

AYAHUASCA, PEYOTL, YAGÉ

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THE plants known under the names of ayahuasca, peyotl and yagé have three things in common. When consumed in suitable quantity they evoke visual hallucinations of astonishing clarity and brilliance of colour, and usually of a pleasing nature. Secondly, because of this property they are revered by the Indians of the regions in which they grow, and have a central place in their religious ceremonies. Thirdly, and this is the reason for writing of them here, they are supposed to produce clairvoyant, telepathic and precognitive powers in persons consuming them. The use of peyotl for this purpose in Mexico is mentioned by several early Spanish writers.¹

Dost thou wander about at night, calling upon demons to help thee? Hast thou drunk peyotl, or given it to others to drink, in order to discover secrets, or to discover where stolen or lost articles were? (Nicolás de León, *circa* 1611.)

If the consultation is about a lost or stolen article or concerning a woman who has absented herself from her husband, or some similar thing, here enters the gift of false prophecy, and the divining that has been pointed out in the preceding treatises; the divination is made in one of two ways, either by means of a trance or by drinking peyote or ololiuhqui [*Datura meteloides*] or tobacco to attain this end, or commanding that another drink it and ordering him to remain under its spell; and in all this goes implicitly hand in hand the pact with the devil who by means of the said drinks. . . . (Hernando Ruis de Alcarón, *circa* 1629.)

[Peyotl] causes those devouring it to be able to foresee and predict things; such, for instance, as whether on the following day the enemy will make an attack upon them; or whether the weather will continue favorable; or to discern who has stolen from them some utensil or anything else; and all other things of like nature which the Chichimeca really believe they have found out. (Francisco Hernandez, *circa* 1638.)

Similar general statements regarding ayahuasca and yagé could be given, but it is difficult to find detailed accounts of specific instances. There is little or no evidence of the property of inducing paranormal powers that reaches the standard required by the Society for Psychical Research for printing as evidential. The two or three instances quoted below do no more than establish a *prima facie* case for further investigation.

I. PEYOTL

Peyotl (peyote, mescal,² muscale) is a small cactus, *Echinocactus Williamsii*, growing in arid regions of Mexico and the southern United

¹ These quotations are taken from La Barre (22), pp. 23-4. (Bold-face numerals refer to the bibliography on pp. 361-3.)

² Mescal is properly a species of agave, from which an alcoholic drink is brewed. The name has been transferred to a spirit distilled from the drink, then to other

States. Most of the plant is underground; a carrot with the leaves removed gives some idea of the size of the cactus and the amount of it visible. The exposed surface is covered with small rounded knobs, arranged in fairly definite rows and each crowned by a tuft of white hair, and the central depression is filled with such tufts. The cactus contains several alkaloids, chiefly in the portion above ground level, of which *mescaline* is responsible for the coloured visions, and *lophophorine* is decidedly poisonous. The use of peyotl when taken by mouth is however quite safe, as large doses provoke vomiting and thus protect the consumer.

The Indians of Mexico, such as the Tarahumare, send special expeditions lasting some weeks to the regions where it grows, the persons taking part being subject to severe restrictions, particularly in the matter of food. The plants are ground with water and the liquid is drunk at an all-night ceremony, dedicated to the god Hikuli, who is believed to be incarnate in the plant.

At times the shaman dances, at times his assistants, and women may dance either separately or simultaneously with the other men participants. The bare-footed men are wrapped to the chin in white blankets; the women wear clean skirts and tunics. The clockwise dancing (with a turn of the body at the shaman's place) consists in a "peculiar quick, jumping march, with short steps, the dancers moving forward one after another, on their toes, and making sharp, jerky movements, without, however, turning round". The men have deer-hoof sonajas, and the rasping and singing are continuous save when the shaman politely excuses himself to the fetish hikuli; others must also ask permission to leave the patio. In the intermittent dancing they beat their mouths with the palm imitating hikuli's talk, or cry "Hikuli vava! (Hikuli over yonder!)" in shrill falsetto. (22, pp. 34-5).

Such ceremonies were formerly confined to the Indians of Mexico, but since about 1880 a religion based on peyotl has spread gradually north and west among the Indians of the United States, and by 1930 had penetrated into Canada (22, 29, 30, 37). Dancing is absent, the ceremonies are simpler, and the dried tops of the cacti ("mescal buttons") are chewed and swallowed without previous preparation, though "tea" may be brewed from them for the old or ill. It is perhaps worth while to quote a few sentences from an appreciation of this religion by two members of the U.S. Office of Indian Affairs.

In the center of the room a sickle or moon-shaped altar is built of earth or other material, its open arms, or horns, facing the eastern door. In front of it a ritual fire is kept burning. . . . The roadchief [chief officiant] prays to the Father Peyote, who is the manifest God, just as Jesus Christ is the Father incarnate. The leader eats the first four peyotes and passes the sack around until everyone has also eaten four. . . . Christian hymns are often sung in meetings, and the Bible is sometimes

things vaguely resembling it in intoxicating action, such as the mescal bean (seed of *Sophora secundiflora*), and peyotl. The identification of peyotl with teo-nanacatl, a poisonous mushroom also used in Mexico for producing hallucinations, appears to be incorrect (22, pp. 128-30; 33; 34).

seen on the altar with the fetish peyote. . . . the moral values of Christianity pervade the peyote cult. . . . The Indian actually merges the two religions. He believes that the white man's God and his own are the same, but that each approaches him in his own way or by his own road (30).

Although continually gaining new converts and spreading into new regions, the peyotl religion appears to be dying out among the tribes that embraced it earliest. La Barre (22, p. 90) mentions some "precognitive" happenings in such meetings, but unfortunately gives no details. For what they are worth, I quote them here :

. . . prophecy in minor matters still occurs via peyote (*e.g.* the Delaware case in which a serious industrial accident might have been avoided if he had only been able to interpret correctly a warning peyote gave him). Old-time Comanche could hear the enemy while still away off when they ate peyote, and in making raids could discover the whereabouts of horses, etc. White Wolf, again, visioned Charley Seminole's face all bloody at a peyote meeting, but was unable to interpret the prophecy ; somewhat later, sure enough, the Seminole accidentally shot himself under the eye.

Psychologists and other persons of European descent studying the effects of peyotl have ordinarily taken about an ounce of the dried plant, or an equivalent amount of the alkaloid, say one-fifth of a gram of mescaline sulphate. The doses taken by the Indians are two to twenty times as large. The typical effects of the drug are as follows, though there is much individual variation. There is first nausea, varying in intensity from a vague feeling of discomfort up to actual sickness. It can usually be relieved by a small quantity of food or drink. One case has been recorded where an excessive dose produced a feeling of imminent death (15). Then there is a sharper perception of colour, light and shade, and often a coloured flicker, typically blue, begins to play around the outlines of objects. On closing the eyes or going into a darkened room coloured visions appear. At first these are simply colours without definite outlines, and in one subject, who states that he is normally devoid of the power of visual imagery, they hardly passed beyond this stage (16). Usually, however, more or less geometrical patterns appear, such as coloured rain, fields of jewels or flowers, interlacing spirals, fretwork, arabesques and the like, usually in motion. It is possible that the background of these designs is furnished by the blood circulation immediately behind the retina (25, 26, 27). These are followed by more organic forms, birds' or butterflies' wings, vegetation, landscapes, and in the last stages animal or human forms appear, the latter usually in quaint and unfamiliar costumes. The last effect is often a night or two of "absolutely restful insomnia" (16). When sleep supervenes dreams do not appear to be influenced in any way by the drug. The whole process occupies perhaps eight to twenty hours, during which time hunger, thirst, and fatigue are at least partly suppressed. For this reason the Indians of Mexico often eat peyotl on long journeys. In some subjects peyotl produces disorientation in spatial relations and in the sense of time (15, 16, 19).

The following extracts from first-hand accounts will give some idea of the visions and other mental phenomena. In the first case there were no visions (36):

Fifteen minutes afterwards I experienced slight dyspnoea accompanied by transient headache, which symptoms were rapidly followed by intermittent tetanoid spasms in the hands and feet, and with a sensation of general *bien aise*. A sense of egotistical concentration, together with a delightful feeling of irresponsibility toward one's surroundings, succeeded, and lasted, in all, eleven hours. No spectral illusions were present, however; neither was there any vertigo nor subsequent drowsiness. The heart was accelerated during the whole of the period, the radial pulse varying between 80 and 90. The pupils were unaffected, and the digestive powers were undiminished.

In the second case coloured visions were seen, but did not develop to any great extent. There was however temporal and spatial dislocation (16):

During most of the observations I was bothered with stomachic aches and pressure in the abdomen, and later with continuous frontal and occipital headache. . . . I reclined and bandaged the eyes . . . a spot of white light of low intensity appeared about the center of the horopter [field of view]. From then [1.43 p.m.] until 2.58 there were intermittent color effects. Colors from violet to orange appeared, but seldom red. The colors were rarely of a high degree of saturation. Two spatial forms were present . . . one in the form of an arc in the upper half of the horopter, and the other in the form of lines down the center of the horopter. The colors seemed to be in constant movement. They did not seem to be affected when I opened the eyes inside the blinders, which were entirely light-proof. . . . At 3.22 the blinders were replaced and the color effects began immediately. During this period colored circles appeared, always spinning in a counter-clockwise direction. . . . The blinders were then [about 3.54] removed, and the parts of my body, seen visually, seemed to be very far away. I extended my arm and fixated the finger-tips, and then stretched the arm away from me. The hand seemed to move a distance of at least ten feet. The stenographer moved her head and shoulders back a few inches, and she seemed to be drawing back many times that distance. This distortion of space was present for both monocular and binocular vision. . . . Accompanying the distortion of space there was also a distortion of time. A given period of time seemed very much more extended than normally. Speech seemed slow. Walking became a ponderous affair. In walking I felt successively sensations from the muscles and joints involved. I became aware at each step, for example, of the sensations due to the curling of the toes.

The third example illustrates fully developed hallucinations (10):

Visions began to appear within twenty-five minutes after ingestion of the drug. At first they were simple in pattern and colouring, and were visible only with the eyes shut. Later they became more complicated; they no longer comprised geometrical designs, but took on three-dimensional form, appearing as figures and scenes, all most brilliantly

illuminated and coloured, and all changing with the utmost rapidity. The hallucinations now became apparent with the eyes open, though never to the same extent as when the eyes were closed. . . . The first vision consisted of a black diamond edged with green, followed shortly by circles of yellow light against a dark background. Next appeared something recalling a desert scene. "On the horizon is a setting sun, lighting up the landscape with a dark-red glow. The radiations from the sun are a beautiful combination of red and black. In the foreground are several black figures as though they might be camel riders or trees. The foreground now begins to assume a greenish-yellow colour." . . . "A particularly picturesque scene: an old-fashioned single span bridge across the upper reaches of a river. There are large stones at the sides of the stream and a narrow navigable channel in the middle. A very restful picture . . . now there is a sort of close-up of the bridge, which is of the old-fashioned type composed of large blocks of stone . . . while looking at the bridge a pillar has appeared in the centre and transformed it into a double-span bridge. . . . The water is quite still and there are sharply delineated shadows in various tints of blue, green and yellow. . . . The water now starts to ripple; it is now drying up and the rocky bed becomes visible. . . . The bridge is getting smaller and the rocky bed is gradually becoming transformed into a stone road in a moorland scene."

Sometimes the sensations seem to have differed in kind from those of everyday life, as in this last example (the artist in 15):

The first paroxysms were the most violent. They would come on with tinglings in the lower limbs, and with the sensation of a nauseous and suffocating gas mounting up into my head. Two or three times this was accompanied by a color vision of the gas bursting into flame as it passed up my throat. . . . At another time my eye seemed to be turning into a vast drop in which millions of minute creatures resembling tadpoles were in motion. . . . My right leg suddenly became heavy and solid; it seemed, indeed, that the whole weight of my body had shifted into one part, about the thigh and knee, and that the rest of my body had lost all substantiality. . . . At one moment the color, green, acquired a taste in my mouth; it was sweetish and somewhat metallic; blue again would have a taste that seemed to recall phosphorus; . . . the strangest of all my color visions . . . began with a feeling that the skin of my face was becoming quite thin and of no stouter consistency than tissue paper, and the feeling was suddenly enhanced by a vision of my face, paper-like and semitransparent and somewhat reddish in color. To my amazement I saw myself as though I were inside a Chinese lantern, looking out through my cheek into the room.

The visual phenomena are in most cases visions rather than hallucinations, as they are seen only in the dark or with closed eyes. Opening the eyes normally dispels them, though the real objects then seen may be perceived with some modification of their normal appearance, or in the observer's mental attitude to them. Occasionally the visions persist with open eyes, taking up a position among or hiding real objects, and they would then rank as genuine hallucinations. The visions do not seem to be

reproductions of objects previously seen, and are rarely under volitional control, though Indians of the peyotl religion claim that with practice they can alter or suppress entirely their visions (17, 29). In the developed stages the source of the visions is presumably the subliminal consciousness of the observer; the remarkable similarity of the visions in the early stages—the “form constants” of Klüver (20)—supports the suggestion of a physiological basis for them (25, 26, 27). If the source of the developed visions is in the subliminal, that is if the effect of the drug is to weaken the barrier between the conscious and the unconscious, the occasional occurrence of telepathic phenomena would be explained, as these processes appear to take place subliminally (1, 5). Rouhier tried the effect of an extract of peyotl on six subjects (32), one of whom developed apparent telepathic abilities (31). During the period of his visions he occasionally saw objects thought of by one of the persons, and in a case of apparent telepathic clairvoyance he described in some detail a bedroom with an empty bed. The bed should have been occupied, but it was established that it was in fact empty at the time of the vision. Warcollier (5) quotes what appears to be the percipient's account of the same event. I translate the latter here, in preference to condensing Rouhier's longer version.

A first vision of the head of Dante and of that of Henri IV having succeeded perfectly, Mme S. wished to try to make me see a little book that she knew was to be found at the home of her cousin, a cousin who had just become a mother and whom she believed to be in bed in her room at the time of our experiments. Almost at once I had a vision of a room of which I described the furniture, the hangings and the bed, but, contrary to what Mme S. believed, I saw this bed empty, and, in spite of all her efforts to make me see the person whom she believed to be in bed there, I persisted in depicting it absolutely empty. Among the objects furnishing this room and which she recognized from my descriptions were two objects that astonished her: a bottle of brown perfume in a cardboard box and a pot of tooth-paste. . . . As for the book that she wished me to see, there was no trace in the room.

The next day our friends had, if not the answer to the riddle, at least the explanation of the fact. At the time of our experiments, her cousin, taking advantage of a moment when she was alone with her nurse, had got up for the first time and had sat down in a neighbouring room, carrying away the famous book that I had been unable to find. As for the two unknown bottles, they had just, an hour before, been given to the young mother and were as yet unknown to anyone in the family.

It would be easy to criticize the conditions under which this experiment was conducted, but it is one of the few that have been recorded in detail.

2. AYAHUASCA

There has been considerable confusion between ayahuasca (caapi) and yagé (caapi-pinima), as their effects are very similar and the two are often used in conjunction by the Indians. It seems clear however that there are two distinct species of plants involved, ayahuasca consisting of *Banisteria Caapi* and related species (*B. inebrians*, *B. Rusbyana*, etc.) and yagé of *Haemadictyon amazonicum*. The latter is distinguished from the former

by the blood-red veins of its leaves ; among the tribes that call ayahuasca (aya-huasca = dead man's vine) *caapi* (caa-pi = narrow leaf), yagé is called *caapi-pinima* (painted *caapi*) in allusion to these veins (44). The active constituent of ayahuasca is the alkaloid *harmine*, found also in the Russian plant *Peganum harmala* and having some applications in medicine.¹

The various species of ayahuasca are climbing plants (lianas) growing in the upper reaches of the Amazon and its tributaries, and also in similar habitats on the western slopes of the Andes. Their height may exceed one hundred feet. They are sometimes cultivated by the Indians along the borders of their manioc plantations. A preparation of the lower stems is used, these being either ground with water or simply boiled until a drink of suitable strength results. Spruce (44) gives the following description of the use of ayahuasca at a "feast of gifts":

In November 1852 I was present, by special invitation, at a Dabocuri or feast of gifts, held in a mallóca or village house called Urubú-coara (Turkey-buzzard's nest), above the first falls of the Uaupés ; . . . We reached the mallóca at nightfall, just as the butútos or sacred trumpets began to boom lugubriously within the margin of the forest skirting the wide space kept open and clear of weeds around the mallóca. At that sound every female outside makes a rush into the house, before the butútos emerge on the open, for merely to see one of them would be to her a sentence of death. We found about 300 people assembled, and the dances at once commenced. . . .

In the course of the night the young men partook of caapi five or six times in the intervals between the dances ; but only a few of them at a time, and very few of them drank of it twice. The cup-bearer—who must be a man, for no woman can touch or taste caapi—starts at a short run from the opposite end of the house, with a small calabash containing about a teacupful of caapi in each hand, muttering "Mo-mo-mo-mo" as he runs, and gradually sinking down until at last his chin nearly touches his knees, when he reaches out one of the cups to the man who stands ready to receive it, and when that is drunk off, then the other cup. In two minutes or less the effects begin to be apparent. The Indian turns deathly pale, trembles in every limb, and horror is in his aspect. Suddenly contrary symptoms succeed : he bursts into a perspiration, and seems possessed with reckless fury, seizes whatever arms are at hand, his murucú, bow and arrows, or cutlass, and rushes to the doorway, where he inflicts violent blows on the ground or the doorposts, calling out all the while : "Thus would I do to mine enemy (naming him by his name) were this he!" In about ten minutes the excitement has passed off, and the Indian grows calm, but appears exhausted. Were he at home in his hut he would sleep off the remaining fumes, but now he must shake off his drowsiness by renewing the dance.

¹ Reinberg (43) gives a list of the names among various tribes. Usual synonyms for ayahuasca include *çaya-huasca*, *iyona*, *çiri-panga*, *natema*, *kaçpi*, *kāpi*, *kapi*, *nepi*, *nepe*, *pinde* ; for yagé they include *yajé*, *yahé yajén*, *yaje*, *iáhi*, *kaapi-pinima*, *kadana-pira*, *kulikaypiro*, *mihi*. The identity of yagé with *Haemadictyon amazonicum* is not quite certain ; neither Spruce nor Reinberg saw yagé in flower, and the identification was based mainly on comparison of the leaves.

Here it seems that the plant was used simply for the pleasureable effect of the intoxication and the hallucinations, but it is employed in greater amount and with perhaps the addition of yagé or *huanto* (*Datura arborea*, active principle presumably *hyoscine*) by the medicine men when their professional services are required for the recovery of stolen property, foreseeing the approach of the enemy, discovery of unfaithful wives, and in other important affairs of primitive life. When so used the waking hallucinations are continued into a profound unconsciousness, on awakening from which the medicine man relates and interprets his visions.

First-hand accounts of ayahuasca visions are rare, and there is not the profusion of studies by psychologists that one finds in the case of peyotl. Travellers in the regions where it grows are however agreed that the initial hallucinations are pleasant, consisting of such things as butterflies, flowers, birds, cities, aerial views, and that these are followed by terrifying appearances, such as monsters, jungle beasts, armed opponents. I have been unable to find an account of a veridical hallucination affecting a person of European descent after its use. Reinberg (43) drank about a teacupful of a decoction made by boiling 120 cm. of ayahuasca stem and five or six yagé leaves in one and a half litres of water until the quantity was reduced to one-quarter litre; he gives the following description of his experiences:

There is some difficulty in swallowing saliva, and I have almost a sensation of paralysis of the muscles of the neck and larynx. Before my eyes shine luminous circles, phosphenes [spots of light], and I see flying in a *ebouissant* sky butterflies belonging to the species collected this morning, which are abundant here. The view is very clear, too clear, and it seems to me that I am looking through a little hole pierced in a card. . . . I observe all symptoms with a perfect clarity of mind and am present at all happenings *as if it were someone else affected* and this symptom specially impressed me. I have pains in my ears: salivation is increased: I have no nausea. But Teofilo had explained to me that nausea (*mareación*) is the precursor of [paranormal] dreams. . . .

Reinberg then took more of the decoction, and had such violent physical symptoms that he abandoned the experiment and attempted restorative treatment. Spruce was given caapi at the feast described above, but was overwhelmed with various other native delicacies before he was able to observe any visual effects.

3. YAGÉ

Yagé also is a climbing plant, but attains a height of only ten to fifteen feet. Its reputation as an inducer of telepathic visions is greater than that of either peyotl or ayahuasca, so much so that Zerda Bayon (49) named its active principle *telepatina*, which has been regularized as *telepathine*. Barriga Villalba (45), who isolated it independently, named it *yagéine*, which is perhaps a more suitable name for ordinary chemical use. It is prepared and used by the Indians in much the same way as ayahuasca, and the visions it induces are similar, though a bluish aureole is said to be characteristic. Rouhier (48) analysed a native preparation, and found that it contained 0.26% of yagéine. Yagéine is poisonous, doses of about 0.2

gram per kilogram of body weight being sufficient to kill guinea pigs. The immediate cause of death is cessation of breathing.

It is difficult to form an opinion on the supposed telepathic property of yagé. Many accounts agree on its reputation among the Indians, but it is probably safe to say that no instances exist of the standard required for printing by the Society as evidential. The only detailed case I have found is the following :

I was induced after considerable hesitation on my part by Colonel Custodio Morales, Commandant of the military detachment in the Intendencia of the Caquetá, who wished to try the effects of yagé upon himself in my hut on the bank of the river Hacha, to give him 15 drops of a preparation of yagé which at the time I believed to be its active principle. He took the tincture at night in a jar of water, and in the morning, at reveille, he came to me with the news of the death of his father, who lived in Ibagué, and of the illness of his little sister, whom he loved very dearly. All this he declared that he had seen during the night ; no one had arrived who could have communicated such news to him, and the nearest post or telegraph office is at least 15 days' journey away. About a month after this strange vision a courier happened to arrive with letters which announced to him the death of his father and the recovery of his sister from a serious illness. It should be mentioned that Colonel Morales is a man of eminently nervous constitution, that he was very ill-fed, and that he is highly intelligent.

This story is quoted from a letter from Dr. Rafael Zerda Bayon in the *Times* (49) ; a version differing only in minor details is given by Warcollier (5) from a South American source. Warcollier was unable to obtain confirmation direct from Colonel Morales. The incident is suggestive, but many similar occurrences with corroboration from the percipient or others conversant with the circumstances would be needed before it could be admitted that yagé deserves its telepathic reputation.

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There are very many publications dealing directly or incidentally with these plants, and an exhaustive bibliography would be prohibitively long. The following list contains (i) relevant publications consulted in detail in preparing this note, and (ii) a few publications that appear from abstracts or references to be important, but which for some reason could not be consulted. The latter are distinguished by printing the author's name in italics. The fullest bibliography on peyotl, extending to some fourteen pages, is given by La Barre (22).

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