Arne Runeberg and Michael Webster, eds. Societas Scientiarum Fennica. Commentationes Humanarum Litterarum 29(1). Helsinki.

Kate, Herman ten

- 1906 Matériaux pour servir à l'anthropologie des Indiens de la République Argentine. *Revista del Museo de la Plata* 12:33-57. La Plata.

Keane, Augustus Henry

- 1909 *Central and South America*. Sir Clements R. Markham, ed. 2d ed. rev. 2 vols. Stanford's Compendium of Geography and Travel. London: Edward Stanford.

Keller-Leuzinger, Franz

- 1874 *The Amazon and Madeira Rivers: Sketches and Descriptions from the Notebook of an Explorer*. New York: D. Appleton.

Kelly, Joanne M.

- 1966 *Cuna*. South Brunswick, N.J.: A. S. Barnes; New York: A. S. Barnes; London: Thomas Yoseloff.

Kensinger, Kenneth M., Phyllis Rabineau, Helen Tanner, Susan G. Ferguson, and Alice Dawson

- 1975 *The Cashinahua of Eastern Peru*. Haffenreffer Museum of Anthropol-

- ogy, Studies in Anthropology and Material Culture. Vol. 1. Providence, R.I.: Brown University.
- Kirchhoff, Paul
- 1948a The Warrau. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 869–81. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948b The Caribbean Lowland Tribes: The Mosquito, Sumo, Paya, and Jicaque. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 219–29. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948c The Guayupe and Sac. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 385–91. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948d Food-Gathering Tribes of the Venezuelan Llanos. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 445–68. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948e The Tribes North of the Orinoco River. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 481–93. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Klimek, S., and W. Milke
- 1935 An Analysis of the Material Culture of the Tupi Peoples. *American Anthropologist* n.s. 37(1):71–91.
- Kloos, Peter
- 1968 Becoming a Piyeci: Variability and Similarity in Carib Shamanism. *Antropológica* 24:3–25. Caracas.
- 1970 Search for Health Among the Maroni River Caribs: Etiology and Medical Care in a 20th Century Amerindian Group in Surinam. *Bijdragen tot de Taal-, Land- en Volkenkunde* 126(1):115–41. The Hague.
- 1971 *The Maroni River Caribs of Surinam*. Assen: Van Gorcum & Comp. N.V.
- Knobloch, Franz
- 1967? *Die Aharaiibu-Indianer in Nordwest-Brasilien*. Collectanea Instituti Anthropos. Vol. 1. St. Augustin bei Bonn: Verlag des Anthropos-Instituts.
- Kobler, Andreas, ed. See Baucke, Florián [Florian]
- Koch, Theodor [from Grünberg, Hessen.]
- 1900 *Zum Animismus der südamerikanischen Indianer*. Leiden: E. J. Brill.
- 1902 Die Guaikurüstämme. *Globus* 81(1):1–7, 81(3):39–46.
- 1903 Der Paradiesgarten als Schnitzmotiv der Payaguá-Indianer. *Globus* 83(8):117–24.
- Koch-Grünberg, Theodor
- 1906 Reisen am obern rio Negro und Yapurá 1903–1905. *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, 80–101.

- 1907 *Südamerikanische Felszeichnungen*. Berlin: Ernst Wasmuth A. G.
- 1908–10 *Zwei Jahre unter den Indianern: Reise in Nordwest-Brasilien 1903–1905*. 2 vols. Berlin: Ernst Wasmuth A. G.
- 1909 Das Haus bei den Indianern Nordwest-Brasilien. *Archiv für Anthropologie* n.s. 35(7):35–50.
- 1911 Aruak-Sprachen Nordwestbrasilien und der angrenzenden Gebiete. *Mitteilungen der Anthropologischen Gesellschaft in Wien*. Series 3, vol. 11. Vienna.
- 1913a Abschluss meiner Reise durch Nordbrasilien zum Orinoco, mit besonderer Berücksichtigung der von mir besuchten Indianerstämme. *Zeitschrift für Ethnologie* 45:448–74.
- 1913b Betóya-Sprachen Nordwestbrasilien und der angrenzenden Gebiete. *Anthropos* 8(6):944–77.
- 1914 Betóya-Sprachen Nordwestbrasilien und der angrenzenden Gebiete. *Anthropos* 9(1–2):151–95, 9(3–4):569–89, 9(5–6):812–32.
- 1915–16 Die Betóya-Sprachen Nordwestbrasilien und der angrenzenden Gebiete. *Anthropos* 10–11(1–2):114–58, 10–11(3–4):421–49.
- 1915–17 Über die Kultur der Indianer Guyanas. *Jahrbuch des Städtischen Museums für Völkerkunde zu Leipzig* 7:63–66. 1918.
- 1921 *Zwei Jahre bei den Indianern Nordwest-Brasilien*. Stuttgart: Verlag Strecker und Schröder.
- 1917–28 *Vom Roroima zum Orinoco*. 4 vols. Vol. 1, 1917. Vol. 3, 1923. Stuttgart: Verlag Strecker und Schröder.
- 1956 *Geister am Roroima: Indianer-Mythen, -Sagen und -Märchen aus Guyana*. Eisenach: Verlag Erich Röth.
- Koelle, George B.  
1975 Neurohumoral Transmission and the Autonomic Nervous System. In *The Pharmacological Basis of Therapeutics*, 404–44. Louis S. Goodman and Alfred Gilman, eds. 5th ed. New York: Macmillan.
- Koenig, Paul, ed.  
1940 *Die Entdeckung des reinen Nikotins im Jahre 1828 an der Universität Heidelberg durch Reimann und Posselt: mit einer Beschreibung ihrer Vorläufer und mit Abbildungen*. Bremen: Arthur Geist Verlag.
- Kramer, Luis Gudiño. See Gudiño Kramer, Luis
- Krause, Fritz  
1911a *In den Wildnissen Brasilien: Bericht und Ergebnisse der Leipziger Araguaya-Expedition, 1908*. Leipzig: R. Voigtländer.  
1911b Die Kunst der Karajá-Indianer (Staat Goyas, Brasilien). *Baessler-Archiv* 2(1):1–31. Leipzig and Berlin.
- Krickeberg, Walter, Hermann Trimborn, Werner Müller, and Otto Zerries  
1962 *Les religions amérindiennes: Aztèques, Mayas, Incas, indiens d'Amérique du Nord, peuples archaïques d'Amérique du Sud et des Antilles*. Traduit de l'allemand par L. Jospin. Bibliothèque Historique. Paris: Payot.
- Kroeber, Alfred L.  
1925 *Handbook of the Indians of California*. Smithsonian Institution. Bureau of American Ethnology. Bulletin 78. Washington, D.C.: U.S. Government Printing Office.

- Kruse, Albert P.  
 1946-49 Erzählungen der Tapajoz-Mundurukú. *Anthropos* 41-44(1-3):314-30, 41-44(4-6):614-56. 1948-49.  
 1951-52 Karusakaybë, der Vater der Mundurukú. *Anthropos* 46(5-6):915-32, 1951. 47(5-6):992-1018, 1952.
- Kubler, George  
 1946 The Quechua in the Colonial World. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 331-410. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Kuhn, H.  
 1965 Tobacco Alkaloids and Their Pyrolysis Products in the Smoke. In *Tobacco Alkaloids and Related Compounds*, 37-49. U. S. von Euler, ed. Proceedings of the Fourth International Symposium, Stockholm, February 1964. Wenner-Gren Center International Symposium Series, vol. 4. New York: Macmillan.
- Kunike, Hugo  
 1912 Der Fisch als Fruchtbarkeitssymbol bei den Waldindianern Südamerikas. *Anthropos* 7(1-2):206-29.
- Kurze, G.  
 1905 Sitten und Gebräuche der Lengua-Indianer. *Mitteilungen der Geographischen Gesellschaft* 23:16-34. Jena.
- La Barre, Weston  
 1948 *The Aymara Indians of the Lake Titicaca Plateau, Bolivia*. Memoirs of the American Anthropological Association no. 68. Menasha, Wisc.
- Laffan, Robert, and Herbert L. Borison  
 1957 Emetic Action of Nicotine and Lobeline. *Journal of Pharmacology and Experimental Therapeutics* 121(4):468-76. Baltimore.
- Landis, Carney, and William A. Hunt  
 1932 Adrenalin and Emotion. *Psychology Review* 39:467-85.
- Lanc, Frederico  
 1950 Cachimbos dos indios Karajá. *Revista do Museu Paulista* n.s. 4:381-88. São Paulo.
- Lange, Algot  
 1914 *The Lower Amazon*. New York and London: G. P. Putnam's Sons.
- Langley, J. N.  
 1909 Curari and Nicotine on Muscle. On the Contraction of Muscle, Chiefly in Relation to the Presence of 'Receptive' Substances. Part IV. The Effect of Curari and of Some Other Substances on the Nicotine Response of the Sartorius and Gastrocnemius Muscles of the Frog. *Journal of Physiology* 39(4):235-95. London and Edinburgh. 1909-10.
- Larsen, May, and Henry Larsen  
 1964 *The Forests of Panama*. Translated by Irene Salem. London: George G. Harrap.
- Larson, Paul Stanley  
 1952 Metabolism of Nicotine and Nature of Tobacco Smoke Irritants. *Industrial and Engineering Chemistry* 44(2):279-83. Washington, D.C.



- 1960 Absorption of Nicotine under Various Conditions of Tobacco Use. *Annals of the New York Academy of Sciences* 90(1):31-35. 1960-61.
- Larson, Paul Stanley, H. B. Haag, and H. Silvette  
1961 *Tobacco: Experimental and Clinical Studies: A Comprehensive Account of the World Literature*. Baltimore: Williams & Wilkins.
- Larson, Paul Stanley, and H. Silvette  
1965 Medical Uses of Tobacco (Past and Present). In *Tobacco Alkaloids and Related Compounds*, 3-13. U. S. von Euler, ed. Proceedings of the Fourth International Symposium held at the Wenner-Gren Center, Stockholm, February 1964. Oxford and New York: Pergamon Press, Symposium Publications Division. (Distributed in the Western Hemisphere by Macmillan, New York, 1965.)
- 1968 *Tobacco: Experimental and Clinical Studies, Supplement I*. Baltimore: Williams & Wilkins.
- 1971 *Tobacco: Experimental and Clinical Studies, Supplement II*. Baltimore: Williams & Wilkins.
- 1975 *Tobacco: Experimental and Clinical Studies, Supplement III*. Baltimore: Williams & Wilkins.
- Larsson, Christer  
1985 *Nicotinic Receptors in the Central Nervous System: Methodological and Functional Aspects*. Abstracts of Uppsala Dissertations from the Faculty of Pharmacy, 104. Acta Universitatis Upsaliensis. Uppsala.
- Las Casas, Bartolomé de  
1909 Apologética historia de las Indias. In *Historiadores de Indias*. . . M. Serrano y Sanz, ed. Madrid: Bailly, Bailliére é hijos.
- Latham, Richard  
1924 La organización social y las creencias religiosas de los antiguos Araucanos. *Publicaciones del Museo de Etnología y Antropología* 3(2-4): 245-868. Santiago de Chile.
- Lautenbach, Louis J.  
1898 Some Results in Cases of Tobacco Amblyopia. *Journal of the American Medical Association* 31(14):770-71.
- Laytano, Dante de  
1957 Populações indígenas. Part 2. *Revista do Museu Júlio de Castilhos e Arquivo Histórico do Rio Grande do Sul* 6(7):151-213, 6(8):49-132. Pôrto Alegre.
- Lecte, Edward  
1983 Biosynthesis and Metabolism of the Tobacco Alkaloids. In *Alkaloids: Chemical & Biological Perspectives*, 85-152. Vol. 1. S. William Pelletier, ed. New York: John Wiley and Sons.
- Lehmann, K. B.  
1908 Untersuchungen über das Tabakrauchen. *Münchener Medizinische Wochenschrift* 55(14):723-25. Munich.
- 1909 Chemische und toxikologische Studien über Tabak, Tabakrauch und das Tabakrauchen. *Archiv für Hygiene* 68:319-465. Munich and Berlin.
- Lelong, Maurice Hyacinthe  
1952 *Les indiens qui meurent*. Paris: René Julliard.

- Lémercy, Nicolas  
1696 *Cours de Chymie: contenant la manière de faire les operations qui sont en usage dans la médecine, par une methode facile.* 8th ed. Paris: E. Michallet.
- Léry, Jean de  
1592 [Narrative] in *Americae tertia pars*. Translated and edited by Theodor de Bry. Frankfurt am Main: Wenchel.  
1951 *Viagem à terra do Brasil.* Translation of *Histoire d'un voyage fait en la terre du Brésil*. . . . 2d ed. São Paulo: Livraria Martins.
- Letschius, Johannes Theophilus  
1695 *Annuae numine, gratiosissimae Medicae Facultatis consensu, de Tabaco, In alma viadrina, praeside Dn. Bernhardo Albino.* . . . Frankfurt on the Oder: Literis Christophori Zeitleri.
- Levine, Ruth R.  
1983 *Pharmacology: Drug Actions and Reactions.* 3d ed. Boston: Little, Brown.
- Levinsohn, Stephen y Sra.  
1976 *Textos Ingas. Folclore Indígena de Colombia* 2:136-97. Instituto Lingüístico de Verano, Colombia.
- Lévi-Strauss, Claude  
1948a Tribes of the Upper Xingú River. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 321-48. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1948b The Nambicuara. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 361-69. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1948c Tribes of the Right Bank of the Guaporé River. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 371-79. Smithsonian Institution, Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1955 *Tristes Tropiques.* Paris: Librairie Plon.  
1966 *Du miel aux cendres.* Paris: Plon.  
1974 *Tristes Tropiques.* Translated by John and Doreen Weighman. New York: Atheneum.
- Library of Congress  
1938 *Books, Manuscripts, and Drawings Relating to Tobacco from the Collection of George Arents, Jr. on Exhibition at the Library of Congress, April 1938.* Foreword and compilation by Herbert Putnam. Washington, D.C.: U.S. Government Printing Office.
- Lickint, Fritz  
1939 *Tabak und Organismus, Handbuch der gesamten Tabakkunde.* . . . Stuttgart: Marquardt.
- Lima Figueiredo, José de  
1939 *Índios do Brasil.* São Paulo: Companhia Editora Nacional.
- Linnaeus, Carl  
[1754] *Genera Plantarum.* 5th ed. Facsimile. With an introduction by William T. Stearn. Weinheim: H. R. Engelmann (J. Cramer). Codicote: Whel-

- don & Wesley, Ltd. New York: Hafner. 5th ed. originally published in Stockholm: L. Salvii. 1754.
- Linton, Ralph  
1924 *Use of Tobacco among North American Indians*. Anthropology. Leaflet 15. Chicago: Field Museum of Natural History.
- Lipkind, William  
1948 The Carajá. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 179-91. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- List, P. H., and Hörhammer, L.  
1977 *Hagers Handbuch der Pharmazeutischen Praxis*. Vollständige (vierte) Neuauflage, Sechster Band *Chemikalien und Drogen. Teil A: N-Q*. Berlin: Springer-Verlag.
- Lista, Ramón  
1975 *Mis exploraciones y descubrimientos en la Patagonia, 1877-1880*. Buenos Aires: Ediciones Marymar.
- Lizot, Jacques  
1978 *Connaissance et usage des plantes sauvages chez les Yanomami*. In *Unidad y variedad: Ensayos antropológicos en homenaje a José M. Cruces*. Erika Wagner and Alberta Zucchi, eds. Caracas: Centro de Estudios Avanzados, Instituto Venezolano de Investigaciones Científicas.
- Lockwood, Tommie Earl  
1979 The Ethnobotany of Brugmansia. *Journal of Ethnopharmacology* 1(2): 147-64. Lausanne.
- Lommel, Andre, ed.  
1960 *Indianer vom Amazonas*. Munich: Museum für Völkerkunde.
- Lopes, Raimundo  
1934 Os Tupi do Gurupy. *Proceedings of the 25th International Congress of Americanists* 1:139-71. La Plata. 1932.
- López, Pedro, Lilia López, with J. K. Salsar y Sra.  
1974 Textos Cubeo. *Folclor Indígena de Colombia* 1:91-154. Lomalinda, Meta.
- Lovén, Sven  
1924 *Über die Wurzeln der tainischen Kultur*. Translated by Dr. Ignaz Schlos- ser. Gothenburg: Erlanders Boktryckeri Aktiebolag.  
1935 *Origins of the Tainan Culture, West Indies*. Gothenburg: Erlanders Bok- tryckeri Aktiebolag.
- Lowie, Robert H.  
1941 A Note on the Northern Gê Tribes of Brazil. *American Anthropologist* n.s. 43(2):188-96.  
1946a Eastern Brazil: An Introduction. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 1 *The Marginal Tribes*, 381-97. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1946b The Northwestern and Central Gê. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 1 *The Marginal Tribes*, 477-517.

- Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1946c The Tarairiu. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 1 *The Marginal Tribes*, 563-66. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1949 Social and Political Organization of the Tropical Forest and Marginal Tribes. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 5 *The Comparative Ethnology of South American Indians*, 313-50. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Lublinski, Ida  
1920-21 Der Medizinmann bei den Naturvölkern Südamerikas. *Zeitschrift für Ethnologie* 52-53:234-63. 1921.
- Lucchesi, C. R., C. R. Schuster, and G. S. Emley  
1967 The Role of Nicotine as a Determinant of Cigarette Smoking Frequency in Man, with Observations of Certain Cardiovascular Effects Associated with the Tobacco Alkaloid. *Clinical Pharmacology and Therapeutics* 8(6): 789-96. St. Louis.
- Lukesch, Anton  
1976 *Bearded Indians of the Tropical Forest: The Asurini of the Ipiaçaba, Notes and Observations on the First Contact and Living Together*. Graz: Akademische Druck- u. Verlagsanstalt.
- Lunardi, Federico  
1938 I Siridòno. *Archivio per l'Antropologia e la Etnologia* 68:178-223. Florence.
- Luzardo, Rodolfo  
1971 *Más sobre Caribes y Chibchas: compendio de referencias*. Caracas: Editorial Sucre.
- Lyle, H. Willoughby  
1905 The Effect of Tobacco in Health and Disease. *Practitioner* 75:68-71. London.
- Machado, Othon Xavier de Brito  
1947 *Os Carajás (Inan-Son-Uéra)*. Conselho Nacional de Proteção aos Índios publ. 104, no. 7. Rio de Janeiro: Imprensa Nacional.
- Macht, David I.  
1938 The Absorption of Drugs and Poisons Through the Skin and Mucous Membranes. *American Medical Association Journal* 110(6):409-13. Chicago.
- Mackenzie, José A.  
1945 El piache Guajiro. *América Indígena* 5(2):153-60. Mexico City.
- Maddox, John Lee  
1923 *The Medicine Man: A Sociological Study of the Character and Evolution of Shamanism*. New York: Macmillan.
- Malkinson, F. D.  
1960 Percutaneous Absorption of Toxic Substances in Industry. *A. M. A. Archives of Industrial Health* 21(2):87-99. Chicago.

- Mallat de Bassilan, Marcel Jacques Saint-Ayne  
1892 *L'Amérique inconnue d'après le Journal de Voyage de J. de Brettes, chargé d'une mission scientifique*. . . . Paris: Librairie de Firmin-Didot.
- Mangones, Edmond, and Louis Maximilien  
1941 *L'art précolombien d'Haïti*. Port-au-Prince, Haiti: Imprimerie de l'État.
- Manizer, Henri Henrikhovitch  
1919 Les Botocudos d'après les observations recueillies pendant un séjour chez eux en 1915. *Archivos do Museu Nacional do Rio de Janeiro* 22:241-73.
- Mansfeld, Georg  
1908 Die Wirkung des Nikotins auf die Nebenniere. *Jahres-Bericht über die Fortschritte der Tier-Chemie*. Wiesbaden. 1909.
- Manske, Richard Helmut Fred  
1961 Thirty Alkaloid Years in Review. *Chemistry and Industry* 36:1420-27. London.
- Manske, Richard Helmut Fred, and Léo Marion  
1942 The Alkaloids of *Lycopodium* Species. I. *Lycopodium complanatum* L. *Canadian Journal of Research Section B* 20(5):87-92. Ottawa.  
1946 The Alkaloids of *Lycopodium* Species. VII. *Lycopodium lucidulum* Michx. (*Urostachys lucidulus* Herter.) *Canadian Journal of Research Section B* 24(2):57-62. Ottawa.
- Marcoy, Paul [pseud.] See Saint-Cricq, Laurent de
- Marion, Léo  
1939 The Occurrence of *l*-Nicotine in *Asclepias syriaca* L. *Canadian Journal of Research Section B* 17(1):21-22. Ottawa.  
1945 The Alkaloid of *Sedum acre* L. *Canadian Journal of Research Section B* 23(5):165-66. Ottawa.  
1950 The Pyridine Alkaloids. In *The Alkaloids: Chemistry and Physiology*, 167-269. Richard Helmut Fred Manske and H. L. Holmes, eds. Vol. 1. New York: Academic Press.
- Marion, Léo, and Richard Helmut Fred Manske  
1944 The Alkaloids of *Lycopodium* Species. IV. *Lycopodium tristachyum* Pursh. *Canadian Journal of Research Section B* 22(1):1-4. Ottawa.  
1946 The Alkaloids of *Lycopodium* Species. VIII. *Lycopodium sabinaefolium* Willd. *Canadian Journal of Research Section B* 24(2):63-65. Ottawa.
- Markham, Clements Robert, ed.  
1869-71 *First Part of the Royal Commentaries of the Yncas, by the Ynca Garcilasso de la Vega*. Translated and edited with notes and introduction by Clements R. Markham. Vol. 1, first series, no. 41. 1869. London: Hakluyt Society.
- Márquez Mirando, Fernando  
1940-41 Los aborígenes de América del Sur. In *Historia de América*. Ricardo Levene, ed. 14 vols. Vol. 2. 1940. Buenos Aires and New York: W. M. Jackson.
- Márquez V., María Elena  
1979 *Los Tunebo*. Medellín, Colombia: Editorial Copymundo.
- Marti, Th., and Matasaru J.  
1964 Prophylaxie des intoxications au tabac. *Praxis* 53(24):828-35. Bern.

- Martius, Karl [Carl] Friedrich Philipp von  
1863 *Beiträge zur Ethnographie und Sprachenkunde Brasiliens. Wörtersammlung brasilianischer Sprachen*. Added title page has special title of vol. 2 *Glossaria linguarum brasiliensium*. . . . Of this edition only vol. 2 was issued. The complete work appeared in 2 vols. in 1867, with title slightly changed. Erlangen: Junge & Sohn.
- 1867 *Beiträge zur Ethnographie und Sprachenkunde Amerika's zumal Brasiliens*. 2 vols. Leipzig: Friedrich Fleischer.
- Mason, Gregory  
1940 *South of Yesterday*. New York: Henry Holt.
- Matteson, Esther  
1954 The Piro of the Urubamba. *Kroeber Anthropological Society Papers* 10:25-99. Berkeley.
- Mattila, M. J., Lisa Ahtec, and Laila Saarivaara  
1968 The Analgesic and Sedative Effects of Nicotine in White Mice, Rabbits and Golden Hamsters. *Annales Medicinæ Experimentalis et Biologiae Fenniae* 46(1):78-84. Helsinki.
- Maybury-Lewis, David  
1965 *The Savage and the Innocent*. Boston: Beacon Press.
- McCorkle, Thomas  
1954 La persistencia comunera y los Guaiqueries. *Boletín Indigenista Venezolano* 2(1-4):85-95. Caracas.
- McGovern, William Montgomery  
1927 *Jungle Paths and Inca Ruins*. New York and London: Century.
- McIndoo, N. E., R. C. Roark, and R. L. Busbey  
1936 *A Bibliography of Nicotine*. 2 vols. in 4. Part II *The Insecticidal Uses of Nicotine and Tobacco*. U.S. Department of Agriculture, Bureau of Entomology. No. E-392. Washington, D.C.: Entomology and Plant Quarantine Bureau.
- Mead, C. W.  
1907 A Collection from the Tukáno Indians of South America. *American Museum Journal* 7(7):108-09. New York: American Museum of Natural History.
- Meggers, Betty J., and Clifford Evans  
1957 *Archaeological Investigations at the Mouth of the Amazon*. Smithsonian Institution. Bureau of American Ethnology. Bulletin 167. Washington, D.C.: U.S. Government Printing Office.
- Melanowski, W. H.  
1963 Wpływ palenia tytoniu na narząd wzroku człowieka [The Influence of Tobacco Smoking on Human Sight]. *Polski Tygodnik Lekarski* 18(51):1937-39. Warsaw.
- Melsens, L. H. F.  
1843 Note sur la nicotine. *Annales de Chimie et de Physique* séries 3, 9:465-79. Paris.
- Mendenhall, Walter Leslie  
1930 *Tobacco*. Harvard Health Talks. Cambridge: Harvard University Press.

- Méndez, Angel Cruz, Florence Gerdel, and Marianne C. Slocum  
1976 Texto Pácz. *Folclor Indígena de Colombia* 2:62-111. Bogotá.
- Mense, Hugo  
1935 Der Hochgottglaube der Mundurukú-Indianer. *Zeitschrift für Missionswissenschaft und Religionswissenschaft* 25(1):21-36. Münster.
- Merxmüller, H., and K. P. Buttler  
1975 Nicotiana in der afrikanischen Namib—Ein pflanzengeographisches und phylogenetisches Rätsel. *Mitteilungen aus der Botanischen Staatssammlung*, 12:91-104. Munich.
- Métraux, Alfred  
1928 *La civilisation matérielle des tribus Tupi-Guarani*. Paris: Librairie Orientaliste Paul Geuthner.  
1930 Études sur la civilisation des indiens Chiriguano. *Revista del Instituto de Etnología de la Universidad Nacional de Tucumán* 1(3):295-493.  
1940a Los indios Chapakura del Oriente Boliviano. *Anales del Instituto de Etnografía Americana* 1:117-27. Mendoza.  
1940b Los indios Manáo. *Anales del Instituto de Etnografía Americana* 1:235-44. Mendoza.  
1942 *The Native Tribes of Eastern Bolivia and Western Matto Grosso*. Smithsonian Institution. Bureau of American Ethnology. Bulletin 134. Washington, D.C.: U.S. Government Printing Office.  
1943 The Social Organization and Religion of the Mojo and Manasi. *Primitive Man* 16(1-2):1-30.  
1944a Nota etnográfica sobre los indios Mataco del Gran Chaco Argentino. *Relaciones de la Sociedad Argentina de Antropología* 4:7-18. Buenos Aires.  
1944b Le shamanisme chez les Indiens de l'Amérique du Sud tropicale. *Acta Americana* 2(3):197-219, 2(4):320-41. Mexico City.  
1944c La causa y el tratamiento mágico de las enfermedades entre los indios de la región tropical sud-americana. *América Indígena* 4(2):157-64. Mexico City.  
1946a Myths of the Toba and Pilagá Indians of the Gran Chaco. *Memoirs of the American Folklore Society* vol. 40.  
1946b Ethnography of the Chaco. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 1 *The Marginal Tribes*, 197-370. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1946c The Caingang. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 1 *The Marginal Tribes*, 445-75. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1946d The Purí-Coroado Linguistic Family. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 1 *The Marginal Tribes*, 523-30. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1946e La civilisation Guyano-Amazónienne et ses provinces culturelles. *Acta Americana* 4(3):130-53. Mexico City.

- 1948a The Guaraní. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 69–94. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948b The Tupinamba. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 95–134. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948c Tribes of Eastern Bolivia and the Madeira Headwaters. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 381–454. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948d Tribes of the Eastern Slopes of the Bolivian Andes. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 465–506. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948e Tribes of the Jurú-Purús Basins. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 657–86. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948f Tribes on the Middle and Upper Amazon River. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 687–712. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1949a The Couvade. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 5 *The Comparative Ethnology of South American Indians*, 369–74. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1949b Boys' Initiation Rites. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 5 *The Comparative Ethnology of South American Indians*, 375–82. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1949c Religion and Shamanism. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 5 *The Comparative Ethnology of South American Indians*, 559–99. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1950a *Les Peaux-Rouges de l'Amérique du Sud*. Paris: Édition Bourrelrier.
- 1950b *A religião dos Tupinambás e suas relações com a das demais tribus Tupi-Guaranis*. Prefácio, tradução e notas do Estevão Pinto. Biblioteca Pedagógica Brasileira sêr. 5, Brasileira vol. 267. São Paulo: Companhia Editora Nacional.
- Métraux, Alfred, and Paul Kirchhoff
- 1948 The Northeastern Extension of Andean Culture. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 349–68. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.



- Meyerhof, M.  
1921 Beobachtungen über Tabakschädigungen der Sehnerven im Orient und in Deutschland. *Klinische Monatsblätter für Augenheilkunde* 66:107-II. Stuttgart.
- Michelson, Fruman  
1932 *Notes on the Fox Wâpanôwîweni*. Smithsonian Institution. Bureau of American Ethnology. Bulletin 105. Washington, D.C.: U.S. Government Printing Office.
- Mitrani, Philippe  
1973 Contribution à l'étude des formes religieuses et culturelles chez les Yaruro de l'Apuce. *Antropológica* 35:25-67. Caracas.
- Monardes, Nicolás  
1580 *Primera y segvnda y tercera partes dela historia medicinal: delas cosas que se traen de nuestras Indias Occidentales, que siruen en medicina*. Seville [Seuilla]: En casa de Fernando Diaz.
- Monconill, Gaspar Miguel  
1945 Manera como preparan la 'coca' los indios Uitoto en general. *Colombiana Americanista* 3(9-10):41-43. Sibundoy.
- Morales, Ernesto  
1929 *Legendas Guaraníes*. Nueva ed. Buenos Aires: "El Ateneo."
- Morales Padron, F.  
1958 Aspectos de la cultura de los indios Muzos (alto Magdalena). *Anuario de Estudios Americanos* 15:551-616. Seville.
- Morison, Samuel Eliot  
1942 *Admiral of the Ocean Sea: A Life of Christopher Columbus*. Boston: Little, Brown.
- Moser, Brian, and Donald Tayler  
1967 *The Cocaine Eaters*. New York: Taplinger.
- Mothes, K., and A. Romeike  
1951 Über die Anhäufung von Alkaloiden in Organen der Speicherung und Reproduktion. *Biologisches Zentralblatt* 70(3-4):97-113. Leipzig.
- Moura, José de  
1960 Os Münkü: 2a contribuição ao estudo da tribo Iranche. *Anuário do Instituto Anchietao de Pesquisas* no. 10. Pôrto Alegre.
- Mujía, Ricardo  
1914 *Bolivia-Paraguay*. Vol. 4 supplement. La Paz: Empresa Editora "El Tiempo."
- Müller, Franz  
1928 Drogen und Medikamente der Guaraní- (Mbyá, Pai und Chiripá) Indianer im östlichen Waldgebiete von Paraguay. In *Festschrift, Publication d'Hommage Offerte au P. W. Schmidt*, 501-14. Wilhelm Koppers, ed. Vienna: Mechitharisten-Congregations-Buchdruckerei.
- Münzel, Mark  
1971 *Medizinmannwesen und Geistervorstellungen bei den Kamayurá (Alto Xingú-Brasilien)*. Wiesbaden: Franz Steiner Verlag GMBH.
- Murphree, Henry B., ed.  
1967 The Effects of Nicotine and Smoking on the Central Nervous System. *Annals of the New York Academy of Sciences* 142(1).

- Murphy, Robert Francis  
 1954 The Rubber Trade and the Mundurucú Village: Ethnohistory and Acculturation of the Mundurucú, with Special Reference to Their Economic Life. Ph.D. dissertation. Columbia University.
- 1958 *Mundurucú Religion*. Publications in American Archaeology and Ethnology 49(1). Berkeley and Los Angeles: University of California Press.
- 1960 *Headhunter's Heritage: Social and Economic Change among the Mundurucú Indians*. Berkeley and Los Angeles: University of California Press.
- Murphy, Robert Francis, and Buell Quain  
 1955 *The Trumai Indians of Central Brazil*. American Ethnological Society monograph 24. New York: J. J. Augustin.
- Murphy, Yolanda, and Robert Francis Murphy  
 1974 *Women of the Forest*. New York: Columbia University Press.
- Mussolini, Gioconda  
 1944 Notas sobre os conceitos de moléstias, cura e morte entre os índios Vapidianas. *Sociologia* 6(2):134-55. São Paulo.
- 1946 Os meios de defesa contra moléstia e a morte em duas tribos brasileiras: Kaingang de Duque de Caxias e Boróro Oriental. *Revista do Arquivo Municipal* 110:7-152. São Paulo.
- Musters, George Chaworth  
 1872 On the Races of Patagonia. *Journal of the Anthropological Institute of Great Britain and Ireland* 1:193-207. London.
- Musters, George Chaworth 1911. See Falkner, Tomás
- Nachtigall, Horst  
 1953 Shamanismo entre los indios Paeces. *Revista Colombiana de Folklore*, segunda época 2:223-41. Bogotá.
- 1955 *Tierradentro: Archäologie und Ethnographie einer Kolumbianischen Landschaft*. Mainzer Studien zur Kultur- und Völkerkunde no. 2. Zürich: Origo-Verlag.
- Naranjo, Plutarco  
 1970 *Ayahuasca: religión y medicina*. Quito: Editorial Universitaria.
- Navarrete, Martín Fernández de  
 1837-80 *Colección de los viajes y descubrimientos que hicieron por mar los Españoles desde fines del siglo XV*. . . . 5 vols. Madrid: Imprenta Nacional. Vol. 3, 1880 imprinted Librería de Moya y Plaza.
- Nesemann, E., R. Schröder, and F. Sechofer  
 1968 Methoden zur quantitativen Bestimmung von Insektiziden im Tabak und Tabakrauch. I. Mitteilungen: Zur Bestimmung von Organo-Chlor-Insektiziden. *Beiträge zur Tabakforschung* 4(4):182-88. Hamburg.
- Nettleship, E.  
 1879 Notes on the Diagnosis of Tobacco Amblyopia. *St. Thomas's Hospital Report* n.s. 19:51-74. London.
- 1887 Toxic Amblyopia. *Transactions of the Ophthalmological Society of the United Kingdom* 7:36-53. London.
- Nicholas, Francis C.  
 1901 The Aborigines of the Province of Santa Marta, Colombia. *American Anthropologist* n.s. 3(4):606-49.

## Nimuendajú, Curt

- 1919-20 Bruchstücke aus Religion und Überlieferung der Šipáia-Indianer. *Anthropos* 14-15(4-6):1002-39.
- 1926 *Die Palikur-Indianer und ihre Nachbarn*. Göteborgs Kungl. Vetenskaps- och Vitterhets-Samhälles Handlingar 4th series 31(2). Gothenburg.
- 1932 Wortlisten aus Amazonien. *Journal de la Société des Américanistes* n.s. 24(1):93-119. Paris.
- 1939 *The Apinayé*. Translated by Robert H. Lowie. Robert H. Lowie and John M. Cooper, eds. Anthropological Series no. 8. Washington, D.C.: Catholic University of America Press.
- 1946 Social Organization and Beliefs of the Botocudo of Eastern Brazil. *Southwestern Journal of Anthropology* 2(1):93-115.
- 1948a Tribes of the Lower and Middle Xingú River. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 213-44. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948b The Maué and Arapium. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 245-54. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948c The Tucuna. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 713-25. Smithsonian Institution, Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1952 *The Tukuna*. Translated by William D. Hohenthal. Robert H. Lowie, ed. Publications in American Archaeology and Ethnology vol. 45. Berkeley: University of California Press.

## Nimuendajú, Carl, and Alfred Métraux

- 1948 The Amanayé. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 199-202. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.

## Niño, Bernardino de

- 1912 *Etnografía Chiriguano*. La Paz: Tipografía Comercial de Ismael Argote.

## Nordenskiöld, Nils Erland Herbert von

- 1908 Südamerikanische Rauchpfeifen. *Globus* 93(19):293-98.
- 1912a *Indianerleben: el Gran Chaco (Südamerika)*. Translated by Carl Auerbach. Leipzig: Albert Bonnier.
- 1912b Les indiens du Chaco. *Revue de Géographie* 6(3). Paris.
- 1919 *An Ethno-Geographical Analysis of the Material Culture of Two Indian Tribes in the Gran Chaco*. Comparative Ethnographical Studies vol. 1. Gothenburg: Erlanders Boktryckeri Aktiebolag.
- 1920 *The Changes in the Material Culture of Two Indian Tribes under the Influence of New Surroundings*. Comparative Ethnographical Studies vol. 2. Gothenburg: Erlanders Boktryckeri Aktiebolag.
- 1922 *Indianer und Weisse in Nordostbolivien*. Stuttgart: Strecker und Schröder.
- 1924a *The Ethnography of South America Seen from Mojos in Bolivia*. Compar-

- tive Ethnographical Studies vol. 3. Gothenburg: Erlanders Boktryckeri Aktiebolag.
- 1924*b* *Forschungen und Abenteuer in Südamerika*. Stuttgart: Strecker und Schröder.
- 1930*a* *Modifications in Indian Culture through Inventions and Loans*. Comparative Ethnographical Studies vol. 8. Gothenburg: Erlanders Boktryckeri Aktiebolag.
- 1930*b* The Use of Enema Tubes and Enema Syringes among Indians. In his *Modifications in Indian Culture through Inventions and Loans*, 184–95. Comparative Ethnographical Studies vol. 8. Gothenburg: Erlanders Boktryckeri Aktiebolag.
- 1931 *Origin of the Indian Civilizations in South America*, with appendixes by Stig Rydén, Axel Hultgren, G. Phragmén and Karl Izikowits. In Comparative Ethnographical Studies 9:1–153. Erland Nordenskiöld, ed. Gothenburg: Erlanders Boktryckeri Aktiebolag.
- Norwood, Victor G. C.
- 1964 *Jungle Life in Guiana*. London: Robert Hale, Ltd.
- Nuñez de Pineda. See Nuñez de Pineda y Bascunán, Francisco
- Nuñez de Pineda y Bascunán, Francisco
- 1863 *Cautiverio feliz, y razón de las guerras dilatadas de Chile*. Colección de Historiadores de Chile vol. 3. Santiago: Imprenta del Ferrocarril.
- Oberem, Udo
- 1957 Die Quijos-Indianer Ost-Ecuadors: Vorläufige Ergebnisse einer Reise 1954–56. *Zeitschrift für Ethnologie* 82(2):174–85.
- Oberg, Kalervo
- 1948 Terena Social Organizational Law. *American Anthropologist* n.s. 50(2): 283–91.
- 1953*a* *Indian Tribes of Northern Mato Grosso, Brazil*. Smithsonian Institution. Institute of Social Anthropology. Publication no. 15. Washington, D.C.: U.S. Government Printing Office.
- 1953*b* The Bacairi. In his *Indian Tribes of Northern Mato Grosso, Brazil*, 69–81. Smithsonian Institution. Institute of Social Anthropology. Publication no. 15. Washington, D.C.: U.S. Government Printing Office.
- Olsen, Fred
- 1974 *On the Trail of the Arawaks*. Norman: University of Oklahoma Press.
- Opitz, K.
- 1982 Untitled. In *Fragen aus der Praxis. Vergiftung mit Tabakaufguss*. *Deutsche Medizinische Wochenschrift* 107:1571. Stuttgart.
- d'Orbigny, Alcide Dessalines
- 1835–47 *Voyage dans l'Amérique Méridionale . . . exécuté pendant les années 1826, 1827, 1828, 1829, 1830, 1832, et 1833*. 9 vols. in 8. Paris and Strasbourg. Paris: Pitois-Levrault. Strasbourg: Ve. Levrault.
- 1945 *Viaje de la América meridional . . . realizado de 1826 a 1833 por Alcides d'Orbigny*. . . . Prólogo de Ernesto Morales. . . . 4 vols. Buenos Aires: Editorial Futuro.
- Ordinaire, Olivier
- 1887 Les sauvages du Pérou. *Revue d'Ethnographie* 6:265–322. Paris.

- 1892 *Du Pacifique à l'Atlantique par les Andes Péruviennes et l'Amazone: une exploration des montagnes du Yanachaga et du rio Palcazu*. Paris: Librairie E. Plon, Nourrit.
- Ortega Ricaurte, Daniel  
1940 *La hoya del Amazonas*. 3d ed. Vol. 1. Bogotá: Editorial Centro.
- Ortiz, Fernando  
1963 *Contrapunteo cubano del tabaco y el azúcar*. . . . 2d ed. Santa Clara, Cuba: Dirección de Publicaciones, Universidad Central de Las Villas.
- Ortiz, Sergio Elías  
1946 The Modern Quillcinga, Pasto, and Coaiquer. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 961–68. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Orton, James  
1870 *The Andes and the Amazon; or, Across the Continent of South America*.  
1876 London, 1870. New York: Harper & Brothers, 1876.
- Osborn, Henry  
1959 Textos folklóricos en Guaraó. III. *Boletín Indigenista Venezolano* 7(1–4):169–89. Caracas.
- Otero, Jesús M.  
1952 *Etnología Caucaña*. Popayán: Editorial Universidad del Cauca.
- Outes, Félix Faustino  
1905 La edad de la piedra en Patagonia. . . . *Anales del Museo Nacional de Buenos Aires* 12:203–575 (scr. 3a, vol. 5).
- Outes, Félix Faustino, and Carlos Bruch  
1910a *Texto explicativo de los cuadros murales "Las viejas razas argentinas."* Buenos Aires: Comp. Sud-Americana de Billetes de Banco.  
1910b *Los aborígenes de la República Argentina*. Manual adaptado a los programas de las escuelas primarias, colegios nacionales y escuelas normales. At head of title Félix F. Outes . . . Carlos Bruch. Buenos Aires: Ángel Estrada.
- Oviedo y Valdés, Gonzalo Fernández de  
1851–55 *Historia general y natural de las Indias, islas y tierra-firme del mar océano*. José Amador de los Ríos, ed. 3 parts in 4 vols. Madrid: Imprenta la Real Academia de la Historia.  
1944 *Historia general y natural de las Indias, islas y tierra-firme del mar océano*. Vol. 1 of 14 vols. 1944–45. Asunción del Paraguay: Editorial Guaranía.
- Oyarzún, Aureliano  
1910 Contribución al estudio de la influencia de la civilización peruana sobre los aborígenes de Chile. *Boletín del Museo Nacional* 2:3–37. Santiago.
- Pacheco, Joaquín Francisco, Francisco de Cárdenas, and Luis Torres de Mendoza, eds.  
1865 *Colección de documentos inéditos, relativos al descubrimiento, conquista y colonización de las posesiones españolas en América y Oceanía, sacados, en su mayor parte, del Real Archivo de Indias*. Vol. 3. Madrid: Imprenta Manuel B. de Quirós.
- Palavecino, Enrique  
1933 Los indios Pilagá del río Pilcomayo. *Anales del Museo Argentino de*

- Ciencias Naturales Bernardino Rivadavia* 37:517-81. Buenos Aires. 1931-33.
- Palza, Ernesto  
1946 *Indios americanos, supersticiones, hechicerías, prácticas curativas adivinatorias y otras. Catálogo de plantas medicinales con sus aplicaciones.* Cochabamba, Bolivia.
- Pané, Ramón [Román, Father]  
1974 *Relación acerca de las antigüidades de los indios: el primer tratado escrito en América.* Nueva versión, con notas, mapa y apéndice por José Juan Arrom. Mexico City: Siglo XXI.
- Paolisso, Michael Jeffery  
MS Fieldnotes on the Irapa-Yukpa Indians.
- Pape, Eduard  
1935 Dic Tschoropí. *Zeitschrift für Ethnologie* 67(4):158-76. 1936.
- Paris, René-Raymond, and Pierre Frigot  
1959 Étude par chromatographie et par électrophorèse des alcaloïdes de diverses Crassulacées indigènes: caractérisation de la nicotine chez le *Sempervivum*. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences* 248(12):1849-52. Paris.
- Park, Willard Zerebe  
1946 Tribes of the Sierra Nevada de Santa Marta, Colombia. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 865-86. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Passey, R. D., and C. Smith  
1963 Irritant Qualities of Cigar and Cigarette Smoke. *41st Annual Report of the British Empire Cancer Campaign for Research: Royal Cancer Hospital*. Part 2 *The Scientific Report* 41(2):65. London.
- Patiño, Victor Manuel  
1967 *Plantas cultivadas y animales domésticos en América equinoccial*. Tomo 3 *Fibras, medicinas, miscelaneas*, 321-23. Cali: Imprenta Departamental.
- Pauly, Antonio  
1928 *Ensayo de etnografía americana: viajes y exploraciones*. Buenos Aires: Talleres S. A. Casa Jacobo Peuser.
- Peñalver Gómez, Henriqueta  
1976 El uso del tabaco y la presencia de "pipas" en las culturas pre-colombinas de la cuenca del lago de Valencia o Tacarigua—Venezuela. (Mimeographed.)
- Penard, A. Ph.  
1928 Het pujai-geheim der Surinaamische Caraïben. *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indië* 84:625-71. The Hague.
- Pereira de Godói, Manuel. See Godói, Manuel Pereira de
- Pereira, Nunes  
1954 *Os índios Maués*. Coleção "Rex." Etnografia no. 1. Rio de Janeiro: Edição da Organização Simões.

Pérez de Barradas, José

- 1943 *Colombia de norte a sur*. 2 vols. Madrid: Ministerio de Asuntos Exteriores, Relaciones Culturales.
- 1950 Drogas ilusionógenas de los indios americanos. *Antropología y Etnología* 3:9-107. Consejo Superior de Investigaciones Científicas, Instituto Bernardino de Sahagún. Madrid.
- 1950-51 *Pueblos indígenas de la Gran Colombia. Los Muiscas antes de la conquista*. 2 vols. Madrid: Consejo Superior de Investigaciones Científicas, Instituto Bernardino de Sahagún.

Perret, Jacques

- 1933 Observations et documents sur les Indiens Emerillon de la Guyane Française. *Journal de la Société des Américanistes* n.s. 25(1):65-98.

Perrin, Michel

- 1976 *Le chemin des indiens morts: mythes et symboles Guajiro*. Paris: Payot.
- 1979 *Sükuaítpa Wayuu, los Guajiros: la palabra y el vivir*. Fundación La Salle Monograph no. 25. Caracas.

Peterson, Nicolas

- 1979 Aboriginal Uses of Australian Solanaceae. In *The Biology and Taxonomy of the Solanaceae*, 171-89. J. G. Hawkes, R. N. Lester, and A. D. Skelding, eds. Linnean Society Symposium Series, No. 17. London: Academic Press.

Petitjean-Roget, Jacques

- 1963 The Caribs as Seen Through the Dictionary of the Reverend Father Breton. *Proceedings of the 1st International Convention [Congress] for the Study of Pre-Columbian Culture of the Lesser Antilles*, 43-68. Fort-de-France, Martinique. 1961.

Petrullo, Vincenzo

- 1932 Primitive Peoples of Mato Grosso, Brazil. *University Museum Journal* 23(2):81-184. Philadelphia.
- 1939 The Yaruros of the Capanaparo River, Venezuela. *Anthropological Papers* 11:161-290. Smithsonian Institution. Bureau of American Ethnology. Bulletin 123. Washington, D.C.

Philippi, Rudolf Amandus

- 1893 Tabak und Pfeifen in Chile. *Verhandlungen der Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*. Berlin.

Pineda Giraldo, Roberto

- 1950 Aspectos de la magia en la Guajira. *Revista del Instituto Etnológico Nacional* 3(1). Bogotá.

Pinell, Gaspar de

- 1928 *Excursión apostólica por los ríos Putumayo, San Miguel de Sucumbios, Cuyabeno, Caquetá y Caguan*. Bogotá: Imprenta Nacional.

Pinto, Estêvão

- 1935-38 *Os indígenas do nordeste*. 2 vols. São Paulo: Companhia Editora Nacional.
- 1957 Introdução à história da antropologia indígena no Brasil (Século XVI). *América Indígena* 17(4):341-85. Mexico City.

- 1958 *Muxarabía e Balções, e outros ensaios*. Biblioteca Pedagógica Brasileira no. 5. Brasileira no. 303. São Paulo: Companhia Editôra Nacional.
- Piso, Willem, and Georgi Marcgravi de Liebstad  
1648 *Historia naturalis Brasiliae*. . . . *In qua non tantum plantae et animalia, sed et indigenarum morbi, ingenia et mores describuntur et iconibus supra quingentas illustrantur*. 2 vols. in 1. Leiden and Amsterdam. Leiden [Lvgdvnvm Batavorvm]: F. Hackium. Amsterdam [Amstelodami]: L. Elzevirium.
- Pittier, Henry François  
1926 *Manual de las plantas usuales de Venezuela*. Caracas: Litografía del Comercio.
- Ploetz, Hermann, and Alfred Métraux  
1930 La civilisation matérielle et la vie sociale et religieuse des indiens *Žé* du Brésil méridional et oriental. *Revista del Instituto de Etnología de la Universidad de Tucumán* 1(2):107–238.
- Plowman, Timothy  
1979 Botanical Perspectives on Coca. *Journal of Psychedelic Drugs* 11(1–2):103–17. Madison, Wisc.  
1981 Amazonian Coca. *Journal of Ethnopharmacology* 3:195–225. Lausanne.
- Pohl, Johann Baptist Emanuel  
1832–37 *Reise im Inneren von Brasilien*. 2 vols. Vienna: Johann Emanuel Pohl.
- Poindexter, E. H., Jr., and R. D. Carpenter  
● 1962a Isolation of Harmane and Norharmane from Cigarette Smoke. *Chemistry and Industry* 4:176. London.  
● 1962b Isolation of Harmane and Norharmane from Tobacco and Cigarette Smoke. *Phytochemistry* 1:215–21. London.
- Polykrates, Gottfried  
1957 Ein Besuch bei den Indianern am Rio Trombetas. *Ethnos* 22(3–4):128–47.  
1962 Beiträge zum Verständnis der Religion und Variationen der materiellen Kultur der Kashuíéna Indianer. *Folk* 4:71–89. Copenhagen.  
1969 *Wawanaueteri und Pukimapueteri. Zwei Yanonami-Stämme Nordwestbrasilien*. Publications of the National Museum. Ethnographical Series vol. 13. Copenhagen: National Museum of Denmark.
- Posnansky, Arthur  
1937 *Antropología y sociología de las razas interandinas y de las regiones adyacentes*. Instituto “Tihuanacu” de Antropología, Etnografía y Prehistoria. La Paz: Editorial “Renacimiento.”
- Posselt, Wilhelm Heinrich  
1940 Text des Physiologischen Teils der Preisschrift. German translation by Horst Jörg Koenig [of Posselt’s part of the prize essay “De Nicotiana respectu ad chemiam et physiologiam habito”]. In *Die Entdeckung des reinen Nikotins im Jahre 1828 an der Universität Heidelberg durch Reimann und Posselt: mit einer Beschreibung ihrer Vorläufer und mit Abbildungen*, 59–82. Paul Koenig, ed. Bremen: Arthur Geist Verlag.



- Posselt, Wilhelm Heinrich, and C. L. Reimann  
 1828–29 *Chemische Untersuchungen des Tabaks und Darstellung des eigentümlichen Principis dieser Planze. Magazin für Pharmazie und die dahin einschlagenden Wissenschaften.* Vol. 24, 1828. Vol. 25, 1829. Karlsruhe. Although this is Reiman's part of the prize essay, he signed this article with Posselt as senior author. (*See also* Kocnig 1940:37–58.)
- Prade, Jean Le Royer, sieur de  
 1668 *Discovrs dv tabac. Ov il est traité particuliereement du tabac en poudre.* Paris: Impr. de m. le Prest.
- Preobraschenski [first name unknown]  
 1876 Untitled. In *Correspondenzen*. Mentioned under Sokoloff entry. *Berichte der Deutschen Chemischen Gesellschaft zu Berlin* 9:1024.
- Preuss, Konrad Theodor  
 1921–23 *Religion und Mythologie der Uitoto. Textaufnahmen und Beobachtungen bei einem Indianerstamm in Kolumbien, Südamerika.* 2 vols. Göttingen: Vandenhoeck & Rupprecht. Leipzig: J. C. Hinrichs'sche Buchhandlung.
- Prichard, Hesketh H.  
 1902 *Through the Heart of Patagonia.* New York: D. Appleton and Company.
- Prudhomme, Louis Marie  
 1798 *Voyage à la Guiane et à Cayenne: fait en 1789 et années suivantes.* . . . Paris: Chez l'Éditeur.
- Purchas, Samuel  
 1906 *Hakluytus Posthumus or Purchas His Pilgrimes.* 20 vols. Vol. 16 *Hakluytus Posthumus or Purchas His Pilgrimes Contayning a History of the World in Sea Voyages and Lande Travells by Englishmen and Others.* The Seaventh Booke, Chap. I, A Treatise of Brasil, written by a Portugall [Fernão Cardim] which had long lived there, and Chap. II, Articles touching the dutie of the Kings Majestie our Lord, and to the common good of all the estate of Brasill. Written (as is thought) by the Author of the former Treatise, 418–517. Glasgow: James MacLehose and Sons, Publishers to the University of Glasgow.
- Putnam, Herbert. *See* Library of Congress
- Quandt, Christlieb  
 1807 *Nachricht von Suriname und seinen Einwohnern: sonderlich den Ara-wacken, Warauen und Karaiben.* . . . Görlitz: Gedruckt bey J. G. Burg-hart, zu finden bey dem Verfasser.
- Radin, Paul  
 1915–16 *The Winnebago Tribe.* In *Thirty-Seventh Annual Report . . . Bureau of American Ethnology . . . Smithsonian Institution 1915–1916*, 33–560. Washington, D.C.: U.S. Government Printing Office. 1923.  
 1937 *Primitive Religion: Its Nature and Origin.* New York: Viking Press.
- Radwan, Eduard  
 1929 Einiges über die Sirionos. *Zeitschrift für Ethnologie* 60(4–6):291–96.
- Raffo, Matilde Josefina, and Julia Amalia Massazza  
 1949 Pipas de los Matacos y Tobas (tribus Chaquenses) de las colecciones del

- Instituto de Antropología. *Revista del Instituto de Antropología* 4:237-48. Tucumán.
- Raleigh, Walter  
 [1596] *The Discovery of the Large, Rich, and Beautiful Empire of Guiana, with a Relation of the Great and Golden City of Manoa (Which the Spaniards Call El Dorado), etc. Performed in the Year 1595.* Reprinted from the edition of 1596 with some unpublished documents relative to that country. Edited with copious explanatory notes and a biographical memoir by Sir Robert H. Schomburgk. New York: Burt Franklin.
- Ramos de Arango Pereira, Arthur  
 1943-47 *Introdução à antropologia brasileira.* 2 vols. Rio de Janeiro: Coleção Estudos Brasileiros da C. E. B.
- 1944 *Las poblaciones del Brasil.* Mexico City: Fondo de Cultura Económica.
- Ramsay, A. Maitland  
 1895 Tobacco Amblyopia. *Lancet* 1:1174-77. London.
- Reclús, Eliseo  
 1958 *Colombia.* Traducida con autorización del autor por F. J. Vergara y Velasco. Biblioteca de la Presidencia de Colombia no. 47. Bogotá: ABC.
- Reichel-Dolmatoff, Gerardo  
 1944 La cultura material de los indios Guahibo. *Revista del Instituto Etnológico Nacional* 1(2):437-506. Bogotá.
- 1945a La manufactura de cerámica entre los Chamí. *Boletín de Arqueología* 1(5):425-30. Bogotá.
- 1945b Los indios Motilones (etnografía y lingüística). *Revista del Instituto Etnológico Nacional* 2(1):15-115. 1945-46.
- 1949-50 Los Kogi. Una tribu de la Sierra Nevada de Santa Marta. *Revista del Instituto Etnológico Nacional* 4(1-2). Bogotá.
- 1953 Contactos y cambios culturales en la Sierra Nevada de Santa Marta. *Revista Colombiana de Antropología*, segunda época 1(1):15-122.
- 1956 Multiple-Stemmed Pipe Bowls. *Man* 56:75. London.
- 1971 *Amazonian Cosmos: The Sexual and Religious Symbolism of the Tukano Indians.* Chicago: University of Chicago Press.
- 1972 The Feline Motif in Prehistoric San Agustín Sculpture. In *The Cult of the Feline: A Conference in Pre-Columbian Iconography*, 51-64. Elizabeth P. Benson, ed. Washington, D.C.: Dumbarton Oaks Research Library and Collections, Trustees for Harvard University.
- 1975 *The Shaman and the Jaguar: A Study of Narcotic Drugs among the Indians of Colombia.* Philadelphia: Temple University Press.
- 1978 *Beyond the Milky Way: Hallucinatory Imagery of the Tukano Indians.* UCLA Latin American Studies, vol. 42. Los Angeles: Latin American Center Publications, University of California.
- 1986 *Arqueología de Colombia. Un texto introductorio.* Fundación Segunda Expedición Botánica. Bogotá.
- Reimann, Karl Ludwig, and Wilhelm Posselt  
 MS De Nicotiana respectu ad chemiam et physiologiam habito. Prize essay submitted to the Faculty of Medicine of the University of Heidelberg.

- 1940 Der Tabak: seine Chemie und Physiologie. In *Die Entdeckung des reinen Nikotins im Jahre 1828 an der Universität Heidelberg durch Reimann und Posselt, mit einer Beschreibung ihrer Vorläufer und mit Abbildungen*, 34-84. Paul Koenig, ed. Bremen: Arthur Geist Verlag.
- Reinburg, P.  
1921 Contribution à l'étude des boissons toxiques des Indiens du nord-ouest de l'Amazonie. *Journal de la Société des Américanistes de Paris* n.s. 13(1):25-54, 13(2):197-216.
- Reis Altschul, Siri von  
1972 *The Genus Anadenanthera in Amerindian Cultures*. Cambridge, Mass.: Botanical Museum, Harvard University.
- Reiser, Hans  
1943 *Índios*. Brunswick: Verlag Gustav Wenzel und Sohn.
- Renard-Casevitz, France-Marie  
1979 *Su-Açu: Essai sur les cervidés de l'Amazonie et sur leur signification dans les cultures indiennes actuelles*. Vol. 20. Paris: Institut Français d'Études Andines.
- Reverte, José M.  
1968 *Literatura oral de los indios Cunas: ensayo literario sobre una cultura aborígen panameña*. Panama City: Ediciones de Educación, Dirección Nacional de Cultura.
- Ribeiro, Darcy  
1950 *Religião e mitologia Kadiuêú*. Serviço de Proteção aos Índios vol. 106. Rio de Janeiro.  
1980 *Kadiuêú: ensaios etnológicos sobre o saber, o azar e a beleza*. 2d ed. Petrópolis: Vozes.
- Ribeiro, Francisco de Paulo  
1841. Memoria sobre as nações gentias que presentemente habitam o continente do Maranhão . . . (1819). *Revista Trimensal de Historia e Geographia* 3(10):184-97, 3(11):297-322, 3(12):443-56.
- Richter, Elise  
1928 Zu Leo Wiener's Africa and the Discovery of America. *Anthropos* 23(3-4):436-47.
- Riester, Jürgen  
1976 *En busca de la Loma Santa*. La Paz: Editorial los Amigos del Libro.
- Ritchie, John  
1926 Poisoning by Tobacco Applied to the Skin. *British Medical Journal* 2(2):116. London.
- Rivero, Juan  
1956 *Historia de las misiones de los llanos de Casanare y los ríos Orinoco y Meta*. Bogotá: Empresa Nacional de Publicaciones.
- Rivet, Paul  
1907 Les indiens Jíbaros: étude géographique, historique et ethnographique. *L'Anthropologie* 18:333-68, 18:583-618. Paris.  
1908 Les indiens Jíbaros: étude géographique, historique et ethnographique. *L'Anthropologie* 19:69-87, 19:235-59. Paris.

- Robicsek, Francis  
1978 *The Smoking Gods: Tobacco in Maya Art, History, and Religion*. Foreword by Michael D. Coe and Barbara A. Goodnight. Norman: University of Oklahoma Press.
- Rochefort, Charles de  
1658 *Histoire naturelle et morale des îles Antilles de l'Amérique. . . . Avec un vocabulaire Caraïbe*. Rotterdam: Arnould Leers.
- Rochereau, Henri J.  
1961 Los Tunebos. Grupo Unkasia. *Revista Colombiana de Antropología* 10: 37-119. Bogotá.
- Rodríguez Lamus, Luis Raúl  
1966 *Arquitectura indígena: los Tukano*. Bogotá: Escala.
- Roe, Peter G.  
1982 *The Cosmic Zygote: Cosmology in the Amazon Basin*. New Brunswick, N.J.: Rutgers University Press.
- Rogow, J.  
1867 Ueber die Wirkung des Extractes der Calabarbohne und des Nicotin auf die Iris. *Zeitschrift für Rationelle Medicin* 29:1-34.
- Romano, Santiago, and Hermán Cattunar  
1916 *Diccionario chiriguano-español y español-chiriguano. Compilado teniendo a la vista diversos manuscritos de antiguos misioneros del Apostólico colegio y particularmente el diccionario etimológico del R. P. Dorotéo Giannechini*. Tarija, Bolivia: Apostólico Colegio de Santa María de los Angeles de Tarija.
- Roquette-Pinto, Edgardo  
1938 *Rondonia*. 4th ed. Biblioteca Pedagógica Brasileira. Ser. 5a. Brasileira vol. 39. São Paulo: Companhia Editora Nacional.  
1968 Os índios Nhambiquára do Brasil-central. *Proceedings of the 18th International Congress of Americanists* 1:382-83. London. 1912.
- von Rosen, Eric Carl Gustaf Bloomfield  
1921 *Bland indianer: forskningar och äventyr i Gran Chaco*. Stockholm: Albert Bonniers Förlag.  
1924 *Ethnographical Research Work during the Swedish Chaco-Cordillera-Expedition 1901-1902*. Stockholm: C. E. Fritze.
- Roth, Walter Edmund  
1911 Narcotics and Stimulants of the Guianese Indian. *British Guiana Medical Annual* 18:1-9. Demarara. 1913.  
1908-09 *An Inquiry into the Animism and Folk-Lore of the Guiana Indians*. 30th Annual Report, 103-386. Washington, D.C.: Bureau of American Ethnology. 1915.  
1916-17 *An Introductory Study of the Art, Crafts, and Customs of the Guiana Indians*. 38th Annual Report, 23-745. Washington, D.C.: Bureau of American Ethnology. 1924.
- Rothballer, Allan B.  
1959 The Effects of Catecholamines on the Central Nervous System. In *Symposium on Catecholamines*, 494-547. Held at the National Institutes

- of Health. U.S. Department of Health, Education and Welfare. Bethesda, Md.: Williams and Wilkins.
- Rouse, Irving  
 1948a The Arawak. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 507-45. (The Ethnology of Puerto Rico supplied by Adolfo de Hostos.) Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
 1948b The Carib. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 547-65. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Rouse, Irving, and José M. Cruxent  
 1963 *Venezuelan Archaeology*. Caribbean Series, 6. New Haven: Yale University Press.
- Roux, Henry D.  
 1935 L'Hinterland Guyanais. *Géographie* 64(4):205-27. Paris.
- Rowe, John Howland  
 1946 Inca Culture at the Time of the Spanish Conquest. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 183-330. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
 1954-55 An Ethnographic Sketch of Guambía, Colombia. *Tribus* n.s. 4-5:139-56. Stuttgart. 1956.
- Rubén Darío, Charles  
 1973 *El archipiélago de San Blas, tierra de los Cuna*. Panama City. [N.p.?  
 1973? *San Blas: Millenary Land of the Cunas. Republic of Panama*. Panama City.
- Rubio, Angel  
 1940 Indios y cultura indígenas panameñas (Apuntes). Panama City. [N. p.]
- Ruddle, Kenneth  
 1974 *The Yukpa Cultivation System: A Study of Shifting Cultivation in Colombia and Venezuela*. Ibero-Americana vol. 52. Berkeley: University of California Press.
- Ruíz de Montoya, Antonio  
 [1639] *Tesoro de la lengva Gvaraní*. 4 vols. Vol. 3 *Arte, vocabulario, tesoro y catecismo de la lengva gvaraní*. Publicado nuevamente sin alteración alguna por Julio Platzmann. Leipzig: B. G. Teubner. Impr. Originally published Madrid: Iuan Sanchez. 1639.
- Russell, M. A. H., and C. Feyerabend  
 1975 Blood and Urinary Nicotine in Non-Smokers. *Lancet* 1(7900):179-81. Boston and London.
- Russell, M. A. H., M. J. Jarvis, and C. Feyerabend  
 1980 A New Age for Snuff? *Lancet* 1(8166):474-75. Boston and London.
- Russell, M. A. H., M. J. Jarvis, G. Devitt, and C. Feyerabend  
 1981 Nicotine Intake by Snuff Users. *British Medical Journal* 283:814-17. London.

- Rydén, Stig  
1941 *A Study of the Siriono Indians*. Gothenburg: Erlanders Boktryckeri Aktiebolag for the Humanistic Foundation of Sweden.
- Saake, Wilhelm [Guilherme]  
1958 Die Juruparilgende bei den Baniwa des rio Issana. *Proceedings of the 32d International Congress of Americanists*, 271-79. Copenhagen. 1956.  
1959 Indicação de um pajé entre os Baniwa e a cura do "Maracimbara." *Sociologia* 21(4):434-42. São Paulo.
- Sabaté, Luis  
1877 *Viaje de los padres misioneros del convento del Cuzco a las tribus salvajes de los Campas, Piros, Cunibos y Sipibos en el año de 1874*. Lima: Tipografía de "La Sociedad."
- Safford, William Edwin  
1916a Identity of Cohoba, the Narcotic Snuff of Ancient Haiti. *Journal of the Washington Academy of Science* 6(15):547-62.  
1916b Narcotic Plants and Stimulants of the Ancient Americans. In *Annual Report . . . of the Smithsonian Institution . . . 1916*, 387-424. Washington, D.C.: U.S. Government Printing Office. 1917.  
1924 The Isolation of Ancient America as Established by the Cultivated Plants and the Languages of Its Aborigines. *Proceedings of the 20th International Congress of Americanists* 1:167-71. Rio de Janeiro. 1922.  
1926 Our Heritage from the American Indians. In *Annual Report of the . . . Smithsonian Institution . . . 1926*, 405-10. Washington, D.C.: U.S. Government Printing Office. 1927.
- Saint-Cricq, Laurent de [pseud. Paul Marcoy]  
1853 Voyage du Pérou au Brésil par les fleuves Ucayali et Amazone. *Bulletin de la Société de Géographie* ser. 4, 6:273-95. Paris.  
1869 *Voyage à travers l'Amérique du sud, de l'Océan Pacifique à l'Océan Atlantique*. 2 vols. Paris: Librairie de L. Hachette.  
1875 *Travels in South America from the Pacific Ocean to the Atlantic Ocean*. 2 vols. London: Blackie & Son Paternoster.
- Salas, Julio C.  
1908 *Tierra-Firme (Venezuela y Colombia): estudios sobre etnología e historia*. Mérida, Venezuela.
- Salathé, Georges  
1932 Les indiens Karimé. *Revista del Instituto de Etnología de la Universidad Nacional de Tucumán* 2(2):297-316. Tucumán.
- Sánchez Labrador, José  
1910-17 *El Paraguay católico*. 3 vols. Buenos Aires: Imprenta de Coni Hermanos.
- San José, João de  
1847 Viagem e visita do Sertão em o Bispado do Gram-Pará em 1762 e 1763. *Jornal do Instituto Histórico e Geográfico* segunda edição 9(1):43-107, 17(2):91-227, 17(3):328-75, 17(3):476-527. Rio de Janeiro. 1869.
- Sauer, Carl Ortwin  
1950 Cultivated Plants of South and Central America. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 6 *Physical Anthropology*,

- Linguistics and Cultural Geography of South American Indians*, 487-543. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1966 *The Early Spanish Main*. Berkeley: University of California Press.
- 1969 *Agricultural Origins and Dispersals: The Domestication of Animals and Foodstuffs*. 2d ed. Cambridge, Mass.: First M.I.T. Press.
- Saville, M. H.
- 1924 Ancient Smoking-Pipes from Ecuador. In *Indian Notes* 1:63-69. New York: Museum of the American Indian, Heye Foundation.
- Schaden, Egon
- 1959 *A mitologia heróica de tribos indígenas do Brasil: ensaio etno-sociológico*. Rio de Janeiro: Ministério da Educação e Cultura, Serviço de Documentação. Departamento de Imprensa Nacional.
- 1962 *Aspectos fundamentais de cultura Guarani*. 2d ed. Col. Corpo e Alma do Brasil vol. 6. São Paulo: Difusão Européia do Livro.
- 1963 *Índios, Caboclos e Colonos*. Coleção de Revista de Antropologia, Universidade de São Paulo.
- Schievelbein, H.
- 1962 Nikotin, Rauchen und Organismus. (Nicotine, Smoking and the Organism.) *Beiträge zur Tabakforschung* 6:199-274. Hamburg: Wissenschaftliche Forschungsstelle im Verband der Cigaretten-Industrie.
- Schievelbein, H., U. Surberg, and E. Werle
- 1962 Erhöhung der Ausscheidung von 5-Hydroxyindoleessigsäure bei Rauchern. *Klinische Wochenschrift* 40(1):52-53.
- Schievelbein, H., and E. Werle
- 1962 Freisetzung von 5-Hydroxytryptamin durch Nicotin. *Psychopharmacologia* 3(1):35-43. Berlin.
- 1967 Mechanism of the Release of Amines by Nicotine. *Annals of the New York Academy of Sciences* 142(1):72-82.
- Schievelbein, H., E. Werle, and W. Jacoby
- 1961 Über die Freisetzung von 5-Hydroxytryptamin (Serotonin) aus Geweben durch Nikotin. *Naturwissenschaften* 48(18):602-03. Berlin.
- Schloesing, Th.
- 1847 Sur la nicotine et son dosage dans les tabacs en feuilles ou manufacturés. *Annales de Chimie et de Physique* ser. 3, 19:230-49. Paris.
- Schlözer, August Ludwig von, ed.
- 1775 *Briefwechsel meist statistischen Inhalts*. Göttingen: Johann Christian Dieterich.
- Schmid, H., and M. Serrano
- 1948 Untersuchungen über die Nikotinbildung des Tabaks. *Experientia* 4(8):311-12. Basel.
- Schmidt, Max
- 1902 Reiseskizzen aus Zentralbrasilien. *Globus* 82(2):29-31, 82(3):44-46, 82(6):95-98.
- 1905 *Indianerstudien in Zentralbrasilien: Erlebnisse und ethologische Ergebnisse einer Reise in den Jahren 1900 bis 1901*. Berlin: Dietrich Reimer (E. Vohsen).

- 1914 Die Paressi-Kabiši. Ethnologische Ergebnisse der Expedition zu den Quellen des Jauru und Juruena im Jahre 1910. *Baessler-Archiv* 4(4-5):167-250. Leipzig.
- 1938 Los Chiriguanos é Izozós. *Revista de la Sociedad Científica del Paraguay* 4(3):1-115. Asunción.
- 1939 Catálogo de la colección etnográfica del Muscu de Historia y Etnografía. *Revista de la Sociedad Científica del Paraguay* 4(5):49-62. Asunción.
- Schnedorf, J. G., and A. C. Ivy  
 1939 The Effect of Tobacco Smoking on the Alimentary Tract. *Journal of the American Medical Association* 112(10):898-903.
- Schomburgk, Moritz Richard  
 1947-48 *Reisen in Britisch-Guiana in den Jahren 1840-1844*. . . . 3 vols. Leipzig: J. J. Weber.  
 1922-23 *Richard Schomburgk's Travels in British Guiana, 1840-1844*. 2 vols. Translated and edited, with geographical and general indices, and route maps, by Walter E. Roth. Georgetown, British Guiana: "Daily Chronicle" Office.
- Schomburgk, Robert Hermann  
 1836 Report of an Expedition into the Interior of British Guayana in 1835-6. *Journal of the Royal Geographical Society* 6:224-84. London.  
 1840a Report of the Third Expedition into the Interior of Guayana, Comprising the Journey to the Sources of the Essequibo, to the Carumá Mountains, and to Fort San Joaquim on the rio Branco in 1837-8. *Journal of the Royal Geographical Society* 10:159-90. London. 1841.  
 1840b Journey from Fort San Joaquim on the rio Branco to Roraima, and thence by the rivers Parima and Merewari to Esmeralda on the Orinoco, in 1838-9. *Journal of the Royal Geographical Society* 10:191-247. London. 1841.  
 1841 *Reisen in Guiana und am Orinoko während der Jahre 1835-1839*. . . . Leipzig: Verlag von Georg Wigand.  
 1842 Excursion Up the Barima and Cuyuni Rivers in British Guiana, in 1841. *Journal of the Royal Geographical Society* 12:178-96. London.
- Schön Y., Miguel, Pedro Jam L., and José M. Cruxent  
 1953 Cultura material. In *La región de Perijá y sus habitantes*, 33-58. Sociedad de Ciencias Naturales La Salle. Maracaibo: Publicaciones de la Universidad del Zulia.
- Schrumpf-Picrion, Pierre  
 1927 *Tobacco and Physical Efficiency: A Digest of Clinical Data*. New York: Paul B. Hoeber, Inc.
- Schtscherbak, A.  
 1887 Experimentelle Physiologie. 3. Ueber den Einfluss des Nicotins und Tabakrauchens auf die Nervencentren. *Neurologisches Centralblatt* 6(3): 55. Leipzig.
- Schuller, Rudolf (Rodolfo, Rudolph) R.  
 1912 Zur Affinität der Tapúya-Indianer des Theatrum rerum naturalium Brasiliae. *Internationales Archiv für Ethnographie* 21:78-98.



## Schultes, Richard Evans

- 1945 El uso del tabaco entre los Huitotos. *Agricultura Tropical* 1(9):19-22. Bogotá.
- 1955 A New Narcotic Genus from the Amazon Slope of the Colombian Andes. *Botanical Museum Leaflets* 17(1):1-11. Cambridge: Harvard University. 1955-57.
- 1961 Lecture II. Native Narcotics of the New World. *Texas Journal of Pharmacy* 2:141-67.
- 1963 Botanical Sources of the New World Narcotics. *Psychodelic Review* 1(2):145-66. New York.
- 1967 The Botanical Origins of South American Snuffs. In *The Ethnopharmacologic Search for Psychoactive Drugs*, 291-306. Daniel H. Efron, Bo Holmstedt, and Nathan S. Kline, eds. Public Health Service Publications no. 1645. Washington, D.C.: U.S. Government Printing Office.
- 1972 Ilex Guayusa from 500 A.D. to the Present. *Etnologiska Studier* 32:115-38. Gothenburg.
- 1977 The Botanical and Chemical Distribution of Hallucinogens. In *Drugs, Rituals and Altered States of Consciousness*, 25-55. Brian M. Du Toit, ed. Rotterdam: A. A. Balkema.
- 1978 Plants and Plant Constituents as Mind-Altering Agents Throughout History. In *Handbook of Psychopharmacology*, 219-41. Leslie L. Iversen, Susan D. Iversen, and Solomon H. Snyder, eds. Vol. 11. New York: Plenum Press.
- 1980 Coca in the Northwest Amazon. *Botanical Museum Leaflets* 28(1):47-60. Cambridge: Harvard University. 1980-82.
- 1981 Einführung in die Botanik der wichtigsten psychotropen Pflanzen. In *Rausch und Realität: Drogen im Kulturvergleich*. Giesela Völger, ed. Vol. 1 of 2. Cologne: Rautenstrauch-Joest Museum für Völkerkunde. *Ethnologica* n.s. 9:28-41. Cologne.

## Schultes, Richard Evans, and Albert Hofmann

- 1979 *Plants of the Gods: Origins of Hallucinogenic Use*. New York: McGraw-Hill.

## Schultz, Harald

- 1953 A pesca tradicional do pirarucu entre os índios Karajá. *Revista do Museu Paulista* n.s. 7:249-55. São Paulo.

## Schultz, Harald, and Vilma Chiara

- 1971 Mais lendas Waura. *Journal de la Société des Américanistes* 60:105-35. Paris.

## Sebag, Lucien

- 1964 Compte rendu de mission chez les indiens Ayoré du Paraguay et de Bolivie. *L'Homme* 4(2):126-29. Paris.
- 1965 Le chamanisme Ayoréo. (Suite.) *L'Homme* 5(2):92-122. Paris.

## Seitz, Georg

- 1960 *Hinter dem grünen Vorhang: Fahrt zu den nackten Indianern an der Grenze Brasiliens*. Wiesbaden: F. A. Brockhaus.
- 1963 *People of the Rain-Forests*. Translated by Arnold J. Pomerans. London: Heinemann.

- Sekelj, Tibor  
1950 *Donde la civilización termina: vida de las tribus del Amazonas*. Buenos Aires: Editorial Albatros.
- Sepp, A.  
1768 Beschreibung der Reise A. Sepp . . . nach Paraguay . . . 1692. In *Geschichte von Paraguay und dem Missionswerke der Jesuiten in diesem Lande*. Aus dem Französischen des P. Franz Xavier de Charlevoir. Nürnberg: bey Gabriel Nicolaus Raspe.
- Serrano, Antonio  
1936 *Etnografía de la antigua provincia del Uruguay*. Paraná: Talleres Gráficos "Melchior."  
1947 *Los aborígenes argentinos: síntesis etnográfica*. Buenos Aires: Editorial Nova.
- Severino. See Severino de Santa Teresa, Father
- Severino de Santa Teresa, Father  
1959 *Los indios Catíos, los indios Cunas: ensayo etnográfico de dos razas de indios de la América Española*. Bogotá: Librería Colombiana.
- Shmuk, A. A., and A. Borozdina  
1941 Alkaloids of Various Plant Species within the Genus Nicotiana. *Comptes Rendus (Doklady) de L'Académie des Sciences de l'URSS* 32:62-65. Moscow.
- Siegel, R. K., P. R. Collings, and J. L. Díaz  
1977 On the Use of *Tagetes lucida* and *Nicotiana rustica* as a Huichol Smoking Mixture: The Aztec 'Yahutli' with Suggestive Hallucinogenic Effects. *Economic Botany* 31(1):16-23.
- Siemiradzki, J. von  
1898 Beiträge zur Ethnographie der südamerikanischen Indianer. *Mitteilungen der Anthropologischen Gesellschaft in Wien* 28:127-70. Vienna.
- Sigmond, G. G.  
1838 On the Application of the Expressed Juice and Infusion of Tobacco to the Skin and Cautions to Be Observed in Their Use. *American Journal of the Medical Sciences* 43:194-96. [Thorofare, N.J., etc.]
- Silva, Alberto da Costa e, ed.  
1957 *Antologia de lendas do índio brasileiro*. Rio de Janeiro: Instituto Nacional do Livro.
- Silva, P. Alcionílio Brüzzi Alves da  
1961 *Discoteca etno-lingüístico-musical das tribos dos rios Uaupés, Içana e Cauaburi*. Ethnographical Record Collection of the Tribes of the Uaupés, Içana, and Cauaburi Rivers. Publicações 7. São Paulo: Centro de Pesquisas de Iauareté.  
1962 *A civilização indígena de Uaupés*. Ser. 1. São Paulo: Centro de Pesquisas de Iauareté.  
1966 Estrutura da tribo Tukano. *Anthropos* 61:191-203.
- Silvette, H., H. B. Haag, and P. S. Larson  
1960 Tobacco Amyblopia. *American Journal of Ophthalmology* ser. 3, 50(1):71-100.

- Silvette, H., E. C. Hoff, P. S. Larson, and H. B. Haag  
1962 The Actions of Nicotine on Central Nervous System Functions. *Pharmacological Reviews* 14(1):137-73. Baltimore.
- Simon, Arnulfo Prestan  
1975 *El uso de la chicha y la sociedad Kuna*. Ediciones Especiales no. 72. Mexico City: Instituto Indigenista Interamericano.
- Simón, Pedro  
1882-92 *Noticias historiales de las conquistas de Tierra Firme en las Indias Occidentales*. 5 vols. Bogotá: M. Rivas.
- Simpson, George Gaylord  
MS The Kamarakoto Indians: A Carib Tribe of Venezuelan Guayana. 456. 1939.  
1940 Los indios Kamarakotos: tribu de la Guayana Venezolana. Translated by J. Villanueva-Uralde. *Revista del Ministerio de Fomento* no. 22-25. Caracas.
- Simson, Alfred  
1880 Notes on the Jívaros and Canelos Indians. *Journal of the Anthropological Institute of Great Britain and Ireland* 9:385-92. London.
- Skinner, Joseph, comp. and trans.  
1805 *Present State of Peru. . . Indians of the Pampa del Sacramento and Andes*. London: R. Phillips.
- Smet, Peter A. G. M. de  
1983 A Multidisciplinary Overview of Intoxicating Enema Rituals in the Western Hemisphere. *Journal of Ethnopharmacology* 9(2-3):129-66. Ireland.  
1985 *Ritual Enemas and Snuffs in the Americas*. Latin American Studies vol. 33. Center for Latin American Research and Documentation. Amsterdam: Dordrecht.
- Smet, Peter A. G. M. de, and Nicholas M. Hellmuth  
1986 A Multidisciplinary Approach to Ritual Enema Scenes on Ancient Maya Pottery. *Journal of Ethnopharmacology* 16(2-3):213-62. Limerick, Ireland.
- Smith, Harold, and Claude R. Smith  
1942 Alkaloids in Certain Species and Interspecific Hybrids of Nicotiana. *Journal of Agricultural Research* 65(7):347-59. Washington, D.C.
- Smole, William J.  
1976 *The Yanoama Indians: A Cultural Geography*. Austin and London: University of Texas Press.
- Sneathlage, Emil Heinrich  
1921 Die Indianerstämme am mittleren Xingú. Im besonderen die Chipaya und Curuaya. *Zeitschrift für Ethnologie* 52-53:395-427. 1920-21.  
1927 Meine Reise durch Nordostbrasilien. *Journal für Ornithologie* 75(3):453-84. Berlin.  
1928 Der Tanz der Kröte Cururú. *Erdball* 2:384.  
1930 Unter nordostbrasilianischen Indianern. *Zeitschrift für Ethnologie* 62:111-205. 1931.  
1935 Nachrichten über die Pauserna-Guarayú, die Siriono am rio Baures und

- die S. Simonianes in der Nähe der Serra S. Simon. *Zeitschrift für Ethnologie* 67(4-6):278-93. 1936.
- 1937 *Atikoy: meine Erlebnisse bei den Indianern des Guaporé*. Berlin: Klinkhardt & Biermann Verlag.
- Soares de Sousa, Gabriel
- 1974 *Notícia do Brasil*. Brasiliensa Documenta vol. 7. São Paulo: Empresa Gráfica da Revista dos Tribunais.
- Sociedad la Salle. See Sociedad de Ciencias Naturales La Salle
- Sociedad de Ciencias Naturales La Salle
- 1953 *La región de Perijá y sus habitantes*. Maracaibo: Publicaciones de la Universidad del Zulia.
- Somervail, A.
- 1839 On the Use of Tobacco in Certain Cases. *American Journal of the Medical Sciences* 23(46):518.
- Sotomayor, José Antonio
- 1908 Relación de los infideles del Ucayali, el Marañon i el Amazonas. 1899. In *Colección de leyes, decretos, resoluciones i otros documentos oficiales referentes al Departamento de Loreto*, 353-60. Carlos Larrabure i Correa, ed. Vol. 14. Lima: Oficina Tipográfica de "La Opinión Nacional."
- Speiser, Felix
- 1926 *Im Dúster des brasilianischen Urwalds*. Stuttgart: Strecker und Schröder.
- Spinden, Herbert Joseph
- 1950 *Tobacco Is American: The Story of Tobacco before the Coming of the White Man*. Arents Tobacco Collection. Publication no. 2. New York: New York Public Library.
- 1967 Power Animals in American Indian Art. In *Indian Tribes of Aboriginal America: Selected Papers*. 29th International Congress of Americanists. New York. 1949. Sol Tax, ed. New York: Cooper Square.
- Spix, Johann Baptist von, and Carl Friederich Philipp von Martius
- 1823-31 *Reise in Brasilien, auf Befehl Sr. Majestät Maximilian Joseph I. Königs von Baiern in den Jahren 1817 bis 1820 gemacht und beschrieben*. 3 vols. Munich: M. Lindauer. Vol. 2-3 bearbeitet und herausgegeben von Dr. C. F. P. von Martius. Vol. 2 has imprint München: I. J. Lentner. 1828. Vol. 3 has imprint München: bei dem Verfasser. Leipzig: in Comm. bei Friedr. Fleischer. 1831.
- 1966 *Reise in Brasilien in den Jahren 1817-1820*. Unveränderter Neudruck des 1823-31 in München in 3 Textbänder und 1 Tafelband erschienenen Werkes. Stuttgart: F. A. Brockhaus Komm. -Gesch. GMBH., Abt. Antiquarium. (Reprint.)
- Staden, Hans
- 1557 *Wahrhaftige Historia und Beschreibung eyner Landschafft der Wilden Nacketen Grimmigen Menschfresser Leuthen in der newen Welt America Gelegen vor vnd nach Christi geburt im Land zu Hessen vmbekant bisz vff dise zwey neststvergangene Jar Da sie Hans Staden von Homberg ausz Hessen durch sein eygne Erfahrung erkant vnd ytz durch den truck an tag gibt. . .* Marburg: Andres Colben.

- 1928 *Hans Staden, the True History of His Captivity, 1557*. Translated and edited by Malcolm Letts. Translations of the author's *Wahrhaftig Historia*. . . . Marburg 1557. London: George Routledge & Sons, Ltd.
- Stachelin, Felix, ed.  
1914 *Die Mission der Brüdergemeinde in Suriname und Berbice im achtzehnten Jahrhundert*. . . . 3 vols. in 1. Herrnhut: Verlag des Vereins für Brüdergeschichte.
- Stahl, Eurico G.  
1928 Etnografía: Cunibos del Ucayali. *Boletín de la Sociedad Geográfica de Lima* 45(2):139-66.
- Stahl, Günther  
1925 Der Tabak im Leben südamerikanischer Völker. *Zeitschrift für Ethnologie* 57(1-2):81-152. 1926.  
1931 Zur Frage des Ursprungs des Tabakrauchens. *Anthropos* 26(3-4):569-82.
- Steere, Joseph Beal  
1901 Narrative of a Visit to Indian Tribes of the Purus-River, Brazil. *U.S. National Museum Annual Report*, 359-93. Washington, D.C. 1903.
- Steinen, Karl von den  
1886 *Durch Central-Brasilien. Expedition zur Erforschung des Schingú im Jahre 1884*. Leipzig: F. A. Brockhaus.  
1892 *Die Bakairi-Sprache*. . . . Leipzig: K. F. Koehler's Antiquarium.  
1894 *Unter den Naturvölkern Central-Brasiliens. Reiseschilderung und Ergebnisse der zweiten Schingú-Expedition, 1887-1888*. Berlin: Dietrich Reimer.  
1897 *Unter den Naturvölkern Central-Brasiliens. Reiseschilderung und Ergebnisse der zweiten Schingú-Expedition, 1887-1888*. 2d ed. Volksausgabe. Berlin: Dietrich Reimer.  
1901 Der Paradiesgarten als Schnitzmotiv der Payaguá-Indianer. *Ethnologisches Notizblatt* 2(2):1-6.
- Steinen, Karl von den, ed.  
1904 *Diccionario sipibo. Castellano-deutsch-sipibo. Apuntes de gramática. Sipibocastellano*. Abdruck der Handschrift eines Franziskaners, mit Beiträgen zur Kenntnis der pano-Stämme am Ucayali. Berlin: D. Reimer (E. Vohsen).
- Stevenson, Homer M.  
1933 Acute Nicotine Poisoning as Noted in the Manufacture and Use of Nicotine Insecticides. *California and Western Medicine* 38(2):92-95.
- Stevenson, R. Scott  
1947 The Throat in Relation to Singing and Public Speaking. *Practitioner* 159(954):452-58. London.
- Steward, Julian H.  
1948a The Circum-Caribbean Tribes: An Introduction. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 1-41. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
1948b Western Tucanoan Tribes. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 737-48. Smith-

- sonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948c The Witotoan Tribes. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 749–62. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1949 South American Cultures: An Interpretative Summary. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 5 *The Comparative Ethnology of South American Indians*, 669–772. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Steward, Julian H., and Alfred Métraux
- 1948a Tribes of the Peruvian and Ecuadorian Montaña. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 535–656. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948b The Peban Tribes. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 727–36. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Stewart, Grace G.
- 1967 A History of the Medicinal Use of Tobacco. *Medical History* 11:228–68. London.
- Stewart, G. N., and J. M. Rogoff
- 1919 The Action of Drugs on the Output of Epinephrin from the Adrenals. III. Nicotine. *Journal of Pharmacology and Experimental Therapeutics* 13:183–241. Baltimore.
- Stirling, Matthew William
- 1933 Jivaro Shamanism. *Proceedings of the American Philosophical Society* 72(3): 37–145. Philadelphia.
- 1938 *Historical and Ethnographical Material on the Jivaro Indians*. Bureau of American Ethnology. Bulletin 117. Washington, D.C.: Smithsonian Institution.
- Stout, David B.
- 1948 The Cuna. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 4 *The Circum-Caribbean Tribes*, 257–68. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- Stradelli, Ermanno
- 1890 L'Uaupés e gli Uaupé. *Bollettino della Società Geografica Italiana* ser. 3, 3(5):425–53.
- Swan, Michael
- 1958 *The Marches of El Dorado: British Guiana, Brazil, Venezuela*. London: Jonathan Cape.
- Tastevin, Constant
- 1926 Le haut Tarauacá. *Géographie* 45(1–2):34–54, 158–75. Paris.
- Taunay, Affonso de E. See Escragnolle Taunay, Affonso de

- Tavera-Acosta, Bartolomé  
 1907 *En el Sur (Dialectos indígenas de Venezuela)*. Ciudad-Bolívar, Venezuela: Impr. de B. J. Castro.  
 1954 *Rionegro. Reseña etnográfica, histórica y geográfica del Territorio Amazonas*. 3d ed. Caracas. [N. p.]
- Teixeira da Fonseca Vasconcelos, Vicente de Paulo  
 1945 *Expedição ao rio Ronuro*. Rio de Janeiro: Imprensa Nacional.
- Teschauer, P. Carl [Carlos]  
 1906 Mythen und alte Volkssagen aus Brasilien. *Anthropos* 1:24-34, 1:185-93, 1:731-44. Vienna.  
 1914 Die Caingang oder Coroados-Indianer im Brasilianischen Staate Rio Grande do Sul. *Anthropos* 9(1-2):16-35. Vienna.
- Teschauer, Carlos, and Theodoro Fernandes Sampaio  
 1955 *Os naturalistas viajantes dos séculos XVIII e XIX, e a etnografia indígena*. Coleção de Estudos Brasileiros, serie cruzeiro, vol. 8. Salvador and Bahia: Livraria Progresso Editora.
- Tessmann, Günter  
 1928 *Menschen ohne Gott: Ein Besuch bei den Indianern des Ucayali*. Harvey-Bassler-Stiftung. Veröffentlichung. Völkerkunde no. 1. Stuttgart: Strecker und Schröder.  
 1930 *Die Indianer nordost-Perus: Grundlegende Forschungen für eine systematische Kulturkunde*. Harvey-Bassler-Stiftung. Veröffentlichung. Völkerkunde no. 2. Hamburg: Friederichen, de Gruyter.
- Thevet, André  
 [1557] *Les singularitez de la France Antarctique, autrement nommée Amerique: & de plusieurs terres & isles decouvertes de nostre temps*. Paris: Chez les Heritiers de Maurice de la Porte.
- Titiev, Mischa  
 1951 *Araucanian Culture in Transition*. Occasional Contributions from the Museum of Anthropology of the University of Michigan. Ann Arbor: University of Michigan Press.
- Tolksdorf, Fritz, and Werner Lang  
 1956 Ethnographische Beobachtungen in Zentral-Brasilien. *Zeitschrift für Ethnologie* 81(2):270-86.
- Torre López, Fernando  
 1969 *Fenomenología religiosa de la tribu Anti o Campa: Amazonia peruana*. Sondeos no. 31. Cuernavaca: Centro Intercultural de Documentación.
- Torres de Araúz, Reina  
 1971 Datos etnohistóricos Cunas, según documentos (1699-1779) de la Colonia Escocesa en Darien. *Actas del II Simposium Nacional de Antropología, Arqueología y Etnohistoria de Panamá*, 93-111. Panama City.
- Torres de Ianello, Reina  
 1957 *La mujer Cuna de Panamá*. Mexico City: Ediciones Especiales del Instituto Indigenista Interamericano.
- Torres Laborde, Alfonso  
 1969 *Mito y cultura entre los Barasana: un grupo indígena Tukano del Vaupés*. Bogotá: Universidad de los Andes, Departamento de Antropología.

- Traquair, H. M.  
 1927 Incidence of Tobacco Amblyopia in Edinburgh and District. *Lancet* 2:603-04. London.  
 1931 Toxic Amblyopia. In Amblyopia, Including Retrobulbar Neuritis. *Transactions of the Ophthalmological Society of the United Kingdom* 50:372-84.
- Treitel, Th.  
 1879 Ueber den Werth der Gesichtsfeldmessung mit Pigmenten für die Auffassung der Krankheiten des nervösen Sehapparates. *Albrecht von Graefe's Archiv fuer Ophthalmologie, vereinigt mit Archiv fuer Augenheilkunde* 25(2):29-130. Berlin.
- Tromel, R. G., R. T. Davis, and C. D. Hendley  
 1951 Dark Adaptation as a Function of Caffeine and Nicotine Administration. *Proceedings, South Dakota Academy of Sciences* 30:79-84.
- Tschopik, Harry, Jr.  
 1946 The Aymara. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 2 *The Andean Civilizations*, 501-73. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.  
 1951 The Aymara of Chucuito, Peru. *Anthropological Papers of the American Museum of Natural History* 44(2):133-308. New York.
- Tso, T. C., and R. N. Jeffrey  
 1956 Studies on Tobacco Alkaloids. I. Changes in Nicotine and Nicotinic Content in Nicotiana. *Plant Physiology* 31:433-40. Lancaster.
- Turner, D. M., A. K. Armitage, R. H. Briant, and C. T. Dollery  
 1975 Metabolism of Nicotine by the Isolated Perfused Dog Lung. *Xenobiotica* 5(9):539-51. London.
- Turner, M. A.  
 1762 A letter from Mr. Mathew Turner, Surgeon, to Dr. John Fothergill, on the Cure of the Ascarides by Tobacco Fumes in form of Clyster. *Medical Observations and Inquiries* 2:307-10. London.
- Turrado Moreno, Angel  
 1945 *Etnografía de los indios Guaraúnos*. Tercera Conferencia Interamericana de Agricultura. Cuadernos Verdes no. 15. Caracas: Lit. y Tip. Vargas.  
 1950 *Como son los Guajiros*. Caracas: Tipografía "El Compas."
- Uhle, Max  
 1898 A Snuffing-Tube from Tiahuanaco. *Bulletin of the Free Museum of Science and Art* 1(4):158-77. University of Pennsylvania.  
 1915 Los tubos y tabletas de rapé en Chile. *Revista Chilena de Historia y Geografía* 16:114-36. Santiago.
- Uthoff, W.  
 1886-87 Untersuchungen über den Einfluss des chronischen Alkoholismus auf das menschliche Schorgan. *Albrecht von Graefe's Archiv für Ophthalmologie* part 1, 32(4):95-188, part 2, 33(1):257-318. Berlin. Part 1, 1886. Part 2, 1887.



- 1911 Beziehungen der Allgemeinleiden zu Veränderungen des Sehorganes. Part 2. Nikotinvergiftung. In *Handbuch der gesamten Augenheilkunde*, 11:25-45. Theodor Graefe-Saemisch, ed. Leipzig: W. Engelmann.
- Underhill, Ruth Murray  
1965 *Red Man's Religion: Beliefs and Practices of the Indians North of Mexico*. Chicago: University of Chicago Press.
- Up de Graff, Fritz W.  
1924 *Bei den Kopffägern des Amazonas: Sieben Jahre Forschung und Abenteuer*. Leipzig: F. A. Brockhaus.
- Uscátegui Mendoza, Néstor  
1956 El tabaco entre las tribus indígenas de Colombia. *Revista Colombiana de Antropología* 5:11-52. Bogotá.  
1959 The Present Distribution of Narcotics and Stimulants Amongst the Indian Tribes of Colombia. *Botanical Museum Leaflets* 18(6):273-304. Cambridge, Mass.: Harvard University.  
1961 Distribución actual de las plantas narcóticas y estimulantes usadas por las tribus indígenas de Colombia. *Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales* 11(43):215-28. Bogotá.
- Valencia S., Manuel, and Sra. Ronald Metzger  
1974 Texto Carapana: Jünia añupu: La historia de Jünia. *Folclor Indígena de Colombia* 1(2):233-50.
- Valero, Helena  
1969 *Yanoáma: The Story of a Woman Abducted by Brazilian Indians, as Told to Ettore Biocca*. Translated by Dennis Rhodes. London: Allen & Unwin.
- Valzelli, Luigi  
1981 Psychopharmacology of Aggression: An Overview. *International Pharmacopsychiatry* 16(1):39-48. Bascl.
- Vandiera, Domenico, of Siena  
1729 *Erbauliche und angenehme Geschichten derer Chiquitos, und anderer von denen Patribus der Gesellschaft Jesu in Paraquaria neu-bekehrten Völcker; samt einem ausführlichen Bericht von dem Amazonen-Strom: wie auch einigen Nachrichten von der Landschaft Guiana, in der neuen Welt*. Christian Edschlager, translator. First section is translation of: *Relación historial de las misiones de los Indios, que llaman Chiquitos*. . . . Madrid. 1726. Authorship according to Backer-Sommervogel . . . Juan Patricio Fernández, given as author on the title page of the edition in Spanish in 1726, was merely a contributor. Second and third sections have separate half-title pages each: *Bericht von dem Strom derer Amazonen*. . . . heraus gegeben von P. Christophoro de Acunna . . . Translation of his *Relacion de la riviere des Amazones*. Paris. 1682. *Reise-Beschreibung zweyer Patrum aus der Gesellschaft Jesu durch die Landschaft Guiana in America* verzeichnet von P. Joanne Grillet . . . Translation of *Journal du voyage qu'ont fait les pères Jean Grillet & François Bechamel*. . . . and *Relation de la Guiane*. . . . In the above mentioned *Relation de la riviere des Amazones*. Vienna: Paul Straub.
- Van Heuvel, Jacob Adrien  
1844 *El Dorado* . . . New York: J. Winchester, New World Press.

- Vareschi, Volkmar  
1959 *Geschichtslose Ufer: auf den Spuren Humboldts am Orinoko*. Munich: F. Bruckmann.
- Vauquelin, M.  
1809 Extrait d'un mémoire: sur l'analyse de différens tabacs préparés. *Annales du Muséum d'Histoire Naturelle* 14:21-24. Paris.
- Venturello, B.  
1947 Con los indios Motilones de Colombia. *Revista Geográfica Americana* 27(164):267-73. Buenos Aires.
- Vila, Marco-Aurelio  
1972 La carta del 18 de Julio de 1500 de Américo Vesputio. *Boletín Histórico* 28: 5-50. Caracas.
- Villamañán, Adolfo de  
1975 Cosmovisión y religiosidad de los Barí. *Antropológica* 42:3-27. Caracas.
- Villarejo, Avencio P.  
1943 *Así es la selva: estudio geográfico y etnográfico de la provincia de Bajo Amazonas*. Lima: Compañía de Impresiones y Publicidad.  
1959 *La selva y el hombre: estudio antropocosmológico del aborigen amazónico*. Lima: Editorial Ausonia.
- Vinalesa, José de  
1952 Indios Arhuacos de la Sierra Nevada de Santa Marta. *Revista del Instituto Etnológico Nacional*. 5(1). Bogotá.
- Vinci, Alfonso  
1945 *Red Cloth and Green Forest*. Translated by James Cadell. London: Hutchinson.  
1956 *Samatari (Orinoco-Amazzoni)*. All'Insegna dell'Orizzonte vol. 12. Bari: "Leonardo da Vinci" Editrice.
- Vinhaes, Ernesto  
1941 *Aventuras de um repórter na Amazônia*. Pôrto Alegre: Edição da Livraria do Globo.
- Volle, Robert L., and George B. Koelle  
1975 Ganglionic Stimulating and Blocking Agents. In *The Pharmacological Basis of Therapeutics*, 565-74. Louis S. Goodman and Alfred Gilman, eds. 5th ed. New York: Macmillan.
- Volney, Jones H.  
1941 The Nature and Status of Ethnobotany. *Chronica Botanica* 6(6):219-21. Waltham, Mass.
- Wachholder, Kurt  
1948 Zur hungerstillenden Wirkung des Rauchens. Rauchen und Blutzucker. *Naunyn-Schmiedesbergs Archiv für Experimentelle Pathologie und Pharmakologie* 205(1):115-28. Berlin.
- Wafer, Lionel  
[1699] *A New Voyage & Description of the Isthmus of America . . . with Wafer's Secret Report (1698) and Davis's Expedition to the Gold Mines (1704)*. Edited, with introduction, notes, and appendices, by L. E. Elliot Joyce. Hakluyt Society, 2d series, no. 73. Oxford: Printed for the Hakluyt Society. Originally published 1699.

- 1960 *Viajes de Lionel Wafer al istmo del Darién. (Cuatro meses entre los indios).* Traducidos y anotados por Vicente Restrepo. Publicaciones de la Revista "Lotería" no. 14. Panama City.
- Wagley, Charles
- 1940 World View of the Tapirape Indians. *Journal of American Folk-Lore* 53(210):252-60.
- 1942 O estado de êxtase do pagé Tupí. *Sociologia* 4(3):285-92. São Paulo.
- 1943 Xamanismo Tapirapé—Tapirapé Shamanism. *Boletim do Museu Nacional* n.s. Antropologia no. 3. Rio de Janeiro.
- 1946 Notas sôbre aculturação entre os Guajajara. *Boletim do Museu Nacional* n.s. Antropologia no. 2. Rio de Janeiro.
- 1951 The Indian Heritage of Brazil. In *Brazil, Portrait of Half a Continent*. Thomas Lynn Smith and Alexander Marchant, eds. New York: Dryden Press.
- 1977 *Welcome of Tears: The Tapirapé Indians of Central Brazil*. New York: Oxford University Press.
- Wagley, Charles, and Eduardo Galvão
- 1948a The Tenetehara. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 137-48. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1948b The Tapirapé. In *Handbook of South American Indians*. Julian H. Steward, ed. Vol. 3 *The Tropical Forest Tribes*, 167-78. Smithsonian Institution. Bureau of American Ethnology. Bulletin 143. Washington, D.C.: U.S. Government Printing Office.
- 1949 *The Tenetehara Indians of Brazil, a Culture in Transition*. New York: Columbia University Press.
- 1961 *Os índios Tenetehara: uma cultura em transição*. Rio de Janeiro: Ministério da Educação e Cultura.
- Waisbard, Simone, and Roger Waisbard
- 1958-59 Les indiens Shamas de l'Ucayali et du Tamaya. *L'Ethnographie* n.s. 53:19-75. Paris. 1959.
- Waldseemüller, Martin
- [1507] *The Cosmographiae Introductio of Martin Waldseemüller* in facsimile, followed by the *Four Voyages of Amerigo Vespucci*, with their translation into English; to which are added Waldseemüller's *Two World Maps of 1507*. Joseph Fischer and Franz von Wieser, introduction. Charles George Hebermann, ed. New York: United States Catholic Historical Society. A reproduction of the so-called *edito princeps* published at St. Dié. 1507.
- Walker, Alexander
- 1822 *Colombia: Being a Geographical, Statistical, Agricultural, Commercial, and Political Account of that Country*. London: Baldwin, Cradock, and Joy.
- Walker, J. M.
- 1953 Physiological Effects of Smoking. *Proceedings of the Nutrition Society* 12:157-60. London.
- Wallace, Alfred Russel
- [1889] *A Narrative of Travels on the Amazon and Río Negro, with an Account of the*

- 1972 *Climate, Geology, and Natural History of the Amazon Valley*. 2d ed. London: Ward, Lock. New York: Dover. Reprint of the 1889 edition.
- Walter, Heinz  
1956 *Der Jaguar in der Vorstellungswelt der südamerikanischen Naturvölker*. Ph.D. dissertation. University of Hamburg.
- Wassén, S. Henry  
1964 *Some General Viewpoints in the Study of Native Drugs Especially from the West Indies and South America*. *Ethnos* 29(1-2):97-120. Stockholm.  
1965 *The Use of Some Specific Kinds of South American Indian Snuff and Related Paraphernalia*. *Etnologiska Studier* vol. 28. Gothenburg: Göteborgs Etnografiska Museum.  
1967 *Anthropological Survey of the Use of South American Snuffs*. In *Ethnopharmacologic Search for Psychoactive Drugs*, 233-89. Daniel H. Efron, Bo Holmstedt, and Nathan S. Kline, eds. Public Health Service Publication no. 1645. Washington, D.C.: U.S. Government Printing Office.  
1972 *A Medicine-Man's Implements and Plants in a Tiahuanacoid Tomb in Highland Bolivia*. In *A Medicine-Man's Implements and Plants in a Tiahuanacoid Tomb in Highland Bolivia*, 8-114. S. Henry Wassén and Contributors. *Etnologiska Studier* vol. 38. Gothenburg: Göteborgs Etnografiska Museum.
- Wassén, S. Henry, and Bo Holmstedt  
1963 *The Use of Paricá, an Ethnological and Pharmacological Review*. *Ethnos* 1:5-45. Stockholm.
- Watson, James Bennett  
1952 *Cayua Culture Change: A Study in Acculturation and Methodology*. American Anthropological Association, Memoirs no. 73. Menasha, Wis.
- Watson, Pamela  
1983 *The Precious Foliage: A Study of the Aboriginal Psycho-active Drug Pituri*. Sydney: University of Sydney Press.
- Watts, Daniel T.  
1960 *The Effect of Nicotine and Smoking on the Secretion of Epinephrine*. *Annals of the New York Academy of Sciences* 90(1):74-80. 1960-61.
- Wavrin, Robert, Marquis de  
1926 *Les derniers indiens primitifs du bassin du Paraguay*. Paris: Librairie Larose.  
1932 *Folk-Lore du Haut-Amazone*. *Journal de la Société des Américanistes* n.s. 24(1):121-46. Paris.  
1937 *Mœurs et coutumes des indiens sauvages de l'Amérique du Sud*. Paris: Payot.  
1948 *Les indiens sauvages de l'Amérique du Sud, vie sociale*. Paris: Payot.  
1953 *Chez les indiens de Colombie*. Paris: Librairie Plon.
- Wegner, Richard Nikolaus  
1934 *Indianer-Rassen und vergangene Kulturen: Betrachtungen zur Volksentwicklung auf einer Forschungsreise durch Süd- und Mittelamerika*. Stuttgart: Ferdinand Enke.
- Weiss, Gerald  
1969 *The Cosmology of the Campa Indians of Eastern Peru*. Ph.D. dissertation. University of Michigan.

- 1975 Campa Cosmology: The World of a Forest Tribe in South America. *Anthropological Papers of the American Museum of Natural History* 52(5): 217-588. New York. 1973-75.
- Weizenecker, R., and W. B. Deal  
1970 Tobacco Cropper's Sickness. *Journal of the Florida Medical Association* 57(12):13-14. Jacksonville.
- Wenusch, Adolph  
1942 Über die absoluten Mengen des beim Rauchen aufgenommenen Nikotins. *Chemiker-Zeitung* 66:254-55. Cöthen. (Also in *Forschung und Fortschritte* 18:77-78. Berlin.)
- Werle, Eugen, and Helmut Schievelbein  
1966 Zur Pharmakologie des Nikotins. *Monatsschrift* 20(7):290-96. Stuttgart.
- Wertheim, G.  
1851 Pharmakologische Studien über die Alkaloide: Nikotin, Coniin, Atropin und Daturin. *Zeitschrift der K. K. Gesellschaft für Ärzte zu Wien* 7:52-71. Vienna.
- West, George  
1934 Tobacco, Pipes and Smoking Customs of the American Indians. *Bulletin of the Museum of the City of Milwaukee*. Vol. 17, parts 1 and 2.
- Weyer, Edward Moffat  
1955 *Jungle Quest*. New York: Harper and Brothers.  
1959 *Primitive Peoples Today*. New York: Doubleday.
- Whiffen, Thomas W.  
1913 A Short Account of the Indians of the Issá-Japurá District (South America). *Folk-Lore* 24:41-62. London.  
1915 *The North-West Amazons: Notes of Some Months Spent among Cannibal Tribes*. London: Constable.
- Whitten, Norman  
1976 *Sacha Runa: Ethnicity and Adaptation of Ecuadorian Jungle Quichua*. Urbana: University of Illinois Press.
- Wied-Neuwied, Maximilian Alexander Philipp, Prinz von  
1820-21 *Reise nach Brasilien in den Jahren 1815 bis 1817*. 2 vols. Frankfurt am Main: Heinrich Ludwig Brönnner. Vol. 1, 1820; vol. 2, 1821.
- Wiener, Charles  
1880 *Pérou et Bolivie*. . . . Paris: Hachette.
- Wiener, Leo  
1920-22 *Africa and the Discovery of America*. 3 vols. Vol. 1, 1920. Vol. 2, 1922. Philadelphia: Innes & Sons.
- Wilbert, Johannes  
1960 Zur Kenntnis der Parirí. *Archiv für Völkerkunde* 15:80-153. Vienna.  
1963 *Indios de la región Orinoco-Ventuari*. Monograph 8. Caracas: Fundación La Salle de Ciencias Naturales.  
1972a Tobacco and Shamanistic Ecstasy among the Warao Indians of Venezuela. In *Flesh of the Gods: The Ritual Use of Hallucinogens*, 55-83. Peter T. Furst, ed. New York: Praeger.

- 1972*b* *Survivors of Eldorado: Four Indian Cultures of South America*. New York: Praeger.
- 1974*a* The Calabash of the Ruffled Feathers. *Artscanada* 4:90-93. Thirteenth anniversary issue Dec. 1973/Jan. 1974.
- 1974*b* *Yupa Folktales*. Latin American Studies vol. 24. Los Angeles: Latin American Center, University of California.
- 1975*a* Eschatology in a Participatory Universe: Destinies of the Soul among the Warao Indians of Venezuela. In *Death and the Afterlife in Pre-Columbian America*, 163-89. Elizabeth P. Benson, ed. Washington, D.C.: Dumbarton Oaks Research Library and Collections, Trustees for Harvard University.
- 1975*b* Magico-Religious Use of Tobacco among South American Indians. In *Cannabis and Culture*, 439-61. Vera Rubin, ed. The Hague and Paris: Mouton. (Distributed in the United States and Canada by Aldine, Chicago.)
- 1976 Metafísica del tabaco entre los indios de Suramérica. Translated by R. Acuña. *Montalbán* 5:181-235. Caracas.
- 1979 Gaukler-Schamanen der Warao. In *Amerikanistische Studien: Estudios Americanistas*, 294-99. Roswith Hartmann and Udo Oberem, eds. Collectanea Instituti Anthropos vol. 21. St. Augustin: Haus Völker und Kulturen, Anthropos-Institut.
- 1980 Genesis and Demography of a Warao Subtribe: The Winikina. In *Demographic and Biological Studies of the Warao Indians*, 13-47. Johannes Wilbert and Miguel Layrisse, eds. Latin American Studies vol. 45. Los Angeles: Latin American Center, University of California.
- 1981*a* Warao Cosmology and Yekuana Roundhouse Symbolism. *Journal of Latin American Lore* 7(1):37-72.
- 1981*b* The Warao Lords of Rain. In *The Shape of the Past: Studies in Honor of Franklin D. Murphy*, 127-45. Giorgio Buccellati and Charles Speroni, eds. Los Angeles: Institute of Archaeology and Office of the Chancellor, University of California.
- 1983 Los Añú (Paraujano). In *Los aborígenes de Venezuela*. Walter Coppens, ed. Vol. 2 *Etnología contemporánea 1*. Roberto Lizarralde y Haydée Seijas, eds. Monograph 29. Caracas: Fundación La Salle de Ciencias Naturales.
- 1985 The House of the Swallow-Tailed Kite: Warao Myth and the Art of Thinking in Images. In *Animal Myths and Metaphors in South America*, 145-82. Gary Urton, ed. Salt Lake City: University of Utah Press.
- Wilbert, Johannes, ed.  
1970 *Folk Literature of the Warao Indians: Narrative Material and Motif Content*. Latin American Studies vol. 15. Los Angeles: Latin American Center, University of California.
- Wilbert, Johannes, and Miguel Layrisse, eds.  
1980 *Demographic and Biological Studies of the Warao Indians*. Latin American Studies vol. 45. Los Angeles: Latin American Center, University of California.

- Wilmer, W. H., and C. Behrens  
1919 Effects of Tobacco on the Eye. *Air Service Medical Division*, 291-93. Washington, D.C.: U.S. Government Printing Office.
- Wissler, Clark  
1940 *Indians of the United States: Four Centuries of Their History and Culture*. New York: Doubleday, Doran.
- Wolff, William, Mariana A. Hawkins, and W. E. Giles.  
1949 Nicotine in Blood and in Relation to Smoking. *Journal of Pharmacology and Experimental Therapeutics* 95(2):145-48. Baltimore.
- Wollaston, A. F. R.  
1925 The Sierra Nevada of Santa Marta, Colombia. *Geographical Journal* 66(2):97-111. London.
- Woodroffe, Joseph Froude  
1914 *The Upper Reaches of the Amazon*. London: Methuen.
- Yde, Jens  
1965 *Material Culture of the Waiwái*. Nationalmuseets Skrifter. Etnografisk Raekke. Vol. 10. Copenhagen: The National Museum.
- Yoffey, Joseph M., and Cecil K. Drinker  
1938 The Lymphatic Pathway from the Nose and Pharynx. The Absorption of Dyes. *Journal of Experimental Medicine* 68:629-40. New York.
- Ypiranga Monteiro, Mário  
1960 Cariamã, Pubertätsritus der Tucano-Indianer. *Zeitschrift für Ethnologie* 85(1):37-39.
- Zerries, Otto  
1954 Los indios Guaiqa y su situación cultural. *Boletín Indigenista Venezolano* 2(1-4):61-76. Caracas.  
1960 El endocanibalismo en la América del sur. *Revista do Museu Paulista* n.s. 12:125-75. São Paulo.  
1964 *Ergebnisse der Frobenius-Expedition 1954/55 nach Südost-Venezuela*. Vol. 1 *Waika: die kulturgeschichtliche Stellung der Waika-Indianer des oberen Orinoco im Rahmen der Völkerkunde Südamerikas*. Munich: Klaus Renner Verlag.  
1965 Drei unbekannte Holzschnitzarbeiten aus Brasilianisch-Guayana im Museum für Völkerkunde zu Mannheim. *Tribus* 14:185-93. Stuttgart.  
1968 Primitive South America and the West Indies. In *Pre-Columbian American Religions*, 230-316. Walter Krickeberg, Hermann Trimborn, Werner Müller, and Otto Zerries, eds. New York: Holt, Rinehart and Winston.  
1970 Tierbank und Geistersitz in Südamerika. *Ethnologische Zeitschrift Zürich* 1:47-66.
- Zerries, Otto, and Meinhard Schuster  
1974 *Ergebnisse der Frobenius-Expedition 1954/1955 nach Südost-Venezuela*. Vol. 2 *Mahekodotedi: Monographie eines Dorfes der Waika-Indianer (Yanoama) am oberen Orinoco (Venezuela)*. Munich: Klaus Renner Verlag.

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FROM THE BOOK:

*Each year in January, when there are heavy thunderstorms, the Tapirapé shamans and a few courageous laymen conducted the Thunder ceremony to protect their people from dangers of Thunder and Lightning. . . . The men swallowed smoke from their long pipes, sang, and danced in frenzied intoxication until they fell in trance and traveled to the house of Thunder. Some of the men were struck down by the enemy's arrows, revived by having tobacco smoke blown and massaged over their bodies, and rejoined the fight, which was characterized by pronounced violence. Commoners, novice shamans, and seasoned practitioners swallowed repeated doses of smoke and moved about in clouds of spewed-out smoke. They vomited, suffered violent seizures, staggered blindly through the houses, and some had to be removed from the battlefield in cataleptic rigidity on the shoulders of their comrades. Thus, whether as were-jaguars or as simply human fighters, tobacco shamans, upon confronting the enemies on earth, in the sky, and the otherworld, . . . return from their ecstatic warpath reassured of having affirmed once again their role and office."*

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