

# HALLUCINOGENIC DRUGS: A PERSPECTIVE WITH SPECIAL REFERENCE TO PEYOTE AND CANNABIS\*

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## I. INTRODUCTION

RECENTLY THERE HAS BEEN CONTROVERSY concerning the use of LSD (d-lysergic acid diethylamide) and other hallucinogenic drugs. At one extreme, Leary and Alpert have advocated that the hallucinogens be made generally available to the public for the purpose of "consciousness expansion" (67) and their viewpoint and activities have been widely examined and criticized in the popular press. The observation that the hallucinogens may have beneficial effects is not limited to extremists, however; Cole and Katz point out that much of the literature embodies "an implicit or explicit attitude that the self-knowledge or the leverage for self-change allegedly effected by these drugs may be of value or benefit to individuals not ordinarily considering themselves to be psychiatrically ill." (37) On the other hand, a number of editorials and articles (including that by Cole and Katz) have warned that uncontrolled use of the drugs could produce psychotic reactions, suicides and undesirable personality changes. (36, 47, 56, 57) Grinker writes, "latent psychotics are disintegrating under the influence of even single doses; long-continued LSD experiences are subtly creating a psychopathology." (57) Farnsworth warns that we have little information on the long-range effects when taken over a protracted period of time and that they may prepare individuals to "move up" to other "more powerful drugs." (47) In general, the critics have regarded LSD as a new and potentially dangerous drug which may produce long-term deleterious mental effects that are unknown at present.

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The purpose of the present paper is to provide a perspective on the long-term effects and social implications of the protracted use of hallucinogenic drugs through a review of the extensive literature on peyote and cannabis sativa (marihuana). Since hallucinogens are known to have been in use for over four thousand years, there is no need to restrict our data to the very limited information available on the uncontrolled use of the more recent additions to the hallucinogen family. The psychic effects of peyote are especially similar to those of LSD. The limitation of peyote to the American Indian culture and religious setting restricts to some extent the generalizing of peyote findings to the current situation; however, some interest exists in the use of LSD for religious purposes (106) and one notable criticism in the present controversy is directed at the formation of LSD cults. The effects of cannabis are less similar to LSD, but it has a history of use under much more varied conditions and motivations than does peyote. There are many other hallucinogens that have been used to alter mental states,\* but only peyote and cannabis are sufficiently well-documented for the purposes of this paper.

Because peyote and cannabis have been freely available to certain groups for many years, studies on their use can help predict the extent and conditions under which LSD and similar drugs would be utilized if accessible. Of particular interest is what proportion of the population would be attracted to their use and for what purpose. Also of interest is the likely frequency of use and tendencies to cause addiction or emotional dependence. The question of the relation of occasional or continual use of hallucinogens to psychosis can be examined, as well as the possibility that such use predisposes users to other more addictive drugs. Questions can be raised concerning personality changes resulting from their long-term use, as well as economic, family and social effects.

## II. PEYOTE

### HISTORY AND DESCRIPTION

Peyote (*Lophophora williamsii*) is a small, spineless cactus that grows in Northeast Mexico and the Rio Grande Valley. It contains nine alkaloids; of these mescaline is the principal one that gives rise to the hallucinogenic effects. Peyote is carrot shaped with only the top-most part extending above ground. This portion is cut off

\*Shultes states that there are more than forty naturally occurring hallucinogens in North and South America.<sup>(97)</sup>

and, though it may be eaten fresh, it is usually dried to form the peyote or "mescal" button.

The ritualistic use of peyote among the Mexican Indians was widespread at the time of the Spanish invasion and has been documented as early as 1560. (64) Most evidence places the introduction in the United States (Texas) at around 1870. (104) Whereas peyotism was a seasonal affair in Mexico, it was used throughout the year in the Plains. Peyote meetings were held for a wide variety of reasons, most frequently for doctoring the sick. A few influential leaders were active in proselytizing neighboring tribes, and peyotism spread rapidly among the Plains Indians. The ritual procedures were standardized into a religious cult in contrast to the tribal nature they had in Mexico. As the cult spread northward, a number of Christian elements were added, and the religion was incorporated under the name "First-born Church of Christ" in 1914 — later changed to the present title, "Native American Church."

In 1919 the Indian Bureau conducted a formal census of peyotists and found that 13,345 out of a total of some 316,000 were peyote users. (87) The Native American Church now claims to have 200,000 members and has penetrated almost all tribes in the United States and Canada. (41) La Barre, writing in 1947, states,

Without a doubt the most widely prevalent present-day religion among the Indians of the United States and Mexico is the Peyote Cult . . . the use of peyote has spread from group to group until today it has assumed the proportions of a great inter-tribal religion. (63).

#### THE RITUAL

To understand the motivation for the repeated use of peyote by the Indians, and to determine what bearing it may have on the use of modern-day hallucinogenic drugs, it is necessary to describe something of the setting in which the ritualistic use occurs.\* There are occasional protracted peyote meetings (lasting perhaps a week or more) during holidays, such as Thanksgiving or Christmas; however, by far the most common is the weekend meeting held on Saturday night and extending into Sunday. Meetings are generally sponsored by a single family, although the cost is sometimes defrayed by a collection. The purpose of the meeting may be to doctor a sick member of the host family, to celebrate a

\*There are a number of excellent detailed descriptions of the peyote ritual in the ethnological literature. Most of the description given here is based on La Barre's account. (64)

birth or death anniversary, to ask for rain, or simply to gather for social reasons. All Indians are welcome regardless of tribe and, with today's improved transportation, participants often travel for distances of a hundred miles or more. (112)

Preparations prior to the meeting include bathing and rubbing with scented plants and some tribes provide a sweat-bath lodge. Many tribes also observe the taboo of not eating salt on the day of the meeting. (64) The meetings are held in large tepees or in peyote churches, or sometimes in the home of a member. The ceremony begins in the evening with the members sitting in a circle around an altar and fire. Women sit on the outside of the circle. The altar or "moon" consists of a crescent-shaped design made on the ground or in clay, and is based on visions received by the early leaders of the cult. A large peyote button is placed on the altar and is called the "chief" or "father peyote."

The principal official is the "road-chief"\* who directs the ritual. Others are the drummer, "fire-chief" and the doorman. The paraphernalia include a staff, drum, gourd rattle, special feathers, tobacco, incense, sage, and a number of other articles. As the cult has become more Christianized, the Bible is also placed on the altar along with the "father peyote," and is often read during the meeting.\*\*

The ceremony begins by smoking tobacco and praying, with each member staring at the "father peyote" and the flickering fire. The peyote is passed and each participant takes four buttons. The leader then begins to sing to the accompaniment of the drum and rattle. Later he exchanges his staff and rattle for the drum and the drummer sings four songs. Similarly, the staff and rattle are passed around the circle, with each member singing four songs and the person to the left drumming in each case. Women do not participate in the singing. Peyote buttons continue to be eaten, but the amount and number taken at a time is up to the individual.

There is praying at intervals and some members rise and make passionate confessions and repentances accompanied by crying and strong emotions. At midnight there is an elaborate water ritual too complex to describe here. If doctoring is to be performed, it normally takes place at this time. The singing continues until dawn when the "peyote woman" is summoned to bring the morning

\*So-called because he leads members to the peyote road or way.

\*\*The Indians have found a number of Bible references to the eating of herbs, which they interpret as peyote — a practice that is particularly irksome to the missionaries attempting to suppress peyotism. (104) The most frequently quoted is Romans 14:2 and 3: "For one believeth that he may eat all things: another, who is weak, eateth herbs. Let not him that eateth despise him that eateth not; and let not him which eateth not, judge him that eateth."

water and another ceremony is performed, followed by the morning songs, prayers and the quitting song. A ceremonial breakfast of water, parched corn, fruit, and dried sweetened meat is served. The meeting is then formally over and participants spend the morning socializing and discussing their experiences and visions. The sponsoring family serves a large dinner at noon, after which the guests depart.

#### MOTIVATION

A primary interest of this paper is the examination of the motives that cause persons to seek the hallucinogenic experiences; what are the attractions and satisfactions which result in submission to repeated exposures over a long period of time? In the case of peyotism, there are two sources of information: (1) direct observation of the ceremonies and interviews with the Indians; and (2) the theoretical explanations offered by the ethnologists. To understand the former we must examine them in the context of the ritual setting. This is pointed out in La Barre's quote of an Oto, who told him in "all seriousness" that "peyote doesn't work outside the meetings, because I have tried it." (64)

The Indians stress the attitude with which peyote is approached — Slotkin writes, "One must be conscious of his personal inadequacy, humble, sincere in wanting to obtain the benefits of peyote, and concentrate on it." (104) Petrullo writes in a similar vein:

In the approach to the Spirit-Forces, including Peyote, humility and a pitiful attitude are characteristic. In the speeches of the road-chief in the meetings, in the prayers, and in the tales of conversion and other lore, the Delaware appears meek and humble, conscious of his insufficiency. He is "a poor boy" who needs help and guidance from Peyote, the compassionate, the pitiful. It is important that aid is not sought for material success in worldly enterprises, but purely in the realm of the spiritual, and in the medicinal. This doctrine is common to all Peyotists, irrespective of Moon affiliation. (91)

Spindler writes about the goal of acquiring power invested in the Great Spirit:

This power cannot be obtained by merely consuming peyote. It comes to one only when the person approaches it in a proper spirit of humility and after long preoccupation and concentration. . . . The humility of the Menomini Peyotists is accompanied with declarations of worthlessness. (109)

Some consider the peyote-induced vision to be an important aspect, but others regard the visions as a distracting element to be suppressed:

Peyote should not be eaten for visions. The visions are the effect of peyote on the body; but if you put your mind on God no visions will come to disturb you. (91)

Slotkin also relegates visions to a minor role, stating that persons seeking a mystic state through peyote ignore visions. (105)

The peyotist not only seeks contact with the higher spirits, but also strives to resolve personal conflicts:

Each individual turned in upon himself with the aid of the narcotic and the fire into which he stares — is not only concentrating upon the nature of the power to come to him or upon the spirits of heaven, but also upon the personal self and its conflicts. (109)

Louise Spindler stresses the power of the concerted group effort in this regard:

During the recital of testimonials at meetings, the group reacts in unison, but one member, often crying uncontrollably, is the center of attention as he exposes his personal problems which he hopes peyote will help him solve. (110)

Slotkin emphasizes that, to get the most from the meeting, the person should not adopt a passive attitude of receiving from peyote, but must prepare through intensive prior concentration on his particular problem. (103)

The peak of the experience is the surrender of the individual, or in more modern terms the giving up of the ego — "ego death." Petrullo writes, "Unless one decides to surrender himself completely to Peyote no benefit will be derived."\* (91) There is also the recognition that psychic surrender may involve intense suffering. An informant reported to Simmons during the ceremony:

If there is suffering, this is the time. That's the reason I took a good rest; so I could stand it. Many a time I have fallen over at this time. It's getting on to what they call the dark hour, the hour of the Crucifixion. Everyone here is suffering now (quoted in La Barre). (64)

\*It should be noted that this attitude of complete helplessness is an essential prerequisite of almost all natural conversion experiences. There is invariably a "feeling of submission — of giving up or giving to." (32)

A related aspect of the ceremony is the role of public confession. La Barre stresses the importance of this aspect:

Many members rise and accuse themselves publicly of misdemeanors or offenses, asking pardon of persons who might have been injured by them... that confession to the father peyote and his authority, and repentance before the group is of profound significance cannot be doubted. (64)

Skinner describes meetings where the leader asks the members to rise and confess their sins; (102) and an informant of Stewart's insists that "no one can face it [Peyote] and lie." (112) La Barre writes:

The significance of a group ritual, as in the peyote cult (aided here by the awesome pharmacodynamic "authority" of a powerful narcotic) may serve to explain the age-long survival of this kind of primitive psychotherapy (public confession), and its re-emergence and spread in the modern religion of the Plains, the peyote cult. (63)

La Barre goes on to interpret the functions of the father-peyote fetish:

The psychological function of the fetish is to give physical form and locus to the projected "spiritual" entities, through which men disclaim responsibility for their own emotions, wishes and acts. The fetish may then serve as an externalized superego or conscience "projected" outside the individual. (63)

Whites who witness the peyote ceremonies typically come away very impressed with the sincerity of the participants. For instance, La Barre writes:

There can be no shadow of a doubt concerning the deep and humble sincerity of the worship and belief—and sincerity perhaps, even in the absence of other ingredients, is the chief component of a living religion. And if the chief function of a religion is the liquidation of the anxieties and the solutions of the fears and troubles of its adherents, then surely the peyote religion eminently qualifies as such.\* (64)

\*It should be mentioned that, while the above description of the peyote ritual is typical, there are some noteworthy exceptions. In particular, Opler describes the ritual in the Mescalero tribe as a struggle between rival shamans to gain power through the use of witchcraft, and there is a great deal of suspicion and distrust among participants. (88)

Turning now to motivation for taking peyote, as stated by the Indians themselves, there are several hundred interviews with peyotists available in the ethnological literature and in testimony at the many legal hearings held in the last half century. The most frequent claim of benefit is that peyote has cured a physical illness. In addition, there are often claims of being freed from alcoholism and led to adopt the ethics of the "Peyote Road" — brotherly love, care of family and self-reliance — which are virtually identical with those of Christianity. The most strikingly consistent report made by the Indians is that (1) peyote *teaches* and (2) this teaching takes place by *direct* revelation from peyote to the devotee. Over and over the answer given to inquiries about the nature of the peyote experience is that the only way to learn is directly from peyote. Slotkin writes that one of the cardinal maxims of the Native American Church is "the only way to find out about Peyote is to take it, and learn from Peyote yourself;" (103) and, "It may be interesting to know what others have to say; but all that really matters is what one has directly experienced — what has been revealed to him personally by Peyote." (104) John Wilson, one of the principal founders of the peyote religion, claimed that:

The greatest teacher for the Indians is Peyote communion which is possible to everyone provided he manifests the proper honesty of purpose to know peyote and learn its teachings. By eating the plant and concentrating on Peyote and the ills that afflict mankind, by a proper show of humility and the desire to learn to "walk on the road," this end can be attained. Thus, each individual is to learn the doctrines of Peyote through personal experience and revelation. (91)

The concept of the *direct* teaching of peyote is probably expressed most succinctly by the often-quoted statement of Quannah Parker, one of the early peyote leaders: "The white man goes into his church house and talks about Jesus; the Indian goes into his tepee and talks to Jesus." (104)

Other statements by Indians refer to the continued capability of peyote to teach; "Peyote is a lifetime education. You will learn new things every time you attend a meeting." (41) One of Slotkin's informants, a peyotist for 30 years, claimed to be "just a beginner" discovering what peyote had to teach. (103) The observation that peyote and its synthetic equivalent, mescaline, teach has not been limited to the Indians, as demonstrated in familiar statements by Ellis, Huxley, Osmond, and others. (46, 60, 90)

I have dealt at some length with the issue of "learning" and the psychotherapeutic effect from the use of peyote because it is

an important dimension in the consideration of all hallucinogenic drugs. It is this unique claim that sets these substances apart from other drugs that alter central nervous system functioning and makes their evaluation such a complex question — one seldom reports learning from alcoholic intoxication — save perhaps to observe more moderation.

#### ETHNOLOGICAL EXPLANATION OF PEYOTISM

Ethnologists have offered a variety of explanations for the diffusion of peyotism among the American Indians. Probably the best known is Ruth Shonle's hypothesis that the Plains Indians had long valued visions produced by fasting and self-torture,\* and accepted peyote as a more direct means to this goal. (100) At the time of her article (1925), peyotism was largely confined to the Plains. She postulated that an "underlying belief in the supernatural origin of visions is important among factors contributing to the diffusion of peyote and in a general way defines the area of its probable spread."

Barber (1941) and La Barre (1960) feel that Shonle's prediction has been at least partially confirmed by the subsequent diffusion of peyotism. (10, 65) The latter points out that where peyotism has spread beyond the Plains it has encountered more opposition; and, though the peyote leaders came from the old elite in the Plains, they did not do so in other areas.

Arth suggests that peyote may also appeal as a method of expressing indirect aggression toward the whites, because of the latter's continued opposition to the movement. (9) In addition, he and others have pointed out the Indian nature of the peyote cult represents a return to the old way of life and a reaffirmation of in-group feelings. As evidence, Arth cites the preference for summer meetings in tepees to winter meetings in frame houses, and that the fire, drum, songs, sitting on the floor, and smoking all demonstrate strong ties with the past.

Finally, a number of writers contend that peyotism proved attractive because it was introduced at a time when the old culture was breaking up, and the Indians found themselves in an anxiety-producing transitional state between the Indian and white cultures. Thus, the peyote cult offered unity and meaning at a time when it was greatly needed. Both Arth and Spindler support this argument with evidence that the cult has been much more enthusiastically accepted by men than by women. (9, 109) They argue, along

\*See Ruth Benedict.<sup>(14)</sup>

with Margaret Mead, (81) that the breakdown of culture is almost always of more vital concern to the men than to the women, who continue to bear children, cook, etc. In addition, Spindler has made detailed studies of Indian acculturation processes, and concludes that peyotism is most attractive to the person in a transitional state. (109)

Of those who view the peyote cult as an attempt to adjust to a disintegrating culture, Petruccio probably makes the most positive assessment:

It teaches acceptance of the new world, and makes possible an attitude of resignation in the face of the probable disappearance of the Indian groups as distinct people, culturally and racially, by insisting on the necessity of emancipation from mundane aspirations. The greater goal that the Indian should attempt to attain is a loftier spiritual realm which is beyond the reach of the White to destroy. (91)

Bromberg, a physician, specifically attacks Petruccio's interpretation:

Peyote, as with all drugs, is taken because it produces a change in the feelings and emotions of the user. Thus sedatives allay anxieties and restlessness; alcohol reduces the sharpness of frustrations; morphine and heroin ease the pain of isolation; marihuana, by producing other worldly sensations, neutralizes the frustrations of this life. So peyote acts not so much to support a cultural drive, but as an anodyne to ease the pain of conflict which the clash of cultures engenders. In this sense, Peyotism as spiritual therapy implies a negative attitude towards emotional problems. To seek to gain permanence for a culture by the repression of conflicts through narcotics and mysticism is not a "constructive" way of life! (25)

The positions of Petruccio and Bromberg quite clearly delineate the two poles of the peyote issue. The former feels that the peyote cult represents a positive adjustment, though one more compatible with an Eastern than a Western value system. The latter adopts a pragmatic Western view, and feels that the ceremonial use of peyote is a non-constructive avoidance of the problem.

#### FREQUENCY OF USE AND THE QUESTION OF ADDICTION

The average consumption of peyote buttons at a meeting is around twelve to twenty per person according to La Barre, with occasional individuals claiming to have eaten as many as eighty

to one hundred. (64) Shultes and Slotkin both report the average number to be about twelve. (117, 103) Stewart puts the average at eight to twelve, and Skinner reports that the Iowas take about two to eight. (112, 102) Women participants consume considerably less, typically from two to four buttons.

The frequency of meetings varies, the upper limit generally being once a week; meetings may be much less frequent due to lack of a host, inclement weather, or unavailability of peyote. La Barre estimates that "one or two meetings a month in each tribe might be an average number when the whole year is considered." (64) Individual attendance at meetings also varies, some persons only attend occasionally.

In rare instances a meeting will last for two or three days, particularly if the purpose is to cure a serious illness. The incidence of peyote intoxications sustained for several days is of interest because it bears on the questions of addiction or excessive use under uncontrolled conditions. Radin reports an incidence of a dramatic conversion resulting from taking peyote on three successive days, (92) and John Wilson, the principal founder of the peyote cult, withdrew to an isolated spot and took peyote frequently over a two-week period at the time of his revelations. (64) Such cases, however, are relatively rare, the normal interval between ritualistic peyote ingestion being at least a week.

Concerning nonritual use of peyote, some tribes strictly forbid its use outside the ceremonial setting; (88) however, others use it as medicine, generally in the form of peyote tea. (103) Louise Spindler reports that in the Menomini tribe women peyotists often keep a can of ground peyote for brewing tea, which they use "in an informal fashion for such things as childbirth, earaches, or for inspiration for beadwork patterns." (110) She also mentions one woman who "takes peyote several times a week and often sinks into a state of complete withdrawal while taking it." La Barre writes that his informants admitted "that there were some individuals who show signs of addiction, in the sense that they consumed the plant often and abundantly, but these are not clear uncomplicated instances of drug addiction." (64) In spite of occasional cases such as these, there is general agreement that peyote should not be included under the vague labels of psychologically addicting or habitforming drugs. (66) In a 1959 summary article on peyote in the *Bulletin on Narcotics* it was concluded, "Most of the authors consulted . . . including scientists, chemists, doctors, and ethnologists long familiar with these substances [peyote and mescaline] state roundly that they do not cause either habituation or addiction." (6) Also, peyote was discussed by the Twenty-First

Session of the League of Nations Advisory Committee on Traffic in Opium and Other Dangerous Drugs and was not included on the list of narcotic drugs. (6) Finally, the 1962 White House Conference on Narcotic and Drug Abuse concludes that:

Careful anthropological and sociological studies indicate that the ritualistic use of peyote does not carry with it significant danger, nor is it abused continuously. . . . In order to qualify this drug as an "addictive" agent one must clearly distort the definition. (121)

As mentioned above, peyote meetings are frequently a month or more apart. Individuals often try the peyote cult for a period and then drop out, and though peyotism has steadily increased, there are tribes where it has flourished and then completely disappeared. (89, 112)

#### PHYSICAL EFFECTS

Peyote often causes nausea and vomiting, but otherwise the immediate physiological effects are minor compared to the psychological. The major concerns are the long-term physiological effects resulting from repeated use, and especially the incidence of psychoses. Unfortunately, there has never been a medical study of the long-term effects of peyote on humans, in spite of the fact that the question has been raised repeatedly at the many legal hearings. The 1944 Congressional Hearing Committee specifically recommended that such a study be conducted and the Taos Indians offered to provide the subjects. (117) Thus, information is limited to the observations of ethnologists, and the pro and con testimony at the legal hearings.

The issue of the effect of peyote on physical health is somewhat clouded by the Indians' practice of doctoring severe illnesses in meetings. Stewart reports that the anti-peyotists among the Washo and Paiute Indians claimed a number of deaths resulted from peyote, and the government doctor made several post-mortem investigations:

All believers allegedly killed by peyote demonstrably suffered from disease or senility which might at any moment have brought death and which figured as the cause in official reports. It is probable, however, that the rigors of peyote meetings hastened the deaths of a few dangerously ill individuals. (112)

Most observers regard the introduction of alcohol to the Indians to be much more devastating than peyote. (94) This seems likely, since alcoholism involves frequent intakes of large amounts of alcohol, and is known to cause various physical pathologies, whereas peyote is typically taken at much less frequent intervals.

Turning now to the question of psychosis, there are a few reports by ethnologists of acute psychotic incidents. Radin mentions a case of temporary paranoia, and Stewart describes a psychotic incident in a man competing for leadership of the group. (92, 112) La Barre reports that several natives "gave up the use of peyote entirely upon the rising of special or acute anxieties." (64)

Missionaries and anti-peyote Indians have made a number of claims of more permanent insanity resulting from taking peyote. Typically the claims are of a vague and general nature, but some cite specific cases. Stewart mentions two who:

were sent to institutions after attending peyote meetings. . . . Altogether seven were judged by the unconverted as completely crazy because of peyote, and three others temporarily deranged . . . in all cases but one, government records revealed long histories of mental instability. The exception possessed unmistakable delusions of grandeur, believing himself the son of God and ruler of the western Indians. (112)

Bromberg, who studied the relations of marihuana and psychosis (see the following section), also speculated on peyote-induced psychosis. (25) He writes, "It is to be expected that, in view of the universal anxiety reaction under peyote, these states of apprehension may attain the intensity of a psychotic picture." He relates one known case of acute psychosis following peyote intoxication; the patient was hospitalized and improved in two weeks.

#### ALCOHOLISM AND PEYOTE

Alcohol was introduced to the Indians by the whites and soon became a serious problem, not only in this country but in Central and South America as well. (27) Some of the early leaders in the peyote cult were alcoholics prior to being converted to peyote, and subsequently became strict prohibitionists. (64) They instructed their followers on the evils of alcohol, and abstinence soon became a part of the "Peyote Road." The present-day Native American Church continue to stress abstinence from alcohol. (104)

Apparently the prohibition on alcohol was relatively effective because even the anti-peyotists grudgingly conceded that members

abstained. A typical anti-peyote testimony in Congress reads, "The Indian has also been taught that it is a cure for the liquor habit. And true it is many drunkards have eaten mescal\* [peyote] and have stopped drinking liquor, but mescal is merely a more dangerous and potent substitute." (118)

The ethnologists are more positive in their assessment. Malouf notes that "almost all peyote members abide by prohibition of alcohol and the few who do not enjoy little prestige." (74) Skinner writes, "The effect of peyote eating on the Kansa has been to abolish drunkenness among its followers." (102) Finally, a Native American Church statement for a Congressional hearing draws an interesting comparison: "Peyote is a great element in our religious ceremonies and not a habit-forming drug or intoxicant. Intoxicant liquor is made by the white man and no doubt for some special purposes which we do not know. . . . Those of us who use peyote do not drink whiskey." (118) La Barre, however, notes that in Mexico peyote is often mixed with alcoholic drinks, and also mentions several cases where peyote cult members drank alcohol between meetings. (62, 64) Radin writes as follows about the Winnebagos:

So completely did peyote users give up drinking that at first it was supposed that this was a direct effect of the peyote. This is, however, an error. John Rave, leader of the cult, gave up drinking when he became a convert and included this renunciation of all liquor in the cult. . . . When Rave's personal influence decreased, and as membership increased, the number of people who drank liquor and ate peyote at the same time increased. (92)

The Spindlers collected data on drinking behavior from their small sample of peyotists among the Menomini. (109, 110) Forty-five per cent of the peyotists abstained, in comparison to 26 per cent of the non-peyotists. While the peyotists drink somewhat less than the others, it is clear that the prohibition is not completely effective. It would be of interest to obtain similar comparative statistics for other peyote groups.

#### APHRODISIAC OR ANAPHRODISIAC

The fantasy that sex, sin, and narcotics are inextricably intertwined is firmly entrenched in our culture, and writers for the popular news media continue to link sexual abandon (*Reporter*),

\*A term sometimes used for peyote, not to be confused with the alcoholic beverage of the same name.

wife-swapping (*Ladies' Home Journal*), and the like with present-day hallucinogenic drugs. (55, 52)

La Barre calls the sexual accusation leveled at the peyote cult a "flat and unqualified untruth" (117) and further writes:

It is a curious west-European mode of reasoning that leads one to expect in all psychic upsetments such as this the emergence of the sexual anxiety—more particularly in the case of peyote intoxication, which provokes marked fall of heart-beat, physical and mental depression at one stage, uncomfortable "stomach fullness" and acute nausea! (64)

Kluver feels peyote has no sexual effect (61), but a number of other observers indicate it acts as an aphrodisiac. (26, 72, 91, 118) Fernberger, a psychologist, conducted an experiment on the subject. (48) He used nine university professors as subjects and conducted an all-night group "meeting," complete with drums and rattles. Subjects consumed from three to seven buttons. Under these conditions, Fernberger found peyote to be a "strong anti-aphrodisiac."

For every one of the observers, the anti-aphrodisiac effect of the drug was marked and continued, in most cases, for at least 24 hours after the period of intoxication. [In one case it lasted 72 hours.] Efforts at erotic stimulation proved ineffective. In several cases physical automanipulation of the genitals failed to produce the usual physiological effect. The calling up of erotic images—visual and verbal—was equally ineffective.

Although Fernberger's setting will undoubtedly never be rated very high by students of erotica, and probably says more about the naivete of the experimenter than it does about peyote, it is nevertheless science's one contribution to the subject.

As far as I have been able to determine, the only persons who find peyote to be a reliable aphrodisiac are missionaries and magazine writers. The Reverend R. H. Harper successfully follows the rules of logic but is tripped-up by a faulty premise:

We are thoroughly convinced that the use of peyote leads to immorality sexually. Given: A drug which stimulates the sexual passions, and at the same time decreases the will power as to resistance, and the inevitable result is immorality in action. (59)

An example of the way our news media describe peyotism is contained in *Time* as late as 1951:

The Navajos, already wretched in their poverty and disease, were easy prey for peyote peddlers... One "peyote hassle" has been described by a paleface intruder... it was "every man for himself." Men hopped up with peyote, he reported, "are likely to grab the closest female, whatever age, kinfolk or not." There have been many reports of sex crimes, some against children, committed under the influence of peyote. (116)

#### SOCIAL AND ECONOMIC ASPECTS OF PEYOTISM

There are no consistent socio-economic differences between the peyotists and other Indian groups. Stewart rated 1,000 Washo-Paiute Indians from poor to prosperous and from lazy to energetic. (112) Twenty-five per cent were peyotists (attended two or more meetings) but only nine percent were active. He concluded that the ratings showed no difference between the two groups, and "that peyotism attracted a proportionate number of all the exceptional individuals in the Washo-Paiute community." Peyotism has met heavy opposition among the Taos, but in 1960 Dustin states that 300 of the 900 Taos Indians are peyotists and "command most of the important religious and civic offices of the Pueblo including that of governor." (41) Spindler rated the socio-economic status of a small minority of Menomini peyotists along with four other groups: native-oriented, transitional, acculturated and elite-acculturated. (109) The peyotists rated above the native-oriented group, but below the other three.

There is general agreement that the peyote cult played a prominent role in breaking down tribal barriers. La Barre, Slotkin and others have noted that all Indians are welcome to peyote meetings and a great deal of intertribal visiting takes place, often with a half-dozen or more tribes represented at a single meeting. (64, 103) Within individual tribes, however, peyotism sometimes encountered strong opposition. Stewart describes the Washo-Paiute relations as follows:

Although only a relatively small number ever espoused peyotism, its effects on the group were considerable... The vehemence of divergent opinions causes a distinct rift in Washo-Paiute communities. Old friends and neighbors are separated, families broken up. Whole communities are divided. (112)



As mentioned earlier, the Taos in New Mexico have had an especially long and bitter struggle over peyotism, with the tribal government jailing peyotists on some occasions. (89)

When peyotists are a minority they often form closely united groups that relate only minimally with non-peyotists in the same tribe. (109, 112) How much this is due to the persecution of outsiders as opposed to the in-group comradeship engendered by the peyote religion is not clear. Peyote cult members are generally credited with adopting a rather charitable and non-aggressive attitude toward their opponents; (91, 104) however, Stewart mentions one Indian who, "confident of supernatural protection for the peyotists, suggested that the members and non-members line up and 'shoot it out.'" (112)

#### LONG-TERM PERSONALITY ASPECTS OF PEYOTISM

There are only two studies in this area. One hypothesized that the more psychologically disturbed Indians would be attracted to the peyote cult as an adaptive device, and would experience more "bad dreams" than the non-peyotists. (40) The results were inconclusive.

A much more thorough study was undertaken by the Spindlers using the Rorschach test. (108, 109, 110) They obtained highly significant differences between the male peyotists and non-peyotist groups, with as many as 13 of 21 indices being differentiated at the .05 level of confidence. The female peyotist showed similar patterns, but the differences were not so marked.

The psychological interpretation of projective test results for cultures other than those on which the norms were developed is a hazardous undertaking. Spindler acknowledges this difficulty, but offers the following interpretations of the peyote group results:

The Peyote personality tends to be one in which there is a high degree of self-projective fantasy, which in a setting of anxiety, introspection, and looseness of control is interpretable as a self-doubting rumination, however much it may represent a relative increase in creative imagination. This type of projection appears at relative cost in the degree of freedom in expression of biologically oriented drives. The personality tends to be subject to unsystematized anxiety and apparently there is a tendency to attempt resolution of it by introspection. There is a relative looseness of control exerted over emotional responses. (109)

Spindler concludes there is some evidence that deviant persons gravitate to the cult, but that the unique Rorschach protocols for male peyotists cannot be explained in this manner. Members apparently undergo personality changes as a result of their participation.\*

#### LEGAL HISTORY OF PEYOTISM

The legal history of peyotism is quite lengthy and can only be summarized here.\*\* The federal opposition to peyotism was spearheaded by the Indian Bureau which made several unsuccessful attempts, beginning in 1908, to have peyote included in the Liquor Suppression Act. This was accomplished in 1923 and repealed in 1935. Slotkin lists a series of nine Congressional bills to prohibit peyote from 1916 to 1937, all of which were defeated. (104) The Department of Agriculture passed a regulation prohibiting the importation of keyote in 1915; the regulation was rescinded in 1937. Similarly, the Post Office banned shipment of peyote through the mails in 1917, and rescinded the ban in 1940. Peyote was included as a habit-forming drug in the Narcotic Farm Act of 1929 to allow treatment of peyote addiction. So far, no "peyote addict" has availed himself of this service. (121) Also, peyote was defined as a narcotic in the Federal Food, Drug and Cosmetic Act for the purpose of labeling. However, peyote has been excluded from all Federal narcotic acts.

According to Slotkin and Stewart, the Indian Bureau acted in a "highly ethnocentric and autocratic" manner during this period (1900-1934), and was very much influenced by the Christian missionaries whose competitive role hardly placed them in a disinterested position. (104, 111) Slotkin also accuses the Bureau of numerous extra-legal maneuvers in its effort to suppress peyotism. In 1925, the Bureau published an anti-peyote pamphlet that is probably one of the most propaganda-laden documents ever presented in the guise of an objective study. (87)

In 1933, John Collier became Commissioner of Indian Affairs and was instrumental in bringing about a more tolerant attitude toward peyotism. Since 1937, the opposition at the Federal level has largely disappeared, although a bill to make peyote illegal was introduced in the House as late as 1963. (38) In 1949, in response to a request to the American Medical Association by the Secretary

\*An alternative interpretation is that a familiarity with peyote visions might influence the patterns seen in Rorschach blots.

\*\*For a thorough discussion, see Slotkin's *The Peyote Religion*.<sup>(104)</sup>

of the Interior for a survey on medical care among the Indians, Braasch, Branton and Chesley made the following comment:

The use of peyote has been a problem among Indians for many years. . . . Unfortunately, the Indian Bureau permitted the use of peyote among the Indians several years ago on the grounds that it was part of an Indian religious ceremony. . . . It is high time that the sale and possession of this drug be restricted by a national law. It is a habit-forming drug and acts on the nervous system as a stimulant and narcotic. The drug usually is taken prior to festival dances and causes excessive stimulation for several hours. The following day the addict is left in an exhausted condition and is incapable of physical exercise or labor.\* (21)

The authors do not provide the source of their information, but it appears to be somewhat unreliable, or at least dated. The use of peyote "prior to festival dances" was prevalent in Mexico in the nineteenth century, but has never been a part of the Plains ceremony.

At the state level, anti-peyotist legislation has been more successful. Slotkin lists 14 states that passed laws against peyote between 1917 and 1937, (104) however, with a few exceptions no effort has been made to enforce these laws, and most have now been repealed or modified to permit ritual use by Indians. Recent action by the State Supreme Courts of Arizona and California have virtually eliminated resistance at the state level. (41, 114)

#### USE OF PEYOTE BY WHITES

At the time peyote attracted medical attention around 1900, several warnings were issued by physicians that it might prove dangerously attractive to whites as well as Indians. Weir Mitchell predicted "a perilous reign of the mescal habit when the agent becomes attainable, (84) and Havelock Ellis agreed that "there is every likelihood that mescal will become popular. (45) Ellis himself was attacked in an editorial in the *British Medical Journal* for painting too attractive a picture of the "artificial paradise." (50) The popular press joined in with lurid warnings on the "gigantic problem of spread to whites of this 'dry whiskey.'" (70) In 1933, a Swiss pharmacy embarked on an advertising campaign for "Peyotyl"

\*According to Brant, the American Medical Association states that the position taken by Braasch, *et al.* does not represent the official stand of the American Medical Association; and, in fact, no official position has been taken regarding peyote. (22)

which was to "restore the individual's balance and calm and promote full expansion of his faculties."\* (6)

Nevertheless, peyote has never achieved much acceptance outside the Indian population. Guttman states, "Experience has shown that the authors who thought that the pleasant state of intoxication produced by mescaline would speedily lead to addiction were wrong." (58) La Barre and Smith mention short-lived attempts to establish peyotism among the Negro, (64, 107) but otherwise its use seems to have been primarily limited to occasional experimentation by the curious.

In a recent study based on interviews of hospitalized drug addicts, Ludwig and Levine found that use of peyote and mescaline among opiate addicts is infrequent; some regular marihuana, amphetamine and barbiturate users engage in week-end parties with the stronger hallucinogens; and a few persons were found to take them exclusively, and at frequent intervals, for fairly long periods of time. (71) However, the abuse of peyote and mescaline is considered to be minor in comparison to other drugs. The 1962 White House Conference on Narcotic and Drug Abuse concludes:

In spite of lurid statements by some popular writers, this drug appeals to only a few individuals other than the American Indian. . . . Like other hallucinogens in the lysergic acid series, abuse of mescaline has comparatively little national significance. (121)

It is an interesting fact that the use of marihuana, which is illegal, is fairly widespread and increasing, while the much more potent hallucinogens, peyote and mescaline, are scarcely employed by whites. This is true, even though peyote may be legally ordered through the mail in most states, and until recently mescaline was also fairly easy to obtain.

### III. CANNABIS

#### HISTORY AND DESCRIPTION

The cannabis or hemp plant is probably indigenous to Central Asia and has a very long history. According to Taylor, it was described in Chinese literature in 2737 B.C. and introduced into India prior to 800 B.C. (115) The drug cannabis is obtained from the flowering tops of the female plant, and it was used very early in China as an analgesic in

\*This case drew the attention of the League of Nations Advisory Committee on Traffic in Opium and Other Dangerous Drugs in 1936. The Swiss Federal Public Health Service subsequently recommended that "it would be advisable to allow 'Peyotyl' to be supplied only on medical prescription." (6)

surgery. It has had wide use in indigenous medicine, especially in India, and to some extent in modern medicine beginning about 1860; however, it is now considered obsolete.

The use of cannabis as an intoxicant was well known in India by the ninth or tenth century A.D., and some authors place the date considerably earlier. (119) From India, it spread to North Africa and then to Europe around 1800. It has a fairly long history in Mexico and Latin America, but was not introduced into the United States to any appreciable extent until about 1920. Cannabis currently grows wild in almost all countries and is cultivated for the drug in many. It is used throughout the world as an intoxicant in various degrees — a survey sponsored by the United Nations in 1950 estimated world-wide usage by 200 million persons, the large majority of them in Asia and Africa. (77)

The potency of cannabis as an intoxicant varies widely depending on climate, cultivation, and preparation for use. There are three grades prepared in India. Bhang is cheap, low in potency and usually ingested as a drink; ganja is two to three times as strong; the most potent is charas, the unadulterated resin obtained from the plant or dried flower. (30) Smoking is the most common mode of consumption for ganja and charas. Cannabis preparations have many other names in various parts of the world — in Morocco it is called kif, in South Africa dagga, and in the United States and Latin America marihuana. These correspond roughly in potency to the bhang of India, though they are mostly smoked rather than ingested. The term hashish, when used correctly, is a powdered and sifted form of charas, or a preparation made from it; however, hashish is widely used in the literature to refer to any form of the cannabis drug. The marked differences in potency among the various preparations are probably responsible for some of the discrepancies between Eastern and Western findings that will be discussed later. From a consensus of several reports, the marihuana available in the United States is estimated to be one-fifth to one-eighth as potent as the charas resin of India. (16, 30, 79, 119)

The active ingredient of cannabis has been identified as tetrahydrocannabinol, but the chemistry is extremely complex and not completely understood. (54) Some 80 derivatives of tetrahydrocannabinol have now been synthesized and studied pharmacologically, and most are active in various degrees.

#### CANNABIS INTOXICATION AND ITS SIMILARITY TO THAT OF PEYOTE AND LSD

Pharmacology texts invariably classify cannabis as a hallucinogen, along with LSD, mescaline and psilocybin. Recent interest, however, has concentrated on the last three, probably because the "model psychosis" hypothesis grew out of work with these more potent hallucinogens. Also, those interested in examining the therapeutic effects of these agents have preferred to avoid the stigma attached to marihuana. On examining descriptions of cannabis intoxication, however, it is clear that virtually all of the phenomena associated with LSD are, or can, also be produced

with cannabis. (5, 17, 119) The wavelike aspect of the experience is almost invariably reported for cannabis as well as for all the other hallucinogens. Reports of perceiving various parts of the body as distorted, and depersonalization, or "double consciousness," are very frequent, as well as spatial and temporal distortion. Visual hallucinations, seeing faces as grotesque, increased sensitivity to sound and merging of senses (synesthesia) are also common. Heightened suggestibility, perception of thinking more clearly and deeper awareness of the meaning of things are characteristic. Anxiety and paranoid reactions may also occur. Walton writes:

The acute intoxication with hashish probably more nearly resembles that with mescaline than any of the other well-known drugs. Comparison with cocaine and the opiates does not bring out a very striking parallelism. With mescaline and hashish there are numerous common features which seem to differ only in degree. (119)

The difference between cannabis and the other hallucinogens must be understood in terms of the motivation of the user as well as the strength of the reaction. This is not to say that the set of the user is not very important for the others as well, but cannabis is especially amenable to control and direction so that the desired effects can usually be obtained at will. Michaux, a French writer, has repeatedly explored his own reactions to the various hallucinogens and writes, "Compared to other hallucinogenic drugs, hashish is feeble, without great range, but easy to handle, convenient, repeatable without immediate danger." (83) It is these features, plus the fact that consumption by smoking enables the experienced user to accurately control the amount absorbed, that makes cannabis a dependable producer of the desired euphoria and sense of well-being. This aspect is pointed up in the study by the New York Mayor's Committee which examined the reaction of experienced users to smoking and ingesting marihuana extract. (79) When smoking, the effect was almost immediate, and the subjects carefully limited the intake to produce the desired "high" feeling. They had no difficulty maintaining a "euphoric state with its feeling of well-being, contentment, sociability, mental and physical relaxation, which usually ended in a feeling of drowsiness." When ingested, the effect could not be accurately controlled and, although the most common experience was still euphoria, users also frequently showed anxiety, irritability, and antagonism. It is common knowledge among marihuana users that one must *learn* to use the drug effectively, and that beginners are often disappointed in the effect. (12)

With the much stronger and longer-lasting hallucinogens, LSD and mescaline, there is much less control and direction possible, and even the experienced user may find himself plunged into an agonizing hell. In summary, it appears that the reaction to cannabis is on a continuum with the other hallucinogens and, given the same motivation on the part of the user, will produce some of the same effects. On the other hand, cannabis permits a dependable controlled usage that is very difficult if not impossible with LSD and mescaline.

One distinct difference that does exist between cannabis and the other hallucinogens is its tendency to act as a true narcotic and produce sleep, whereas LSD and mescaline cause a long period of wakefulness. One other very important difference from the sociological standpoint is the lack of rapid onset of tolerance that occurs with the other hallucinogens. The cannabis intoxication may be maintained continuously through repeated doses, whereas the intake of LSD and mescaline must usually be spaced over several days to be effective. In addition, the evidence on the use of these drugs indicates that, although the mild euphoria obtained from cannabis may be desirable daily, or even more frequently, the overwhelming impact of the peyote and LSD experience generally results in a psychological satiation that lasts much longer than the tolerance effect.

#### MOTIVATION

In this country marihuana users almost invariably report the motivation is to attain a "high" feeling which is generally described as "a feeling of adequacy and efficiency" in which mental conflicts are allayed. (79) The experienced user is able to achieve consistently a state of self-confidence, satisfaction and relaxation, and he much prefers a congenial group setting to experiencing the effects alone. Unlike the reasons the Indian gives for taking peyote, the marihuana user typically does not claim any lasting benefits beyond the immediate pleasure obtained.

In India and the Middle East, cannabis is apparently taken under a much wider range of circumstances and motivations. The long history, wide range of amount used, and the fact that legal restrictions do not require its concealment permits investigation under a variety of conditions. Most Eastern investigators draw a clear distinction between the occasional or moderate regular user and those who indulge to excess. Chopra states that cannabis is still used fairly extensively in Indian indigenous medicine, and that it is also frequently taken in small quantities by laborers to alleviate fatigue. (29) In certain parts of India this results in a 50 percent increase in consumption during the harvest season. Chopra writes:

A common practice amongst laborers engaged on building or excavation work is to have a few pulls at a ganja pipe or to drink a glass of bhang towards the evening. This produces a sense of well-being, relieves fatigue, stimulates the appetite, and induces a feeling of mild stimulation, which enables the worker to bear more cheerfully the strain and perhaps the monotony of the daily routine of life.

Similarly, Benabud found moderate use of kif by the country people in Morocco to "keep spirits up." The need for moderation is expressed in the folk saying, "Kif is like fire; a little warms, a lot burns." (13) Bhang is also frequently used as a cooling drink or food supplement. (29) The habitual use of cannabis as an intoxicant is also considerable,

although Chopra states that it has gradually declined over the past thirty years and "at the present time it is almost entirely confined to the lower strata of society. Amongst the upper and middle classes, the use of cannabis is nowadays considered to be derogatory, in spite of the fact that the practice was held in great esteem in ancient India, and early literature is full of references to the virtues of this drug." (29) Chopra found that the current usage is only one-fourth that consumed around 1900, and that the decline is largely due to government reduction of the area under cannabis cultivation and higher excise duty. He estimates the current number of regular users to be between 0.5 and 1.0 percent of the population.

Cannabis also has a long history of religious use in India, being taken at various ceremonies and for "clearing the head and stimulating the brain to think" in meditation. (29) It also plays a central role in the religions of certain primitive African and South American tribes. (86) In India, the religious use of cannabis is by no means always moderate. Chopra writes, "The deliberate abuse of bhang is met with almost entirely among certain classes of religious mendicants." (29)

Cannabis is widely believed to have aphrodisiac properties. Bouquet states that in North Africa the belief that cannabis will preserve, maintain or improve sexual powers is an important initiating cause of the habit. (17) In a sample of some 1,200, Chopra found 10 percent listed sexual factors as the exciting cause leading to the cannabis habit. (30) While cannabis intoxication may be sexually stimulating for some, several authors have claimed that prolonged and excessive use will eventually cause impotence. (13, 17, 29)

In the United States, two studies of marihuana use on the Army concluded that it frequently produced various homosexual and heterosexual perversions. (28, 76) On the other hand, the Mayor's Committee study in New York concluded "that in the main, marihuana was not used for direct sexual stimulation." (79) Their conclusions were based on the findings of six policemen and women who, for a period of one year, posed as marihuana habitues and visited numerous intimate marihuana gatherings and "tea pads," some of which were also brothels. The experimental portion of the study found that in about 10 per cent of the 150 marihuana administrations there was some evidence of eroticism. Whatever aphrodisiac qualities cannabis may possess, virtually all investigators agree these are cerebral in nature and due to the reduction of inhibition and increased suggestibility. It is probable that it is little, if any, more effective than alcohol in this respect. In fact, Chopra writes, "Amongst profligate women and prostitutes bhang-sherbet used to be a popular drink in the course of the evening when their paramours visited them. This practice has, however, been largely replaced by the drinking of alcohol which is much more harmful." (30) Chopra also mentions that certain "saintly people who wish to renounce world pleasure use cannabis drugs for suppressing sexual desires." (29)

One final motivation should be mentioned — that of musicians who feel marihuana improves their ability. Walton writes, "The habit is so

common among this professional group that it may properly be considered a special occupational hazard." (119) Aldrich and Williams both found that experienced marihuana users perform worse on musical tests under the effects of the drug, whereas the self-evaluation of the subjects indicated the majority felt they had performed better. (3, 122) Williams did report, however, that three out of twelve subjects tested showed "marked improvement" in auditory acuity. Morrow found no change in either musical ability or auditory acuity. (79)

In addition to the stated motivations for using cannabis, evaluations of the underlying sociological and psychological basis are of interest, particularly in instances of excessive indulgence. In this country there is very little evidence of excessive use approaching that of some groups in the East; there is general agreement, however, that the majority of regular marihuana users suffer from basic personality defects. The Mayor's Committee study in New York found that most marihuana users "were unemployed and of the others most had part-time employment." (79) This study also administered extensive personality tests to 48 users and 24 nonusers. The subjects were prisoners, and therefore the sample is somewhat biased; they found, however, that the user group when undrugged was differentiated from the nonuser group by greater emotional inhibition and introversion. Maurer and Vogel characterize the marihuana user as follows:

most of them appear to be rather indolent, ineffectual young men and women who are, on the whole, not very productive. . . . Most habitual users suffer from basic personality defects similar to those which characterize the alcoholic. (77)

According to the literature, most marihuana users come from the lower socio-economic classes and there is a preponderance of Negroes and Latin Americans. (79) Four studies of marihuana use in the Army found 90 per cent or more of the samples were Negro. (28, 50, 51, 76) In recent years there appears to be an increasing use of marihuana by college students, and by middle and upper class groups in certain urban centers.

In the Eastern countries, most investigators dismiss the occasional or moderate regular use of cannabis in about the same way as moderate use of alcohol is considered in this country. Excessive indulgence, however, particularly with the more potent preparations, is invariably considered indicative of serious personality defects. As in the United States, the majority of users are in the lower socio-economic classes.

Benabud stresses that the major problems with cannabis in Morocco exist among the urban slum dwellers, especially among those who have newly come from the country and are "no longer buttressed by traditional customs." (13) By contrast, he points out that although kif is widely used among the country people, there is no sign of compulsive need, such as exists "among the uprooted, and poverty-stricken proletariat of the large

town." Benabud also cites individual psycho-pathological factors as prominent causes of excessive indulgence:

the mental attitudes and behavior usual in the emotionally immature are extremely common — prevalence of the imaginary over the real, of the present over the future, with the impulsive need of the habitually frustrated for immediate satisfaction of desire. . . . Thus, the importance and the frequency of constitutional predispositions are clear, a fact which justifies the adaptation of the well-known saying, "You are a kif addict long before you smoke your first pipe."

#### FREQUENCY OF USE AND THE QUESTION OF ADDICTION

The confirmed user takes cannabis at least once per day; however, many others indulge only occasionally. There are no statistics on the ratio of regular to occasional users, but Bromberg found that only a small proportion of those who smoked marihuana in New York used it regularly. (24) Of those who use it regularly in the United States, most report they have voluntarily or involuntarily discontinued the habit from time to time without difficulty. (79)

Several studies have reported that the average number of marihuana cigarettes smoked by regular users in the United States is around 6 to 10 per day. (28, 79, 122) Two experiments in which regular marihuana users were encouraged to consume as much as desired found no evidence of tolerance or withdrawal symptoms. (101, 122)

Chopra collected detailed statistics on the sample of 1,200 regular users in India. (30) Seventy per cent had practiced the habit for more than ten years. Seventy-two per cent used only cannabis, while the others also took alcohol, opium, or other drugs. Most of those using the bhang drink did not take excessive amounts, but 46 per cent of the ganja and charas smokers consumed in excess of 90 grains per day (18 per cent used in excess of 180 grains). More than half of both groups used the drug two or more times per day.

Benabud states that confirmed kif smokers in Morocco consumed from 20 to 30 pipes a day and 40 to 50 is not infrequent. (13) As mentioned at the beginning of this section, marihuana available in the United States is, at most, only one-fifth as potent as charas and probably about one-third as potent as ganja. An average consumption of eight marihuana cigarettes (0.5 gram each) per day would thus be roughly equivalent to 12 grains of charas or 21 grains of ganja. When we consider that almost one-half of the ganja and charas smokers in Chopra's sample used from 90 to 360 grains per day, it is clear that the average consumption of marihuana by regular users in the United States is very mild in comparison.

Regarding the question of addiction to cannabis, most investigators agree there is generally no physiological dependence developed and only slight tolerance. This applies particularly to the moderate use observed in the United States. In the Mayor's Committee study, the officers who

posed as marihuana habitués found no evidence of compulsion on the part of the user — there was no particular sign of frustration or compulsive seeking of a source of marihuana when it was not immediately available. (79)

Concerning the use of cannabis in India, Chopra writes:

The tolerance developed both in animals and man was generally slight, if any, and was in no way comparable to that tolerance developed to opiates. Its occurrence was observed only in those individuals who took excessive doses, after its prolonged use. . . . Habitual use of bhang can be discontinued without much trouble, but withdrawal from ganja and charas habits, in our experience, is more difficult to achieve, and is sometimes accompanied by unpleasant symptoms, though they are negligible compared with those associated with withdrawal from opiates and even cocaine. (29)

Chopra writes that many persons indulge in the milder bhang drinks in summer and discontinue it during the winter. (31) In Morocco Benabud found that kif smokers did not show progressively increased consumption, that habituation was not appreciable — only about one-third using it regularly, and that withdrawal was not usually followed by psychic or somatic effects. (13) The only report differing from these findings is one by Fraser who indicated rather severe withdrawal symptoms in nine Indian soldiers addicted to ganja. (49)

#### PHYSICAL AND MENTAL EFFECTS

Some features of the cannabis intoxication have already been discussed. When taken orally, the effects begin in one-half to one hour and usually last from two to four hours. The effects of smoking are almost immediate and typically last from one to three hours. The safety factor is enormous — Walton lists only two deaths due to overdoses which have been reported in the literature. (119)

The Mayor's Committee administered a wide range of physical, mental and personality tests to 72 prisoners under the effects of various dose levels, both ingested and smoked. (79) The physiological effects were minimal — increased pulse rate, hunger and frequency of urination. The major psycho-motor effect was decreased body and hand steadiness. Intellectual functions are impaired, and the effect is greater for complex tasks, large doses and non-users. Emotional and personality measures showed increased feelings of relaxation, disinhibition, and self-confidence, but basic personality structures did not change.

Although the dominant emotional reaction is euphoria, acute intoxication can cause severe anxiety, panic, and paranoid reactions. Six of the subjects in the Mayor's Committee study experienced such episodes lasting from three to six hours; all occurring after the drug was ingested rather than smoked.

The Mayor's Committee compared the 48 users and 24 nonusers

from the standpoint of mental and physical deterioration resulting from long-term use of marihuana. They also conducted detailed quantitative measures on 17 of those who had used it the longest (mean 8 years, range 2 to 16; mean dose per day 7 cigarettes, range 2 to 18). They conclude that the subjects "had suffered no mental or physical deterioration as a result of their use of the drug." (79) Freedman and Rockmore also report that their sample of 310, who had used marihuana an average of seven years, showed no mental or physical deterioration. (50)

In India, the study of the mental, moral and physical effects of cannabis has had a long history, beginning with a seven-volume report issued by the Indian Hemp-Drug Commission in 1894. Their conclusions, as quoted by Walton (119) are as follows:

The evidence shows the moderate use of ganja or charas not to be appreciably harmful, while in the case of bhang drinking, the evidence shows the habit to be quite harmless. . . . The excessive use does cause injury. . . . tends to weaken the constitution and to render the consumer more susceptible to disease. . . . Moderate use of hemp drugs produces no injurious effects on the mind. . . . excessive use indicates and intensifies mental instability.

The commission continued, as quoted by Chopra: (30) "it (bhang) is the refreshing beverage of the people corresponding to beer in England and moderate indulgence in it is attended with less injurious consequences than similar consumption of alcohol in Europe." Chopra writes, "This view has been corroborated by our own experience in the field."

Chopra provides numerous statistics on the effect of cannabis on health by dose size and mode of consumption. (30) In the previously mentioned sample of 1,200 regular users, there was a distinct difference in the effects on health, as reported by the user, depending on the amount consumed. For those using less than ten grains, none claimed impairment of health, whereas 75 per cent of those using in excess of 90 grains per day indicated some impairment.

The most common physical symptom found by Chopra was conjunctivitis (72 per cent); this effect is frequently reported by other investigators and is a well-known means of detecting cannabis users. Chopra also found chronic bronchitis was frequent among ganja and charas smokers, as well as a higher-than-average incidence of tuberculosis. Various digestive ailments were reported, and habitual use of large doses resulted in defective nutrition and a deterioration of general health. The fact that excessive use and the resulting impairment of health is much more common among users of the more potent preparations (ganja and charas) has been recognized by the various governments, and the use of charas is now illegal in all countries. (17) Bhang, and comparable preparations in other Eastern countries are often legal, but the cultivation and sale are generally controlled by the government.

Turning now to the relation between cannabis and psychosis, it is well established that transient psychotic reactions can be precipitated by

using the drug, and, in susceptible individuals, this may occur even with moderate or occasional use. Out of a total of 72 persons used as experimental subjects the Mayor's Committee reports three cases of psychosis: one lasted four days, another six months, and one became psychotic two weeks after being returned to prison (duration not noted). (79) The Committee concludes, "that given the potential personality make-up and the right time and environment, marihuana may bring on a true psychotic state." On the other hand, Freedman and Rockmore report no history of mental hospitalization in their sample of 310 who had an average of seven years usage. (50) Similarly, the United States Army investigation in Panama found no report of psychosis due to marihuana smoking in a sample of several hundred users over a period of one year. (101)

Bromberg reported on thirty-one cases admitted to the hospital as a result of using marihuana. (23, 24) Fourteen were described as "acute intoxication" that lasted from several hours to several days and was often accompanied by severe anxiety or hysterical reaction and transient panic states or depressions.

In India and other Eastern countries, cannabis has long been considered an important cause of psychosis, and many of the early authors classified 30 to 50 per cent of hospitalized mental cases as cannabis psychosis. (119) It is now considered that the casual effects of cannabis were somewhat exaggerated, but there is generally agreement among Eastern writers that the drug plays a significant role in the precipitation of transient psychoses. Benabud cites the following data on psychiatric admissions to one hospital in Morocco. In the two-year period (1955-1956), 25 per cent of the some 2,300 male admissions were diagnosed as "genuine" cannabis psychoses, and 70 per cent of the total admitted to smoking kif (one-third were regular users). (13) Since the incidence of cannabis use in Morocco is estimated to be considerably less than 10 per cent of the population, it is clear that there is a definite associative, if not causative, relationship between cannabis and psychosis. Benabud estimates that of the total population of kif smokers, the number "suffering from recurrent mental derangement" is not more than five per thousand. Of Chopra's sample of 1,200 regular users, 13 were classified as psychotic. (30) Benabud especially stresses excessive use and environmental factors, pointing out that the rate of psychosis among the moderate-smoking country people is only one-tenth that in the large cities.

Benabud classifies the cannabis psychosis as acute or subacute (74 per cent), residual (17 per cent) and psychical deterioration (9 per cent). He describes the first category as usually resulting from a sharp toxic overdose and lasting for several days. The main features are excitation and impulsivity which may produce acts of violence. Sometimes there are continuing disassociations or "spectator ego" and delusions of grandeur, especially identification or kinship with God. Patients in the residual classification have longer lasting syndromes including schizophrenic-like withdrawal, mental confusion and mild residual hallucinations. There is little tendency for symptoms to become organized and proliferate, but rather to disappear gradually after a few months. The third class (can-

nabis deterioration) is described as the result of prolonged, excessive use of cannabis, resulting in precocious senility and over-all physical and mental deterioration. "These are the old addicts, exuberant, friendly, kif-happy vagabonds, often oddly dressed and living by begging."

Bouquet feels the fact that male hospitalized psychotics outnumber females three to one in North Africa is a consequence of cannabis use being almost entirely restricted to males. (17) He considers charas to be much more dangerous in this regard than the milder forms of cannabis, and states that the incidence of cannabis psychosis has appreciably declined because charas is now prohibited and only the "raw cannabis ends" are used.

The chronic cannabis psychosis reported by Eastern writers has not been observed in this country. Most Western authors, while recognizing the role of cannabis in precipitating acute transient psychoses, have questioned the causal role in chronic cases. Mayer-Gross writes: "The chronic hashish psychoses described by earlier observers have proved to be cases of schizophrenia complicated by symptoms of cannabis intoxication." (78) Allentuck states that "a characteristic cannabis psychosis does not exist. Marihuana will not produce a psychosis *de novo* in a well-integrated, stable person." (4) And Murphy writes: "The prevalence of *major* mental disorder among cannabis users appears to be little, if any, higher than that in the general population." (86) Since it is well established that cannabis use attracts the mentally unstable, Murphy raises the interesting question of "whether the use of cannabis may not be protecting some individuals from a psychosis." Regardless of the issue of chronic psychosis, it is clear from Eastern descriptions that gross personality changes do result from very prolonged and excessive use of cannabis. The complete loss of ambition and the neglect of personal habits, dress, and hygiene resemble characteristics of the skid-row alcoholic in this country.

#### CANNABIS AND CRIME

The association of crime with the use of cannabis goes back at least to around 1300 when Marco Polo described Hasan and his band of assassins (see Walton or Taylor). The drug was reportedly used to fortify courage for committing assassinations and other violent crimes, and the words hashish and assassin are supposed to be derived from this source. In certain parts of this country, a near hysteria developed about 1930 when the use of marihuana was claimed to be related to a violent crime wave and the widespread corruption of school children. Dr. Gomila, who was Commissioner of Public Safety in New Orleans, wrote that some homes for boys were "full of children who had become habituated to the use of cannabis," and that, "Youngsters known as 'muggle-heads' fortified themselves with the narcotic and proceeded to shoot down police, bank clerks and casual by-standers." (53) Sixty per cent of the crimes committed in New Orleans in 1936 were attributed to marihuana users.

Despite these lurid claims, subsequent studies have, for the most part, failed to substantiate a casual relationship between major crimes and cannabis. Bromberg conducted two large statistical studies and found

very little relation between crime and the use of marihuana. (23, 24) The Mayor's Committee found that many marihuana smokers were guilty of petty crimes, but there was no evidence that the practice was associated with major crimes. (79)

More recent assessments tend to agree with these findings. The Ad Hoc Panel on Drug Abuse at the 1962 White House Conference states, "Although marihuana has long held the reputation of inciting individuals to commit sexual offenses and other anti-social acts, evidence is inadequate to substantiate this." (121) Maurer and Vogel write:

It would seem that, from the point of view of public health and safety, the effects of marihuana present a very minor problem compared with the abusive use of alcohol, and that the drug has received a disproportionate share of publicity as an inciter of violent crime. (77)

Chopra found that the crime rate for the sample of 1,200 regular cannabis users in India was higher than that for the general population. (30) For bhang users, 6 per cent had one conviction and 3 per cent had more than one; for ganja and charas users, the comparable percentages were 12 and 17. In a further study of serious, violent crimes, however, especially murder cases, Chopra found that cannabis intoxication was responsible for only 1 to 2 per cent of the cases. (29) In addition to impulsive acts performed under acute cannabis intoxication, there are frequent references in the literature to criminals using the drug to provide courage to commit violent acts. There has been no evidence offered to substantiate this claim; rather, Chopra writes as follows regarding pre-meditated crime:

In some cases these drugs not only do not lead to it, but actually act as deterrents. We have already observed that one of the important actions of these drugs is to quieten and stupify the individual so that there is no tendency to violence, as is not infrequently found in cases of alcoholic intoxication. (29)

Similarly, Murphy writes:

Most serious observers agree that cannabis does not, *per se*, induce aggressive or criminal activities, and that the reduction of the work drive leads to a negative correlation with criminality rather than a positive one. (86)

It is interesting that a number of observers, particularly in countries other than the United States, consider alcohol to be a worse offender than cannabis in causing crime. For instance, an editorial in the *South African Medical Journal* states:

Dagga produces in the smoker drowsiness, euphoria and occasional psychotic episodes, but alcohol is guilty of even graver action. It is not certain to what extent dagga contributes to the commission of crime in this country. Alcohol does so in undeniable measure. (42)

In the United States, probably the most serious accusation made regarding marihuana smoking is that it often leads to the use of heroin. (77) The Mayor's Committee found no evidence of this, stating, "The instances are extremely rare where the habit of marihuana smoking is associated with addiction to these other narcotics." (79) Nevertheless, it is difficult to see how the association with criminal peddlers, who often also sell heroin, can fail to influence some marihuana users to become addicted to heroin.

#### SUMMARY AND APPRAISAL

Cannabis is an hallucinogen whose effects are somewhat similar to, though much milder than, peyote and LSD. The confirmed user takes it daily or more frequently, and through experience and careful regulation of the dose is able to consistently limit the effects to euphoria and other desired qualities. Unlike peyote, there are typically no claims of benefit other than the immediate effects. Mild tolerance and physical dependence may develop when the more potent preparations are used to excess; however, they are virtually nonexistent for occasional or moderate regular users. There are apparently no deleterious physical effects resulting from moderate use, though excessive indulgence noted in some Eastern countries contributes to a variety of ailments. The most serious hazard is the precipitation of transient psychoses. Unstable individuals may experience a psychotic episode from even a small amount, and although they typically recover within a few days, some psychoses triggered by cannabis reactions may last for several months. In Eastern countries, where cannabis is taken in large amounts, some authors feel that it is directly or indirectly responsible for a sizable portion of the intakes in psychiatric hospitals.

In this country cannabis is not used to excess by Eastern standards; however, it does attract a disproportionate number of poorly adjusted and nonproductive young persons in the lower socio-economic strata. There is some evidence that its use among other groups is increasing, but is not readily observable because of the lack of police harassment and publicity. In Eastern countries cannabis use is currently also more prevalent in the lower classes; however, moderate use is not illegal, socially condemned, nor necessarily considered indicative of personality defects. The reputation of cannabis for inciting major crimes is unwarranted and it probably has no more effect than alcohol in this respect.

Of those familiar with the use of marihuana in this country, there is general agreement that the legal penalties imposed for its use are much too severe. Laws controlling marihuana are similar or identical to those pertaining to the opiates, including the mandatory imposition of long prison sentences for certain offenses. Many judges have complained that these laws have resulted in excessive sentences (five to ten years) for relatively minor offenses with marihuana. The 1962 White House Conference made the following recommendation: "It is the opinion of the Panel that the hazards of marihuana *per se* have been exaggerated and that long criminal sentences imposed on an occasional user or possessor are in poor social perspective." (121)



The cultural attitude toward narcotics is, of course, a very important determiner of legal and social measures adopted for their control. An interesting commentary on the extent to which these attitudes resist change and influence factual interpretation is afforded by the lively debate that followed the publishing of the Mayor's Committee Report on Marihuana in 1944. (43, 7, 18, 19, 20, 75, 120) This was an extensive study conducted under the auspices of the New York Academy of Medicine at the request of Mayor La Guardia. Its findings tended to minimize the seriousness of the marihuana problem in New York and set off a series of attacks from those with opposing viewpoints. An American Medical Association editorial commented: "Public officials will do well to disregard this unscientific, uncritical study, and continue to regard marihuana as a menace wherever it is purveyed." (43) And, as Taylor points out, "We have done so ever since." (115) Anslinger, the Commissioner of Narcotics, wrote, "The Bureau immediately detected the superficiality and hollowness of its findings and denounced it." (8) The authors expressed dismay that the report was attacked on the grounds that the findings represented a public danger, rather than on its scientific aspects. (20) Walton, a leading authority on cannabis, wrote:

The report in question came generally to the same conclusion that any other group of competent investigators might reach if they repeated the inquiry under the same conditions. . . . A scientific study should be expected to report merely what it finds, avoid propaganda and let the public do what it will with the results. (120)

Murphy raises the question of why cannabis is so regularly banned in countries where alcohol is permitted. (86) He feels that one of the reasons is the positive value placed on action, and the hostility toward passivity:

In Anglo-Saxon cultures inaction is looked down on and often feared, whereas over-activity, aided by alcohol or independent of alcohol, is considerably tolerated despite the social disturbance produced. It may be that we can ban cannabis simply because the people who use it, or would do so, carry little weight in social matters and are relatively easy to control; whereas the alcohol user often carries plenty of weight in social matters and is difficult to control, as the United States prohibition era showed. It has yet to be shown, however, that the one is more socially or personally disruptive than the other.

#### IV. EXTRA-MEDICAL USE OF LSD

The incidence of extra- or para-medical use of LSD is difficult to estimate; although, with the exception of certain small groups, it is undoubtedly quite low. There are indications that it is becoming available via the black market, and that its use is increasing. (71) This final section

will attempt a perspective on the present and future roles of the stronger hallucinogens in the extra-medical area, based on current information and the history of peyote and cannabis presented in the two previous sections.

In spite of the tendency of many medical authorities to consider extra-medical use of LSD to be motivated by the desire for "kicks," the evidence indicates that the motivation of the majority of those who take, or desire to take, LSD is much more similar to that of the peyotists than the marihuana users. Sanford writes:

Those who advocate the drug's use [LSD] are not, in the main, after kicks, nor are they interested in antisocial activity. These advocates, who include intellectuals, professionals, and scientists, claim that the drug offers great benefits to the individual — rich inner experience, freedom to be himself, a chance for further development of his personality, and a loving rather than a hostile or indifferent attitude towards other people. (95)

To a considerable extent, this is the manner in which Indians view peyote. Of course, there are vast cultural and ritual differences between the Indian's taking of peyote and the current usage of LSD among whites, but the fact remains that both are largely motivated by hopes of beneficial, lasting effects rather than the desire for the immediate experience which characterizes the marihuana user. There is no reason to believe that the Indian's emphasis on *direct learning* from peyote is especially different from the reports of personal insight by the LSD taker.

As discussed in the previous sections, LSD and the other strong hallucinogens are not well-suited for the production of dependable and repeated euphoriant experiences as is the case with cannabis. The rapid onset of physical tolerance, difficulty of control, tendency to produce psychological satiation, and the fact that peyote and mescaline have not proved popular in this respect with either Indians or whites all attest that there is little likelihood of their use in this manner. Some persons who habitually take a wide variety of mind-affecting drugs will, of course, also take LSD, but there is little indication that it will be a favorite with this group. As indicated by some of Ludwig and Levine's drug-addict subjects, the effect of the stronger hallucinogens is "more like an ordeal than a pleasure." (71)

If we grant that the majority of persons who do, or would, take LSD are motivated by a desire for self-improvement and understanding, what is the evidence that such efforts will be successful? There is a large body of literature on the effectiveness of LSD as an adjunct to psychotherapy, but evidence for LSD-induced change outside the formal therapy setting is largely limited to subjective claims. Several investigators have remarked that their (non-therapy) subjects have frequently claimed better adjustment, lower anxiety, increased feelings of well-being and confidence, and lasting insights. (1, 93, 96) Some of these have administered follow-up questionnaires at post-LSD periods of up to three years, and found that about 40 to 60 per cent of the subjects claimed various personality, attitudinal and value changes attributable to the LSD experience. (39, 68, 113)

The author has conducted a preliminary experiment in conjunction with Dr. Sidney Cohen in which 15 subjects were given a battery of anxiety, attitude and performance tests prior to, and one week following, the administration of 200 mcg. LSD. (80) Significant drops in anxiety measures and certain attitude changes resulted, but no change was observed in the performance tests (intended to measure creativity in the form of fluency, flexibility and originality). A larger and more controlled study is currently underway which will measure the effects of three 200 mcg. sessions at post-LSD periods of two weeks and six months.

A recent development in the psychotherapeutic use of LSD is the single large dose technique (400 mcg. or more) with very little additional therapy. (33, 73, 85, 99) Special efforts are made to create strong positive expectations in the patient prior to the treatment, and the setting during the LSD session often has a decidedly mystical and religious flavor. The goal is to obtain a rapid personality change through a "massive reorganization" similar to a conversion experience.\* There is a growing evidence that the method is surprisingly effective in the treatment of alcoholics. While the early claims of 40 to 50 per cent abstinence appears to be overly optimistic, there seems to be no doubt that some persons can almost miraculously be changed from chronic alcoholics to permanent abstainers in a period of 24 hours.

These results would seem to lend indirect support to claims of LSD-induced personality change made by persons taking the drug outside of a formal therapeutic setting. If a single high-dose LSD treatment can produce such a rapid, and clearly observable, behavioral change, it is not unlikely that some non-alcoholics will also experience rather dramatic personality alterations. It is accepted that naturally occurring traumatic events can result in a rapid personality shift—it is not especially surprising that a chemically-induced trauma can have similar effects.

If we grant that LSD-induced personality change can take place, such changes may or may not be viewed as desirable depending on the personal and social value system applied in the assessment. For instance, Cole and Katz ask:

How should one evaluate the outcome if an individual were, for example, to divorce his wife and take a job which paid him less but which he stated he enjoyed more than the one which he had previously held? If a person were to become more relaxed and happy-go-lucky, more sensitive to poetry or music, but less concerned with success or competition, is this good? There are suggestions that individuals who take drugs like LSD either illicitly or as therapy may become more detached from reality or less concerned with the real world, more "transcendental." (37)

\*It is interesting to note that this method is not dissimilar to the ritual use of peyote by the Indians, including its reported effectiveness in combating alcoholism.

Still others have viewed the hallucinogens as a threat to the Western value system. McClelland has been quoted regarding the Harvard experience with psilocybin:

It is probably no accident that the society which most consistently encouraged the use of these substances, India, produced one of the sickest social orders ever created by mankind, in which thinking men spent their time lost in the Buddha position under the influence of drugs exploring consciousness, while poverty, disease, social discrimination and superstition reached their highest and most organized form in all history. (55)

Mellen gives his impression after a peyote experience:

what I found in peyote seemed squarely in contradiction with all the patterns of Western, industrial society: it did not fit in with the utilitarian context of my life and culture. It is worth wondering whether a society like ours could function if it were predicated on consciousness expansion. (82)

The questions raised by these writers are intriguing because they take the issue of drugs out of the usual context of individual problems related to excessive indulgence (primarily of alcohol) and suggest that they might threaten the social value system. The repeated use of the stronger hallucinogens might indeed have a profound impact on the social values of an isolated group. The ritual use of peyote undoubtedly plays an important role among the Plains Indians, and this came about in a relatively short period of time. It is well to remember, however, the crucial role of the environment in determining the effect of hallucinogens. It is one thing to have such an experience and continue to live in the environment of the American Indians—it is quite another to come back abruptly to a competitive Western culture.

Turning now to the hazards accompanying the use of LSD, there have been a number of strong warnings from physicians. (37, 47, 56, 57) Most have been limited to its use outside of medical supervision, but Grinker writes, "The drugs are indeed dangerous even under the best of precautions and conditions." (56) More recently Levine and Ludwig (69) have argued along with Cohen (35) for their safety when administered under proper medical supervision.

Although there are no statistics available, it seems probable that the incidence of psychotic reactions from LSD taken without medical supervision is considerably higher than the 0.8 per 1000 reported by Cohen for experimental subjects. Lack of screening of subjects, uncontrolled dose level, improper care during the intoxication, and lack of facilities for terminating severe reactions will all tend to result in a higher rate of complications. In particular, mild paranoid reactions, which are rather common, rarely pose a serious problem if handled properly, but when LSD is taken alone or with an untrained person, such reactions can balloon and become quite acute, sometimes lasting for several days or

weeks. The history of peyote use by the Indians would seem to indicate, however, that there is no general deterioration or psychosis in store for those who use LSD repeatedly over long periods of time as has been suggested by some authors. (47, 57) As in the case of cannabis, psychotic reactions to LSD are virtually all transient in nature, although a few recover slowly over a period of months. There is no compulsion to continue taking LSD; a person experiencing a very severe anxiety reaction usually has no desire to take it again. La Barre mentions that he has known several Indians who stopped taking peyote after such a reaction, (64) and the author has known persons who abruptly terminated their self-experimentation with LSD for the same reason.

There have been no cases reported of LSD addiction in the usual sense, but a peculiar type of "addiction" seems to have developed — its principal characteristic is a severe state of overenthusiasm. Barron, Jarvik and Bunnell write, "there is a tendency for those who ingest hallucinogens habitually to make the drug experience the center of all their activities." (11) Grinker writes that one of the motivations is "belonging to a 'superior' social group which transcends the mundane existence of ordinary people." (56) The 1962 White House Conference reports that abuse of LSD and similar drugs is primarily limited to the "long-hair" and beatnik cults which experiment with the use of psychotropic drugs to achieve group cohesiveness and personal nirvana" (121) — goals that incidentally are not considered particularly reprehensible under other circumstances. Cole and Katz express concern that "investigators who have embarked on serious scientific work in this area have not been immune to the deleterious and seductive effects of these agents." (37) Cohen notes that there has been "an impressive morbidity [of therapists] in view of the relatively small number of American practitioners using the hallucinogens." (34) Grinker waxes a bit overenthusiastic himself with his statement, "At one time it was impossible to find an investigator willing to work with LSD-25 who was not himself an 'addict'." (56)

It is hardly surprising that the very intense effects of the LSD experience can produce such overenthusiasm in some individuals — the reported mystical, transcendental, self-insightful experiences have proved very impressive to a number of sophisticated persons — they are not likely to be dismissed lightly by those more suggestible. Fortunately, "over-enthusiasm," from whatever source, tends to be transitory in nature, and most of those so affected can expect to recover with no more treatment than the passage of time. Shelton (98) has noted that Ching Yuan aptly describes a similar state:

When I knew nothing of Zen, mountains were to me just mountains and waters just waters, but when I knew a little of Zen, mountains were no longer mountains, waters no longer waters; but when I had thoroughly understood, once again, mountains were mountains and waters were waters.

The controversy over the para-medical roles of LSD and similar drugs promises to grow more intense because of the complex evaluation of

benefits vs. hazards. There also appears to be a re-evaluation of the hazards of marihuana, and a recognition that the associated legal penalties are far too severe. In one sense the prohibition of marihuana and not the stronger hallucinogens is analogous to banning beer but not distilled liquor. However, the arguments in favor of LSD include those of religion, values, and freedom to improve one's personality — issues which are considered very important in our culture. Proponents for legalizing marihuana are mostly limited to the position that it provides escape and recreation and is probably less harmful than alcohol.

On the other hand, Huxley has repeatedly argued that a more rational policy would not simply accept the admittedly very unsatisfactory alcohol as inevitable, but would seek to replace it with better drugs:

the need for frequent chemical vacations from intolerable selfhood and repulsive surroundings will undoubtedly remain. What is needed is a new drug which will relieve and console our suffering species without doing more harm in the long run than it does good in the short. (60)

The search for other chemical escapes does go on, but considering that we have abandoned the investigation to juveniles and beatniks, it is not surprising that we get nothing better than glue, nutmeg, and morning-glory seeds.

In conclusion, the primary purpose of this paper has been to broaden the perspective from which hallucinogenic drugs are considered. Many current articles on hallucinogens end with a conclusion on their *use* and *abuse*. The proper use is as a tool to investigate mental chemistry, and possibly as a treatment of neuroses; the illicit abuse is for "kicks" and cults. Thus the reader is handed a neatly packaged assessment that in no way conflicts with his personal or cultural preconceptions of the good and bad roles of drugs. It is a curious inconsistency that we readily accept such inflexible dichotomies without realizing that our favorite intoxicant, alcohol, is very much a drug. A much broader perspective will be needed to fully explore the potentials of the very potent and versatile hallucinogens. The Indians have long contended that "peyote teaches"; Huxley and many others have also thought they saw the possibility of valuable education experiences via a "chemical Door in the Wall." The extent to which we explore these possibilities is largely dependent on our ability to transcend cultural and semantic boundaries.

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# AYAHUASCA DRINKERS AMONG THE CHAMA INDIANS OF NORTHEAST PERU

HEINZ KUSEL

SOME TIME AGO I read an article describing the experience of consuming peyote, a cactus, with Indians of South Dakota. I could not help being reminded of the *ayahuasca* drinkers of northeast Peru. I lived for seven years traveling and trading in the Upper Amazon region and often heard stories about the effect of the drug. Once on a long canoe trip down the river my Indian companion had chanted the song of the "Goddess of Ayahuasca." *Ayahuasca*, a Quechua word meaning vine of death, is the collective name for various climbing tropical lianas\* and also designates the tea prepared from the leaves of the vine, either by itself or in combination with other leaves.

Indians and low-class mestizos alike visit the *ayahuasquero* or witchdoctor when they are ailing, or think they need a general check-up, or want to make an important decision, or simply because they feel like it. Among the scattered halfcastes and natives of the swamps and rain-forests of the Ucayali region the *ayahuasca* cult plays a significant role in their religious medical practices and provides them with a good deal of entertainment.

Repeatedly I heard how in a vision induced by drinking the tea prepared from the liana the patient had perceived the specific plant needed for his cure, had later searched and found it in the jungle and had subsequently recovered. To the enigmatic mind of the Indian, *ayahuasca* opens the gate to the healing properties of the forces of nature at whose mercy he lives. A recurrent theme, whenever the natives refer to the results of the drug, is the vision of the procession of plants, with garlic, the "king" of the good plants, leading the way. Garlic, tobacco, quinine, and *ojé*,† (a tree

\*Various species of *Banisteriopsis*, especially *B. Caapi*.

†*Ficus helmiathogoga*

latex now processed in Iquitos and exported to a pharmaceutical firm in New York for use in a remedy against hookworm), are at the head of a long line of friendly, elf-like plants which in *ayahuasca* visions bow to man, offering their services.

The strange aspect of the veneration of garlic is that it does not even grow in the jungle. Garlic and dogs are the main products of individual barter between Quechua highland Indians and those people with which they apparently have no ethnic and hardly any linguistic bonds. The lowland Indians live under the jagged mountain-ranges of the eastern Andes. Perspiring couples, dressed in heavy woolen homespun garments, descend from their cold heights into the dark hot valleys which they fear, carrying loads of garlic on their backs and driving herds of small thin dogs before them to exchange for ginger roots and other medicinal plants of the forest. Dogs are always in demand for hunting because they fall prey so easily to ant-eaters, panthers and snakes. And garlic, in the common belief of the people, helps protect them from the most frequent plagues of the jungle-dweller, the amoebas, parasites and parasitic worms. Garlic also keeps poisonous snakes away, when the juice is rubbed on feet and legs; and a section of a clove of garlic when kept in the pocket is believed to be potent enough to protect the bearer against a "light" love-charm. Such a charm, referred to as *brebaje*, is prepared with relative ease by adding a trace of the female cyclic affliction to an innocent refreshment. A more elaborate charm used by the male, called *pusanga*, is an expensive oil obtained from a certain part of a porpoise, by a qualified individual observing strict rules of procedure, fasting, and solitude. A few drops of this essence applied to the man's hands before dancing are said to have an automatic effect on the desired partner. Aside from these there are many other more or less elaborate charms also referred to as *pusanga*.

The half-civilized Chama Indians, sturdy fellows, who today specialize in drawing mahogany and cedar logs for the sawmills in Iquitos, undergo a "purge" of *ayahuasca* before they enter the flooded areas of forest to float out the logs and assemble them into tremendous rafts. For a cure of that nature they prepare themselves by a prolonged diet, avoiding meat, salt, alcohol, and sugar.

Aside from the main use of the drug for curing or keeping the consumer in good general condition *ayahuasca* will, according to its users, induce clairvoyance and may, for example, solve a theft or prophesy the success or failure of a given enterprise. A man might be planning a trip to a certain river where he knows of a good place to tap rubber, but to be sure of good results he will consult *ayahuasca* first. After that, more than likely he will