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Levin, Louis. 1924.

Phantastica - Die betäubenden
und erregenden Genussmittel.

1931. Eng. ed. Phantastica -
Narcotici & Stimulating Drugs -
Their Use and Abuse.

Cooke, M.C. 1860. The Seven
Sisters of Sleep. (7 narcotics)

for

Economic Botany. 1927.



16-II-1989

Dear John,

Nature has again been flaunting her strength in the face of mere human endeavors. I hope that Highland Heights by virtue of its name sake has escaped disaster, and that you have not floated away downstream!

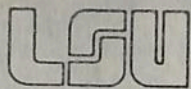
Bennett

Good to hear from you.

We are fine. Our house is on a hilltop; if we would flood, so would you. Our university, too, is high--indeed, it overlooks (literally) the fine city of Cincinnati. The mighty Ohio IS high. Some of my favorite botanizing places are under water at the moment.

Thanks much for your concern

John Thieret



21-IV-1987

John -

In response to your request, and conforming to space limitations, I enclose a note for your consideration. I know you'll not hesitate to tell me whether or not this is the kind of thing you have in mind for your "Notes on Economic Plants."

I plan to leave for Hungary on 18 June, and expect to return not later than 24 July.

Saludos,

Bernard

Colonia Cinco Mil
1980 - for Econ Bot.
for Econ Bot. 1987.
(slide)



Colonia Cinco Mil
1980
for Econ. Bot. 1987.
(slide)



Colonia Cinco M.l
1980
for Econ. Bot. 1987.
(photo)



Colonia Cinco Mil.

1980

for. Econ. Bot. 1987

(photo)

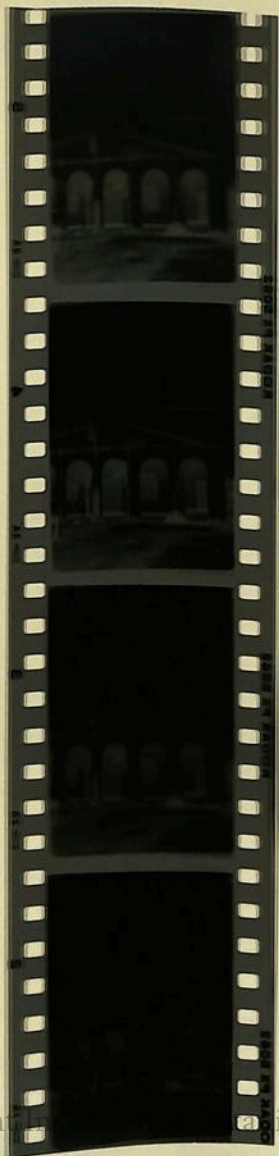


Colonia Cinco Mil

1980

for Econ. Bot. 1987

(film)



Caapi Revisited—in Christianity.—The malpighiaceae liana *Banisteriopsis caapi* (Spruce ex Griesb.) Morton is widely distributed throughout the Amazon basin where its hallucinogenic properties have been recognized by tribal people since antiquity and have been used by them extensively in magico-religious ceremonies to the present day. Knowledge of its entheogenic effects—now understood to be due to the presence in the plant of the alkaloids harmine and harmaline and related compounds—was first called to the attention of modern botanists in 1851 by the self-effacing Yorkshireman Richard Spruce (1817–1893), plant explorer extraordinary, who left a rich legacy of thousands of identified Amazonian plants, prolific records of meticulous observations, botanical and otherwise, and not a few animadversions concerning his 13 uninterrupted years of peripatetic residence in Amazonia (1). Among his multitude of original contributions were his notes on the use by observant, sagacious natives of species of *Banisteriopsis*, variously called caapi, ayahuasca, yajé, notéma, or pinde, by indigenous populations throughout tropical South America. Its history, chemical structure, and manner of preparation and use were reviewed by Schultes and Hofmann (2; 163–181).

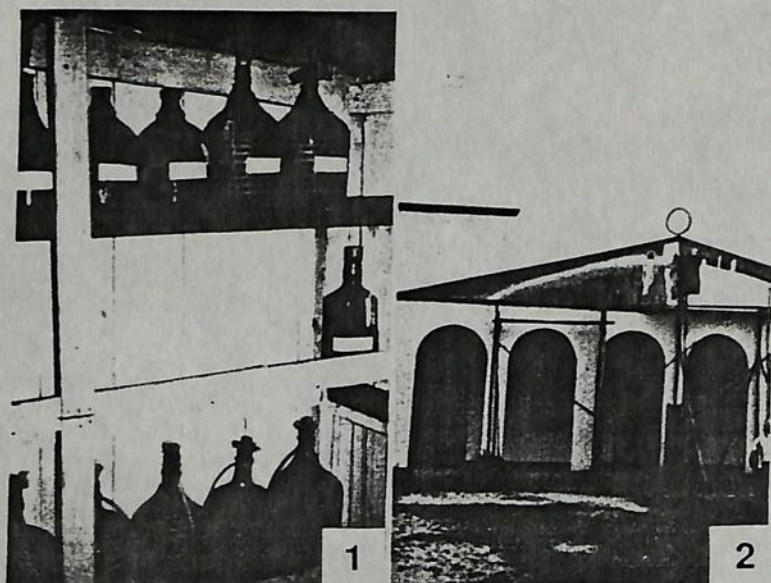


Fig. 1, 2. Fig. 1. Stored 5-liter bottles of "Santo Daime" in the church at "Colonia Cinco Mil," Brazil. Fig. 2. The church at "Colonia Cinco Mil."

In recent times, the use of naturally occurring hallucinogens has not been limited to the cognoscenti among native populations, but has been avidly adopted and pursued by individuals interested in experiencing the spectacular effects of a broad spectrum of psychoactive compounds. The phenomenon may be viewed as a reverse acculturation process, for whereas it is the norm for indigenous populations to adopt some cultural practices of alien societies with which they have come into contact, the phenomenon has not often occurred in the opposite direction. The opportunity to verify this in a contemporary setting is consequently of some anthropological interest.

In September 1980, during my participation in Projecto Flora Amazonica expedition to Acre, Brazil, my colleagues Bruce W. Nelson, Carlos Alberdo Cid Ferreira, Stuart R. Lowrie, and I, visited a small colony of zealots who augmented their Christian fervor by imbibing a mixture of approximately equal parts of an aqueous extract of the bark of *Banisteriopsis caapi* and the leaves of a rubiaceous plant, *Psychotria viridis* Ruiz et Pavón, the drink called by cult members "Santo Daime," a name indicative of its perceived sacred properties. The active ingredients of *Psychotria* are the alkaloids N-methyltryptamine, N-methyltetrahydrocarboline, and N,N-dimethyltryptamine (2; 178). We were invited to inspect the premises of a self sustaining colony of some 250 individuals, located about 13 km west of Rio Branco, Acre's capital, where it is locally known as the "Colonia Cinco Mil." One of the most significant influences in their lives (their "raison d'être"), is the *Banisteriopsis* vine, cultivated for the production of impressive quantities of the hallucinogen, which they consume during such celebrations as Christmas, All Saints Day, and the New Year. The final product is stored in 5-liter bottles (Fig. 1) labeled with the date of production and neatly arranged in a large closet-like enclosure with shelves having a capacity for several dozen bottles. In

the preparation of the drink, fresh leaves and bark are macerated, pounded by wooden mallets on short, portable, cylindrical tree stumps, followed by boiling in water for several hours in a large iron cauldron, after which the resultant mixture is allowed to cool before bottling. The drink is freely dispensed on the occasions mentioned, as well as at other unspecified intervals. The congregation carries out their religious devotions in a church (Fig. 2) built and decorated by its members, and it is here that they partake of their potion, women and children not being excluded from their ceremonies.

A similar use of a concoction of *Banisteriopsis* and *Psychotria* by natives and other Brazilian residents of Tarauacá in the state of Acre was reported by Prance (3), but this was not associated with a church-oriented cult. Prance noted that "in Rio Branco, there are several highly secret groups that meet to drink the narcotic in much the same way as in Tarauacá," and that the "cipó has become a part of Acre culture," cipó being the local Brazilian generic name for any liana.

Esteem for "Santo Daime" is evident in the Colonia Cinco Mil, where this centuries old tradition of Brazilian Indians is reverently perpetuated.

Literature Cited. (1) Spruce, R. 1970. Notes of a botanist on the Amazon and Andes. A. R. Wallace, ed. Reprint of the 1908 edition. New York; (2) Schultes, R. E., and A. Hofmann. 1980. The botany and chemistry of hallucinogens. 2nd ed. Springfield, IL; (3) Prance, G. T. 1970. Notes on the use of plant hallucinogens in Amazonian Brazil. *Econ. Bot.* 24:62-68.

—B. Lowy, Louisiana State University, Baton Rouge, LA 70803.

Caapi and Christianity ^{mailed: 22-11-187}
to John Thieret, Editor

Economic
Botany

The malpighiaceae liana Banisteriopsis caapi (Sp. ex Griesb.) Morton is widely distributed throughout the Amazon basin where its hallucinogenic properties have been recognized by tribal people since antiquity, and used by them extensively in magico-religious ceremonies to the present day. Knowledge of its entheogenic effects, now understood to be due to the presence in the plant of the alkaloids harmine, harmaline and related compounds, was first called to the attention of modern botanists in 1851 by the self-effacing Yorkshireman Richard Spruce* (1817-1893), plant explorer extraordinary, who left a rich legacy of thousands of identified Amazonian plants, prolific records of meticulous observations, botanical and otherwise, and not a few animadversions concerning his 13 uninterrupted years of peripatetic residence in Amazonia. (Spruce, R: In Wallace, A.R. (Ed.): Notes of a Botanist on the Amazon and Andes. London Macmillan, 1908. (Reprinted ed.) New York, Johnson Reprint, 1970.) Among his multitude of original contributions were his notes on the use by observant, sagacious natives of species of the woody vine Banisteriopsis, variously called caapi, ayahuasca, yajé, notéma or pinde, by indigenous populations throughout tropical South America. Its history, chemical structure, manner of preparation and use was reviewed by Schultes and Hofmann (Schultes, R.E. & A. Hofmann, The Botany and Chemistry of Hallucinogens. 2nd ed. pp. 163-181. 1980. C.C. Thomas.)

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* A plaque on the door of his cottage in Coneysthorpe, Yorkshire, where he spent the last 17 years of his life reads: Distinguished botanist, fearless explorer, humble man, lived here 1876-1893.

reverse acculturation process, for whereas it is the norm for indigenous populations to adopt some cultural practices of alien societies with which they have come into contact, the phenomenon has not often occurred in the opposite direction. The opportunity to verify this in a contemporary setting is consequently of some anthropological interest.

In September 1980, during my participation in ²Projecto Flora Amazonica expedition to Acre, Brazil, my colleagues Bruce W. Nelson¹, Carlos Alberdo Cid Ferreira², Stuart R. Lowrie¹, and I, visited a small colony of zealots who augmented their Christian fervor by imbibing a mixture of approximately equal parts of an aqueous extract of the bark of Banisteriopsis caapi (Spruce ex Griesb.) Morton, and the leaves of a rubiaceaceous plant, Psychotria viridis Ruiz et Pavón, the drink called by cult members "Santo Daime," a name indicative of its perceived sacred properties. The active ingredients of Psychotria are the alkaloids N-methyltryptamine, N-methyltetrahydro-carboline, and N,N-dimethyltryptamine (Schultes & Hofmann, op. cit. p. 178). We were invited to inspect the premises of a self sustaining colony of some 250 individuals, located about 13 km west of Rio Branco, Acre's capitol, where it is locally known as the "Colonia Cinco Mil." One of the most significant influences in their lives (their "raison d'être"), is the Banisteriopsis vine, cultivated for the production of impressive quantities of the hallucinogen which they consume during such celebrations as Christmas, All Saints Day and the New Year. The final product is stored in 5-liter bottles (fig. 2) labeled with the date of production and neatly arranged in a large closet-like enclosure with shelves having a capacity for several dozen bottles. In the preparation of the drink, fresh leaves and bark are macerated, pounded by wooden mallets on short, portable, cylindrical tree stumps, followed by boiling in water for several hours in a large

¹ The New York Botanical Garden, Bronx, New York.

² INPA Botânica, C.P. 478, Manaus 69.000, AM. Brasil.

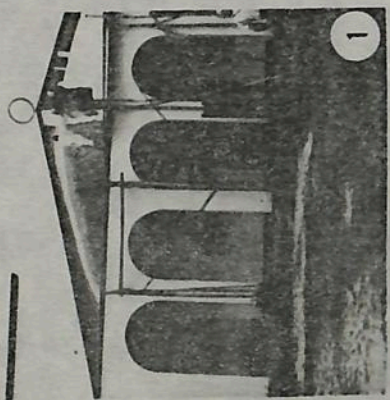
iron cauldron, after which the resultant mixture is allowed to cool before bottling. The drink is freely dispensed on the occasions mentioned, as well as at other unspecified intervals. The congregation carries out their religious devotions in a church (fig. 1) built and decorated by its members, and it is here that they partake of their potion, women and children not being excluded from their ceremonies.

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Esteem for "Santo Daime" is evident in the Colonia Cinco Mil, where this centuries old tradition of Brazilian Indians is reverently perpetuated.

B. Lowy, Botany Dep't. Louisiana State University, Baton Rouge.

2 illus.



~~Department of Botany~~
~~University of Massachusetts~~
~~Amherst, MA 01003~~

Dear Dr. Lowy:

contribution to

I acknowledge receipt of your "Notes on Economic Plants"

on 28 April 1987.

After it has been read by our reviewers, we will write to you.

*J.W.T. phoned me at home
5-1-87; article accepted.*

John W. Thieret
~~General Editor~~
Editor, *Economic Botany*



SOCIEDADE BOTÂNICA DO BRASIL

**XXXIII CONGRESSO
NACIONAL DE
BOTÂNICA**

RESUMOS



Encyclia Alagoense

Maceió, 24 a 30 de janeiro de 1982.

PLANTAS CONSTITUENTES DO SANTO DAIME, COLÔNIA CINCO MIL, ACRE

Bruce Walker Nelson*

Carlos Alberto Cid Ferreira**

Stuart R. Lowry*

Bernard Lowy*

Nos últimos anos, a imprensa vem noticiando o uso de uma bebida alucinôgena utilizada em celebrações religiosas de uma comunidade rural perto de Rio Branco, Acre. Localmente, a comunidade é conhecida como a "Colônia Cinco Mil". Segundo os noticiários da imprensa popular ela é conhecida pelos nomes de "Seita do Cipó" ou "Seita do Daime". Os adeptos dessa seita chamam sua bebida de "Santo-Daime". Ela é preparada socando a haste de um cipó da família Malpighiaceae, e depois misturada e cozida com folhas de um arbusto da família Rubiaceae. Os nomes vulgares destas duas plantas são "cipó-daime" e "rainha" respectivamente. São cultivadas na colônia, mas também ocorrem naturalmente na área.

A despeito da grande publicidade, nem os nomes botânicos nem os constituintes químicos ativos foram até agora registrados para as plantas usadas para preparar o "Santo-Daime", na Colônia Cinco Mil. Pensando nisso, nós coletamos espécimes do "cipó-daime" e do arbusto "rainha", na colônia, em setembro de 1980, que foram identificados por especialistas como Banisteriopsis Caapi (Spruce ex Griseb.) Morton e Psychotria viridis R. & P., respectivamente. Duplicatas estão depositadas no INPA e NY (Ferreira 3054 e 3055).

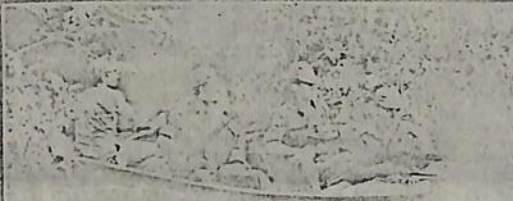
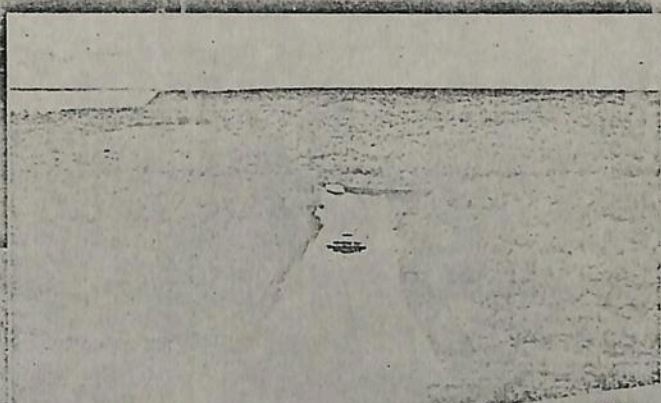
As identificações do material coletado por nós confirmam que "Santo Daime" é a mesma bebida usada por povos indígenas da Amazônia ocidental e conhecida como "Caapi", no Brasil, "Ayahuasca", no Peru, e "Yage", na Colombia.

Rivier e Lindgren (1972) já tinham feito análises químicas das plantas constituintes de "Caapi". Eles mostraram que as hastes de Banisteriopsis Caapi contêm 0,05-0,83% de alcalóides (% peso seco), principalmente Harmina, Harmalina e Terahidroharmina. Na Psychotria viridis foi encontrado 0,11-0,34% de alcalóides (% peso seco) constituídos principalmente de N,N-dimetiltriptamina e N,monometiltriptamina.

*The New York Botanical Garden, Bronx, New York, EUA

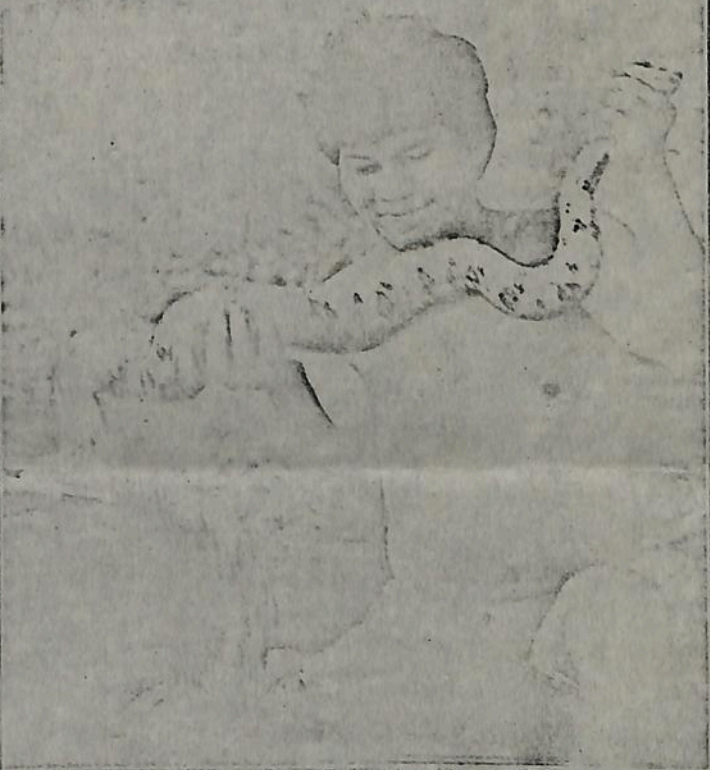
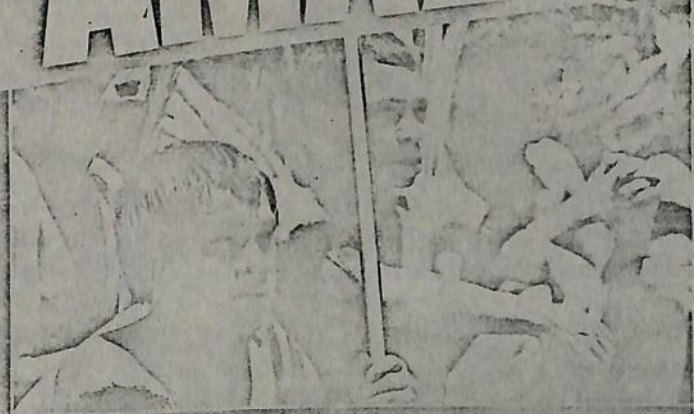
**INPA, C.P. 478, Manaus 69.000 - AM

Manchete



sensacional
nova série

AMAZONIA A ÚLTIMA FRONTEIRA



CASO BETH
Uma tragédia carioca

exclusivo
MICHEL FRANK HOJE

OSCAR 87 Os grandes vencedores

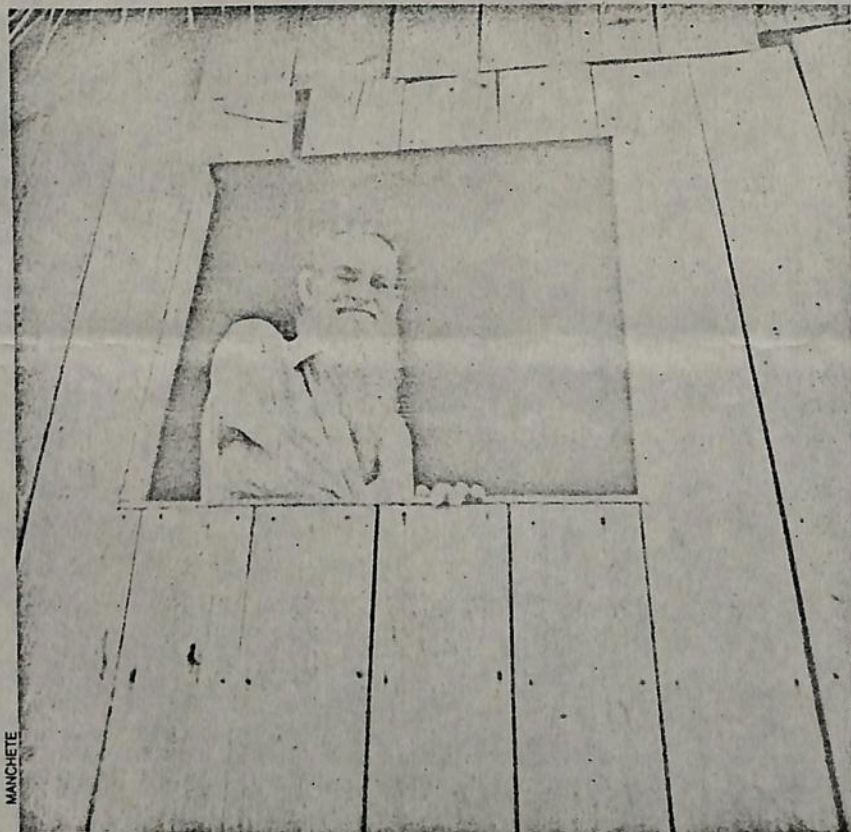
DIANA x SARAH A guerra das princesas

medicina
VERDADES E MENTIRAS
GRIPE



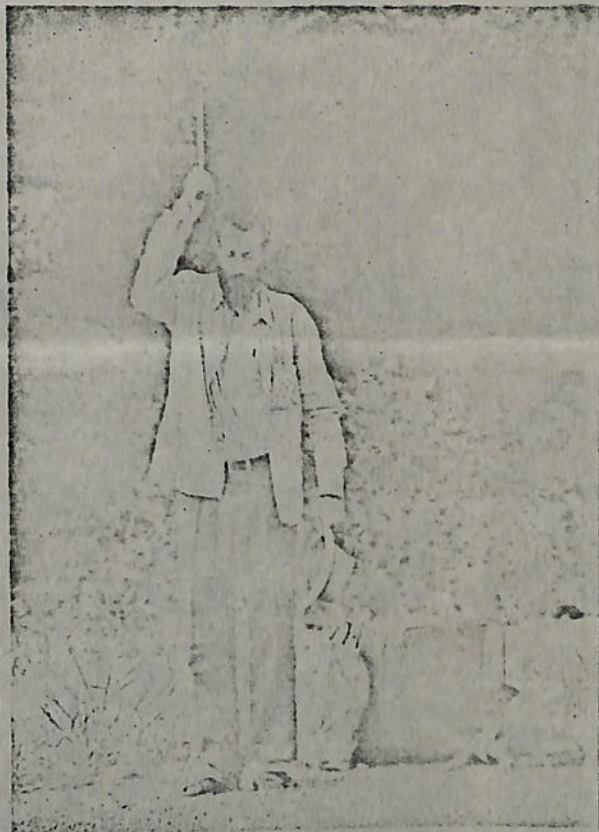
bloch

DE ABRIL DE 1987
RIO DE JANEIRO, N. 1825



MANCHETE

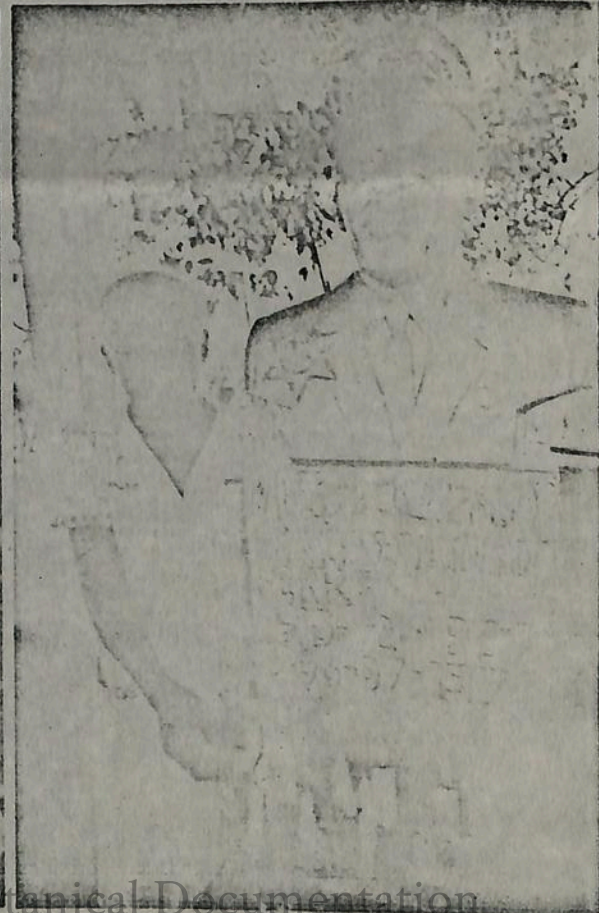
Sebastião Mota, da seita Santo Daime, teve uma "visão celestial" e fundou a Colônia 5 Mil.



Um estradeiro místico amaldiçoa os repórteres.



Pedro Pereira, da seita União do Vegetal, e o cipó alucinógeno mariri.



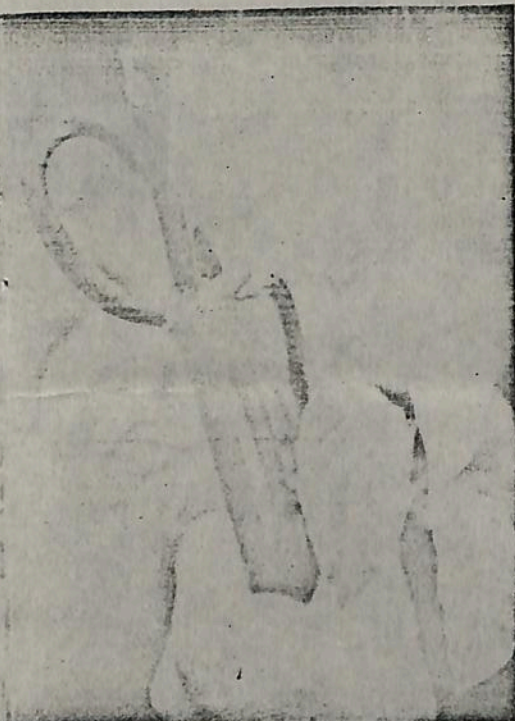
Irineu Serra, fundador do Santo Daime, virou estátua.

O cipó m

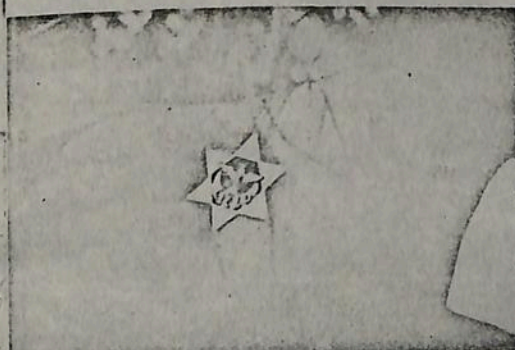
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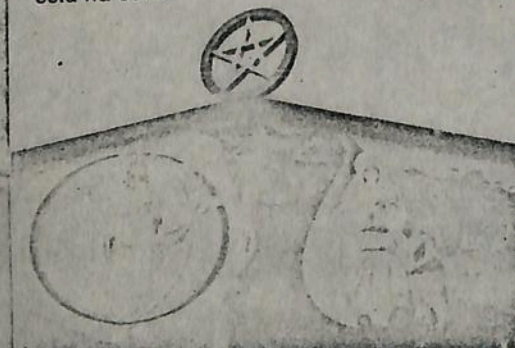


O cipó mariri, usado pelas seitas da alucinação.

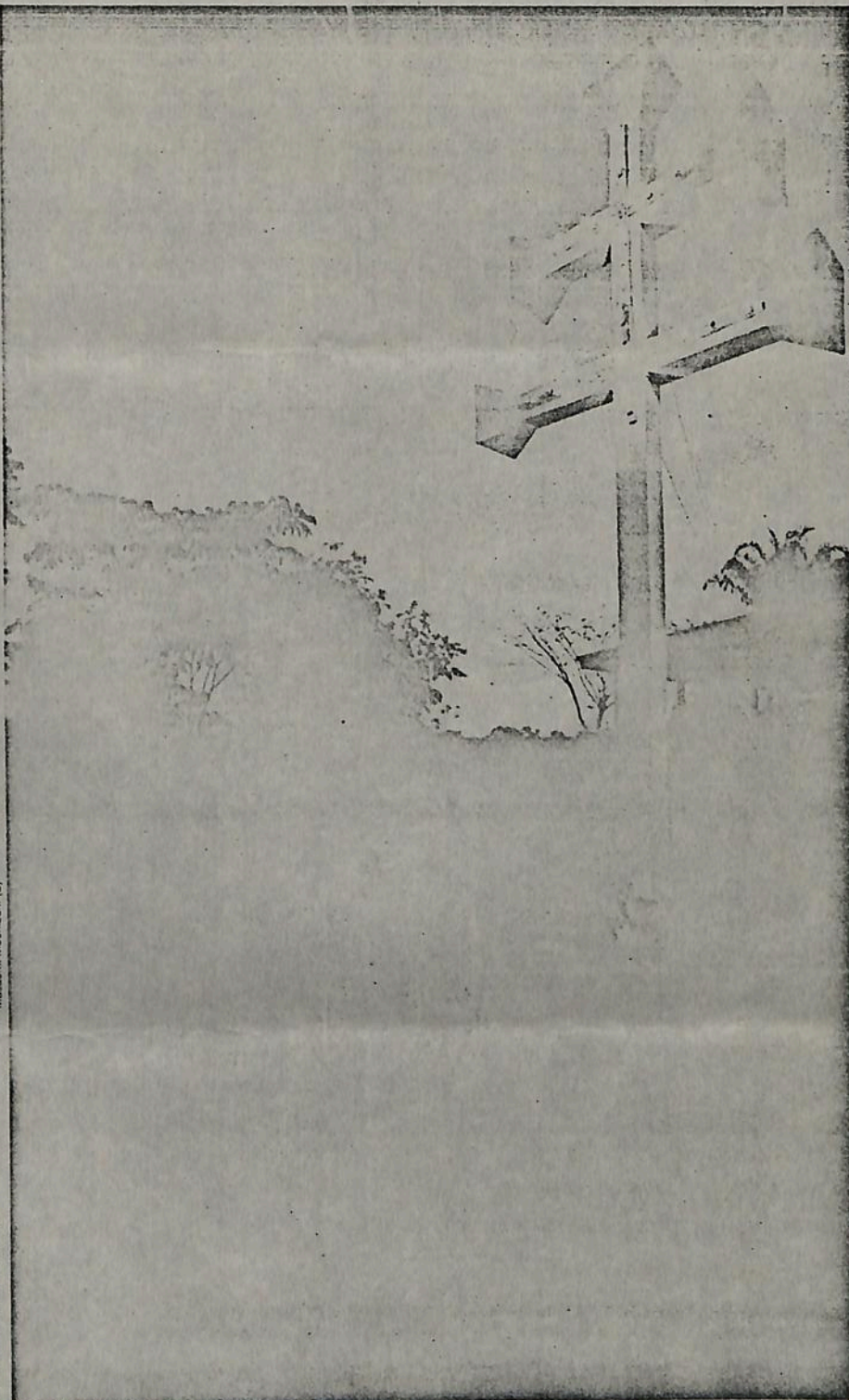


Masami Mochizuki (2)

Medalha do Santo Daime. Metade do Acre está na seita.



Templo do Santo Daime, perto de Rio Branco.



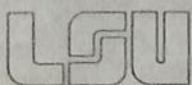
Adeptos do Daime levam velas ao túmulo de Raimundo Gomes, um dos patriarcas da seita.

“Quando não existia nada, brotou uma mulher de si mesma. Surgiu suspensa sobre seus bancos mágicos e cobriu-se de enfeites”

Umúsin Kumu, índio, autor de *Antes o Mundo Não Existia*



s sussurros e gemidos da mata acordam a imaginação. A imaginação leva à magia. Daí em diante, tudo é possível: o misticismo está em tudo na Amazônia. Os índios ensinaram ao homem branco o uso ritual de plantas alucinógenas, dando origem às seitas Santo Daime e União do Vegetal, que usam um chá do cipó *mariri* com folhas da chacrona. Os adeptos, em transe, fazem viagens fantásticas: dizem que o chá cura todas as doenças. Uma cisão no Daime, aberta por Sebastião Mota e com sede central em Boca do Acre, Amazonas, mistura maconha ao chá, e afirma: a maconha “é Santa Maria”. Quando a polícia destruiu uma plantação de maconha, o choro foi geral.



2-VI-1987.

Dear John,

Your suggested title for my little blurb,
"Caapi and Christianity," is quite appropriate,
and certainly more striking than my usual
"Banisteropsis Revisited."

I forgot to ask whether a few reprints
would be forthcoming (for my innumerable
readers), and at what cost, if any.

My scheduled departure for Magyarország
remains: 18-VI.

Saludos,

Bernard

PS - Did you know that Dick Schutte was awarded
The Tyler Prize?



27-III-1987

Dear Bruce:

The editor of Economic Botany has asked me whether I would submit an article for a new section of the journal: "Notes on Economic Plants." The Colonia Daime (Acre, 1980) I believe would be a good candidate for this. I don't know whether you have published anything on this. If so, would you send me a reprint? Proper acknowledgment will be made of anything you may have published about the cult.

The 3 type collections (Maracá) are in NY. I spoke to Mickey who told me they would be forwarded to you by the next person going down your way. (to Manaus)

I hope that all is well with you. Please take a minute to respond to this inquiry as soon as you can.

Saludos,

Bernard

Bernard,
 Only the summary of
 the paper (oral communication)
 was published. I enclose also
 a couple of pages on the
 cult (Secta do Cipó) published
 this month in the 1st volume
 of Life magazine.
 About 1983 a Paulista
 wrote his m.s. on the Colonia
 Cívica Mil, I believe from
 the sociological or anthropo-
 logical aspect, but I
 do not have the reference
 of hand
 Bruce

Notes on the Use of Plant Hallucinogens in Amazonian Brazil

GILLEAN T. PRANCE¹

Amazonian Indian use of hallucinogens has been known for a long time (Spruce 12), but the plants used have only recently become the subject of close attention. Schultes et al. (6, 7, 9, 10, 11) have summarized the present knowledge of the plants used, and since these publications other workers have added further information.

My experience in Brazil (most recently in 1968-9) has been primarily as a taxonomist making systematic collections of herbarium specimens. While engaged in field work in various areas of the Amazon region, I encountered utilization of two known hallucinogens in two new localities and was able to make notes about their use and collect botanical specimens of the source plants.

Some of this account will duplicate what has already been written (e.g., Schultes et al. 5, 6, 7, 9, 10). It may also be somewhat limited, because I was engaged in taxonomic field work rather than ethnobotanical research. I hope, nevertheless, that these notes will stimulate other field workers to add to ethnobotanical knowledge by observing primitive uses of plants, recording details, and collecting material adequate to identify the plants accurately.

Sanama Indian snuff at Auaris, Roraima Territory

The details of the use of hallucinatory snuff in the northwest Amazon has been summarized by Schultes et al. (9, 11).

The observations are based on the use of a hallucinatory snuff by the Sanama Indians (part of the Waikás as defined in Schultes, 9) at Auaris in the extreme northwest corner of Roraima Territory in Brazil. This snuff is prepared from a single species, *Virola theiodora* (Spruce ex Benth.) Warb., which I have identified from two collec-

tions pointed out by Indians from the two different tribes at Auaris (the Sanamas and the Mayongongs). The material is as follows: *Prance et al.* 9638, sterile; *Prance et al.* 9684, flowering.

It is interesting that the Waiká Indians at Tototobí, described by Schultes et al. (9), likewise employ the *Virola* alone. Many other groups using narcotic snuffs add material from a wide variety of unrelated plants. Schultes (11) has pointed out that the resin of *Virola* is rich in hallucinatory tryptamines and that it contains approximately 8% 5-methoxy N, N-dimethyltryptamine, N, N-dimethyltryptamine. The tryptamines are presumably also the active ingredients in the snuff at Auaris.

The Indians select a tree of *Virola* in the forest, strip the bark off in large sections, and then build a fire at the same spot. They heat the bark sections over the fire so that the resin oozes out. The resin is scraped off with arrowheads and left on the same arrowheads, which are then placed in a container made from a bamboo stem. These are later scraped in the maloca, and the powder which is scraped off forms the snuff. They occasionally fill a small gourd with resin, but their main method of storage appears to be on the arrowheads.

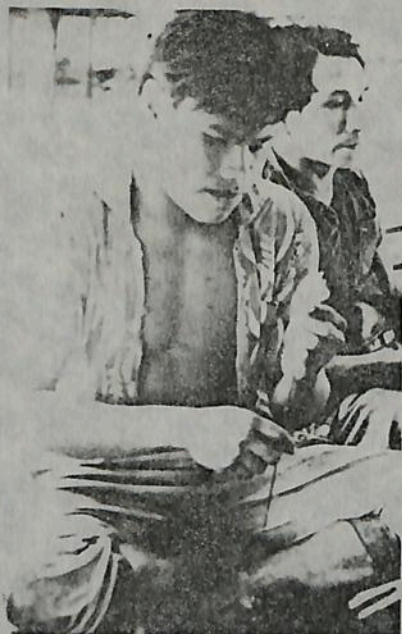
The arrowheads have a dual purpose. They are employed for poisoned arrows in hunting and as a storage for the snuff. These two uses are recorded by Schultes (9) for Indians at Tototobí, although the arrows are not the prime method of storage at Tototobí.

As far as could be ascertained, the snuff is utilized in two ways by the tribe: to enable the witch doctor to go into a trance before treating a patient; and at ceremonies following the death of a member of the tribe. They do not appear to take the snuff, except on these two occasions, and no casual uses of the snuff were observed. I did not see the witch doctor take the snuff and hence cannot describe that use.

¹B. A. Krukoff Curator of Amazonian Botany, New York Botanical Garden, Bronx, New York, N.Y. Submitted for publication September 9, 1969.

Econ. Bot. 24: 62-68. 1970.

A Jamamadi boy places the cotton fluff on a blowgun dart poisoned with curare



Jamamadi child sniffs narcotic snuff, shinā, through a hollow monkey bone



THE BOTANY OF A BRAZILIAN INDIAN TRIBE

By Ghillelan and Anne Prance

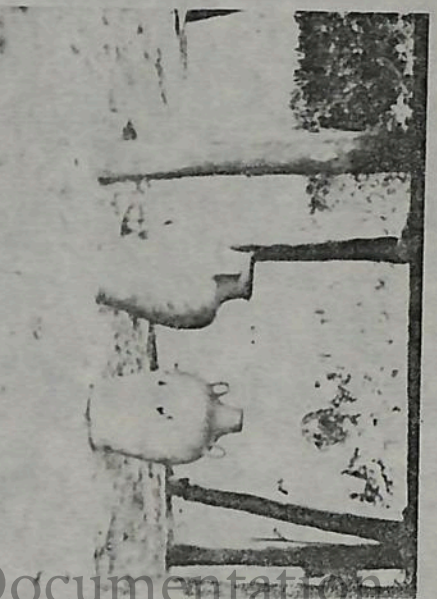
RECENTLY MANY Americans have become re-aware of the close link between man and nature. There is great involvement with natural foods and herbs, and housewives in increasing numbers are concerned about food freshness and purity. "Ecology" has become a household word; pollution is recognized as everyone's problem. In this country, as in the other developed nations, the dilemma is to preserve the amenities of living without destroying the environment. We are acutely conscious again of our dependence on nature and the natural world.

The Jamamadi Indians, who live in the Brazilian forests near the Purus River, a tributary of the Amazon, have never passed into the Industrial Age, but are still living in close harmony with nature. They have been in contact with Western civilization for some years, but in spite of this have retained much of their own culture: they use blowguns with poisoned darts, though they now also have shotguns; they still sing their own songs but they also own one record player. As civilization comes closer to them they are gradually becoming more westernized. The purpose of our visit to this tribe was to learn about their uses of plants before this unique knowledge is lost.

Each tribe of Brazilian Indians has its distinct culture. Although some plant uses are common to many tribes, others are confined to one. The life and culture of the Jamamadi tribe is dominated by its dependence upon plants which are used for many purposes ranging from housing to medicinal. Not all of these uses can be described in detail here so we have concentrated on some of the more interesting ones.



Jannamadi woman dries tobacco leaves over a fire to use in snuff



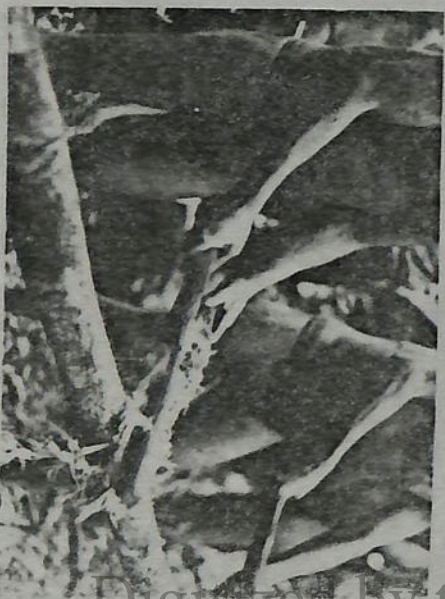
Ceramics are hardened with "Caripe" bark, which contains



A Jannamadi Indian prepares ingredients of snuff for grinding into a fine powder



Jannamadis scrape bark from Strychnos stem to use in arrow poison



Waiikds use same method as Jannamadis to extract fish-poison

The Importance of Plants in the Life of the Jamamadi Indians

Building. Jamamadi houses are constructed entirely from natural material, with simple frames and walls made from a variety of woods selected for their durability. Compensating for a lack of nails, the frame is bound together with vines and fibers gathered from the forest. The roof is constructed from a palm, "Ubim," *Geonoma*; the floors and often the walls are made from the trunk of the "Paxiuba" palm, *Socratea exorrhiza*. This palm is useful because the wood splits easily into strips which wear well and make ideal flooring.

The canoe, still an important form of transport, is made by the ancient dugout method which ensures a water-tight hull without caulking, and of course uses no nails, screws or joints. These dugouts are made from one of three different species of forest trees, two of them members of the Laurel family, "Itaúba," *Mezilaurus itauba*, and "Lauro-miri," *Aniba santalodora*; they are maneuvered with paddles made from the same "Itaúba" wood or from the paddle-wood tree, *Aspidosperma*.

Panniers, baskets, trays, and sieves are made from a vine called "Titicá," *Heteropsis jenmani*, belonging to the Araceae. This vine is split, dried, and used for basket work throughout the Amazon region. The bark of several members of the annona family is stripped off the trees in fiber-like straps to make ropes, carriers, baby-carrying slings, and to tie houses together.

Food. Jamamadi Indians grow several nutritious crops to provide a varied diet. We visited their fields and saw several different bananas used for cooking and eating; both sweet and bitter cassava; pineapples; yams; "Pupunha" palms, *Guilielma speciosa*; taros; corn; cashew nuts; papayas; lemons; and mangoes. These last two crops are not of South American origin and although a com-

paratively recent introduction, are now important in the tribe's diet.

Plants play an essential part in the hunting and fishing methods of the Jamamadis. Their blowguns are made from the trunks of *Iryanthera tricornis*, a member of the nutmeg family. The young trees are felled, then the trunks are split exactly in two so that the center core can be hollowed out. The two hollow halves are then stuck back together with the resin from the tree *Protium*, and bound with the string-like inner bark fiber of an annonaceous tree. The blowgun darts are made from slivers of the same "Paxiuba" wood used for flooring. Each 15-inch-long dart is carefully sharpened, given a flight of twisted raw cotton, and then poisoned. The cotton provides a good compression, enabling the dart to travel down the long pipe with great force.

Poisons. Much has already been written about the famous curare dart poison. Each tribe has a slightly different recipe for curare, although the same four plants are usually used. The Jamamadis make it from a mixture of ingredients taken from "Ira," *Strychnos*; "Bicava," *Curarea toxicifera*; "Boa," *Guatteria megalophylla*; and "Balala," *Fagara*.

Fish poisons are common to most of the Amazonian tribes and are also used by local Brazilians. The main fish poison of the Jamamadis is a member of the bean family, the vine that they call "Cunã," *Derris latifolia*. The "Cunã" vine is cultivated in large quantities in their fields, and is extremely easy to propagate since a small root cutting will soon sprout and produce a new plant.

The roots and stem are cut into short lengths, then beaten with a hard club-like object. These mashed stems are placed in a small stream, and

the water is agitated to mix up the juices. As the juices are carried downstream, the fish are poisoned for about half a mile below.

The Indians are aware that this method does devastate the fish population, and they do not use fish poison too frequently. However, when they do follow this procedure the Indians collect and eat even the smallest fish, and the entire tribe joins in to share the abundance of food. Fish poisoned this way are perfectly safe to eat, because the poison only paralyzes the fish gills and causes the fish to suffocate.

Shinā, a Narcotic Snuff. Like many tribes of Indians, the Jamamadis have an intoxicating snuff. However, it is not an hallucinogenic snuff as is the one of the Waikás, which we described in *Garden Journal*, Volume 20, pages 102-107. The Jamamadi snuff has an elevating effect rather similar to the initial "high" produced by alcohol.

The snuff is prepared from tobacco leaves, *Nicotiana tabacum*, mixed with the bark ash of the "Cupui" tree, *Theobroma subincanum*, which belongs to the same genus as the cocoa tree.

Tobacco leaves, after being harvested and dried on sticks beside a fire, are placed on an inverted metal bowl and rolled with a stick resembling a rolling pin, thus squeezing out any remaining juices. When the leaves are crisp and dry, they are broken into small pieces and placed in a wooden bowl, to which is added an almost equal amount of "Cupui" ash. This mixture is ground into a fine powder with a smooth stick, and the snuff is then ready to use.

Jamamadis administer the snuff by drawing it into each nostril, one after the other, with the help of a hollow monkey-bone pipe. It rapidly causes light-headedness and intoxication. Most Indians

keep their own supply of shinā and sniff it mainly in the afternoon and evenings when they have finished their work. To us, the most serious aspect of the Jamamadis' usage of shinā is its use by even small children. One four-year-old seemed to take it daily, and many other children had their own bottles of snuff which we were able to trade with them, in exchange for brightly colored material, coins which they use as pendants, fish hooks, candies, and other trade goods which we always carry when visiting Indians.

Medicines. As is the case in most Indian tribes, the Jamamadis have many medicinal plants which they use to cure almost any of the common ailments. We collected their cures for coughs, sore throats, rheumatic pains, and worm infestations. One apparently effective medicine is their toothache cure which they call "Washi," using the root of a species of *Piper*, a relative of the condiment pepper. A small piece of root is chewed and, when placed on the tooth, gives immediate relief. When we tried this root it produced a tingling sensation in the tongue and gums, and had a definite anesthetic effect.

Pottery. An intriguing plant use is the hardener which several tribes use in their excellent ceramics. The bark of the "Caripé" tree, *Licania octandra*, a member of the plant family Chrysobalanaceae, is rich in silica grain (sand) which is widely used in hardening pottery. A fire is made exclusively of "Caripé" bark, and the resulting ash is sifted in a basket-work sieve before being mixed with the pottery clay. The ceramics containing this ash are much harder than others and they have a metallic ring.

We often tend to dismiss Indians as "primitive people," but their plant uses demonstrate that they are a people highly adapted to their environment, drawing much from it. They remember, too, the possibility of exhausting it. □

Acknowledgments

Dr. Ghilleen T. Prance, B.A. Krukoff Curator of Amazonian Botany at the New York Botanical Garden, gratefully acknowledges support of his field work by NSF grant GB-18655 and also wishes to thank the Instituto Nacional de Pesquisas da Amazonia in Manaus for co-sponsorship of the field program. Especial thanks are due to the two people who arranged and set up the expedition for Dr. Prance and his wife to the Jamamadis, Mr. Fred Orr, missionary of Lábrea and Sr. Moacir Canizo de Brito, owner of Seringal Jurucuá where the Jamamadi Indians live.

At a time when so much is written about taking "trips" in modern society, it is fascinating to discover that the use of hallucinogenic snuffs and beverages is common in Brazilian Amazonia, and that many examples of these hallucinogens have been reported in botanical and chemical literature.

The German ethnologist, Dr. Theodor Koch-Grünberg, first reported the use of narcotic snuffs among an Indian tribe in the Rio Negro basin in the early 1900's. This was not an innovation, but was obviously an aspect of that particular Indian culture. More recently the use of hallucinogenic snuffs among primitive tribes in South America has been the subject of research, and there is much information now available, for example, in the studies of Dr. Richard E. Schultes of Harvard University.

The use of the snuffs and beverages differs greatly from tribe to tribe and from one area to another. The snuffs are prepared from a number of different plant sources, but chiefly from some species of Virola. The beverages reported so far all contain the Malpighiaceous genus Banisteriopsis or the closely related Banisteria, as well as other plant ingredients.

During our last field trip to Brazil, we were able to observe the use of hallucinogens in two widely separated localities, Auaris and Tarauacá, and to collect and identify their plant sources. This is an account of what happens in these two regions and is not a detailed summary of the use of hallucinogens throughout the region, since each group takes them for a different purpose and has a different ceremony attached to their use, though the hallucination ceremonies of related tribes of Indians may differ only slightly.

Virola at Auaris

The Virola tree, Virola theiodora (Spruce ex Benth.) Warburg, is an important source of hallucinogenic snuffs in the northwest part of Amazonia. Some tribes use snuff made only from Virola, while others combine Virola with other plant ingredients, some of which are also active hallucinogens.

Three species of Virola have so far been reported

These observations were made during a field trip financed by the National Science Foundation. I am extremely grateful to the people who helped me obtain information and samples in the two regions involved, especially to Mr. Fritz Harter, a missionary at Serra dos Surucucus, Roraima Territory and to Dr. Thomas Geddis, missionary doctor at Tarauacá, who did much to help my field work there. I have to thank especially Sr. Tupanir, mayor of Tarauacá, who was extremely helpful and also gave us free accommodation. I likewise express my appreciation to Mr. Lyn Entz of the Missionary Aviation Fellowship in Boa Vista for providing excellent air transport to the interior of Roraima Territory, to the Unevangelised Fields Mission for permission to visit their mission stations and to use their numerous facilities, and to Dr. Richard Evans Schultes who encouraged me to follow up this subject.—Ghilleen T. Prance, B.A. Krukoff Curator of Amazonian Botany, The New York Botanical Garden

Hallucinations in Amazonia

By Ghilleen T. and Anne E. Prance



as sources of snuff. The resin of these species is rich in the hallucinogenic compounds termed tryptamines.

The snuff-taking ceremony we observed first-hand was among one of the tribes of the northwest Amazon, the Sanama Indians at Auari, in the extreme northwest corner of the Roraima Territory.

The Sanama Indians are part of the Waiká complex. Preparation, use, and lore of the snuff vary in different tribes, as does the name applied to the snuff. But the Waiká group of Indians seems to be the center of the snuff-using activity reported among different local tribes by several workers and researchers, most notably by Dr. Richard E. Schultes.

The Sanama Indians prepare their snuff in this manner: first, they select a tree of Virola in the forest, strip the bark off in large sections, and then build a fire. The bark sections are heated over the fire until the resin oozes out. This resin is then scraped off with arrowheads, which, with the resin on them, are then placed in a container made from a bamboo stem and taken back to the maloca, a communal Indian dwellinghouse. On some occasions the resin may also be collected in a small gourd, but the Sanama Indians' main method of storage appears to be on the arrowheads. The snuff is the powder made by scraping the resin from the arrowheads with a knife or another



Sanama Indians dancing during the ceremonies following the death of a member of the tribe. After several days of festivities, they take the hallucinatory snuff.

arrowhead. This is usually done in the *maloca*.

The arrowheads have a dual purpose. They are used for poisoned arrows in hunting, and as a storage for snuff. This dual use among Waiká Indians at Tototobí, well south of Auaris, was reported by Schultes and Holmstedt in 1968.

As far as we could understand, the snuff is used in two ways by the tribe: first, witch doctors take it as a means of inducing a trance before treating a patient. Second, it is used in the ceremonies that follow the death of a member of the tribe. The Sanamas do not appear to use the snuff except during these two occasions, and no casual uses of snuff were observed.

We did not see the witch doctor use the snuff, but we were able to make notes at a ceremony for the dead, after a member of the tribe died from what appeared to be a common cold—an ailment against which the Indians have little or no resistance.

The ceremonies following a death are long and complicated. At least one ceremony is held for each person who dies, including infants. In some cases, there is more than one ceremony.

The description which follows concentrates on the use of the *Virola* snuff, and does not attempt to cover the entire ceremony in full detail.

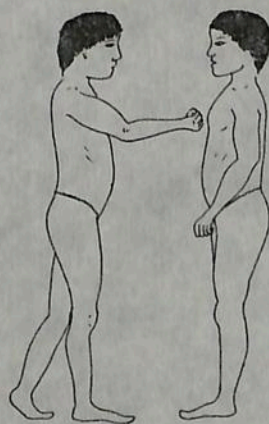
The ceremony begins with most of the men from the tribe going on a hunt for big game: tapir, pigs, spider monkeys, and capybaras. This hunt lasts about twelve days. While it is taking place, one man goes out to invite a group from another village. The visiting group arrives before the hunters have returned and spends most of its time drinking a highly fermented liquid made from *Manihot*. When the hunters return, they join in the drinking. The intensity of the ceremonies that follow depends on the success of the hunt.

The women make large quantities of *beiju*, a large "pancake" made from tapioca flour. The meat is smoked and boiled and then tied up in large portions to be consumed during the ceremonies.

The Indians dance every night for five to ten days. (It was eight days when we were there.) On one night the men (and often the boys) dance, and on another the women dance, dressed in palm leaf skirts.

On an evening during the ceremonies the snuff is taken. First of all, two or three older men gather in the middle of the *maloca* and begin to scrape the powder from the arrowheads that had been coated with *Virola* resin in the forest. One man sniffs the powder first, and then everybody joins in, either by taking a pinch and sniffing it, or by having someone blow it into his nostrils with a small blowpipe.

When all have used the snuff, the whole group



THE SANAMA INDIAN SNUFF CEREMONY

Top. Indian heating strips of *Virola* bark to extract the hallucinogenic resin.

Center. The administration of the snuff by means of a small blowpipe.

Lower left. The chest hitting ritual.

Lower right. The shouting ritual.

then gathers in the center of the *maloca* and begins to dance, their weapons (bows, arrows, or axes) held over their heads. They shout, and an informant told us that they also commune with the spirits while under the influence of the narcotic.

The dancing is followed by an incredible chest-beating ceremony. If anyone has a grievance, or is upset, he takes it out on somebody else in the group. This takes place generally in pairs, but also in small groups. One man offers his chest as a target to the other man, who hits as hard as he can with his fist, a rock, or a piece of pointed metal. After one hit, the process is reversed, and the other man does the hitting. This continues, with alternating blows, until one of the pair has had enough and capitulates. The blows are hard, and blood often runs, but the man who is struck usually does not appear to flinch; he is apparently anesthetized by the narcotic.

Following the chest-hitting ritual, each member squats down, puts his arms around another's neck, and all shout in one another's ears. It is quite deafening just to be in the *maloca*.

When a peak of sweat and excitement has been reached, the bone ashes of the deceased are poured on the fire in the *maloca*. The shouting gradually dies down as the effect of the drug diminishes.

Uascá, the Hallucinogenic Beverage of Acre

The use of the Malpighiaceae genus *Banisteriopsis* as a hallucinogen was first observed by the famous explorer Richard Spruce in 1852. He found it cultivated and used by the Indians on the upper Rio Negro. Although Spruce wrote detailed notes on the subject, his work has only recently been followed up. Dr. Schultes and others published in 1968 a fascinating account of a chemical analysis of the original Spruce collections, which revealed the presence of hallucinatory compounds even in this old material.

The use of Malpighiaceae beverages has now been reported from a number of different tribes in western Amazonia: in Peru, Ecuador, Colombia, and Brazil. In Spanish-speaking countries it is widely known as Ayahuasca.

The use of species of *Psychotria* as a component of the drink was reported for the first time by Schultes as recently as 1967. The use of *Psychotria* is, however, widespread since it has now been reported in three geographically separated parts of western Amazonia: in Ecuador, among the Kofán Indians (by Pinkley); in Peru, among the Cachinahuahua Indians (by Der Maderosian and others); and now at Tarauacá in Acre, Brazil, where *Banisteriopsis* sp. cf. *inebrians* Morton

and *Psychotria viridis* R. & P. are used.

Long before we visited the town of Tarauacá, in the state of Acre, we had heard about the hallucinatory beverage that is drunk there. Tarauacá has quite a reputation in Amazonia for its use of the drink.

Unlike the Indian snuff, the Tarauacá drink is not used nowadays primarily by the Indians, but by the local Brazilian population. The beverage was obviously of Indian origin, and it is still taken by the Indians who inhabit the upper region of the Rio Tarauacá.

Many of the inhabitants of the village, when questioned, admitted to having experimented with the



A group of Sanama Indians at Auaris. The men all participated in the snuff ceremony. Bananas, shown in foreground, form a major part of their diet. Structure in the background is a hut for preparation of food.

beverage at least once, and some families use it regularly. In Tarauacá, the population all refer to the beverage as cipó (the Portuguese word "liana"). None of the people in Tarauacá used the more widely known name uascá (or ayahuasca in Peru). Perhaps this is because of the secretiveness shown by all who use the drink.

The use of the beverage has spread from Tarauacá through Acre to the state capital of Rio Branco, where it is always referred to as uascá. In Rio Branco, there are several highly secret groups that meet to drink the narcotic in much the same way as in Tarauacá.

It is interesting that the Brazilian users of hallucinogens, in contrast to the Indians, have adapted the indigenous tribal use of a narcotic for their own purposes, but have attached their own folklore to its use and made their own ceremony rather than using the Indian one. Cipó has become a part of the Acre culture.

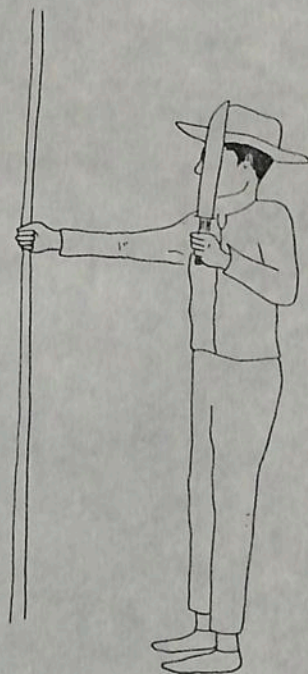
The natives at Tarauacá were very insistent that both plants, Psychotria and Banisteriopsis, are needed for the beverage to have the desired effect. Some people told me that they had used the drink without the Psychotria leaves and in consequence had a vastly inferior hallucinatory experience.

The Psychotria is a common species in the forests near Tarauacá and was easy to find. The Banisteriopsis is much harder to find, because its supply has been severely depleted by use. One has to go a long way into the forest to find the vine growing naturally. A few people in Tarauacá cultivate the Banisteriopsis for a more easily obtainable supply. The vine is easy to propagate, and when a small section of the root is planted, it sprouts and grows quickly.

Banisteriopsis contains the hallucinatory compounds harmine and harmaline, and Psychotria psychotriaefolia, the admixture for the Banisteriopsis drink in Ecuador, has been found to contain N, N-dimethyltryptamine. It is, therefore, to be expected that Psychotria viridis may likewise contain this tryptamine.

The Banisteriopsis vine is cut into sections and put into a saucepan of water which is allowed to heat up almost to a boil. The leaves of Psychotria are added and allowed to simmer for another half hour. The liquid is left to cool and is bottled and corked. The liquid obtained is rust-brown with much plant residue remaining in it, and it has an acrid taste.

On our second day in Tarauacá, we were able to visit a large family who use the beverage frequently, apparently without harm or addiction. There were several children in the house who also admitted to drinking the beverage. The family reported that they merely take cipó in connection with spirit-worship, a



UASCÁ, THE HALLUCINOGENIC DRINK OF WESTERN AMAZONIA

Top. Brazilian man ready to chop sections of the stem of Banisteriopsis.

Below. Men of Tarauacá taking part in the drinking ritual. One man, the mestre, always serves as a guardian of the others, should someone experience an unpleasant hallucination. The mestre does not drink the uascá at this time.

ult that is extremely common and growing in the region. The use of *uascá* in Rio Branco is also largely connected with the spirit-worshipping sects.

Apart from the use in spirit-worship, individuals in Tarauacá and other towns in the region frequently gather to drink the beverage. The group begins by taking a large quantity of the drink, except for one man who serves as the *mestre* (or master), who is in charge, and who does not drink on that occasion. Then they shut their eyes and wait for the hallucinogen to take effect, while background music is played. During this time, some vomit up the drink.

The hallucinations then begin. The job of the *mestre* is to bring anyone out of his hallucinatory experience should it be a bad one. The *mestre* does this either by touching him, which usually works, or by putting a strong smelling substance, ammonia or in some cases a leaf of an unidentified plant, under his nostrils. When the *mestre* has brought a person out of hallucination, the intoxicated individual needs only to close his eyes again to resume his hallucinations. The group continues under the supervision of the *mestre*, until the effect of the hallucinogen wears off. During the entire process, loud music usually is playing in the room.

Those who have taken the beverage described particularly bright colors and large-sized objects and

animals, mostly snakes and jaguars. Some people reported seeing cities they had never visited and described ocean liners and large stores, etc., in considerable detail.

We met an Air Force captain who had once taken movies to show at Tarauacá to the Indians up river. He said that the Indians were distinctly disappointed by the movies (one a cowboy film and the other a documentary about Brazil). They told him that they had seen all that and more while under the influence of *cipó*, and in the future they would use *cipó* instead.

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A group of Sanama Indians on a hunt. Our expedition frequently met such hunting parties while we were in their area. The group consists of men and boys who always go out to get meat before the snuff-taking ceremonies.