

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,"<sup>(81)</sup> and their viewpoint and activities have been widely examined and criticized in magazine articles.\*\*\* 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

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\*\* The term "hallucinogen" is somewhat misleading since true hallucinations do not result from these drugs, and such illusions as are present play a minor role in the over-all experience. The term "psychedelic" (mind-manifesting) has been proposed by Osmond,<sup>(106)</sup> and has been generally accepted by those stressing the more positive features of the mental effects; however, cannabis has not generally been included under this label. The whole area is so charged at the present time that it appears impossible to arrive at a neutral nomenclature. The early description "psychotomimetic" is gradually being abandoned as the model psychosis approach proves unfruitful. The Leary group has used "consciousness-expanding agents" in an attempt to escape the stigma attached to non-medical use of drugs. His opponents have countered with "mind-distorting." A compromise such as "mind-changing" has some of the connotations of a lobotomy, especially when permanent or semi-permanent features are stressed. At least the term "hallucinogen" is probably the most widely known.

\*\*\* See Refs. 60, 63, 74, and 145.

these drugs may be of value or benefit to individuals not ordinarily considering themselves to be psychiatrically ill."<sup>(41)</sup> On the other hand, a number of editorials and articles in medical journals (including the article by Cole and Katz) have warned that uncontrolled use of the drugs could produce psychotic reactions, suicides, and undesirable personality changes.\* While these drugs are currently limited to experimental purposes by both the manufacturer and the Food and Drug Administration, a small black market has apparently developed, and legal and medical authorities are concerned over the possible hazards.

In the opinion of the author, the controversy can be clarified considerably by examining other hallucinogenic drugs that have been in use for much longer periods of time. The pro-LSD literature often makes brief, romantic references to the fact that, for hundreds of years, primitive people have used plants containing hallucinogenic substances, but rarely does this literature attempt to determine how the many resulting studies relate to the current questions being raised about LSD, mescaline and psilocybin. Rather, the discovery or synthesis of these more recent drugs is viewed as a new and revolutionary short-cut to psychotherapeutic goals, and to mental states previously accessible only by the arduous methods of the Eastern religions. On the other hand, the anti-LSD attitudes expressed in the recent popular press, and to some extent in the medical literature as well, tend to ignore information on older hallucinogenic substances completely. They regard LSD as a new and potentially dangerous drug which may produce long-term deleterious mental effects that are unknown at present. For instance, Farnsworth warns:

We have as yet no wholly reliable information as to the long-range effects of taking the hallucinogens over a protracted period of time, but there are already some distressing indications that habitual use of the drugs will lead, in some individuals at least, to looseness in thinking and difficulty in communicating coherently. Until we know otherwise, it is prudent for us to assume, further, that regular

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\* See Refs. 40, 55, 64, and 65.

use of the hallucinogens will prepare individuals to "move up" to other and more powerful drugs, such as morphine or diacetylmorphine (heroin).<sup>(55)</sup>

Although this warning may have validity, I do not agree that the long-term effects of these drugs is nearly so unknown a quantity as is generally implied. Hallucinogens have been used for over four thousand years, and there are more than one thousand documents on the use and effects of peyote alone.

The purpose of this paper is to review the extensive literature on peyote and *Cannabis sativa* (marihuana), with particular emphasis on reducing the uncertainty about the benefits or perils inherent in the use of LSD and other recent additions to the hallucinogen family. The psychological effects of peyote are especially similar to LSD, to the extent that the principal active alkaloid, mescaline, has been shown to be indistinguishable from LSD in double blind experiments.<sup>(147)</sup> Certain groups of Indians have long used peyote in connection with their religious ceremonies. The pro and con aspects of such use have been thoroughly examined and documented in the several unsuccessful efforts to obtain federal legislation prohibiting its use. The limitation of peyote to the 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, and one notable criticism in the present controversy is 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,<sup>\*</sup> 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

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\* Shultes states that there are more than forty naturally occurring hallucinogens in North and South America alone.<sup>(117)</sup>

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.

The following study will be organized in four sections. Since any discussion of the dangers of hallucinogenic drugs must involve a number of vaguely defined terms such as psychic addiction, habituation and emotional dependence, Sec. II will attempt to clarify some of these terms before examining the use and effects of the drugs in question. Section III will describe the history and spread of peyotism among the American Indians, and will provide a detailed review of the literature pertaining to the method and frequency of use, incidence of addiction and psychosis, motivation, relation to alcoholism, legal aspects, and the socio-economic and psychological differences between peyotists and non-peyotists. Section IV will present a similar review of the literature on the use of cannabis in the United States and other parts of the world. Section V will utilize the information presented on peyote and cannabis, together with data on LSD, in an effort to predict the likely future direction and accompanying problems of hallucinogens in the present culture.



## II. ADDICTION AND HABITUATION

Of all the drugs used to alter the functioning of the central nervous system, hallucinogens are probably the most dramatic in their effect. The question naturally arises as to the danger of addiction or habituation among their users. Evidence on this question as it pertains to peyote and cannabis will be given in the following two sections; however, since the semantic difficulty is very great in this area, some background discussion will be provided here. Many persons automatically associate any nonmedical use of drugs, and especially narcotics, with addiction. Shultes writes, "The very word 'narcotic' has taken on a sinister meaning in American culture. There is probably no field -- save perhaps religion and politics -- so replete with popular misinformation and purposeful misrepresentation . . . it is enough that a substance be called a narcotic to draw away aghast."<sup>(116)</sup> On the other hand, writers discussing the use of various hallucinogenic and other drugs often note that neither the tolerance nor physical dependence\* of opiate addiction are present, and quickly dismiss the question of addiction. Neither the generalizations of the first group nor the second group's rigid adherence to definitions provide satisfactory answers in this complex area.

The World Health Organization defines drug addiction as:

a state of periodic or chronic intoxication produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include:

- (1) an overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means;
- (2) a tendency to increase the dose;
- (3) a psychic (psychological) and generally a physical dependence on the effects of the drug;
- (4) detrimental effect on the individual and on society.<sup>(54)</sup>

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\*Tolerance to a drug necessitates an increase of the dose in order to obtain the original effects. Physical dependence is an altered physiologic state resulting from repeated use which necessitates the continued use of the drug to avoid an illness termed abstinence syndrome.

The 1962 White House Conference on Narcotic and Drug Abuse concludes that, "alcohol qualifies on all counts" with this definition.<sup>(146)</sup>

Unfortunately, as Monge points out in relation to coca-leaf chewing, authorities frequently resort to categories such as "drugs which are not addicting, but which should be treated as though they were," for purposes of control.<sup>(100)</sup> This certainly encourages the type of semantic confusion already too prevalent in this area. In the 1957 meeting, the World Health Organization strongly recommended that the label "addictive" be limited to drugs falling under that definition and offered the following definition of drug habituation:

Drug habituation (habit) is a condition resulting from the repeated consumption of a drug. Its characteristics include:

- (1) a desire (but not a compulsion) to continue taking the drug for the sense of improved well-being which it engenders;
- (2) little or no tendency to increase the dose;
- (3) some degree of psychic dependence on the effect of the drug, but absence of physical dependence and hence of an abstinence syndrome;
- (4) detrimental effects, if any, primarily on the individual.<sup>(54)</sup>

As the definition of addiction is relaxed, it becomes increasingly difficult to apply in any absolute sense. For instance, tobacco produces some emotional dependence and even withdrawal symptoms among heavy smokers,<sup>(73)</sup> and yet we are reluctant to label it an addictive drug. Coffee causes psychological dependence in some, and laxatives can produce a kind of physical dependence. On the other hand, a drug may not produce physical dependence and yet be dangerously addictive, i.e., cocaine.<sup>(92)</sup>

In the case of hallucinogens, neither tolerance nor physical dependence develop, so the issue revolves about habituation or emotional dependence. Brown defines habituation as "an emotional and psychological predilection associated with euphoria and the desire to avoid responsibilities."<sup>(28)</sup> Ricks, in referring specifically to hallucinogens, states, "A person is hooked, even without physiological habituation and withdrawal symptoms, if he finds his only real experiences

occur under the influence of drugs."<sup>(110)</sup> Still others have noted the tendency for users of hallucinogens to turn inward and away from social reality, and have warned against the resulting social and value implications.<sup>(97)</sup> Shultes feels there is little difficulty when hallucinogens are taken for ceremonial purposes, but problems sometimes arise when they pass "from ceremonial to purely hedonic or recreational use."<sup>(117)</sup> I shall discuss all of these aspects in more detail, following the review of the literature on peyote and cannabis.

Enough has been said to indicate that the nonmedical use of drugs is much too complex to be described or understood by simply applying addictive or habituating labels. Perhaps the most useful definition of drug addiction for the purposes of this paper is given by Vogel, Isbell, and Chapman: "Drug addiction may be defined as a state in which a person has lost the power of self-control with reference to a drug, and abuses the drug to such an extent that the person or society is harmed."<sup>(142)</sup> As Maurer and Vogel point out, the problem is one of asking "how much deterioration on the part of the individual can the society tolerate without also suffering," yet, at the same time recognizing that "people have a certain right to behave as they wish -- so long as they do not harm others in the process."<sup>(92)</sup> A convenient yardstick is the extent to which our society tolerates the use of alcohol. Of the 70 million users, the estimated number of alcoholics is around 5 million or a rate of 44 per 1,000 adults. This is some one and one-half times greater than that of the next highest country (France).<sup>(149)</sup> The economic expenditure for alcoholic beverages is in excess of the total amount spent for education, and drunkenness and drunken driving account for around 40 per cent of all arrests in the United States.<sup>(71)</sup>

The particular values and views held by the culture are, of course, strong determinants of what will be interpreted as sufficiently harmful to society to require restrictive laws. Even coffee has at times been declared illegal,<sup>(44)</sup> and, although tobacco was widely used at the beginning of this century, cigarette smoking was regarded "as morally and physiologically dangerous -- almost as dangerous as marijuana is regarded by the public today -- and their use was generally

deplored by most respectable people."<sup>(92)</sup> Our own history of the enactment and repeal of prohibition is very instructive. Shortly after prohibition was enacted an attempt was also made in Congress to prohibit the Indians' use of peyote. Dr. Harvey Wiley testified on this subject before the Senate Committee on Indian Affairs:

Now I think people who are exposed to the dangers of this kind (intoxication) are usually very much opposed to being protected. This is true particularly with regard to alcohol, opium, cocaine, and other habit-forming drugs, and I call this peyote (sic) and believe it to be a habit-forming drug for this reason. If we should listen to the arguments of those who want to use the drug (peyote) or have used it or any kind of drug ... we would not have any legislation of any kind.<sup>(103)</sup>

In view of the subsequent repeal of the 18th Amendment and the increase in peyotism among the Indians (from 13,000 in 1919 to an estimated 200,000 at present), it is clear that Dr. Wiley's observation has practical validity only when the nondrug users are in a substantial majority.

### III. 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 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.<sup>(78)</sup> Most evidence places the introduction in the United States (Texas) at around 1870.<sup>(125)</sup> Shultes cites some evidence for its use in Mexaco as early as 300 B.C., and its introduction to Texas in 1760.<sup>(115)</sup>

In Mexico, the peyote ritual usually involved elaborate preparations, which included an annual pilgrimage to collect the peyote. Some tribes, notably the Huichol, had only a single ritual a year.<sup>(78)</sup> Others had several ceremonial feasts for various purposes. Peyote was thought to have curing powers, and was also used to divine the outcome of wars, etc.

Among the Plains Indians in the United States, peyotism underwent numerous changes beginning around 1900. Whereas it 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. (103)  
Of the 116 agencies, 29 reported some usage and the percentages ranged from 0.4 to 90 per cent. The Native American Church now claims to have 200,000 members and has penetrated almost all tribes in the United States and Canada. (47) In 1932, Margaret Mead stated that the "Peyote Cult represents most closely the present-day religious faith of the majority of the people." (96) And 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." (77)

#### 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 birth or death anniversary, to ask for rain, or to simply 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. (135)

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. (78)  
The meetings are held in large tepees or in peyote churches, or sometimes

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\*Includes spouses and children of known users.

\*\* 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. (78)

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 water and another ceremony is performed, followed by the morning songs, prayers and the quitting song.

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\* 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. (125) 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."

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."<sup>(78)</sup>

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."<sup>(125)</sup> 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.<sup>(107)</sup>

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.<sup>(131)</sup>

The physiological discomfort of nausea and vomiting that often



accompanies the extremely bitter peyote is thought by some to be a "cleansing of sins,"<sup>(78)</sup> but others interpret its occurrence to an improper attitude on the part of the person eating the peyote. Radin writes:

If a person who is truly repentant eats peyote for the first time, he does not suffer at all from its effects, but if an individual is bull-headed, does not believe in its virtue, he is likely to suffer a great deal ... The disagreeable effects of the peyote vary directly with the man's disbelief in it.<sup>(108)</sup>

La Barre relates a story told by the Indians on the effect of not adopting humility:

A leader took his expensive watch into a meeting and laid it on the altar cloth near the father peyote to "show off." A man shaking the gourd vigorously on the north side was making motions toward the father peyote and miraculously the watch became broken up; it was just a mess of works there loose, and the hands dropped off. "It don't pay to go in there and then try to show off."<sup>(78)</sup>

The meeting itself greatly intensifies the mood through suggestion and environment:

Owing to the hypnotic effect of the firelight, the community of thought, abstraction from all extraneous affairs, the droning chant, and the mental attitude of expectancy induced by the words of the speakers, who discourse on the visions which shall be seen, combined with the physiological effect of the drug ... they really see the most wonderful visions of spirits.<sup>(42)</sup>

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.<sup>(107)</sup>

Slotkin also relegates visions to a minor role, stating that persons seeking a mystic state through peyote ignore visions.<sup>(126)</sup>

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. (131)

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. (132)

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. (123)

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."\* (107) La Barre describes it as follows:

At intervals older men pray aloud with affecting sincerity, often with tears running down their cheeks, their voices choked with emotion, and their bodies swaying with earnestness as they gesture and stretch out their arms to invoke the aid of Peyote. The tone is of a poor and pitiful person humbly asking the aid and pity of a great power, and absolutely no shame whatever is felt by anyone when a grown man breaks down with loud sobbing during his prayer. (78)

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). (78)

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

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\* 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." (36)

is of profound significance cannot be doubted. (78)

Skinner describes meetings where the leader asks the members to rise and confess their sins; (121) and an informant of Stewart's insists that "no one can face it [Peyote] and lie." (135) La Barre writes:

The significance of a group ritual, as in the peyote cult (aided here by the awesome pharmaco-dynamic "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. (77)

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. (77)

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. (78)

Similarly, Petrullo writes:

[it was] a most imposing twenty-four hour performance accompanied by the deepest feeling of reverence and awe and peace that it has been my lot to have witnessed either among primitive people or Christian groups engaged in worshipping their God. \* (107)

Turning now to the motivation for taking peyote, as stated by the

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\* 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. (104)

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;"<sup>(123)</sup> 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."<sup>(125)</sup>

Similarly, Petrullo states:

A prime law of Peyotism is that Peyote is the teacher of the religion, and that by submitting oneself to the narcotic intoxication with faith and a sincere desire to learn, everything will be revealed. Therefore, to ask of the Peyotist questions on the religion is not necessary. They should be asked of Peyote instead.<sup>(107)</sup>

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.<sup>(107)</sup>

The concept of the direct teaching of peyote is probably expressed most

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\* This bears a striking resemblance to the goals of modern-day psychotherapy.

succinctly by the often-quoted statement of Quanah 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."<sup>(125)</sup>

Other statements by Indians refer to the continued capability of peyote to teach; "Peyote is a lifetime education. You will learn new things everytime you attend a meeting."<sup>(47)</sup> One of Slotkin's informants, a peyotist for 30 years, claimed to be "just a beginner" discovering what peyote had to teach.<sup>(123)</sup> Malouf reports one informant who said, "He was sorry he had gone to school as Peyote would have told him everything necessary to know."<sup>(88)</sup>

The observation that peyote and its synthetic equivalent, mescaline, teach has not been limited to the Indians, as the following statements demonstrate:

To be shaken out of the ruts of ordinary perception -- this is an experience of inestimable value to everyone, and especially to the intellectual -- the man who comes back through the Door in the Wall will never be quite the same as the man who went out. He will be wiser but less cocksure, happier but less self-satisfied, humbler in acknowledging his ignorance yet better equipped to understand the relationship of words to things. -- Aldous Huxley.<sup>(68)</sup>

To be admitted to the rites of mescal is "an educational influence of no mean value" -- Havelock Ellis.<sup>(53)</sup>

Most subjects find the experience valuable, some find it frightening and many say it is uniquely lovely ... For myself, my experiences with these substances have been the most strange, most awesome, and among the most beautiful things in a varied and fortunate life -- Humphrey Osmond.<sup>(106)</sup>

The whole experience is a profound piece of knowledge. It is an indelible experience; it is forever known. I have known myself in a way I doubt would have ever occurred except as it did -- Philip Smith.<sup>(129)</sup>

I have dealt at some length with the issue of "learning" and the psychotherapeutic effect from the use of peyote and mescaline because it is an important dimension in the consideration of hallucinogenic drugs. It is this unique claim that sets these substances apart from other drugs that alter the central nervous system, and makes their evaluation such a complex question -- one seldom reports learning from

alcoholic intoxication -- save perhaps to observe more moderation.

#### THEORETICAL 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 Indian had long valued visions produced by fasting and self-torture,\* and accepted peyote as a more direct means to this goal,<sup>(120)</sup> 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."

Shultes' article (1938) attacks the vision theory by pointing out that peyotism had spread to non-Plains areas where visions are assigned little importance.<sup>(115)</sup> He also stresses, as mentioned above, that peyote visions are often not sought and are regarded as wrong by some. Shultes argues that the doctoring aspect of peyote was foremost in its diffusion. He points out that all proselytes stressed the curative powers, and most early leaders were converted by a cure; that the curing rite is an important part of many peyote ceremonies, and that peyote is referred to as medicine in many tribes. Along these lines, La Barre feels that the major anxiety of the American Indian is death, and that peyote is considered a cure for virtually every disease.<sup>(77)</sup> However, La Barre also contends that the Indians' view of "medicine" and supernatural visions are intimately related, and that Shultes' dispute of Shonle's thesis is largely semantic.<sup>(76)</sup>

Barber (1941) and La Barre (1960) feel that Shonle's prediction has been at least partially confirmed by the subsequent diffusion of peyotism.<sup>(12, 79)</sup> 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

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\* See Ruth Benedict.<sup>(16)</sup>

indirect aggression toward the whites, because of the latter's continued opposition to the movement.<sup>(10)</sup> 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.<sup>(10, 131)</sup> They argue, along with Margaret Mead,<sup>(96)</sup> 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.<sup>(131)</sup> Aberle and Stewart have examined the spread of peyotism among the Navajos and find some evidence of correlation between increased diffusion of the cult and the incidence of deprivation caused by government stock-reduction programs.<sup>(1)</sup>

Of those who view the peyote cult as an attempt to adjust to a disintegrating culture, Petrullo 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.

A religion with such doctrines is the natural but final recourse of a subjugated people who fully realize the inadequacy of their material means to restore their former world state. Their spiritual battle is won if they can build a subjective universe containing a heaven whose attainment does not depend on materialistic means. By acquiring an

outlook on life which permits indifferent contemplation of the ordinary pursuits of men, a response of sympathy and pity to the injustices suffered at the hands of their neighbors, and serene acceptance of evil and misfortune, spiritual freedom and self-respect are assured. Such an escape from an oppressional world the Peyotists seem to have found. (107)

Bromberg, a physician, specifically attacks Petrullo'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! (27)

Bromberg also criticizes peyotism on the grounds that it interferes with scientific medical care, and concludes:

Whether the American Indian, perhaps discouraged with the struggle to attain the social status of his white brethren, chooses to remain in his tepee curing ills through consumption of peyote, or to adjust himself to civilization and science, is a question for the future to decide. (26)

The positions of Petrullo 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 of "civilization," and feels that the ceremonial use of peyote is a non-constructive avoidance of the problem. I shall discuss this question further in the last section as it relates to the present-day use of hallucinogenic drugs.

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

The average consumption of peyote buttons at a meeting is around twelve to twenty according to La Barre, with occasional individuals claiming to have eaten as many as eighty to one hundred. (78) Shultes



and Slotkin both report the average number to be about twelve.<sup>(139)(123)</sup> Stewart puts the average at eight to twelve, and Skinner reports that the Iowas take about two to eight.<sup>(135)(122)</sup> 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."<sup>(78)</sup> 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. Laboratory investigators have found a rapid onset of tolerance for both mescaline and LSD, lasting for three to five days and as long as eight days in some subjects.<sup>\*(2)(11)</sup> Nevertheless, Radin reports an incidence of a dramatic conversion resulting from taking peyote on three successive days,<sup>(109)</sup> 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.<sup>(78)</sup> 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;<sup>(104)</sup> however, others use it as medicine, generally in the form of peyote tea.<sup>\*\* (123)</sup> 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

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\*Whereas a slow build-up of tolerance is regarded as a characteristic of addictive drugs (see the preceding section), a rapid onset of tolerance is a deterrent to addiction since it limits the frequency with which the drug may be taken and still be effective.

\*\* In addition "father peyote" buttons are often carried as a personal amulet to ward off misfortune.<sup>(78)</sup>

patterns."<sup>(132)</sup> She also mentions one woman who "takes peyote several times a week and often sinks into a state of complete withdrawal while taking it."

Concerning addiction, there is complete agreement among investigators that peyote is not physiologically addictive and does not result in tolerance in the sense of increased dose size over a period of time. There are instances of excessive use, such as the woman mentioned above. La Barre also writes that his informants admitted "that there were some individuals who shows signs of addiction, in the sense that they consumed the plant often and abundantly, but these are not clear uncomplicated instances of drug addiction."<sup>(78)</sup> In spite of occasional cases such as these, there is general agreement that peyote should not be included under the vaguer labels of psychologically addicting or habit-forming drugs.<sup>(80)</sup> 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."<sup>(7)</sup> 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.<sup>(7)</sup> 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.<sup>(146)</sup>

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.<sup>(105)(135)</sup>

#### 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.<sup>(139)</sup> 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 Washu 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.<sup>(135)</sup>

Most observers regard the introduction of alcohol to the Indians to be much more devastating than peyote.<sup>(113)</sup> This seems likely, since alcoholism involves frequent intakes of large amount of alcohol, and is known to cause various physical pathologies, whereas peyote is typically taken at much less frequent intervals. Slotkin states he has known Indians who have taken peyote for 40 to 50 years without apparent ill effects.<sup>(123)</sup>

Turning now to the question of psychosis, there are a few reports by ethnologists of acute psychotic incidents. La Barre quotes Lumholtz on Mexican peyotism: "... in a few cases a man may consume so much that he is attacked with a fit of madness, rushing backward and forward, trying to kill people, and tearing his clothes to pieces. People then seize upon him, and tie him hand and foot, leaving him thus until he regains his senses."<sup>(78)</sup> Radin describes a case of temporary paranoia following a peyote meeting,<sup>(109)</sup> and Stewart mentions a meeting in which there was a great deal of jealousy and competition over the leadership of the group, and one man "went out of his head and said the world

was coming to an end." (135) La Barre mentions several natives who "gave up the use of peyote entirely upon the rising of special or acute anxieties." (78) La Barre suggests that the semipsychotic state is to some extent culturally conditioned; that in the Mexican peyotism there was a good deal of aggressive witchcraft activity, but in the Plains "the attitude repeatedly emphasized is that of inter-tribal brotherhood and an individual feeling of friendliness and well-being." The importance of the setting has certainly been dramatically confirmed in this regard in experimental work with LSD. (69) (141)

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. (135)

In addition, some Indians have given testimony against peyote in the Congressional Hearings and named specific persons who "have gone crazy from peyote." (140)

Bromberg, who studied the relations of marihuana and psychosis (see the following section), also speculated on peyote-induced psychosis. (27) 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. Bromberg rationalizes the infrequent reports of peyote-induced psychosis as follows:

The tendency to suppress emotional expression common among Indians ... may well account for the paucity of acute or prolonged psychotic reactions observed. Authorities of the United States Public Health Service report no cases of peyote psychosis or peyote intoxication have applied for treatment to the government narcotic hospitals. There are obvious facts in explanation of this also -- the reluctance

of the Indians to bring peyote to the attention of medical authorities, distance factors and so on.

#### 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.<sup>(30)</sup> Some of the early leaders in the peyote cult were alcoholics prior to being converted to peyote, and subsequently became strict prohibitionists.<sup>(78)</sup> 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 continues to stress abstinence from alcohol.<sup>(125)</sup>

Apparently the prohibition on alcohol was relatively effective because even the anti-peyotists grudgingly conceded that members abstained. Stewart writes, "White and Indian opponents admit peyotism keeps its members from drinking, but they falsely accuse it of attracting only confirmed alcoholics."<sup>(135)</sup> 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."<sup>(140)</sup>

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."<sup>(88)</sup> Skinner writes, "The effect of peyote eating on the Kansa has been to abolish drunkenness among its followers."<sup>(122)</sup> 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."<sup>(140)</sup>

Some have gone so far as to say that peyote is something of a mystical equivalent to antabuse; that peyote and alcohol are incompatible.

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

La Barre points out that there is no basis for this belief and that in Mexico peyote is often mixed with alcoholic drinks. He also mentions several cases where peyote cult members drank alcohol between meetings. (75)(78) 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. (109)

The Spindlers collected data on drinking behavior from their small sample of peyotists among the Menomini. (131,132) 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.

#### APHRODISAIC 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), wife-swapping (Ladies' Home Journal), and the like with present-day hallucinogenic drugs. (63)(60) It may be a hopeless task to oppose such an oft-repeated illusion, but I shall nevertheless present some facts as they relate to peyote.

La Barre calls the sexual accusation leveled at the peyote cult a "flat and unqualified untruth" (139) 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! (78)

Lumholtz states that, "the use of the plant temporarily removes all sexual desire." (86) Collier, the pro-peyote Commissioner of Indian Affairs, testified, "Something on which all of the literature has agreed

is that peyote narcotizes the sexual emotions. It is the opposite of a sexual excitement."<sup>(140)</sup> Buchanan describes the effects of mescaline, "As the intoxication increases in strength the ego with all its strivings, its wishings and its willings appears to vanish."<sup>(29)</sup> He also states that the mescaline subject has no sex drive. Petrullo reports that "there is no actual, implied or even symbolic eroticism" in the peyote ceremony.<sup>(107)</sup>

Fernberger, a psychologist, took Petrullo's statement as a point of departure and conducted an experiment.<sup>(56)</sup> 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.

La Barre and Kluver both feel that "the drug apparently does not influence the sexual sphere in any specific way."<sup>(78)(72)</sup> Examination of a large number of published and unpublished descriptions of mescaline and LSD experiences, however, reveals that, though a few subjects report sexual excitement, a much larger number indicate anaphrodisiac effects.

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.<sup>(67)</sup>

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

Indians were trooping in last week to buy such sweets as canned peaches or candy. To the experienced trader, these innocent purchases meant only one thing: a peyote party was in the making. Soon at some secret hideaway far out in the desert, men, women and children would be enjoying the transitory delights of a powerful drug. After the party they would have a dismal hangover. The sweets were to help straighten them out.

Peyote is the fruit of the mescal cactus, which grows abundantly in Mexico and in parts of Texas ... 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\*(138) against children, committed under the influence of peyote.

#### 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.<sup>(135)</sup> Twenty-five per cent were peyotists (attended two or more meetings) but only nine per cent 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." In another study among the Utes, he found that the more literate members of one tribe tended to belong to the peyote cult.<sup>(134)</sup> 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

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\*La Barre's comments about this article are worth repeating: "One of the most widely read accounts of peyote was the article 'Button, Button ...' It is also one of the most error-ridden (there is no 'dismal hangover' from peyote, the ritual breakfast is not 'to help straighten them out,' peyote is not the 'fruit' of the 'mescal cactus,' nor, incidentally, is mescal a cactus). The opinions of this article are as tendentious as its statements are erroneous. It is unfortunate that so many persons should obtain their notions about peyote from so irresponsible a source."<sup>(79)</sup>



of the important religious and civic offices of the Pueblo including that of governor."<sup>(47)</sup> 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.<sup>(131)</sup> 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.<sup>(78)(123)</sup> Within individual tribes, however, peyotism sometimes encountered strong opposition. Stewart describes the Washu-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 Washu-Paiute communities. Old friends and neighbors are separated, families broken up. Whole communities are divided.<sup>(135)</sup>

Opler relates similar circumstances among the Ignacio. 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.<sup>(105)</sup>

When peyotists are a minority they often form closely united groups that relate only minimally with non-peyotists in the same tribe.<sup>(131)(135)</sup> 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;<sup>(107)(125)</sup> 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!'"<sup>(135)</sup>

#### LONG-TERM PERSONALITY ASPECTS OF PEYOTISM

There are only two studies in this area, one preliminary investigation by Dittmann and Moore on the effect on dreams,<sup>(46)</sup> and a detailed

study by the Spindlers using the Rorschach test.<sup>(130)(132)</sup> The first 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. They had judges evaluate dream descriptions and found the hypotheses confirmed by some, but not all, judges. It was assumed by the authors that the differences were due to selective effects rather than changes occurring as a result of taking peyote.

The Spindlers have conducted a much more thorough study of acculturation on the Menomini Indians. They used samples of 68 males and 61 females and divided them into five groups: native-oriented (medicine lodge), peyote cult, transitional, acculturated and elite-acculturated.\* The Rorschach test was then administered to these samples. The most striking result was the consistent deviation of the peyotists from all other groups. This was especially true of the males; for 13 of the 21 indices obtained, the native-oriented and peyote groups were differentiated significantly beyond the .05 level of confidence. The native-oriented and elite groups, which were at the extremes on the acculturation scale, were differentiated on eight indices. Thus, the peyote and native-oriented groups showed more psychological differences, though they were adjacent on the acculturation scale. The native-oriented and transitional groups were differentiated on five indices. Spindler concludes that the peyote group does not fit in any psychological continuum similar to the socio-cultural sequence.

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

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\*The peyote cult was introduced to the Menomini in 1914 and has made little headway since that time. There are only 15 adult male peyotists and their families out of a total of 550 households. The Spindler sample included 13 of the 15 males and seven of the ten female peyotists. The peyote minority are to some extent persecuted -- some persons calling them "devil worshippers."<sup>(131)</sup>

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. (131)

Spindler especially stresses the looseness of control as differentiating the native-oriented and peyote groups, the former evidencing stoicism and self-control. He feels the loss of this control results in anxiety in this instance, even though it may be appropriate in other settings.

Louise Spindler, who conducted the study on the female sample, found that women peyotists also showed fewer modal Rorschach patterns than did the non-peyotists, although the difference was not as marked. The main difference was more use of uncontrolled color, "indicating emotional expressiveness is somewhat uncontrolled and incautious." (132) She points out that the women do not show the strong intratensive pattern evidenced by the men peyotists. Thus, the strongly self-involved inward-turning reflection is not present in the women.

George Spindler entertains the question of whether deviant persons gravitate to the peyote cult, or if they undergo personality changes as a result of participation. He concludes that there is some evidence for the former, but the unique Rorschach protocols for the male peyotist cannot be explained in this manner. "This particular combination of characteristics does not appear, randomly scattered, among isolated individuals in other Menomini categories." Louise Spindler concludes that membership in the peyote cult does not have such a determinant relationship on the personality configuration of the women. She finds that women satisfy needs for a sanctioned, institutionalized place for emotional expression, but otherwise are not nearly as deeply involved as the men. This is accompanied by less active participation by the women; only three of the sample of seven attend meetings regularly.

Whatever the merits of the psychological interpretation of the results, the fact remains that the Rorschach responses for the peyote cult members were strikingly different from the other groups, and from the modal pattern for whites. One possible cause might be a familiarity

with peyote visions, which in turn influenced the patterns seen in the Rorschach blots. However, the measures indicating greater emotional expressiveness are certainly consistent with the type of behavior encouraged in the peyote ceremony, so valid differences in this area might be expected. Further studies of this type among peyote cult members who are not a minority would be very valuable in assessing personality changes resulting from peyotism.

#### LEGAL HISTORY OF PEYOTISM

The legal battles over peyotism are instructive, not only for the presentation of opposing viewpoints, but also because they took place largely when prohibition was being enacted and repealed. This provides an interesting perspective on the use of drugs which has been lost with the present apathy toward the issue of alcohol and the attendant five million alcoholics. For instance, Newberne quotes the testimony of Professor Hrdlicka as follows: "While the effects of peyote are not so violent or quite so harmful as those of alcohol, they are nevertheless deleterious, and the use of the drug should be discouraged and, if possible, prohibited." (103)

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. (125) The Department of Agriculture passed a regulation prohibiting the importation of peyote 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. (146) Also, peyote was defined as a narcotic in the Federal Food, Drug and Cosmetic Act for the purpose

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\*For a thorough discussion, see Slotkin's The Peyote Religion. (125)

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.<sup>(125)(133)</sup> Slotkin also accuses the Bureau of numerous extra-legal maneuvers in its effort to suppress peyotism. In 1925, the Bureau published what is probably one of the most propaganda-laden documents ever presented in the guise of an objective study.<sup>(103)</sup> Among other things, it presents the results of a questionnaire on peyotism that was submitted to the superintendents, physicians, field matrons, farmers and missionaries working with the Indians. An example of the answers to the question on the physical, mental, and moral effects of peyote follows:

- Physical: produces yellow color and drawn looks; impairs nerve stability; leads to early decay and death; may lead to insanity; weakens the body; weakens the offspring.
- Mental: deadens the intellect; stupifies; weakens the willpower and opinions; those who have the habit are indolent, shiftless and have no fixed purpose; the continued use of peyote makes the users deadheaded and stupid.
- Moral: debasing; deadens moral sensibilities; tends to licentiousness; makes its victims liars; has same effect as liquor on morals; like opium; leads to sexual perversion; if anything could be said in favor of the continuation of its use it would be that it will exterminate those who use it.

The respondents are somewhat more charitable to the animals owned by the Indians:

and finally, the superintendents plead for the lower animals, for the horses that are overdriven [presumably to get to the meetings], and for poor creatures which are neglected from the day of notification to the day of restoration to a normal condition.

This document is prefaced by some comments from the then Indian Commissioner, C. H. Burke, who writes:

[this pamphlet] is published as a convenient source of information for the employees of the Indian Service and for supplying those who are interested in securing regulative legislation against the sale, shipment, and use of peyote with the

kind of data most frequently requested.

Burke concludes by reminding the Indians in the words of Clauston that, "To crave is easy, to control is difficult, therefore the wiser course is to avoid those things which tend to create a craving."

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. In 1949, however, in response to a request to the American Medical Association by the Secretary 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.\*(22)

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, six later repealed them. (125) With a few exceptions no effort has been made to enforce these laws,\*\* and the Native American Church continues to hold its meetings openly without interferences from state officials.

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\* 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. (23)

\*\* A test case of a California conviction for peyotism is currently being appealed to higher courts.

The Arizona law prohibiting peyotism was recently ruled unconstitutional in a test case, and Judge McFate accompanied the ruling with the following statement:

Peyote is not a narcotic. It is not habit-forming. It is actually unpleasant to take, having a very bitter taste. There is no significant use of Peyote by persons other than Indians who practice Peyotism in connection with their religion. There are about 225,000 members of the organized church, known as the Native American Church, which adheres to this practice. The Peyote rite is one of prayer and quiet contemplation. The doctrine consists of belief in God, brotherly love, care of family, and other worthy beliefs ... Through the use of Peyote, the Indian acquires increased powers of concentration and introspection, and experiences deep religious emotion. There is nothing debasing or morally reprehensible about the Peyote ritual.

The use of Peyote is essential to the existence of the Peyote religion. Without it, the practice of religion would be effectively prevented. The manner in which Peyote is used by the Indian worshipper is not inconsistent with the public health, morals, or welfare. Its use, in the manner disclosed by the evidence in this case, is in fact entirely consistent with the good morals, health, and spiritual elevation of some 225,000 Indians.

It is significant that many states which formerly outlawed the use of Peyote have abolished or amended their laws to permit its use for religious purposes. It is also significant that the Federal Government has in nowise prevented the use of Peyote by Indians or others.

Under these circumstances, the court finds that the statute is unconstitutional as applied to the acts of this defendant in the conduct and practices of her religious beliefs.<sup>(47)</sup>

#### 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 wrote in 1896, after a single small dose of peyote:

I predict a perilous reign of the mescal habit when this agent becomes attainable. The temptation to call again the enchanting magic of the experience will, I am sure, be too much for some men to resist after they have once set foot in this land of fairy colours, where there seems to be so

much to charm and so little to excite horror and disgust.<sup>(99)</sup>

Havelock Ellis, after a dose of three peyote buttons wrote:

Personally, I have found the penalty of a single dose surprisingly light, though, having learned what the experience has to teach, I have no special inclination to renew it. But I fully agree with Dr. Weir Mitchell that there is every likelihood that mescal will become popular.<sup>(52)</sup>

Ellis himself was attacked by an editorial in the British Medical Journal for painting too attractive a picture of the "artificial paradise."

we must venture to point out that such eulogy of any drug is a danger to the public ... Surely this is putting temptation before that section of the public which is always in search of a new sensation ... We rather fear that Mr. Ellis, instead of being the discoverer of a new Paradise, has only shown the way to a new Inferno.<sup>(50)</sup>

Some forty years later, Bromberg wrote as follows:

The spread of its use among American Indians has alarmed many who see in peyote only a narcotic drug. Fear has been expressed by some that the falling off of narcotic importation through legal channels, and the cessation of smuggling of opium and its derivatives because of the war, may result in the spread of the peyote habit to the white population ... Studies will probably prove ... peyote exerts a hedonistic habituation where the user wishes to experience over and over again the exotic sensation produced ... More potent than marihuana in its narcotic effects, almost as widespread as morphine and its derivatives, the lowly cactus seems destined to raise problems of religious and medical significance far beyond the dreams of its ancient Aztec users.<sup>(26)</sup>

Nevertheless, peyote has never achieved much acceptance outside the Indian population. Guttmann 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."<sup>(66)</sup> La Barre and Smith mention short-lived attempts to establish peyotism among the Negro,<sup>(78)</sup><sup>(128)</sup> but otherwise its use seems to have been limited to occasional experimentation by the curious -- this, in spite of the fact that peyote has been widely publicized in magazines for a half century, and a Swiss pharmacy even embarked on a large-scale advertising campaign in 1933 under the name "Peyotyl," which was to "restore the individual's



balance and calm and promote full expansion of his faculties."\*(7) It appears that Slotkin's ethnological assessment that most middle-class Americans would not be interested in the effects of peyote has proved more accurate than the prediction of the medical profession in this instance.(124)

Mescaline, the active hallucinogenic agent in peyote, was isolated in 1896 and synthesized in 1919.(7) Thereafter, the psychic effects of peyote could be had with the physical side effects of nausea largely eliminated. Considerable interest developed for psychiatric experimentation, but again there was virtually no use by the public.\*\* 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. Experiments at the United States Public Health Service Hospital in Lexington indicate that it is unacceptable even to addicts with wide drug experience. Like other hallucinogens in the lysergic acid series, abuse of mescaline has comparatively little national significance.(146)

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 very recently mescaline was also fairly easy to obtain.

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\*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 perscription."(7)

\*\*A 1931 article by M. Critchley entitled "Some Forms of Drug Addiction: Mescalism" has been quoted several times in the literature as evidence of addiction of white groups to mescaline.(43) Actually, the title is quite misleading. This article was published in an obscure British journal, and on examination only contains three sentences devoted to a report that police authorities in Paris were alarmed by the increasing use of mescaline and were taking measures to control its sale. The remainder dealt with the use of peyote by the Indians and a description of its psychic effects. To my knowledge, there was no further published evidence of problems with mescaline in Paris or elsewhere until the recent flurry of articles on LSD, mescaline, and psilocybin by Farnsworth and others.(55)

#### IV. 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.<sup>(137)</sup> It was cultivated initially for its fiber to make rope and crude cloth, and it still has considerable commercial value for this purpose.

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 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.<sup>(143)</sup> 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.<sup>(92)</sup>

The potency of cannabis as an intoxicant varies widely depending on climate, cultivation, and preparation for use. Chopra and Bouquet present good reviews on these aspects.<sup>(33)</sup> <sup>(17)</sup> In India the plants are carefully cultivated to maximize the active ingredient which is largely contained in the resinous matter that develops in the flowers and top-most leaves and twigs.

There are three grades of cannabis prepared in India. The poorest is called bhang and consists of the dried matured leaves and flowering shoots; it may be obtained from wild as well as cultivated plants. In the former case it usually contains male as well as female plants, although, according to Chopra, the male flowers have very little of the

active agent. Ganja, a more potent preparation, is formed by treading the small leaves and resinous matter until a solid homogenous mass is formed. Charas is the pure resin obtained either directly from the plants prior to harvesting, or in a powder form from the dried flower. Few areas grow cannabis plants sufficiently rich in resin to permit the collection of charas. Smoking is the usual mode of consumption for ganja and charas, while bhang is almost always ingested in the form of a drink. 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.

Isolation of the active ingredients of cannabis has proven extremely difficult and is still not completely understood, even though it has been studied extensively. According to Goodman and Gilman,<sup>(62)</sup> Wollner and his coworkers first isolated and identified a natural tetrahydrocannabinol in 1942, and this compound has been shown to be quite active pharmacologically in both animals and man. Some 80 derivatives of tetrahydrocannabinol have now been synthesized and studied pharmacologically and most are active in various degrees. The complex chemistry is beyond the scope of this paper; it is treated in detail by Walton and Lowe.<sup>(143)(85)</sup>

The inability to standardize dosage has hampered experimental studies of cannabis. The marked difference in potency among the various preparations also appears responsible for some discrepancies between Eastern and Western findings. Since the results of several studies will be compared in this section, it is desirable to attempt a rough scale of relative potency among the different preparations. The amount of oil contained is considered to be related to the potency and can be measured by the alcoholic extract. Walton reviews several findings and places the percentage extracts of bhang, ganja and charas at 10, 20 and 40, respectively.<sup>(143)</sup> This is in line with Bouquet, who states charas is some four to five times as potent as the crude preparations.<sup>(17)</sup> Also, Chopra found the lethal dosages of charas in animals to be only one-fifth

that for bhang.<sup>(33)</sup> The potency of American grown cannabis is generally thought to be less than that grown in India and Africa, and Walton places the extract percentage at 6 to 10.\* In one experiment, the extract from a gram of marihuana given orally was approximately equivalent in effect to two cigarettes.<sup>(94)</sup> The cigarettes contained about 0.6 grams of marihuana, so in this instance the two modes of consumption appeared to produce about equal effects. The extract from about two grams of marihuana was required to produce clear-cut effects, or the smoking of four cigarettes. By contrast, Walton quoted Gayer to the effect that smoking 0.2 grams of "cooked hashish" usually gives the desired effect.<sup>(143)</sup> In general, the marihuana available in the United States is probably about one-fifth to one-eighth as potent as the charas resin of India.

#### 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 possible 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.<sup>(6)(18)(143)</sup> 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

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\* Gaskill studied cannabis users among American soldiers stationed in India during World War II and stated that those who has used marihuana in the United States almost invariably stated that that available in India was much stronger.<sup>(59)</sup>

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.(143)

Similarly, De Ropp states:

We have no reason to suppose that Gautier had ever heard of peyotl but his descriptions of his experience under the influence of hashish are so like those of other investigators under the spell of the sacred cactus that one is tempted to suppose that the two drugs must produce within the brain a similar reaction, despite the chemical dissimilarity of their active principles.(44)

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." (98) 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.(94) 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. (14)

With the much stronger and longerlasting 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, instead of experiencing satori. 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 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. These aspects will be discussed further in Section V.

#### 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. (94) 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 and sometimes hunger.<sup>(32)</sup> In certain parts of India this results in a 50-per-cent 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."<sup>(15)</sup> Bhang is also frequently used as a cooling drink or food supplement.<sup>(32)</sup>

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."<sup>(32)</sup> 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 per cent 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.<sup>(32)</sup> It also plays a central role in

the religions of certain primitive African and South American tribes.<sup>(101)</sup> 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 medicants."<sup>(32)</sup>

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.<sup>(18)</sup> In a sample of some 1,200, Chopra found 10 per cent listed sexual factors as the exciting cause leading to the cannabis habit.<sup>(33)</sup> He also questioned the subjects on the actual sexual effect that typically resulted. Of those using bhang, 21 per cent found it to be stimulating at some stage of the intoxication, 52 per cent described it as sexually depressing, and 27 per cent stated it had no effect. Of those using the more potent ganja and charas the comparable percentages were 61, 19 and 20. Chopra concludes that the differences for the two preparations are probably more due to motivation than the strength of the drug. While cannabis intoxication may be sexually stimulating for some, several authors have claimed that prolonged and excessive use will eventually cause impotence.<sup>(15)(18)(32)</sup>

In the United States, two studies of marihuana use in the Army concluded that it frequently produced various homosexual and heterosexual perversions.<sup>(31)(91)</sup> 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."<sup>(94)</sup> Their conclusions were based on the findings of six police men 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."<sup>(33)</sup> Chopra also mentions that certain "saintly people who wish to renounce world pleasure use cannabis drugs for suppressing sexual desires."<sup>(32)</sup>

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."<sup>(143)</sup> He grants that the release of inhibitions may intensify the "emotional character of the performance" for certain audiences, but doubts that technical performance is improved. 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.<sup>(4,147)</sup> 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.<sup>(94)</sup>

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."<sup>(94)</sup> 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. They describe the marihuana users as follows:

These subjects did not have a desire or urge to occupy themselves creatively in a manner which might prove socially useful. They showed a tendency to drift along in a passive fashion and gave a good portion of their attention to relatively unimportant matters. These men were poorly adjusted, lonely and insecure. As indicated by their history they seldom achieved good heterosexual adjustment.

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.(92)

Goodman and Gilman write:

The typical marihuana user in the United States is usually a person 20-30 years of age, idle and lacking in initiative, with a history of repeated frustrations and deprivations, sexually maladjusted (often homosexual), who seeks distraction, escape and sometimes conviviality by smoking the drug. He almost uniformly has major personality defects and is often psychopathic.(62)

Most marihuana users come from the lower socio-economic classes and there is a preponderance of Negroes and Latin Americans.(94) Four studies of marihuana use in the Army found 90 per cent or more of the samples were Negro.\* Charen and Perelman hypothesize that the characteristic "feeling of adequacy" attained under the effect of marihuana meets needs of the Negro that are not satisfied in the normal culture.(31)

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. Of Chopra's sample of 1,200, 29 per cent were religious mendicants and beggars with no occupation, and another 40 per cent were hackney drivers and laborers.(33) Sixty-three per cent of the bhang users were married, as compared with only twenty-six per cent of the ganja and charas users.

Benabud notes that some of the wealthy classes in Morocco also smoke kif, but "addiction is found mostly among the poorest classes."(15) Bouquet feels that the observation that cannabis use is limited to the poorer classes in North Africa is overdrawn; it also exists among the upper classes but is less observable.(18)

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."(15) By contrast, he points out that although kif is widely

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\* See Refs. 31, 58, 59 and 91.

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."

In summary, marihuana use in the United States is largely restricted to a young, emotionally immature and unproductive group. Excessive indulgence of the type encountered in the East has not been reported, probably due in part to the relatively low potency of marihuana. In the East, where cannabis is generally permitted, moderate use is typically not looked upon as harmful or necessarily indicative of maladjustment; however, excessive indulgence is considered to result from a combination of poor socio-economic conditions and inherent individual personality inadequacies.

#### 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.<sup>(25)</sup> 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.<sup>(94)</sup>

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.<sup>(31)(94)(147)</sup> Two studies have conducted experiments in which regular marihuana users were encouraged to consume as much as desired. Under these conditions, thirty-four United States soldiers in Panama smoked from 1 to 20 per day for a period of six days.<sup>(121)</sup> Williams et al. conducted a similar experiment on six prisoners for a period

of thirty-nine days.<sup>(147)</sup> One smoked only 1 per day; the others ranged from 9 to 26 with a mean of 17. Williams concludes this is a much higher usage rate than would occur in civilian life (their subjects stated their normal average was 6 to 10). This study also conducted a four-week experiment on six prisoners in which a synthetic marihuana-like compound (pyrahexyl) was made freely available. The compound was taken orally and the daily amount consumed ranged from 60 to 2,400 mg. in one to eight doses. An interesting aspect of the latter experiment is that the average amount taken per day (at the request of the subjects) steadily increased from 200 mg. on the first day to around 1600 mg. at the end of the four-week period. No increase in the number of cigarettes smoked was noted in the thirty-nine day period, and natural marihuana is not considered to produce appreciable tolerance.

Chopra collected detailed statistics on the sample of 1,200 regular users, with 100-per-cent sampling at several locales throughout India.<sup>(33)</sup> 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. Sixty-two per cent used bhang and thirty-eight per cent used ganja or charas. Of those using bhang, 98 per cent ingested it in the form of a beverage, while 92 per cent of the ganja and charas was smoked. Fifty per cent of the bhang users averaged less than 20 grains per day and only 5 per cent took more than 90. For those smoking ganja and charas, 9 per cent averaged less than 20 grains per day and 46 per cent used in excess of 90 grains (18 per cent used in excess of 180 grains per day). For bhang users, 43 per cent averaged once per day, 33 per cent twice, and 24 per cent three or more times. The corresponding percentages for ganja and charas were 27, 49 and 24. Benabud states that confirmed kif smokers in Morocco consume from 20 to 30 pipes a day and 40 to 50 is not infrequent.<sup>(15)</sup> 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 habitué's 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.<sup>(94)</sup> In the studies mentioned above, where experienced subjects were allowed to smoke marihuana at will, no behavioral evidence of discomfort was observed when it was abruptly withdrawn. Williams found that after a period of thirty-nine days of heavy smoking (average 17 cigarettes per day) the subjects reported they felt "jittery" following withdrawal, "but this was not observed by any of the nurses or doctors."<sup>(147)</sup> This study did find some evidence of withdrawal after a four-week period of orally ingesting the synthetic compound, pyrahexyl. Subjects slept poorly and had little appetite. One subject had a panic reaction and another was hypomanic; the former, however, had a previous history of schizophrenia.

Concerning the use of cannabis in India, Chopra writes:

In contrast to the other narcotic drugs, we found that the necessity for increase of dosage in order to produce the same effects subsequently was only rarely observed in those who took cannabis drugs habitually. 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. Even then, it was hardly appreciable when cannabis was taken orally, but sometimes occurred when it was smoked.... 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.<sup>(32)</sup>

Fraser reports rather severe withdrawal symptoms in nine Indian soldiers addicted to ganja.<sup>(57)</sup> Chopra writes that many persons indulge in the milder bhang drinks in summer and discontinue it during the winter.<sup>(34)</sup> 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.<sup>(15)</sup>

## PHYSICAL AND MENTAL EFFECTS

### Immediate Effects

Some features of the cannabis intoxication have already been discussed, and others will be briefly described here. 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.<sup>(143)</sup>

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.<sup>(94)</sup> Forty-eight of the subjects were experienced users. The physiological effects were minimal -- increased pulse rate, hunger and frequency of urination. The major psychomotor effect was decreased body and hand steadiness, and this increased with dose size and was also larger for nonusers. Simple functions such as speed of tapping or reaction time were only slightly affected. In another study, Williams found subjects played ball effectively while under marihuana intoxication.<sup>(147)</sup> The often reported distortion of time perception was not confirmed by objective measures.

Intellectual functions are impaired, and again, the effect is greater for complex tasks, large doses and nonusers. Emotional and personality measures showed increased feelings of relaxation, disinhibition, and self-confidence, but basic personality structures did not change. The disinhibition was expressed primarily in oral rather than physical activities. The lessening of inhibition was not unique to marihuana -- intoxicating doses of alcohol were found to produce comparable behavior changes.<sup>(94)</sup>

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. Three others experienced longer lasting psychotic reactions, which will be discussed later.

#### Long-Lasting Effects

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."<sup>(94)</sup> 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.<sup>(58)</sup>

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<sup>(143)</sup> 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:<sup>(33)</sup> "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.<sup>(33)</sup> 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 whether bhang or ganja and charas were consumed. For bhang, 65 per cent reported no effect, 19 per cent minor impairment, 4 per cent marked impairment and 11 per cent slight improvement. For ganja and charas the comparable

percentages were 31, 33, 32, and 4.\* By dose level, 70 per cent of those using less than 10 grains per day said there was no effect on health and 30 per cent reported improvement. By comparison, of those using more than 90 grains per day, 25 per cent claimed no effect, 31 per cent minor impairment, 44 per cent marked impairment and none claimed improvement of health. Forty per cent of the ganja and charas users reported sleep disturbance and insomnia as compared to 4 per cent of the bhang drinkers.

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.<sup>(18)</sup> 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).<sup>(94)</sup> The Committee concludes, "that given the potential personality make-up and the right time and environment, marihuana may bring on a true psychotic state." Williams also reports that one subject developed a transient psychosis with a paranoid reaction after smoking three marihuana cigarettes.<sup>(147)</sup> On the other hand, Freedman and Rockmore report no

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\* As described in the previous section the consumption of bhang was typically much lower and its effect less potent than ganja and charas.



history of mental hospitalization in their sample of 310 who had an average of seven years usage.<sup>(58)</sup> 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.<sup>(121)</sup>

Bromberg reported on thirty-one cases admitted to the hospital as a result of using marihuana.<sup>(24,25)</sup> 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. Seventeen of the cases were classified as one of two types of toxic psychosis: (a) disturbed sensorium with delusional and emotional reactions amounting to a psychosis, but with characteristic toxic signs; and (b) functional psychosis initiated or colored by marihuana. In the latter, Bromberg attributes more importance to personality factors than to the effect of the drug.

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.<sup>(143)</sup> It is now considered that the causal 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).<sup>(15)</sup> 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.<sup>(33)</sup>

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\*By comparison, alcoholism accounts for about 12 per cent of all first admissions to state hospitals in the United States, and the annual rate for male first admissions to state mental hospitals for alcoholic psychosis is about 9 per 100,000.<sup>(89)</sup>

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. Of a sample of 800 kif smokers admitted to a psychiatric hospital in 1954, 60 per cent were without regular income, 42 per cent were unmarried, and 90 per cent had below-average incomes. He also reports that there is a definite annual peak in admission during the fasting period of Ramadan, when low intake of food is accompanied by frequent abuse of cannabis.

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 (cannabis 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."

Chopra examined a sample of 600 hospitalized toxic psychotics in India with a "history of hemp-drug addiction or indulgence."<sup>(35)</sup> Two-thirds were considered to be unmixed cases where cannabis was the "only excitable cause of insanity." Of these cases, 77 per cent were diagnosed acute and 23 per cent chronic. Recovery for most acute cases occurred in a few days to a few weeks.

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 by males.<sup>(18)</sup> 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."<sup>(93)</sup> Allentuck states that "a characteristic cannabis psychosis does not exist. Marihuana will not produce a psychosis de novo in a well-integrated, stable person."<sup>(5)</sup> 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."<sup>(101)</sup> 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."<sup>(61)</sup> 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 causal relationship between major crimes and cannabis. Bromberg analyzed a sample of 1,500 convictions for drug addiction in New York and found 135 were in connection with marihuana.<sup>(24)</sup> Of these, 69 per cent had no previous record, and 25 per cent had records for other than drug offenses. For those with longer records (4 to 7 arrests), "none showed progression from the use of drugs to other crimes." Bromberg concludes, "the earlier use of marihuana apparently did not predispose to crime, even that of using other drugs." Bromberg also reports on another sample of 2,200 convicted of felonies in New York and examined psychiatrically -- no cases of confirmed marihuana addiction were found.<sup>(25)</sup>

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.<sup>(94)</sup> On the contrary, "professional" criminals considered marihuana smokers to be inferior and unreliable and would not associate with them. The Committee also investigated 39 schools and found that marihuana was used by small numbers in certain schools, but that it was not a large-scale practice. Finally, they report that although marihuana smoking causes disinhibition, it does not alter the basic personality of the user or "evoke responses which would be totally alien to him in his undrugged state."

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."<sup>(146)</sup> Maurer and Vogel write:

While there may be occasional violent psychopaths who have used marihuana, have committed crimes of violence, and who have, in court, explained their actions as uncontrollable violence resulting from the use of the drug, these are exceptions to the general run of marihuana users, who, while they are almost universally petty thieves (unless they have an income or work for a living) become "criminals" chiefly in that they violate the narcotics laws.... 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 incitor of violent crime.<sup>(92)</sup>

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.<sup>(33)</sup> 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.<sup>(32)</sup> Benabud found acts of violence to be fairly frequent in cases of cannabis psychosis, but they did not generally result in serious consequences and showed no premeditation.<sup>(15)</sup> 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 premeditated 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. The result of continued and excessive use of these drugs in our experience in India is to make the individual timid rather than to lead him to commit violent crimes.<sup>(32)</sup>

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.<sup>(101)</sup>

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.<sup>(48)</sup>

Bouquet writes as follows concerning the relation of cannabis and crime in North Africa:

a large number of petty offenders (pilferers and thieves), some more serious offenders (assault and battery, minor acts of violence and indecent assault), but very rarely persons guilty of more

serious crimes, even attempted murders, are to be found among hemp consumers. It cannot therefore be said that cannabis addiction has an influence on criminality in the Moslem world at the present time; in North Africa nowadays there are perhaps more brawls, acts of violence, blows and wounds attributable to alcoholic liquors than to cannabis.(18)

In the United States, probably the most serious accusation made regarding marihuana smoking is that it often leads to the use of heroin.<sup>(92)</sup> 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."<sup>(94)</sup> 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.

The extent to which legal prohibition and social stigma prevent other groups from indulging is a matter of conjecture. In Eastern countries cannabis is currently also largely restricted to 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."<sup>(146)</sup>

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.\* 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."<sup>(49)</sup> And, as Taylor points out, "We have done so ever since."<sup>(137)</sup> Anslinger, the Commissioner of Narcotics, wrote, "The Bureau immediately detected the superficiality and hollowness of its findings and denounced it."<sup>(9)</sup> The authors expressed dismay that the

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\* See Refs. 49, 8, 19, 20, 21, 90, and 144.

report was attacked on the grounds that the findings represented a public danger, rather than on its scientific aspects.<sup>(21)</sup> 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.<sup>(144)</sup>

Murphy raises the question of why cannabis is so regularly banned in countries where alcohol is permitted.<sup>(101)</sup> 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.



## V. THE LSD CONTROVERSY

This final section will examine the current status of hallucinogens (especially LSD) and speculate on their future role in Western culture. The primary emphasis will be on their extra- or para-medical use, because it is in these areas that the previous discussion of peyote and cannabis can prove helpful. It is not intended to depreciate the use of hallucinogens in psychotherapy -- presumably, if they prove useful in this respect they will be adopted as a psychiatric tool, the same as any other drug. The question is simply one of evaluating their relative worth in comparison to other methods.\* The question of whether hallucinogens can induce self-knowledge, desirable personality changes or other benefits outside the therapeutic setting, or rather represent simply a social and health hazard to be controlled, is infinitely more complex and speculative.

To begin with, the tendency of many medical authorities to consider all extra-medical use of hallucinogens to be motivated by the desire for "kicks" is an oversimplified and erroneous conception. However misguided, hazardous and ill-advised one may consider such activities, the fact remains that those who currently wish to use LSD and other strong hallucinogens are largely motivated by hopes of beneficial, lasting effects rather than just the immediate experience. Many consider hallucinogens capable in some almost magical way of producing enhanced self-understanding, creativity, emotional warmth and meaning to life, which is, to a considerable extent, the manner in which the Indians view peyote. As discussed in Sec. IV, the stronger hallucinogens are not well suited for the production of dependable and repeated euphoriant experiences as is the case with cannabis. It would be naïve to think that a determined person could not find a means of accomplishing this, but the rapid onset of physical tolerance,

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\* One such comparison has already been conducted in England, and the conclusion was that LSD therapy proved superior to traditional methods for some classes of neuroses, but provided the same or inferior results for other groups.(112)

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.

Although much has been written about the benefits that may result from the administration of LSD in a supportive environment, collaborating evidence is largely limited to clinical assessments as an adjunct to psychotherapy, and to the subjective claims of experimental subjects. Several investigators who have conducted experiments with LSD have incidentally remarked that their subjects frequently reported better adjustment, lower anxiety, increased feelings of well-being and confidence, and lasting insights.<sup>(2)(111)(114)</sup> Mayer-Gross writes as follows about mescaline:

the great majority of experimental subjects have been deeply impressed by the strange experiences they have had under mescaline. Some have felt that a new and unknown mental world had been opened up to them, and others that reality had been shown to them in new aspects, or that unknown sensory pleasures had been explored. Apart from the few who were disappointed and skeptical, by most the experiment was remembered as significant and important.<sup>(93)</sup>

Some investigators have administered follow-up questionnaires at post-LSD periods up to three years concerning various personality changes observed by the subjects.<sup>(45)(82)(136)</sup> Claims of change in the form of lower anxiety, increased tolerance, enhanced understanding of self and others plus a variety of other attitudinal and value changes were reported by about 40 to 60 per cent of the subjects. About 50 per cent claimed some lasting benefit, and from 70 to 90 per cent indicated they would like to repeat the experience.

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 LSD.<sup>(95)</sup> 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 number of authors have

expressed the opinion that the hallucinogens may facilitate creativity in some way, but evidence is limited to anecdotal reports.

Theories on the physiological and psychological effects of the hallucinogens are outside the scope of this paper. It suffices to say that there is no general agreement about the site and action on the central nervous system, and the psychological interpretations depend largely on the preferred theoretical framework of the therapist. It is generally agreed that defense mechanisms are inhibited, which may allow the recovery of childhood memories and repressed material with accompanying abreaction. Regression and enhancement of transference are also prominent. In the experiment described in the preceding paragraph, no psychotherapy was attempted beyond the creation of a secure and supportive environment. In this situation, it was hypothesized that the initial shock and anxiety that accompanies the sudden relinquishing of defenses will frequently be followed by the subject's realization that he is not overwhelmed and defeated, but rather is free from the burden of protecting himself against unreal threats. As Ling and Buckman point out, the hallucinogens help a person "to see himself as he really is," and frequently results in the perception of a world that seems "more real than the customary one."<sup>(83)</sup>

In addition to the use of LSD as an adjunct to traditional psychotherapy (in doses of 25-200 mcg.), there has also been some interesting work using a single large dose (400 mcg. or more) with very little additional therapy.\* 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 the conversion experiences described by James.<sup>(70)</sup> In some ways this treatment is quite similar to the ritual use of peyote by the Indians, including its reported effectiveness in combating alcoholism.

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\* See Refs. 37, 87, 119, and 127.

Turning now to the hazards accompanying the use of LSD, there have recently been a number of strong warnings from physicians.\* Most have been limited to its use outside of medical supervision, but Grinker writes:

From experimental subjects there are increasing numbers of reports indicating that temporary or even permanent harm may be induced, despite apparently careful pretherapeutic screening of latent psychoses and careful precautions during the artificial psychosis . . . The drugs are indeed dangerous even under the best of precautions and conditions.<sup>(64)</sup>

Cole and Katz write:

Since there has been a number of reports of suicide attempts or of prolonged psychotic reactions requiring psychiatric hospitalization in persons obtaining these drugs outside of approved medical channels, their indiscriminate unsupervised use is clearly dangerous.<sup>(41)</sup>

The only systematic study of LSD-induced suicide and psychosis was done by Cohen, who collected information from 44 investigators on almost 5,000 patients and experimental subjects who received LSD or mescaline on over 25,000 occasions.<sup>(38)</sup> The number of sessions ranged from 1 to 80, the LSD dose size from 25 to 1,500 mcg., and that for mescaline from 200 to 1,200 mg. The rates of major complications for patients were: attempted suicide, 1.2 per 1,000; completed suicide, 0.4 per 1,000; psychotic reactions longer than 48 hours, 1.8 per 1,000. For the experimental subjects there were no attempted or completed suicides, and the psychosis rate was 0.8 per 1,000. Some immediate adverse effects were reported, the most frequent being unmanageability. There were also instances of panic, severe physical complaints and paranoia. Short-lived depressions following the drug experience were fairly common, and there was occasionally a case in which the hallucinogenic effects recurred spontaneously a week or more after the experience. Cohen also reviewed the literature and found one suicide in a schizophrenic patient and "a small number of short, self-limited psychotic reactions." He concludes that "with proper precautions (LSD is) safe when given to a selected healthy group."

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\*See Refs. 41, 55, 64, and 65.

In 350 psychotherapy patients treated with LSD and ritalin, Ling and Buckman report one attempted suicide and three who needed hospitalization.<sup>(83)</sup> In a recent paper, Cohen and Ditman report on nine cases of prolonged adverse reactions that were either caused or associated with the taking of LSD.<sup>(40)</sup> Adams gives an insightful first-hand account of a prolonged psychotic reaction to LSD.<sup>(3)</sup> Cohen has also described one case of apparent suicide due to ingesting morning-glory seeds.<sup>(39)</sup> That LSD can result in transient psychotic reactions should hardly be surprising in view of the known capability of the much weaker hallucinogen, cannabis, to produce similar effects.

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 that reported by Cohen for the sample of 5,000 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. 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,<sup>(78)</sup> 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."<sup>(13)</sup> Grinker writes that one of the

motivations is "belonging to a 'superior' social group which transcends the mundane existence of ordinary people."<sup>(64)</sup> He also reports that his anti-LSD editorial brought a "wave of vilification" from the "believers." The 1962 White House Conference reports that abuse of LSD and similar drugs is primarily limited to the "growth of 'long-hair' and beatnik cults which experiment with the use of psychotropic drugs to achieve group cohesiveness and personal nirvana"<sup>(146)</sup> -- 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;"<sup>(41)</sup> and 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'."<sup>(64)</sup>

The tendency here seems not to be a compulsion to take the drug so much as a compulsion to talk about the experience -- the most serious consequence being the boredom suffered by the devotee's friends. 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, "overenthusiasm," 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<sup>(118)</sup> 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.

Some persons have raised questions about how to assess personality and value changes related to LSD use. 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."<sup>(41)</sup>

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

To judge by the behavior of Mexican curanderas and Indian mystics, one would expect the chief effects of psilocybin and similar substances to be to encourage withdrawal from contact with social reality and to increase satisfaction with one's own inner thought life. Research reports from the Harvard project are not inconsistent with these expectations . . . 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.<sup>(63)</sup>

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 . . . The Indian's culture, like many Eastern societies, emphasizes passivity, meditation and resignation. The Indian has time to explore his own consciousness with drugs; the non-Indian does not . . . Obtaining insights with drugs is "easy" and "passive," and while it may help an individual to understand himself it cannot be translated into action or creation. Group uses of drugs among non-Indians represent a trend toward passivity in our society -- a highly dangerous trend, since passive societies in the midst of active ones are always destroyed.<sup>(97)</sup>

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 place it in an almost staggering context of effect on the social-value

system. The author is inclined to agree that 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. To suggest, however, that the value system of Western culture is, or could be, threatened by the use of hallucinogens ignores the determining role of the environment in which they are taken. "Consciousness expansion" is not an irreversible process, as anyone can testify who has experienced it through hallucinogens or the intensive group interaction methods of the National Training Laboratory.<sup>(102)</sup> 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. It seems safe to assume that Western culture will provide whatever "consciousness contraction" is necessary to prevent a serious disruption of the current value system, and if the hallucinogens ever become popular in this society, it will be in a role very different from that of the Indians.

What then are the possible future roles that LSD and similar drugs might play in our society? To fully explore this question, one must relax the rigid constraint that drugs be limited to medical treatment of the ill. On the basis of present knowledge we can do little more than speculate, but there are some who think that these drugs may prove most beneficial to the intellectually gifted and the emotionally healthy. Ling and Buckman suggest that "LSD is essentially a treatment for the mentally and educationally privileged, with a fairly high level of intelligence as an almost indispensable asset."<sup>(83)</sup> Shelton makes a similar assessment with regard to emotional health. He discusses the "peak experiences" that may be attained at "the preliminary price of intense anxiety and 'dying';" and notes:<sup>\*</sup>

The capacity for such surrender of defenses presupposes a considerable degree of ego strength, so that perhaps, similar

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\* Note that a similar type of experience has been described by the Indians (see Sec. III).



to psychoanalysis itself, LSD may be most useful in the search for "self-actualization" as described by Maslow, in the training of psychotherapists and as an aid to the creator's "regression in the service of the ego." Certainly it can be of use in a culture where even the "healthy" require so much alcohol ("the poor man's mysticism") to resolve the felt discrepancy between his ego identity and what he dimly senses himself to be. (118)

Should the hallucinogens prove beneficial in such a para-medical role, the minimization of accompanying hazards through proper medical supervision would probably still be desirable. Also, the extension of their use to persons not under formal medical treatment is not incompatible with some form of social control to prevent the danger arising from the indiscriminate use by juveniles and other immature individuals.

On the other hand, suppose further investigation shows that the claims of lasting benefit resulting from LSD experiences are largely a matter of self-deception -- a product of expectation and suggestion not borne out by corresponding behavioral changes. Suppose it only provides an interesting and exciting experience and is, at best, a relatively harmless vacation from everyday consciousness, what then? To legally prohibit marihuana and not the much stronger hallucinogens would, in some sense, be analogous to banning beer but not distilled liquor. Perhaps, however, we should follow Huxley's suggestion and revise our whole attitude on drugs that provide escape and recreation. A recent tongue-in-cheek editorial in Lancet suggests that marihuana might be removed from the list of dangerous drugs and given the same social status as alcohol:

Besides the undoubted attraction of reducing, for once, the number of crimes that a member of our society can commit, and of allowing the wider spread of something that can give pleasure, a greater revenue would certainly come to the State from taxation than from fines. (51)

A United States expert on narcotics, Lawrence Kolb, has also observed that marihuana is probably less harmful than alcohol, but adds that he still favors restricting its use for social purposes:

Alcohol, during the past 2,500 years, has apparently become an irreplaceable part of our social structure. We know that

it does much harm, but the fact that we tolerate this harm is no reason for permitting the indiscriminate use of another intoxicant.<sup>(84)</sup>

This counter-argument was also offered by the editorial in Lancet.

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.<sup>(68)</sup>

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

Most current articles on the hallucinogens end with a conclusion on the use and abuse of these drugs. 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. This author takes the position that a broader perspective and re-examination of our preconceptions may ultimately lead to a quite different set of conclusions -- at least there are other areas sufficiently interesting to warrant investigation. The difficulty in examining such questions as, "Can the use of hallucinogens improve the healthy?" lies not so much in methods of assessment as in our rigidly prescribed cultural attitudes.\* We find it very difficult to entertain the idea that the use of drugs might be beneficial to the healthy individual. We are somewhat shocked when it is pointed out that alcohol is an

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\*A good and largely untapped source of data is the effect of peyote on the Indians. Additional studies on the social, economic, and personality differences between peyotists and non-peyotists would certainly be of interest.

addicting drug, in some ways more injurious to health and society than is marihuana. The idea that drugs may produce pleasure without compensatory harm is not consistent with our puritanical ethics. The suggestion that good may somehow come from a drug-induced disruption of "reality" is altogether foreign. Although many of the questions raised about hallucinogens are quite within the purview of Western science to resolve, the probability that such research will be undertaken is very much a function of the cultural attitudes and biases just described. Science may be objective and unbiased, but the direction it takes and the questions asked are strongly influenced by the beliefs and theories popular at the time.\* Indeed, scientists, with their large investments in rational explanations, are perhaps less tolerant of radical changes in their conceptualizations than are other groups.

The primary purpose of this paper has been to broaden the perspective from which the hallucinogenic drugs are considered. The author has attempted to draw on the long history of peyote and cannabis to obtain factual information on their hazards and attractions, and to show how the effects may be very different, depending on the motivation of the user and on the conditions under which he takes them. It has been repeatedly demonstrated that cultural attitudes play an especially important role in shaping opinions in this area, not only in terms of social control but also in limiting the horizons of scientific investigation. The Indians have long contended that "peyote teaches"; Huxley and many others have also thought they saw the possibility of valuable educational experiences via a "chemical Door in the Wall." The extent to which we explore these possibilities is largely dependent on our willingness to forsake the secure and familiar in favor of an exciting, but threatening, unknown.

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\* In the currently popular Bayesian terminology, the antecedent probability assigned to hypotheses outside culturally accepted limits is virtually zero (i.e., closed mind), and therefore the probability that they will be confirmed, or indeed, that appropriate research will even be undertaken, is also virtually zero. I am suggesting that by increasing certain antecedent probabilities related to hallucinogenic drugs, we may uncover some very fruitful areas.....

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