Pharmacodynamics And Therapeutic Applications Of Iboga And Ibogaine

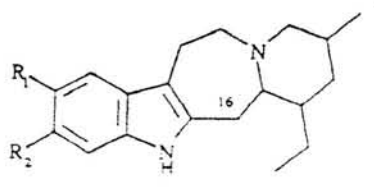
by Robert Goutarel, Honorary Research Director;
Otto Gollnhofer and Roger Sillans, Ethnologists, C.N.R.S.
(French National Scientific Research Center)
Translated from French by William J. Gladstone

Tabernanthe iboga H.Bn. is an apocynaceous shrub from Equatorial Africa whose roots are used in Gabon at low doses as a stimulant and at high doses during the ceremony for admission into the Gabonese initiation society, the Bwiti. Four periods are described: the first three relate to the pharmacodynamic studies conducted in France (1864-1905; and 1940-1950) and subsequently in the U.S.A., essentially Ciba's work (1950-1970). The low acute and chronic toxicity of ibogaine is established (Dhahir, 1971). Ibogaine *inhibits* the oxidation of serotonin and *catalyzes* that of catecholamines by a MAO (monoamine oxidase), ceruloplasmin (Barrass and Coult, 1972). Ibogaine is a type of hallucinogen (oneirophrenic) at high doses.

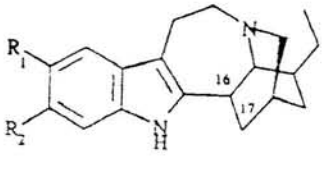
The present period began around 1960 and covers the applications of ibogaine in psychotherapy and psychoanalysis according to Naranjo (1969) and in combatting drug dependency according to Howard S. Lotsof. The role of iboga in Bwiti initiation ceremonies was studied by ethnologists in Gabon. The intoxication by iboga is characterized by four stages. The first three are essentially Freudian; while the fourth reflects the tribe's collective unconscious and has some similarities to the near death experience (NDE). The method of Naranjo reaches only the Freudian stages, while that of H.S. Lotsof attains a state comparable to the fourth stage (NDE).

Based on recent "neuroscientific" evidence concerning the mode of action of ibogaine, the National Institute on Drug Abuse (NIDA) has added ibogaine to the list of drugs whose activity in the treatment of drug dependency is to be evaluated. Ibogaine blocks the morphine- and cocaine-induced stimulation of mesolimbic and striatal dopamine and reduces the intravenous self-administration of morphine in rats.

Note on the structure of ibogaine



1A[25] Goutarel



1B[3] Taylor

Chemical investigations for the purpose of establishing the structural formula of ibogaine were undertaken by two groups: a Swiss group headed by Professor E. Schlittler (Organisch chemische Anstalt der Universitat Basel), and a French-Swiss research group including Professor V. Prelog, Nobel laureate in chemistry (Zürich Federal Polytechnic School), Professor M.M. Janot (School of Pharmacy, Paris), and R. Goutarel.

The discovery of ibogamine, a nonoxygenated alkaloid, the basis of the other iboga alkaloids, was published jointly by C.A. Burckhardt, R. Goutarel, M.M Janot and E. Schlittler (*Helv. chim. Acta*, 35, 1952, p. 642).[8]

Using the alkaline fusion of ibogaine, Schlittler's group isolated 1,2-dimethyl-3-ethyl-5-hydroxyindole (Schlittler, E., Burckhard, C.A., Gellert, E., Die Kalischmelze des Alkaloides Ibogain, *Helv. chim. Acta*, 36, 1337, 1953)[50], while the French-Swiss group (Structure de l'ibogäine, R. Goutarel, M.M. Janot, F. Mathys and V. Prelog, *C.R. Acad. Sci.*, 237, 1953, p. 1718)[26] characterized 3-methyl-5-ethylpyridine.

The combination of these results led R. Goutarel to propose, in 1954[25], a formula that included all the elements of the structure of ibogaine; the definitive structure necessarily had to include a fifth ring formed by a bond between the C-17 or a carbon atom from the ethyl chain and another carbon atom of this molecule (most likely C-16).

The definitive structural formula was established by W.I. Taylor (Bartlett, M. *et al.*, 1958)[3] in which ibogaine has an ethyl chain, following the study of the seleniated dehydrogenation products of this alkaloid, (R_1=OMe, R_2= H)[1b]

W.I. Taylor had belonged to the French-Swiss group before he joined Prof. Schlittler's staff at Ciba Laboratory in Summit, New Jersey, and contributed in particular to the study of cinchonamine and quinamine (R. Goutarel, M.M. Janot, V. Prelog and W.I. Taylor, *Helv. chim. Acta*, 33, 1950, p. 150, 164).[27]

> *Clinical research, the one which is directly concerned with human illness, will be the bearer of great hopes.*
>
> Philippe Lazar, Director General of INSERM (French National Institute of Health and Medical Research), Madame Figaro, No. 14110, 88 (1990)

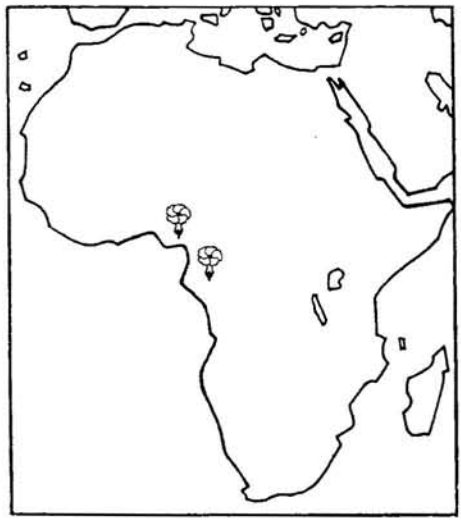
History (1864-1905):

The pharmacodynamic and clinical research on iboga and ibogaine may be divided into four periods.

Henri Baillon, who established the genus Tabernanthe at the Muséum National d'Histoire Naturelle in Paris in 1889, and described under the name of *Tabernanthe iboga* the sample* brought back from Gabon in 1864 by Dr. Griffon du Bellay, a navy surgeon, wrote: "The root of this plant is the part that the Gabonese eat. They say that it is inebriating, aphrodisiac, and, with it, they claim that they feel no need for sleep".[1] However, as early as 1885, Father Henri Neu had written in a manuscript entitled "Le Gabon" (Neu 1885)[42]:

> Most Europeans (living in Gabon) have heard about this plant, used in fetishistic ceremonies. The natives use an infusion of iboga root scrapings as a potent philter that enables one to discover hidden things and to tell the future. The one who drinks it falls into a deep sleep during which he is obsessed by uninterrupted dreams which, until the time that he awakens, he takes to be actual events...

At the beginning of this century, Dybowsky and Landrin (1901)[17] isolated a crystallized alkaloid from the iboga roots and named it ibogaine.



The Iboga plant, *Tabernanthe iboga*, is restricted to the wet tropical areas of west-central Africa, mainly the Congo and Gabon.

Therapeutic applications

The first step in the pharmacodynamic studies began when Phisalix (1901)[43] showed that, in the dog, this alkaloid acts principally on the

* This sample, along with the roots, was displayed at the Paris Exposition in 1867, and had been reported earlier by Aubry-Lecomte ("Note sur quelques poisons de la côte occidental de l'Afrique, Archives de Médecine navale, 2, 1864, p. 264-265). It was then given to the Paris Museum d'Histoire Naturelle.

CNS and produces inebriation similar to alcoholic drunkenness (though this would be contradicted later).

This was the period of studies by the French pharmacologists, Lambert, 1901[30], 1902[31] Heckel, 1901[28] and Pouchet, 1905[44].

The results were that ibogaine, used clinically, was recommended as a stimulant in cardiac "atony" and neurasthenia by Pouchet and Chevalier (1905).[44]

This period ended in 1905 with the thesis for a medical degree, "De l'Iboga et de l'ibogaïne" (de Closmenil 1905)[9], defended in Paris by Mme de Closmenil, the daughter of Landrin, who advocated the use of ibogaine hydrochloride at doses of 10-30 mg/day in convalescence, neurasthenia and asthenia.

Thus, it was the "antifatigue" properties of ibogaine that particularly attracted the attention of investigators of this period, and another 40 years were to pass before the study of this alkaloid was resumed.

Pharmacodynamics (1939-1950)

In 1941, Raymond-Hamet[48] published a paper entitled "L'iboga, drogue défatigante mal connue" (Iboga, a poorly known antifatigue drug), in which he showed that ibogaine increases the responsiveness of animals to epinephrine and puts the organism in a state of hypersympathicotonus, and he would later refer to it as a "sympathicosthenic" agent, in contrast to yohimbines which, according to him, were "sympathicolytics".

During the same period, Delourme-Houdé prepared a remarkable thesis for a doctorate of pharmacy which he defended after the war was over in France in 1944. In this thesis, he discussed the botany, chemistry, and pharmacodynamics of iboga. He also isolated a new alkaloid which he named *tabernanthine* (Delourme-Houdé, 1944).[13] (R_1=H, R_2=OMe)[1b]

Delourme-Houdé determined the LD50 of ibogaine in the guinea pig intraperitoneally to be 82 mg/kg.

In 1941, Raymond-Hamet had demonstrated the "sympathicosthenic" activity of ibogaine and the fact that this alkaloid suppressed the hypertensive effects produced by carotid occlusion, that it increases tyramine-induced hypertension, and he further demonstrated its own hypotensive action, confirmed by Miss Séro (1944).[55] He showed that ibogaine acts as a true antagonist of "sympatholytics" (Raymond-Hamet 1939-1946).[47]

Vincent and Miss Séro, of Montpellier, demonstrated the inhibitory action of iboga on serum cholinesterase (Vincent, D. and Séro, I. 1942)[56].

Previously, in 1939, Wurman (1939)[57] had published a Doctorate of Medicine thesis in Paris, entitled "Contribution à l'étude expérimentale et thérapeutique d'un extrait de *T. manii* (syn. *T. Subsessilis*), d'origine gabonaise" (Contribution to the experimental and therapeutic study of an extract of *T. manii* [syn. *T. subsessilis*] from Gabon).

This extract reportedly contained about 6% total alkaloids including 4% ibogaine, as determined by the assays of Raymond-Hamet.

According to Wurman, this extract stimulates hematopoiesis in the mouse and has a hypotensive action.

Therapeutic application: Lambarène, (1939-1970)

It was during this period, in 1939, that a proprietary pharmaceutical preparation called **Lambarène** in honor of Dr. Schweitzer, was first marketed in France: it was based on a dry pharmaceutical extract of roots of *Tabernanthe manii*, with a drug content of 0.20 g of extract per tablet (about 8 mg of ibogaine), whose therapeutic action, dosage regimen and effects were, according to package information, as follows: "a neuromuscular stimulant, promoting cell combustions and getting rid of fatigue, indicated in cases of depression, asthenia, in convalescence, infectious diseases, greater than normal physical or mental efforts by healthy individuals. 2-4 Tablets daily. Rapid and prolonged action, not followed by depression. May be administered to hypertensives."

The fact that it was recommended for physical or mental efforts by healthy individuals rapidly aroused the interest of post-war athletes (Paris-Strasbourg walking race competitors, mountain climbers, cyclists, cross-country runners, etc.).

Haroun Tazieff, celebrated French geologist and volcanologist, Honorary Research Director at the C.N.R.S., gave the following description of his experience with Lambarène in his book, *Le gouffre de la Pierre Saint-Martin* (Arnaud publ.).

> "Go ahead", said André (the expedition's doctor), "it will give you strength. And also swallow this, he added as he handed me a tablet.
>
> Do you think we should already be taking this? Shouldn't we save it until we are completely exhausted?"
>
> It was Lambarène, a stimulant, a "doping" agent which was supposed to enable us to find the necessary strength in our exhausted bodies.
>
> "No, go ahead, what we have to do is to prevent fatigue. Later on, we'll be taking some more, regularly..."
>
> We had just swallowed our third tablet of Lambarène, and we

could feel a tonic effect.

I hastened, "doped up" on Lambarène, and jumped from one boulder to the next with renewed agility...

Despite the Lambarène, I was really beginning to feel worn out and had trouble scaling the huge boulders which we immediately had to descend to start on the next one, while insidious cramps crept along the anterior portions of my thighs.

I was hoping they wouldn't get worse...

I took another Lambarène. While André climbed up the ladder, I massaged my legs. Within ten minutes, everything was in order and in turn I climbed up without any difficulty...

In spite of the fact that I had swallowed a Lambarène, I really didn't feel talkative at all. Time flowed on, like a stream. One hour passed, and so did the effect of the Lambarène...

And, on this last day, this frenzied race toward our discovery, these six hours of descent and climbing sustained by Lambarène, this day on top of all others, it was terrible...

Only the stimulant enabled us to keep going. When the effect of the last tablet had passed and I had no more, I was nothing but a pitiful package of meat miserably dangling at the end of a wire.

Lambarène disappeared from the market around 1966 and the sale of ibogaine was prohibited.

Since 1989, this alkaloid has been on the list of doping substances banned by the International Olympic Committee, the International Union of Cyclists and the French State Secretariat for Youth and Sports.

Pharmacodynamics, 1950s-1970s

The 3rd period covers the time of the discovery of reserpine in the *Rauwolfias* by Schlittler (Mueller, J.M., Schlittler, E., Bein, H.J. 1952)[40], which prompted a new interest in plants containing indole alkaloids.

French chemists were outstanding in this field by virtue of their discovery of new indole alkaloids and by establishing their structures, but we must say that foreign pharmacologists were mainly responsible for the new research on the pharmacodynamics of Iboga.

A description of these investigations can be found in the PhD thesis of Dhahir (1971)[12], and in an article by J. Delourme-Houdé which was published in *Fitoterapia* (Delourme-Houdé 1977)[19].

Structurally, ibogaine is a derivative of serotonin and an indole azepine.[25] It was this comparison with serotonin that was the main subject of Dhahir's thesis (1971)[14].

In this thesis at the Department of Pharmacology and Toxicology of the University of Indiana in 1971, Dhahir established the acute and

chronic toxicities of ibogaine:

The intragastric LD50 in the rat is 327 mg/kg. The intraperitoneal LD50 in the rat is 145 mg/kg.

The mouse and the guinea pig are more sensitive than the rat. The toxicity is not changed by the ingestion of 1 g/kg of alcohol. Alcohol suppresses tremor in the animal as a result of its depressant effect on the CNS which attenuates the stimulant effects of ibogaine.

Therefore, the inebriation in the dog reported in 1901 by Phisalix is not comparable to alcoholic inebriation.

Larger quantities of alcohol (2 g/kg) slightly increase the toxicity of ibogaine.

Atropine sulfate at doses of 1-2 mg/kg does not affect the toxicity of ibogaine but does away with the ataxia, tremors and most of the external signs of intoxication.

The study of chronic toxicity shows that when ibogaine was administered for 30 days at a dose of 10 mg/kg i.p., it caused no liver, kidney, heart or brain damage.

The administration of 40 mg/kg for 12 days to 10 rats produced no pathological changes in the liver, kidneys, heart or brain.

This is in contrast with the toxicity of serotonin which, at doses four times lower, causes serious damage to the kidneys: tubular dilatation and degeneration and the presence of eosinophils.

Thus, ibogaine appears to be a relatively nontoxic alkaloid, particularly by oral administration, with a wide therapeutic index ranging from 10 to 50 mg as an antidepressant in humans and, as we shall see later, from 300 mg to 1 g when used for its oneiric action, the toxic doses being similar to those of aspirin and quinine.

Schneider and Reinehart (1957)[51] analyzed the cardiovascular effect of ibogaine hydrochloride in the dog and the cat and showed that at doses of 2 to 5 mg/kg, ibogaine exerts *negative chronotropic and inotropic* effects.

The slowing of the cardiac output is responsible for the drop in blood pressure. *These effects are suppressed by atropine.*

Gershon and Lang (1962)[16] suggested that the changes in the electrocardiogram of the unanesthetized dog indicate that ibogaine enhances sinus arrhythmia and potentiates the vagal effects. They confirmed what had been pointed out by Raymond-Hamet: ibogaine potentiates hypertension produced by epinephrine and norepinephrine.

They pointed out that the negative chronotropic activity of indole alkaloids is increased by the introduction of a methoxyl group on the indole ring.

Zetler and Lessau (1972)[58] synthesized two azepino-indoles and compared them with four indole alkaloids. These compounds have di-

rect noncholinergic effects with negative chronotropic and inotropic actions.

Neuropharmacological studies were carried out by Schneider and Sigg(1957)[52] using isolated cat brain preparations, as well as curarized cats and dogs.

The electroencephalogram shows a *typical arousal* syndrome when 2 to 5 mg/kg of ibogaine hydrochloride are given intravenously. They suggested that the site of action of ibogaine must be in the ascending reticular formation.

Pretreatment with atropine (2 mg/kg) blocks this ibogaine-induced arousal. There is no effect on neuromuscular transmission.

Numerous researchers were interested in the tremor produced by certain indole alkaloids, particularly ibogaine. This tremor is of central origin and is suppressed by atropine.

In addition, Schneider explained the morphine-potentiating effect of ibogaine by its inhibiting action on cholinesterase.[53]

Finally, in 1972, in a study on the effects of some CNS-active drugs that can interact with ceruloplasmin, Barrass and Coult (1972)[2] indicated that at a concentration equal to that of the substrate, ibogaine *inhibits* 50% of the oxidation of serotonin and *catalyzes* the oxidation of catecholamines (200%) by the copper-containing plasma globulin. *They classified ibogaine among the hallucinogens* and noted that LSD produces the same effects at a concentration 10 times lower.

It should be noted that Naranjo (1969)[41] explained the antifatigue and antidepressant properties of ibogaine by defining it as a monoamine oxidase inhibitor (MAOI).

We should add that more recently in France, Wepierre[45] studied the influence of tabernanthine, an isomer of ibogaine, on the kinetic parameters of the turnover of cardiac norepinephrine in the hypoxic rat. This hypoxia can serve as a model to assess the protective action of this substance against fatigue.

In addition, at Gif-sur-Yvette, in the CNRS Laboratory of Physiology of the Nervous System, Dr. Naquet demonstrated that in the cat, tabernanthine produces a calm and prolonged wakefulness, *very different from the one produced by amphetamines.* (Da Costa, L., Sulklaper, I., Naquet, R., *Rev. EEG Neurophysiol.* 1980, 10, 1, 105)[11]. This wakefulness is followed by slow sleep without the anomalies that occur in REM sleep, the period of dreams (Da Costa, L. 1980).[11]

1970s-1990

This previous third period lasted about 25 years. It was not until the fourth period, which runs from the 1970s to the present, that

knowledge was acquired, sometimes illegally, into the nature of the *oneiric effects in humans* of iboga and ibogaine, on the one hand through the remarkable studies in the field by the CNRS ethnologists O. Gollnhofer and R. Sillans and by the ORSTOM (Office of Overseas Scientific and Technical Research) ethnologist J. Binet, concerning the *Mitsogho Bwiti* and its extension to the different *Bwitis of the Fang* (Gollnhofer, O. and Sillans, R., 1985); Gollnhofer, O. and Sillans, R., 1983; Binet, J., Gollnhofer O., Sillans, R., 1972,)[23,24,4] and on the other hand through the researches conducted in Chile by Claudio Naranjo (1969),[41] and in North America by Howard Lotsof (1985, 1986, 1989, 1991).[32-37]

The Gabonese rituals of iboga:
Bwiti of the Mitsogho[4,23,24]

The original Bwiti or Bwiti of the Mitsogho arose among the Mitsogho when they reached the territory that is now Gabon. In the remote period, the Bwiti itself was a product of a syncretism made up of ancestor worship enhanced by the discovery of iboga (perhaps imparted by the Pygmies of the equatorial forest) and of cultural elements acquired during the migrations of the Mitsogho.

Among the Mitsogho (and the Bapinzi), the Bwiti is *strictly for males*, and those who have been initiated are considered as Masters and sole custodians of the mystery of the *visual knowledge* of the beyond given to them by iboga, the "miraculous tree".

This initiation is indispensable for social promotion within the tribe and any individual who is unable to join the Bwiti is *strictly for* outcast and is considered by one and all as a girl.

Iboga brings about the *visual, tactile and auditory* certainty of the irrefutable existence of the beyond. Through his spiritually immutable substance, man belongs on two planes of existence with which he blends, knowing not where birth and death begin. Physical death loses all meaning because it is nothing but a new life, another existence. "It is Iboga that conditions the several existences."

Iboga does away with the notion of time, *the present, past and future blend into one*, as in the *superluminous universe* of Régis and Brigitte Dutheil[16]: through the absorption of iboga, man returns to the birthplace whence he came.

In order to be admitted to the Bwiti Society, the candidates must submit to a series of trials or rites of passage that begin in an enclosure strictly reserved for the initiates.

Each candidate has a "mother", who is an old initiate; this is a *man* who sees to it that the initiatory ceremony is conducted properly.

This ceremony consists essentially of ingesting scrapings of iboga root (*Tabernanthe iboga* H.Bn. var. ñoke and mbassoka).

Continued after following page

During the Bwiti initiations, the Iboga causes tremendous "cleansings"

This "chewing of iboga" is supervised by the "mother" who constantly checks the dosage of the drug according to the physiological reactions of his candidate who must take a very large quantity of root bark and stems of *T. iboga*.

This chewing is preceded by abstinence from sex and food the day before. The rite is very strict and each manifestation has great symbolic value.

Over a fire, the elders roast squash seeds. The sound they make as they pop symbolizes the release of the spirit -- which supposedly leaves the body through the fontanelle -- on its mystical journey. The candidate's skull is *struck three times with a hammer* to help free his spirit.

The neophyte's tongue is pricked with a needle to give it the power to relate the visions to come.

Since the chewing can last *several days*, the *disincarnation* and the reincarnation of the neophyte are reenacted before the visions appear.

The candidate is led to the river, and a miniature dugout canoe made of a leaf, bearing a lit torch of okoumé resin, is set upon the waters. This rite represents the journey of the spirit, downstream, toward the West, the setting sun, death, and symbolizes *disincarnation*.

A stake surmounted by a diamond-shaped wooden structure is planted in midstream: it represents the female sexual organ, which the candidate must go through (in a fetal state) *against the current*, thus swimming upstream, from the East, the rising sun, from *birth*.

For the enactment of this initiatory birth, the neophyte's head is shaved and is sprinkled with a red wood (padouk), as is done with the newborn.

Finally, as soon as the neophyte's psychological state after the chewing is considered satisfactory, he is led into the Temple where he is placed on the *left side*, symbolizing womanhood, darkness, death.

He remains in the Temple, on the left side, absorbing iboga leaves until the *normative perception of the visions* occurs.

During the chewing, the effects of the drug begin to be manifested twenty minutes after the first absorption of iboga by *violent and repeated vomiting*: "The belly of the neophyte (banzi) is emptied even of its mother's milk."

To go to the beyond, one has to die; the body remains on the ground with the elders, the soul departs.

The physiological manifestations begin with drowsiness, followed by motor incoordination, strong agitation, tremor, crying and laughter, partial anesthesia with intermittent hypothermia and hyperthermia, panting that may go as far as choking.

To assess the progress of the intoxication and to adjust the dosage,

those in charge take the pulse, listen to the heartbeat, check the temperature simply by touching the body and evaluate sensibility by pricking with a needle at different times. According to the physiological state, the "mothers" regulate the dose of iboga up or down from time to time.

The oneiric effects do not begin to be manifested until after about ten hours, during which time the aforementioned rituals take place, partly in public with dances and music.

Among the Mitsogho, the subjects under the influence of iboga go through *four stages* to reach an image content corresponding to the required norms. The candidates are constantly questioned by the *initiated elders* as to the content of what they perceive. The elders are the ones who make a judgment as to the initiatory value of the vision described.

The *first vision* consists of hazy, incoherent, disordered images devoid of religious significance, whose authenticity is often questioned by the neophyte.

The *second stage* is characterized by a series of apparitions of menacing looking animals that sometimes break apart and at times form together again rapidly.

The initiate is symbolically "reborn" by passing under (through) the vagina's of three women. He then ritually becomes a sperm swimming toward his mothers womb.

In the *third stage*, the oneiric vision clearly progresses toward the mythical stereotype. The neophyte grows more and more calm, a sign of a *pleasant, peaceful vision* that dispels his doubts as to the objectivity and factualness of the image perceived.

The neophyte feels himself enveloped by a wind that carries him off in the twinkling of an eye, to the sound of the *Ngombi harp*, to an immense village *without a beginning or end.*

We ought to say a word about the symbolic value of the musical bow whose melodious sounds accompany the ceremony. It represents a link between the village of the men here on earth and the village of the father in the beyond. The musical bow symbolizes the road of life and death.

On the way over, voices are heard: "Who is it that you seek, stranger?" And the traveler answers: "I seek the Bwiti." The voices suddenly take on human forms that ask the question again and then respond in a chorus: "You are looking for the Bwiti. The Bwiti is us, your ancestors, we constitute the Bwiti."

The vision tends more and more to become normative. The initiates then tell the candidate: "You are on the right path, the Bwiti will soon be here. Go further on. Look, and you will find it. You must not forsake the images; take up where you left off."

A voice gives the candidate his initiatory name. The neophyte is watched constantly by his "mother", who regulates his psychophysiological reactions to prevent him from letting *terrifying phantoms* interfere, for they would lead him down the wrong path, down the *road of death.*

The *fourth stage*, of vision (the one that ethnologists refer to as the stage of *normative visions*) is the one marked by the encounter with higher spiritual entities.

After a dialogue with his ancestors, the neophyte suddenly finds "his legs immobilized, before two Extraordinary Beings" who disclose that he is in the "Village of the Bwiti" (village of the dead). They ask him why he has come to this place.

After hearing the answer of the neophyte, the "Fantastic Beings" speak again. The first one says: "My name is Nzamba-Kana, the father of humankind, the first man on earth", and the one standing to his left says: "My name is Disumba, the mother of humankind (wife of Nzamba-Kana) and the first woman on earth."

Suddenly, the "Village of the Dead" is covered with increasingly intense sparks, a "ball of light" takes shape and becomes distinct (Kombé, the sun). This ball of light questions the visitor as to the reasons for his journey. "Do you know who I am? I am the Chief of the World, I am the *essential point!*" This is my wife Ngondi (the moon)

and these are my children (Minanga) the stars. The Bwiti is everything you have seen with your own eyes."

After this dialogue, the sun and the moon change into a handsome boy and a beautiful girl.

Without any warning, the moon and the sun resume their original forms and disappear. The thunder (Ngadi) is heard and calm returns everywhere.

The wind wraps around the neophyte for a second time and carries him to earth among the living.

The elders greet him with pride: "He has seen the Bwiti with his own eyes", and invite him to take his place on the right side of the Temple, the side of men and of life.

The candidate has become an initiate by discovering the Bwiti in another reality, that is, in *the other life stemming at once from physical death and initiatory death.*

Through the waking dream, he catches a glimpse, in the *present, past and future* of his own being, of man, immutable in his spiritual essence, and living on two planes of existence.

However, after the rites of passage, the new member will be isolated from the outside world for a period of one to three weeks. During this time, his meals will be prepared and served by a young woman who has recently given birth, because he is considered as a newborn.

The initiate has seen, he knows, he believes, but as a Mitsogho, he will only make this journey twice: *during the initiation and on the day of his death.* It is out of the question for him to take iboga again under the same conditions.

From then on, the sacred plant will only be used sparingly, to "*warm the heart*" and to help him "*in physical efforts or discussion.*"

We can learn several things from this study of the Mitsogho Bwiti.

First of all, there are some striking similarities between the Bwiti initiation and the freemasonery initiation rites. The end result is the same, the knowledge of the mysteries of the beyond, which the masons call the "sublime secret". Freemasonry initiation is preceded by the candidate's retreat during which he is assisted by one who has been previously initiated. The latter will convey to him, as he makes him pass through a narrow door, that the initiation is a *new birth.*

But most astonishing, in the masonry ritual, are the three blows on the head with a mallet, in remembrance of the assassination of Hiram, the architect of the Temple of Solomon, by three of his companions to whom he refused to reveal the "sublime secret". The only difference between the masons and the followers of the Bwiti is that the latter have the certainty of knowing this secret.

The Bwiti initiation, among the Mitsogho, concerns essentially the

passage from adolescence to manhood, hence the necessity of eliminating the epigenetic elements of childhood and adolescence in order to reprogram in the young man a new ego corresponding to the cultural norms of the tribe.

To achieve this, the Mitsogho call on the *instrumental deprivation of sleep*, as the initiation lasts for days without sleep or food, as well as on *pharmacological deprivation* through the chewing of iboga.

The result is a *waking dream* without psychotic manifestations during which the subject remains perfectly conscious and can communicate with those around him, being at once an actor and a spectator of his visions.

What is remarkable is the fact that iboga intoxication is very gradual, which makes it possible to observe several stages during these visions.

Ethnologists were able to follow in the field the progression of this intoxication and to distinguish four characteristic stages during the initiation.

In the first three stages, the visions correspond essentially to what the psychoanalysts call the subterranean world of Freud.

The fourth stage is referred to by the ethnologists as the stage of *normative visions* corresponding to the *collective and cultural image* of the tribe (cf. Jung).

While, in the Bwiti *ritual*, we did not fail to bring out certain similarities between the Bwiti initiation and the Freemasonry initiation, we are compelled likewise to draw analogies between certain *aspects of the vision* resulting from the absorption of iboga and what certain persons see at the time of *clinical death*. We have discussed this topic in the conclusions.

The neophyte will have to face initiatory (or real) death that will enable him to gain access to the things of the beyond.

He can do so only if he has been properly prepared and, especially, if his *motivation* is sufficient.

For various reasons - poor preparation, inadequate motivation, fear, psychosis, neurosis - certain subjects are unable to get past this critical phase. They fall prey to evil genies who veer them off onto the road of death.

The elders will then decide to stop the initiation by means of an antidote whose composition is not known. We should note that the pharmacology of ibogaine has shown that atropine (an acetylcholine antagonist) suppresses all signs of ibogaine intoxication as well as ibogaine's arousal and inotropic activities.

The *Ombudi* (or Ombwiri, among the Fang) is an initiatory order reserved for women who belong to the therapists among the Mitsogho

and the Fang.

The women take iboga in smaller quantities than the ones taken in the Bwiti initiation. In their case, the visions do not go beyond the *third (Freudian) stage* during which genies, good or evil, communicate to the women that they are in possession of the causes of the affliction or illness for which they were consulted.

Bwiti of the Fang

(Gollnhofer, O. & Sillans, R. 1985; Gollnhofer, O. & Sillans, R. 1983; Binet, J., Gollnhofer, O., Sillans, R. 1972)[23,24,4]

Along the coastal portions of Gabon, the Bwiti began to be known by the Fang at the time of the explorations of Savorgnan de Brazza, but according to a letter from Lucien Meyo, secretary of the Prophet Ekang Nwa, "it was in 1908 that the Itsogho and Bapinzi arrived in Gabon, that is to say, in the Libreville estuary. That is where they taught the Fang how to eat iboga by the root." Prior to that time, the Fang used the leaves of iboga and of **alan** (*Alchornea floribunda*, an euphorbia from which Mrs. F. Khuong-Huu[29] isolated a new alkaloid, alchorneine), but only the effects of iboga roots ultimately produce the visions of the Bwiti.

The Bwiti of the Fang, unlike that of the Mitsogho, accepts women as members, but all of them, regardless of sex, are admitted only after taking iboga.

The iboga root is absorbed not only in the form of fine scrapings but also in a preparation made of cane juice or sugar, palm wine or milk. While the extraction of iboga root is reserved for the men, the "galenic preparations" are made by the women and are referred to as "express" or "automatic".

Such preparations, which reduce the bitterness and partly prevent the vomiting, make it possible to achieve the phase of normative visions more rapidly.

During the rites of passage, the essential features of the Mitsogho rites are preserved and the ritual language is Mitsogho.

However, the "mother" is a woman, sometimes accompanied by her husband, who becomes the "father".

Great importance is given to the *retreat* and to the *confession* that precede the initiation.

The notion of purity is an obsession in the Fang mentality, and the chewing is perceived as a trial that serves to expiate (by vomiting) the wrongs that have been committed.

The Fang Bwiti is actually the result of an adaptation of the original Bwiti of the Mitsogho to the traditional ancestor worship (Byeri),

with the integration of Christian elements and concepts.

As a result, the Fang Bwiti is not uniform and is structured through many branches that are independent from each other, in the midst of which "prophetic and messianic movements" flourish.

According to Michel Fromaget (1986)[18], Chairman of the Department of Psychology of Libreville University from 1981 to 1983, there are two sorts of Bwiti in Gabon.

The Bwiti of the Mitsogho which has been preserved in a very sober, refined form close to the original model, the initial Bwiti or Disumba Bwiti, from the name of the first woman, which has two variants:

The Mitsogho Bwiti of the nganga-a-misoko, seers and divining sorcerers, eminent therapists who practice psychosomatic healing and a sort of psychoanalysis.

The N'dea Bwiti, a cult of sorcerers, a deviation from the Mitsogho Bwiti with human sacrifices and cannibalism, whose ultimate goal is magic, the securing of supernatural powers.

The Fang Bwiti, received mediately at a late period by the Fang, is an astonishing syncretism with a blend of Christianity and animism.

Bureau (1972)[7] mentions 12 subdivisions in the Fang Bwiti. Therefore, we must give up any thought of studying the Fang Bwiti as a uniform, homogeneous entity, and it would be illusory and inaccurate to try to look for a "normative Fang vision" comparable to the Mitsogho Bwiti.

Therefore, within a community in which the initiation is to take place, everything depends on the relationships that are accepted in that community between the worship of the ancestors (represented by their skulls), the original Bwiti, and Christianity.

If we compare, in broad terms, the Fang Bwiti and the original Bwiti, we find striking similarities between the contents of the vision. Only the setting and the figures or persons represented differ. The latter are entities derived from Christianity and may appear in unlimited numbers.

However, it would be a mistake to think that the Fang Bwiti has departed completely from the original Bwiti and from the ancestral culture of the Fang. The elements are in there, but are not very apparent. However, they can be if we know the connection between the figures that are recognized and those that are concealed behind them.

A Christian religious figure may incarnate at the same time several Fang spiritual entities, and vice versa.

During the rites of passage, we find the same psychophysiological effects as the ones observed among the Mitsogho.

After a long series of episodes, during his mystical ascension, the

subject under the influence of iboga at its peak feels "as if transported by the wind" to the beyond before the house of Christ and of God. He is guided to that place by the ancestors, to the sound of the harp.

A voice gives him his initiatory name and tells him how much money he will have to pay to be initiated.

During his journey, he sees many saints, Noah, priests in their cassock. Christ, dressed in gold garments, questions the stranger as to the reason for his visit. And the neophyte answers: "I am seeking, I want to see the Lord Jesus Christ". "I am the one you seek", Christ replies.

From one neophyte to the next, the content of the narratives describe encounters with Christ in some other setting.

The subject first goes through "purgatory, where men suffer", then on to heaven with its seven planes where angels glide. At the highest plane, the traveler sees a man bearing a cross, and further on the beard of God the Father.

In other visions, the Virgin Mary, Adam, and Lucifer appear.

The dialogue is practically identical in each vision with the dialogue reported among the Mitsogho.

In this syncretism, Nyingon (the female principle or the first woman, called Disumba among the Mitsogho) is assimilated both to Eve and to the Virgin Mary.

As for Nzame, the male principle, the first man, or Nzamba-Kana among the Mitsogho, he is represented by Jesus Christ.

To certain prophets, Adam and Christ personify Ngoroyo-Ama, that is to say, the "*Supreme Being*", who is never perceived in the Mitsogho vision.

Lucifer, the rainbow-serpent, is present in the Fang vision. He represents evil, that is, *Evus*, a well-known notion among the Fang.

In their lifetime, the Fang can make several journeys under the ritual conditions of the Bwiti, enabling them to confirm the reality of their visions. The initiates may also belong to the Ombwiri possession society (reserved for women and called ombudi among the Mitsogho). This society, which plays a great role in medical diagnosis, is characterized by the vision, under the influence of iboga, of genies who during the course of public divinatory sessions will reveal the nature of the affliction suffered by the patient who has come for consultation.

In the Ombwiri, we can note some similarity with Voodoo in the Caribbean and South America.

Among the Mitsogho, the *normative vision* is that of the whole tribe and corresponds in the initiate to the knowledge recorded *orally* since in his childhood within the tribe.

With the Fang, we observe many differences because of the changes and turnovers that may have taken place in the initiatory experience,

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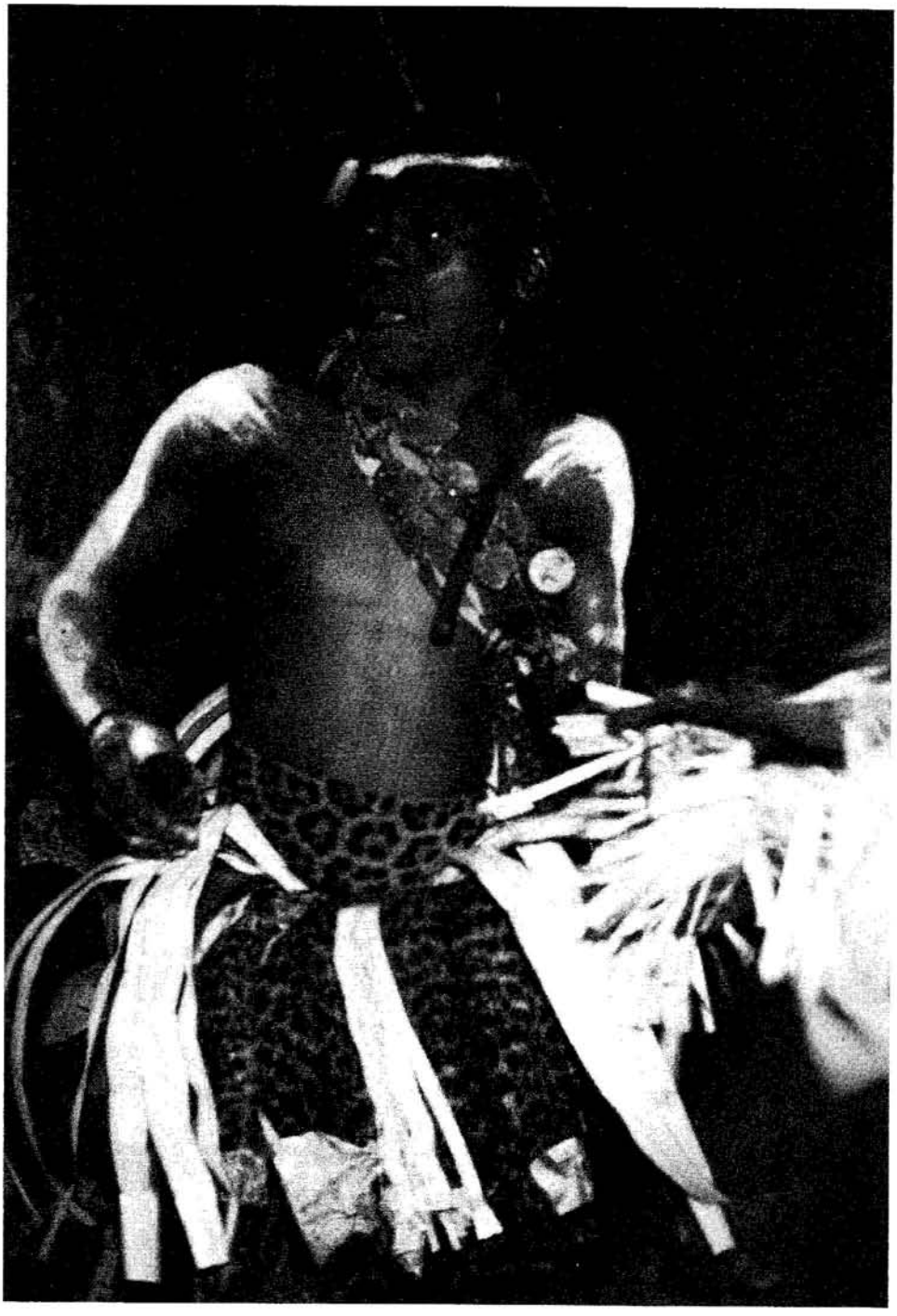

The order of Nganga a Misoka; Mitshoga. Public rituals are held at night with the Nganga (above) on the hunt for sorcerers

the influence of Christianity and the competition among various more or less orthodox messianic and prophetic movements, and the loss of the tribal notion.

Some whites, most of them French, have voluntarily gone through the trial of chewing of iboga. A few of them were able to be interviewed. A study of the the interpretation of these interviews is in progress at this time (O. Gollnhofer and R. Sillans).

Ibogaine in psychotherapy: psychoanalysis according to Naranjo[41]

Claudio Naranjo is a Chilean psychotherapeutic physician who, while in training at the Institute of Personality and Research, University of California at Berkeley, in 1969, published a remarkable report entitled "Psychotherapeutic Possibilities of New Fantasy-Enhancing Drugs" in *Clinical Toxicology* (Naranjo, C. 1969)[41]

Naranjo, in this report, deals with the therapeutic action, at so-called *subtoxic doses*, of two alkaloids, harmaline and ibogaine.

C. Naranjo wrote: "Because of the lack of a systematic study of these drugs (harmaline and ibogaine), from the simple standpoint of chemotherapy they were considered as toxic at a certain dose.

The fact is that the phenomena of harmaline and ibogaine intoxication are the points of greatest interest insofar as psychological exploration and psychotherapy are concerned."

Harmaline was isolated in 1841 by Goebel[22] from the seeds of a plant of the family Malpighiaceae, *Peganum harmala*. It has also been extracted from another South American Malpighia, *Banisteriopsis caapi* or yage.

Yage bark is the principal ingredient of the beverage used by the Indians of the region of the headwaters of the Amazon in connection with certain divination rites and practices and it is known, according to research done at the University of Chile, that this drug was central to the culture of different Indian tribes as far back as the paleolithic period.

The effects of harmaline and of ibogaine are practically unique among the psychoactive drugs.

The best term to describe these effects is the one used by William Turner, a yage specialist, **oneirophrenia**, to refer to the states induced by drugs that differ from psychotomimetic states by the absence of any psychotic symptom while sharing with the psychotic or psychotomimetic experience the preeminence of a primary thought process.

Harmaline and ibogaine are characterized in their psychological effects by a state such that it involves a *dream phenomenon without loss of consciousness* or change in the perception of the environment or any

illusions or formal deterioration of thought and without depersonalization.

In a word, we can say that there is an enhancement of fantasies which is remarkable in that it does not interfere with the ego. Such fantasies are more like *actual visions* than common everyday dreams.

In a study on the psychological effects of harmaline performed in Chile in 1963-64 together with other Chilean physicians and with Indian traditional therapists, Naranjo pointed out that one of the most remarkable aspects of the fantasy is its great consistency.

The themes or images that are evoked are mostly *archetypes*, according to Jung's definition of the term, namely ancient memories, generally common to all humans, buried in their collective unconscious.

To cite Voltaire: "The world, according to Plato, was composed of archetypal ideas that always remained deep in the brain."

Naranjo distinguishes between two sorts of archetypes:

The *mythical style* similar to the dream of a lost treasure, a kind old man, an ideal woman, a saint, an ideal community and various so-called noble thoughts, and so on.

The *instinctive style* such as it may be expressed in a fantasy with aggression, sex, bloody scenes of all sorts, incest or other practices.

By their spontaneity, these *waking dream* sequences are more extreme than any other reported by patients from their usual dreams and *do not resemble* the visions on mescaline or LSD. In fact, the effects of the two types of drugs seem to be poles part, those of the common *hallucinogens* being a high and angelic domain of esthetic sensations, of a lack of union with anything else, while the domain of the *oneirophrenics* is that of Freud's subterranean world of animal impulse and regression.

Naranjo gives some examples of subjects treated successfully with harmaline at doses of 4-5 mg/kg orally (about 300 mg).

Concerning *ibogaine*, Naranjo says that he knows less than about harmaline as regards the use of iboga by the Gabonese and Congolese. He is unacquainted with the *Bwiti* and apparently does not know the structure of ibogaine.

He knows that the drug has been used in the European pharmacopeia for its antifatigue properties at a low dose, which, according to him, is due to the fact that it is a MAOI.

As with harmaline, Naranjo uses ibogaine at doses of 4-5 mg/kg orally and one-quarter of it intravenously, and describes subjective reactions lasting about 6 hours.

Compared with the effects of harmaline, those of ibogaine appear less exotic. Even though the archetypal contents are common to both

(visions of animals being frequent), the quality of the fantasy is generally more personal and concerns the subject himself, his parents and significant others.

At the same time, the fantasy evoked by ibogaine is easier for the subjects to manipulate, either on their own initiative or through the psychotherapist, so that, more often than with other drugs, they can stop to contemplate a scene, go back, explore an alternative in a given sequence, bring a previous scene back to life, etc.

This ease with which the events in a treatment with ibogaine can be manipulated and the fact that the experience can be directed to the desired area is probably one of the reasons for the success observed by many psychotherapists who have used this drug.

Naranjo was much more impressed by the effects obtained in an ibogaine session than with those observed with any other drug.

An example really shows the ease with which the psychotherapist is able to direct his analysis:

This is a young patient who, when treated with ibogaine, decides to lie down and close his eyes shortly after feeling the effects of the drug:

"First, he sees the face of his father, facing him as though they were playing a game, with a restrained smile. His comment at this point is that his father looks like a little boy to him. It was like someone unfamiliar and yet familiar, like something the patient had forgotten for many years.

Suddenly his father's features change, distorted by rage. The scene changes and the patient sees a naked woman hiding her face with her arm, afraid.

Close by, he sees his father, also naked, throwing himself on the woman in a sexual attack. He feels a controlled rage in the woman whom he now identifies as his mother."

At that moment, Naranjo asks the subject to have his father and mother engage in conversation, intending in this way to distance the latent content of these images. "What is she saying?" "Go away"; "what does he feel?" He cannot imagine. "I am perplexed", he suggests.

Naranjo then chooses another tack to make the subject's feelings more conscious and explicit.

"Now, you be your father. Become your father, to the best of your dramatic abilities, and listen to what he is telling you."

Then, personifying his father, the patient falls, not into perplexity, but into a great sadness, suffering and rejecting his anguish.

Shortly after this episode, a drastic change occurred in the way the subject viewed his parents and, consequently, in his feelings toward them.

The next day, he commented that only now did he know how much he identified with his mother, looking at things through her eyes, blaming his father, and more than that, a man, which had interfered with his own masculine aspirations.

In contrast to his usual idealization of his mother in a total love and his perception of his father as a selfish brute, he then had the feeling of knowing them as they are.

He wrote: "I have seen my mother as a hard person, without affection or fear, and I no longer look upon my father as an insensitive being who had hurt her in his love affairs, but as someone who wishes to open the door of his love, without succeeding. Now, I am full of compassion for my mother."

Compared to the dramatic quality of psychedelic experiences, this episode may appear insignificant or trivial, and yet it was the key to a radical change in the attitudes of the young patient.

That might be said of the experiences with ibogaine in general, when we compare its effects with those of LSD.

Here, the type of contact concerned by the unconscious material is symbolic (rather than assuming the form of a free-floating emotion, as with LSD), and may henceforth be assimilated in the form of lasting signs.

Such signs generally occur when a fantasy or a hypothesis that had been unconscious becomes conscious with such clarity *that the ego of a mature person is compelled to become aware of his or her deep-rooted former error.*

Naranjo concludes as follows:

"I do not want to give the impression that I regard ibogaine as a psychiatric panacea that will bring changes by itself. I believe that many drugs may be used for psychological exploration, but that these drugs can only be an instrument.

I doubt that there is anything that can be achieved with a drug that cannot be done without it.

However, drugs can be psychological catalysts that make it possible to compress a very lengthy psychotherapeutic process into a shorter time and change its prognosis.

Although ibogaine cannot open a door by itself, it can be considered as the oil for its hinges".

At the time of the publication of his report on drugs that enhance fantasies, in June 1969, C. Naranjo, together with a Frenchman, D.P.M. Bocher, obtained a special drug patent in France pursuant to an application submitted on January 31, 1968 and issued on July 31, 1969, for:

"A new medication acting on the central nervous system that can

be used in psychotherapeutic treatments and as an antidrug preparation". (Bocher, D.P. & Naranjo, C. 1969).[5]

The drug was composed of total alkaloids of *Tabernanthe iboga* roots combined with an amphetamine in a proportion varying according to the behavior of the patient.

Among the 50 cases studied in psychiatry, Naranjo described four in support of his application for a "nontoxic drug that clarifies thoughts and permits a very thorough introspection while preserving the patient's emotional character which is indispensable for the stimulation of thought and imagination."

However, in this same period, following the resolutions of the World Health Assembly of May 1967 and May 1968, the American federal government classified ibogaine, through the F.D.A., among the substances analogous to lysergides and to certain CNS stimulants.

"Whereas, in the interest of public health, certain regulatory provisions should be applied relating to the manufacture, transportation, possession, sale and distribution, delivery and acquisition for valuable consideration or free of charge of soporific and narcotic substances, and of certain substances likely to *produce drug dependency or endanger human health*".

These regulations are applicable to the following substances, to their isomers, *unless expressly exempted*, to their salts, ethers and esters, as well as to the salts of said ethers and esters in all cases where such salts may exist.

The list of these substances includes: amphetamines, ibogaine, compounds and derivatives of lysergic acid, amides of lysergic acids and other derivatives, peyotl and mescaline [harmaline is not mentioned], hallucinogenic mushrooms, psilocybin and derivatives of dimethyltryptamine, 4-OH-DMT and 5-OH-DMT".

We shall return later to this decree which was applicable beginning in 1970 in several European countries, France and Belgium in particular.

The fact is that in France and in Belgium, nothing more was heard about ibogaine and the sale of Lambarène was prohibited.

Ibogaine for combatting drug dependencies according to Howard Lotsof[32,33,34,35,36,37]

In the early 1960s, a young American, Howard Lotsof, during the course of a drug party with some friends, offered six of them the trial of a single dose -about 500 mg - of ibogaine.

While interest in ibogaine may have started with this drug party, the unique effects of ibogaine became immediately evident in that it was not a substance conducive to such parties. There followed a period

of six months of lay research which provided a dose-related response study ranging from 1 mg/kg to 19 mg/kg of ibogaine in both addict and non-addict human subjects.

Five of Lotsof's seven friends gave up the use of drugs during these six months. As for young Lotsof, he rebuilt his life, and although he was not a physician or a psychologist, he dreamed ("I had a dream", he told us the first time we met, paraphrasing the minister Dr. Martin Luther King), he dreamed that he would be the one who would contribute to curing drug addicts by providing them ibogaine.

H. Lotsof collected all the available documentation on iboga and ibogaine and, as a good American and businessman, founded a New York corporation, NDA International, Inc., whose purpose was partly a humanitarian mission and partly the marketing of a proprietary pharmaceutical preparation, *Endabuse*, composed of capsules of ibogaine hydrochloride.

In 1985, H. Lotsof took out a U.S. Patent on a *Rapid method for interrupting the narcotic addiction syndrome*,(Lotsof, H. 1985)[36], followed by another one in 1986 on a *Rapid method for interrupting the cocaine and amphetamine addiction syndrome* (Lotsof, H. 1986)[35] and subsequently yet another in 1989 for a *Rapid method for attenuating the alcohol dependency syndrome.*(Lotsof, H. 1989).[34], and in 1991 for a *Rapid method for interrupting or attenuating the nicotine/tobacco dependency syndrome.*[37]

The heroin addiction syndrome had been interrupted in 5 of the 7 subjects described in the first patent.

A single treatment with ibogaine or ibogaine hydrochloride administered orally at a dosage ranging from 6 mg/kg to 19 mg/kg made it possible to interrupt the use of heroin for at least six months.

The duration of the treatment is about 30 hours, and ibogaine exerts a stimulant effect during this period. An abreactive process takes place during the treatment but does not become evident until the patient awakens from a natural sleep that occurs after the primary and secondary effects of ibogaine are diminished.

The drug addicts no longer desire to take heroin and show no perceptible signs of physical withdrawal. The subjects are relaxed and express themselves coherently. They demonstrate a *feeling of self-confidence.*

Lotsof describes the effects of the oral administration of ibogaine and divides these effects into three stages, comparable to the four stages of the *Bwiti of the Mitsogho.*

These three stages are described perfectly in the interview by the journalist Max Cantor[33] with a 44-year-old subject who had been a cocaine addict for more than eight years and was treated by the Lotsof

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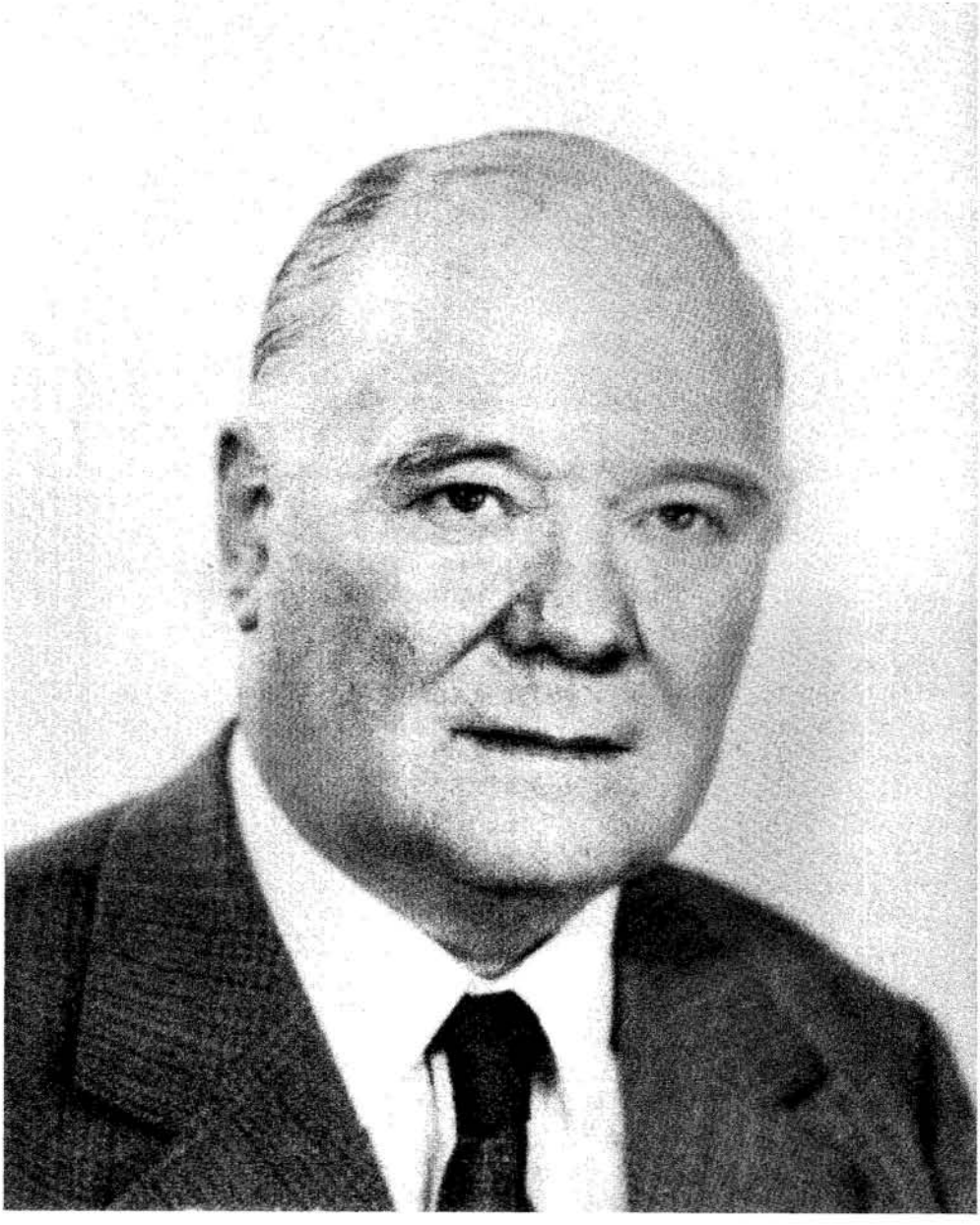

Robert Goutarel is the father of modern Ibogaine research

procedure.

1st stage: 15 to 20 minutes after the start of the treatment, a numbing of the skin is accompanied by an auditory buzzing and an oscillating sound. Objects appear to vibrate intensely.

The first visions appear after an hour. Suddenly, on the walls, there appears a screen on which the subject views pictures that may be archetypes, more or less deformed animals, an abyss lit up by lightning, etc., or more personal episodes related either to childhood or to more recent events.

The subject may question the persons he sees, identify with one of them, be at the same time a spectator and an actor. He views a film of his subconscious and his repressed memories. He looks within himself.

2nd stage: 5 to 10 hours later, the visions cease and cutaneous sensitivity begins to return. This stage is marked by an unusually high energy that lasts 5 to 8 hours, during which the subject see flashes of light around him. Then comes what the subject calls the question-and-answer period. He analyzes the visions that he remembers, seeks an interpretation and may communicate with the people around him.

Ibogaine *shows him where his problem is*. He has the impression that a reset button has been actuated. Everything is erased, everything becomes sharp and clear. He knows where his life took the wrong turn and what he must do to get back on the right path.

This question-and-answer period may last 20 hours, during which the subject remains under medical supervision.

3rd stage: the subject remains awake from a residual stimulation for up to 20 hours and then goes to sleep for as short a period as two hours and will wake up in top form, provided he is young and his general health had been good previously, *with a new self-confidence*, feeling no more need to take drugs. Mr. Lotsof, who knew of us, O. Gollnhofer, P. Potier (member of the French Academy of Sciences, Professor at the Museum of Natural History in Paris, Director of the Institute of Chemistry of Natural Substances, C.N.R.S.,Gif-sur-Yvette, 91190 Essonne, France) and R. Goutarel, through his bibliographical documentation, came to France and contacted us. We were able to get some appointments, with Mr. Lotsof, at the Ministry of Health when Madame Barzach was Minister. We must say that we were received with courtesy and some skepticism. And then, Ministries change...

Our impression was that the people we met with, still impressed with the failures of LSD, were always afraid of making some mistake for which they would have been held accountable.

And yet, around the same time, in *Figaro Magazine* of February 14, 1987, there was a story on a shock treatment administered by the

Buddhist monks of Tham-Krapok monastery in Thailand that resembles uncannily what is observed during the chewing of iboga.

A spectacular sequence presented to Madame Barzach and shown on television on the program 7/7 hosted by Madame Sinclair was the vomiting of the patients who, according to the commentator, had to get rid of the poisons in their system. Unfortunately, the drug was being kept secret, and it was said that Minister Chalandon had sent an observer over there to learn the secret. That secret seems obvious to us, and we know Apocynaceous plants from Asia containing ibogaine derivatives which, in all likelihood, have the same oneirophrenic properties as the latter.

At this time, Mr. Lotsof, who went to Gabon to collect a certain quantity of iboga, is having experiments pursued in several countries. Excellent results are being reported in the European and North American press. There have been several interviews with subjects successfully treated by the Lotsof procedure.

Pharmaceutical grade Ibogaine used in the treatment of addicts

Thanks to him, basic research is being conducted at Erasmus University of Rotterdam, at the Nathan Kline Institute at Orangeburg, N.Y., at Albany Medical College, N.Y., and through the Committee on Problems of Drug Dependence of the N.I.H., Bethesda, Maryland, for the purpose of investigating the different body systems, the CNS in particular, in which ibogaine is involved. Blockade of morphine-induced stimulation of mesolimbic and striatal dopamine by ibogaine has recently been demonstrated by the Albany Medical College researchers.[38]

The 1967-68 resolutions of the World Health Assembly classified ibogaine among the *drugs capable of producing dependency or impairing human health.*

When all is said and done, this alkaloid had been found guilty of the charge of being a hallucinogen similar to LSD, whose hazards for those who use it had recently come to light.

The fact is, however, that even though ibogaine is considered as a hallucinogen (oneirophrenic), it produces no drug dependency and it has proved to suppress dependency to opiates, amphetamines, cocaine, LSD and even alcohol and tobacco.

As for "impairing human health", the Gabonese experience shows that this is simply not true, quite the contrary.

The 1967-68 decree never did put an end to the illegal trade in amphetamines (the famous Ecstasy pill), nor to the trade in LSD. However, on that market, one never finds iboga or ibogaine.

According to Dhahir (1971)[14], the appearance of ibogaine on the illegal drug market was reported in 1967 by the police of Suffolk County, N.Y., on a single occasion, when it was used to dilute heroin, and after Haight Ashbury it was reportedly used by young addicts in San Francisco as a substitute for LSD.

Ibogaine suddenly disappeared from the market and it seems that the drug dealers rapidly became aware of the fact that its use would deprive them of part of their clientele.

Conclusions

What are we to conclude from this three-phase experience of the role of iboga (or ibogaine) at subtoxic doses, in the Bwiti, in psychotherapy according to Naranjo, and finally in combatting drug addiction?

1) In the Bwiti, and the Mitsogho Bwiti in particular in which we must emphasize the rigorous rites and the motivation inherent in it, the quantity of drug (scrapings of iboga root) is measured by the "mother", the initiate who accompanies and constantly watches over the initiate-to-be. It is measured in the number of baskets and cannot be translated

for us in weight of ibogaine. It is adjusted to the behavior of the subject and makes it possible to go past the first stage to reach the stage of so-called normative visions, corresponding to the *real motivation* of he who aspires to see and to know the things of the beyond.

The intoxication by iboga is slow and progressive, which makes it possible to observe four stages during the visions. The first three stages are essentially of the Freudian type and the fourth one, the so-called stage of normative visions, corresponds to the collective image of the tribe.

Finally, the initiation into the Bwiti among the Mitsogho concerns the passage from adolescence to adulthood. Hence the necessity of eliminating the epigenetic acquisitions from the period of childhood and adolescence in order to reprogram in the young man a new ego in keeping with the cultural norms of the tribe.

In the *Bwiti of the Fang*, the ceremony may be accelerated by substituting for the scrapings of iboga a galenic preparation flavored with milk, sugar or palm wine, known under the names of "express" or "automatic".

Women can be initiated in the Fang Bwiti, and many differences are observed due to the changes in the initiatory experience that may have occurred under the influence of Christianity and the competition among the various more or less orthodox messianic and prophetic movements and the loss of the tribal notion. Therefore, it is out of the question to speak of normative visions in the Fang Bwiti, which is a real syncretism between ancestor worship and Christianity. When all is said and done, the visions correspond to the culture of the future initiate: Christian and Western culture for whites who are initiated into the Fang Bwiti.

2) The doses of ibogaine used in *psychotherapy according to Naranjo* are relatively low, and the session does not last more than 6 hours. The dose of 300 mg orally appears to be the minimum required for triggering the visions analyzed by the psychotherapist who constantly guides the patients as he searches for the deep-seated causes of the neurosis for which the patient has consulted him. It appears that the sessions have to be repeated.

Naranjo's conclusion is that ibogaine cannot produce the changes just by itself, hence the need for a psychotherapist.

3) In the *treatment of drug addicts, H. Lotsof* gives a single dose of about 1 g of ibogaine hydrochloride orally.

The session is quite long, about 36 hours, which is comparable to what is observed during the initiation into the Bwiti, given that the slow chewing of iboga and the accompanying rites are dispensed with. We might note that in the Fang Bwiti, the session also lasts ap-

proximately 36 hours when the so-called "express" or "automatic" galenic preparation is substituted for the iboga scrapings.

Thus, the first visions appear two hours after the ingestion of ibogaine hydrochloride. The three phases described by Lotsof are comparable to the four phases of the Mitsogho Bwiti, the first phase being that of Freudian type visions, and the second phase ("questions and answers") being comparable to the phase of normative visions. Lotsof describes a third phase, one of residual stimulation followed by restorative sleep of short duration.

We should point out that in all likelihood, the success of the Lotsof method also depends on a *deep motivation* of the subject who is treated, which is the will to eliminate all drug dependency.

On November 17, 1989, the United States Senate Committee on the Judiciary published a Committee Report on Pharmacotherapy for Illicit Drug Use.

This report deals essentially with a research program, the Medication Development Program (MDP) entrusted to the National Institute on Drug Abuse (NIDA) in Rockville, Maryland.

Beginning in 1989, the Director of the MDP was given a subsidy of 30 million dollars. Starting at the beginning of 1990, the research budget was increased to 200 million dollars. The research, at the time, was not oriented toward developing a chemical substance that might cure addicted persons, but toward substitution drugs like methadone that remove the need for hard drugs, particularly cocaine, while creating a less dangerous dependence.

At the time, ibogaine had not been listed among the products of interest for combatting chemical dependency.

It was difficult to accept the fact that a chemical could, in a few days, suppress all dependency to opiates, cocaine or any other drug.

There were then and there are still two opposing schools of thought: the proponents of substitution chemical drugs and those of gentle, long-lasting psychotherapy that could sometimes result in a cure.

We can therefore understand that the method of H.S. Lotsof was initially met with disbelief and even hostility.

Before authorizing clinical trials for a new drug, the government agencies responsible still require, quite appropriately, that its activity be demonstrated in the animal.

In addition to proving that ibogaine has a low toxicity[14] and perhaps potentiates the analgesic action of morphine[32], the pharmacodynamic studies in animals had supplied few data demonstrating the incredible property of ibogaine to modify the behavior of an individual and result in a new individuation of the brain by eliminating

certain tendencies detrimental to its full development.

However, new techniques developed by researchers in the neurosciences have recently provided some definite information as to the mechanism of action of ibogaine in the treatment of addicts (morphine and cocaine).

Using microdialysis, Di Chiara and Imperato (1988)[15] reported that acute administration of amphetamine, cocaine, morphine, nicotine and ethanol, all known to be addictive drugs, increases the extracellular dopamine (DA) levels in the *nucleus accumbens* and to a lesser extent in the *striatum.*

I.M. Maisonneuve (1991)[38] showed that ibogaine blocks the morphine-induced stimulation of mesolimbic and striatal dopamine. Curiously, it appears that ibogaine affects brain DA systems for a period of time that exceeds its elimination from the body and during this time alters the responses of these systems to morphine. Furthermore, ibogaine alters cocaine-induced accumbens dopamine neurotransmission (Broderick, P.A., 1992).[6]

Ibogaine reduced the cocaine-induced locomotor stimulation when given two hours before an acute injection of cocaine to mice. This stimulation is also reduced when a second injection of cocaine is given 24 hours later (H. Sershen, 1992).[54]

Finally, S.D. Glick (1991)[21] demonstrated that ibogaine reduces the intravenous self-administration of morphine in rats, not only in the hour after ibogaine treatment (acute effect) but also one day or more later (after-effect). Since ibogaine is eliminated rapidly[14], the persistence of this after-effect suggests the formation of a metabolite of ibogaine with a long half-life.

Barrass, B.C. and Coult (1972)[2] had shown that ibogaine *inhibits* the oxidation of serotonin by a monoamine oxidase (MAO), ceruloplasmin, and *catalyzes* the oxidation of catecholamines by the same substrate.

Indeed, ibogaine is a potent serotoninergic that has ability to reduce the level of cerebral catecholamines. This decrease in the level of catecholamines, dopamine in particular, explains the results described recently on the blockade of the stimulation of mesolimbic and striatal dopamine induced by morphine or cocaine.

We should point out that ibogaine is not specific to morphine and cocaine but is active in the presence of all addictive drugs, which justifies the patent applications that followed the initial patent of H.S. Lotsof.

The decrease in the level of catecholamines and the joint increase in the cerebral serotonin level result in a suppression of REM sleep

and the appearance of the hallucinatory phenomenon (C. Debru, 1990).[12]

LSD, like ibogaine,[2] is a potent serotoninergic that inhibits the oxidation of serotonin and catalyzes the oxidation of catecholamines by MAO.

However, there is an enormous difference between these two alkaloids: LSD is active at doses of less than a milligram. Its activity is difficult to control and the hallucinatory phenomena produced belong to a high and angelic domain of esthetic sensations, whereas ibogaine is hallucinogenic only at doses in excess of 100 mg, and the domain of this oneirophrenic substance is that of the subterranean world of Freud, of animal impulse and of regression.

The toxicity of ibogaine is very low, lower than that of aspirin, which makes this alkaloid easy to use.

The initiated masters in the Bwiti have an *antidote* that enables them to interrupt at any time the course of the visions if, for any reason, the absorption of iboga were to be actually life-threatening for the neophyte.

Let us note that serotonin is the neurotransmitter of the cerebral parasympathetic system, catecholamines being neurotransmitters in the cerebral orthosympathetic system, and that the negative chronotropic and inotropic effects as well as the arousal-producing action of ibogaine are nullified by atropine, an acetylcholine antagonist, acetylcholine being the neurotransmitter of the autonomic nervous system.

The long waking dream period that follows the absorption of iboga or ibogaine at a subtoxic dose (or oneirophrenic dose according to Naranjo) appears to be responsible for a temporary destructuring of the ego, followed by its restructuring.

This hypothesis is consistent with the observations made by the ethnologists in their studies of the Mitsogho Bwiti, and may be compared to the hypotheses of Michel Jouvet and Sir Francis Crick (C. Debru, 1990)[12] on the role of dreams in the programming and deprogramming of basic behavior patterns, resulting in a new individuation of the human brain.

Normally, the stages of wakefulness of the human brain are: waking, NREM (slow wave or deep) sleep, PGO (pontogeniculo-occipital) waves, and REM (rapid eye movement or paradoxical) sleep. REM sleep is the period of dreams.

Michel Jouvet and Sir Francis Crick consider PGO waves to be the *principal coding tool* that acts at the cortical level in recording the genetic and epigenetic acquisitions necessary for the individuation of the human brain.

In addition, through random activation mechanisms, the PGO waves eliminate from certain types of neuronal networks an informational overload linked to pathological behavior. This is what C. Debru calls "cleaning out the neuronal circuitry."

REM sleep apparently undertakes a sorting out process among the "residues" stirred up by the PGO wave sleep pattern and disposes of these residues during dreaming.

Michel Jouvet (letter of November 7, 1990) wrote: "The oneiric effects observed in humans and which are produced by hallucinogens do not enable us to approach the dream mechanisms directly, because it does appear that these two phenomena cannot be linked together as one."

We know, however, that the principal difference between dreams and hallucinations resides in the way in which the stages of wakefulness are organized, with the suppression of REM sleep and the intrusion of PGO waves in the arousal (waking) stage and in NREM (or slow) sleep.

The new organization becomes: waking (arousal) stage, stage of PGO waves, hallucination stage, sleep stage, and it appears possible that hallucinatory manifestations, the waking dream, eliminate "residues" stirred up by the PGO wave pattern in the absence of REM sleep.

Near Death Experiences

According to the Mitsogho, the initiate will see the Bwiti only twice in his life: on the day of his initiation and on the day of his death.

This means that the visions at the approach of death, what are called *near death experiences* (NDE), are the same as those termed normative visions.

We know that at the time of dying, some individuals see their whole life pass before them. In those who are "rescued from death", a spectacular transformation is observed. They no longer fear death, they feel stronger, more optimistic, calmer, and contemplate their life more positively.

Two Americans, the psychiatrist Raymond Moody[39] and the cardiologist Michael B. Sabom[49] have been particularly interested in the oneiric manifestations of NDE.

After a statistical study of 150 people "rescued from death", M.B. Sabom established a chart of these manifestations.

Sabom chart

Autoscopic phase	1. Subjective feeling of being dead 2. Peace and well-being 3. Disembodiment 4. Visions of material objects and events
Transcendental phase	5. Tunnel or dark zone 6. Evaluation of past life 7. Light 8. Access to a transcendental world – Entering in light 9. Encounter with other beings 10. Return to life

Most of these manifestations are to be found in the Mitsogho Bwiti. Starting at the 3rd stage, a peaceful and agreeable vision, disembodiment; the neophyte feels himself wrapped up by a wind that carries him off to an unknown village without beginning or end; a vision of two extraordinary Beings, Nzamba-Kana, the first man and Disumba, the first woman on earth. The village is covered by sparks, then a brilliant ball of light appears, the sun, and the moon and the stars. The sun is transformed into a handsome youth, the Master of the World, and the moon into a beautiful woman, his wife, the mother of his children, the stars. The wind carries the initiate back to earth where he is reborn and is greeted with joy and pride by the elders.

In the Fang Bwiti, where we have a syncretism between the religion of the ancestors and Christianity, it is difficult, because of many divergent forms, to describe a coherent whole corresponding to the normative visions of the Mitsoghos.

Interviews with young Frenchmen

However, interviews with young whites from France who were willing to go through the Fang Bwiti initiation trial show a set of visions characteristic of their Western and generally Christian culture, which for the most part fit in with Sabom's chart.

Thus, in the narration of a young man named Christophe, after some personal Freudian type visions and a few visions influenced by the Fang Bwiti, there is the following description: an absolute white, an indescribable luminous blue, the joy and perfection of blue, a cave and a cavernous sound, bright light entering through the forehead like a third eye, things seen in the astral, the sight of the spiritual world that cannot be seen with the body, a large sun fueled by our particles, the

light of which we are a part. Paradise that can be reached only through the spirit. The awareness of an envelope preventing him from joining the spiritual world, etc.

The visions, both in the Mitsogho Bwiti and in the Fang Bwiti, seem to be dominated by this impression of shining lights that we find at the second stage described by H.S. Lotsof in his first patent[36] (H.S. Lotsof, U.S. Patent 4,499,096, Feb. 12, 1985).

After a first stage characterized by Freudian type visions, the second stage is marked by a high energy during which the subject sees lightning or brief flashes of light that dance about him. During this period, thoughts continue that seem to amplify the meaning of the visions seen during the primary phase. This is the question-and-answer period described by one of the subjects treated according to H.S. Lotsof.

What is important is that this luminous phase of questions and answers is followed by a restorative sleep from which the subject awakens in great form and with a new self-confidence.

Lotsof notes that the first two stages together last 24 to 48 hours or longer, followed by only 3 to 4 hours of sleep. This reduced need for sleep may continue for 1 to 4 months.

The persistence of this long-term effect is consistent with the hypothesis (I.M. Maisonneuve, 1991; S.D. Glick, 1991) of a metabolite of ibogaine with a long half-life.

Some subjects treated according to Lotsof retain for a fairly long time the impression of being under the influence of ibogaine.

A young Dutch woman wrote: "I lost a great deal of interest in drugs in general, because the effect of ibogaine goes far beyond their effect, though not necessarily in a pleasant way", and "Up until four months after the treatment, I kept experiencing colors and light very intensely."

The conclusion of the report that was written recently by this 25-year-old woman six months after a treatment with ibogaine shows that this alkaloid produced a real change in what she calls her "addictive ego", and also shows the necessity of having a strong motivation.

"Ibogaine was a mental process for me, a form of spiritual purification and a truth serum in which I had to experience its results through time. It's only now, after six months, that I can say I am not addicted anymore. It takes time to admit that there is no way back. Ibogaine is not a solution in itself, although it takes away withdrawal completely. Ibogaine helps you to realize that all knowledge is available to cure yourself through will power. It's up to you if you are ready to give up your addictive ego."

The recent decision of the National Institute on Drug Abuse (NIDA) to add ibogaine to the list of drugs whose activity in the treat-

ment of drug dependency is to be evaluated should prompt the competent authorities in European countries to engage rapidly along the same lines. This applies to France in particular, where research on iboga and its alkaloids began at the end of the 19th century and has continued well beyond the second half of the 20th century.

If we consider all the pharmacodynamic and therapeutic investigations conducted on iboga and ibogaine, we may conclude that this alkaloid, unjustly condemned as a hallucinogen, is a key that opens the door of the fascinating realm of today's neurosciences, and we should like to see the creation of a *multidisciplinary organization* including ethnologists, medical doctors, psychiatrists and psychologists, chemists, pharmacists and pharmacologists, and even technical writers, so that we can get a definite opinion on the psychotherapeutic properties of iboga and ibogaine, whose use must now take place under the norms of pharmaceutical development and medical ethical review.

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Biographical note on the author

Robert Goutarel was born on March 15, 1909 at Dôle, in the Jura Department of France. He is a pharmacist, a doctor of medicine and a doctor of sciences, and was a student of professor V. Prelog, Nobel prizewinner in chemistry, at the Federal Polytechnic School in Zürich, Switzerland.

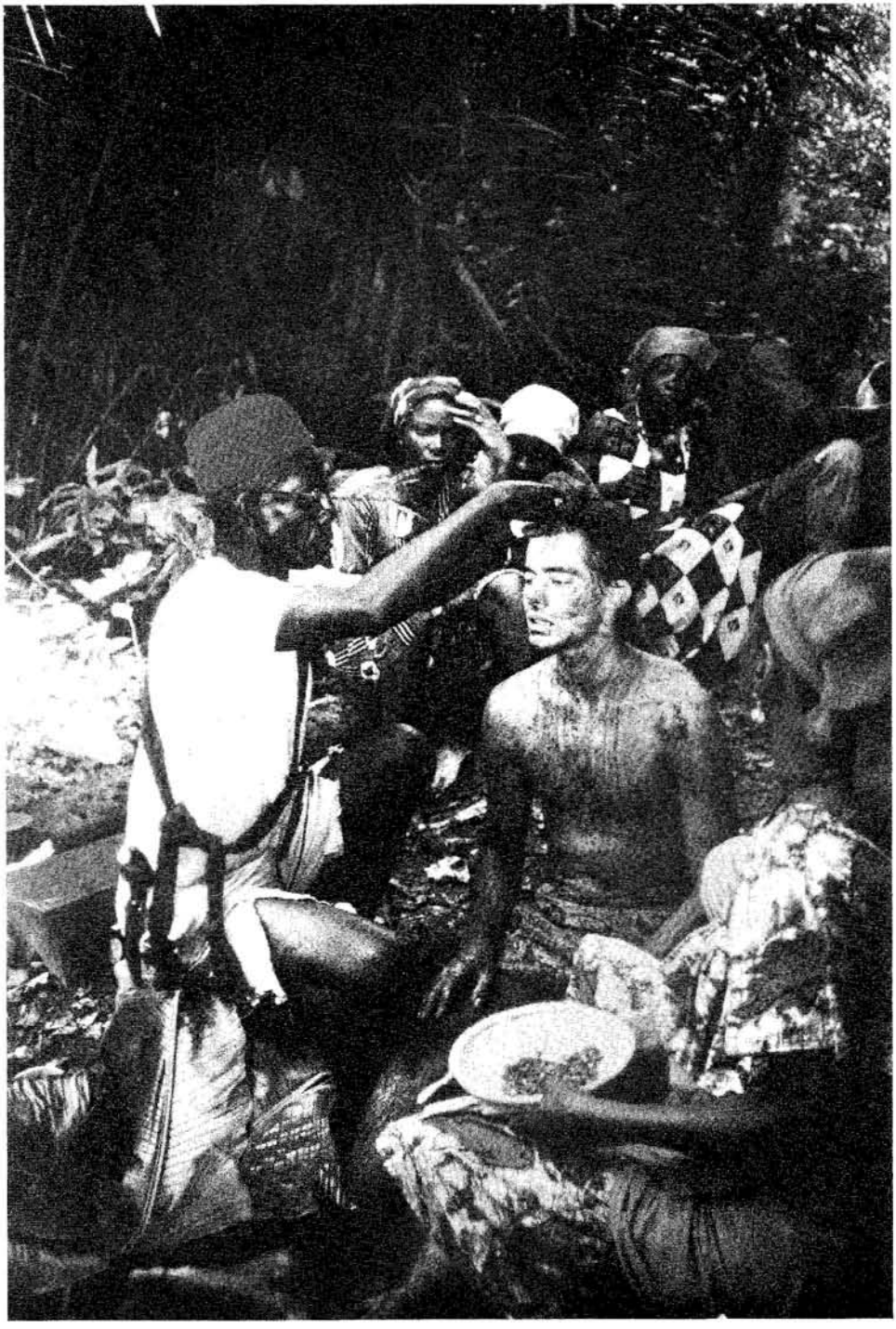
A specialist in the chemical study of plants containing alkaloids, a research director at the French Scientific Research Center (C.N.R.S.), R. Goutarel was the cofounder with Prof. M.M. Janot of the alkaloid section at the C.N.R.S. Institute of Chemistry of Natural Substances at Gif-sur-Yvette. He is the author of numerous publications, particularly on steroidal alkaloids: *Les alcaloïdes stéroïdiques des Apocynacées*, Hermann Publ., Paris, 1964; *Steroidal alkaloids of the Apocynaceae and Buxaceae*, *The Alkaloids Specialist Periodical Reports*, the Chemical Society, Burlington House, London, 1970 to 1976; and *On indole alkaloids: yohimbines, indolo-quinuclidic alkaloids of the Rubiaceae*; (über China Alkaloids, über die Konstitution von Cinchonamin und Chinamin, R. Goutarel, M.M. Janot, V. Prelog und W.I. Taylor, *Helv. Chim. Acta,* 33, p.150, 1949); *Iboga and Voacanga alkaloids.*

R. Goutarel isolated several of the alkaloids of *T. iboga* and *T. subsessilis*: ibogamine (8), ibolutein, iboxygaine, ibophylline, etc., as well as alkaloids of the genus *Voacanga*: voacangine, voacamine, voacorine, vobtusine.

The observation of 3-methyl-5-ethylpyridine by alkaline fusion of

ibogaine (*Structure de l'ibogaïne*, R. Goutarel, M.M. Janot, F. Mathys and V. Prelog, *C.R. Acad. Sci.* 237:1718, 1953), led him to propose a partial formula comprising all of the structural elements and four ring structures of this alkaloid (1a). The definitive formula including a fifth closed chain formed by a C16-C17 bond was established in 1957 by W.I. Taylor.

Institute of Chemistry of Natural Substances
of the National Scientific Research Center (C.N.R.S.)
91198 Gif-sur-Yvette Cedex, France.



A young Frenchman undergoing initiation into the Bwiti, an African secret society which uses Iboga in its' ceremonies