Peyotl and Mescaline

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Although only more recently studied than the well known mescaline-containing peyote cactus (*Lophophora williamsii*) of North America, the use of mescaline-containing Cactaceae in South America now appears to be far older archeologically. Four Andean *Trichocereus* species contain the hallucinogenic drug mescaline: *T. macrogonus*; *T. terscheckii*; *T. werdermannianus*; and *T. pachanoi*. Of these, the last is the most important ethnographically. *Trichocereus pachanoi* is a smooth, ribbed, comparatively slender, night-blooming, columnar species of cactus which was located in Andean Ecuador by Britton and Rose in 1920; in 1959 the German botanist Curt Backeberg extended this area to include northern Peru and Bolivia.

In Peru this *Trichocereus* is known in folk medicine as "San Pedro" and in Ecuador as *aguacolla*. San Pedro also forms a part of the hallucinogenic drink *cimora*, which also includes other Cactaceae and a datura. The mescaline content of San Pedro is about 0.12 percent of the green plant and two percent when dried. In 1939 the Swedish pharmacologist Stig Agurell discovered seven other alkaloids in the plant but these occur in insignificant quantities.

Peruvian medicine men most commonly use a seven-ribbed San Pedro cactus in their shamanistic cures. But the rarer four-ribbed specimens, like a four-leaved clover, are regarded as especially lucky and powerful, because these symbolize the "four winds" and "four roads," where there are supernatural powers associated with the cardinal points that are invoked during rituals. Preparation of the medicine is simple. Four cacti (the thinnest are the best), bought in the local native herb market, are sliced like a loaf of bread and boiled for seven hours in a five-gallon can of water. The completed brew, usually with nothing else added, is placed among the numerous other articles on the shaman's "mesa" or medicine altar. However, for illnesses thought to be caused by black magic, powdered bones, dust from a cemetery and dirt from archeological ruins are added; and sometimes also four kinds of *hornamo* (*blanco*, *amarillo*, *morado* and *cuti*) as well as *condor purga* condorilla (*yerba de la justicia* or *majorana*) and other unidentified plants are boiled separately and added later to the San Pedro drink. "Floripondio" (*Datura arborea*) is added by many *curanderos* in the Chiclaya region. The mescaline and other drugs in these brews can be counted on to produce visual and other hallucinations – sure signs for American Indians that they are in the presence of supernatural powers.

The great antiquity of San Pedro use in aboriginal Peru is well attested. The earliest depiction is found on an incised block of stone recently excavated from the sunken plaza in the court of the Old Temple at Chavin de Huantar in the north Peruvian highlands. The specimen referred to dates from about 1300 B.C. or early in the Chavin period. The carving shows the principal Chavin deity, an anthropomorphic mythical being with snakes for hair, fangs and a two-headed serpent belt, harpy eagle claws and holding in its

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outstretched right hand a four-ribbed San Pedro cactus. Chavin textiles recently discovered in coastal southern Peru show the cactus associated with a hummingbird and a feline animal — which in much of South America is the animal-familiar into which the medicine man is thought to be able to metamorphose. Ceramic representations, often associated with deer, are datable *circa* 1000-700 B.C. Five other Chavin vessels, dating from *circa* 700-500 B.C., show the cactus with jaguars. Another, of similar date, I suggest may depict the use of San Pedro infusion as an enema.

Other finds showing the San Pedro cactus are of later date: Nazca urns of about 100 B.C.-700 A.D.; Salinar ceramics (*circa* 400-200 B.C.); Moche (*circa* 100 B.C.-700 A.D.) — in the last style often showing a shawl-clad, owl-faced female shamaness. Chimu vessels dating 700-1745 A.D. still depict the San Pedro cactus, the use of which persisted in the colonial period, despite efforts to suppress it. Our earliest written documents on San Pedro are 17th century. In 1631 Father Oliva described the ritual use of *huachuma* or San Pedro, as in 1653 did Father Cobo — both expressing Church hostility to traditional folk healing which has, however, continued into modern times. The folk-medical use of this mescaline-containing cactus therefore spans some 33 centuries of continuous employment (Sharon 1978; Schultes 1977b; La Barre 1974; Furst 1972; de Rios 1969, 1968).

By contrast, in North America the use of another mescaline-containing cactus, *Lophophora williamsii* or peyote, can at present be C^{14}-dated only to 810-1070 A.D. In 1941 Walter Taylor (1966) excavated a peyote-button necklace in a Mayan mortuary-complex cave site (CM-79). One of the oldest materials ever submitted to alkaloid analysis, through thin-layer chromatography, gas chromatography and mass spectrometry, this specimen from west-central Coahuila somewhat surprisingly still contained identifiable mescaline, anhalonine, lophophorine, pellotine and anhalonidine. In suitably dry sites, alkaloids persist for remarkably long periods: *Ilex guayusa* leaves from a medicine man's tomb in Bolivia, C^{14}-dated to 375 A.D., still contained caffeine, and traces of nicotine were identified from a tobacco sample in the same tomb (Bruhn et al. 1978).

The peyote cactus is a small, spineless, carrot-shaped, mostly subterranean gray-green cactus; only the small pincushion-like top of which protrudes above the ground. The radial (sometimes spiral, sometimes sinuous), rounded superficial ribs contain small tufts like grayish artist paintbrushes in rows from which the name *Lophophora*, "crest-bearing," is taken. Cut off transversely at about ground level and dried, "peyote buttons" are obtained, hard-corky and bitter-nauseous in taste. (The misnamed "peyote bean" is entirely different, being the "Red Bean" *Sophora secundiflora*; nor is "mescal" bean or button a very good name, since mescal proper is the giant non-cactaceous succulent *Agave americana*, the mucilaginous sap of which is brewed into the national drink of the Mexican poor, *pulque* beer, often distilled into the familiar *tequila* whiskey.)

Peyote grows wild from the Rio Grande southwestward into much of northern Mexico. In pre-Columbian times peyote was used by the Tepehuane, Tarahumare, Nahuatl (Aztec) and other Mexican tribes — among whom the present-day Huichol have perhaps best preserved the prehistoric ritual, which was a first-fruits ceremony using parched or popped corn in honey-water, stoneless fruits and boneless meat. Huichol peyote is symbolically equated with "Elder Brother Deer" and the first specimen found on the days-long ritual pilgrimage to find peyote is shot with a bow and arrow by the presiding shaman as though the plant were a deer. Quantities of the green plant are consumed at night by communicants sitting around "Grandfather Fire," another ancient Huichol supernatural figure.

Although the aboriginal tribes of Texas and northwestern Mexico are even now very poorly known, from the first of my studies 40 years ago this area has seemed to me the place of origin of the peyote religion in the United States, which later archeological and ethnographic evidence appears to have confirmed. The extraordinarily complete fieldwork of Morris Opler has suggested to some anthropologists that peyote came to the United States via the Mescalero Apache (La Barre 1975). But the ritual use of peyote in the Pueblo and Athapaskan Southwest has always had a tough time, even among the Mescalero, among whom peyotism is said now to be extinct. The Texan Lipan are a likelier Apache group and, even more probably, the Tonkawa and other little-known tribes in Texas and northeastern Mexico. For example, El Paso and Eagle Pass are still the border points of heaviest international trade in the harvested plants (Morgan 1976); and *señi*, the Kiowa word for peyote, is a Querétaro term in Mexico (Bruhn & Holmstedt 1974; Diguet 1907).

The ritual use of peyote in central Mexico is documented from the 16th century, in northwestern Mexico and bordering Texas from the 17th century and in parts of the southern Plains from the 18th century. Although the major spread of the peyote cult occurred after the failure of the Ghost Dance movement to get rid of the White man, and after the Sioux Uprising of 1890,

I now believe with Omer Stewart (1974, 1972) that the key tribes for later diffusion, the Kiowa and the Comanche, certainly had peyote by 1870 and perhaps before. In the 20th century peyotism has spread over the Plains northward to Saskatchewan and Manitoba in Canada and westward to Nevada-central California tribes besides taking in many of the Algonkian-speaking residual-reservation tribes from the Midwest and Eastern woodlands. Over 250,000 Indians, in as many as two or three dozen tribes, now practice the peyote ritual of the so-called "Native American Church." Anthropologists, notably Stewart and Aberle, have consistently and successfully defended the aboriginal use of peyote, which current laws now specifically exempt from regulation.

The principal significance in eating the peyote cactus is that the mescaline contained in it induces spectacular visual hallucinations in color, which are regarded (after the aboriginal pattern of the vision quest) as direct contacts with the supernatural, the *manitou* of the Algonkians, the *wakan* of the Siouans, the *orenda* of the Iroquoians and so forth. Typical visions might be of a dog with a clam-shell head, which it opens and closes ridiculously as it tries to support itself on duck-headed feet, and the visionary may be hard-put to suppress unseemly laughter. Both Indian and White users have reported frightening and rather paranoid experiences while under the influence of peyote. Sometimes the visions may be abstract, as of fields of sparkling many-colored jewels, or of vast cosmic curtains undulating like an *aurora borealis*. In one meeting, the drum handle (made of excess lacing wound into a kind of handle) looked to me like a Gila monster, though I was intellectually aware it was not and was not frightened. Hallucinations in other sensory modalities (auditory, olfactory and the like) are not uncommon, including synesthetic hallucinations (as when one Indian *heard* the sun coming up with a roar) and even kinesthetic sensations (as when another participant felt he was lifted up into the air by the sound of the drumming). Anciently Indians went out alone on the vision quest for supernatural "medicine" power; with peyote people can have an assembled vision quest largely guaranteed pharmacologically.

In the standard Kiowa-Comanche peyote ritual of the Plains, the Indians, often from several tribes, gather about dusk in a circle within a large tipi (sometimes there is a second, concentric circle of women behind the men) around a central fire. The fire, built of sticks like interlaced fingers, with the opening eastward toward the tipi door, burns within the horns of a crescent-shaped earth altar, with a "peyote road" groove symbolizing the individual life span along its top and a fetish "Father Peyote" placed on its center crest. West of the altar, in the traditional place of honor, sits the presiding shaman or "Road Chief," assisted by his "Drum Chief." Another assistant, the "Cedar Chief," sprinkles cedar shavings on the fire, in the smoke of which everyone censes himself/herself, rubbing the smoke over the arms and legs, chest and head. Sometimes the sagebrush (*Artemisia*) on which communicants sit is similarly rubbed on the body.

The Fire Chief sits north of the eastern door of the tipi and during the night he shapes the ashes from the fire into a "water bird" (cormorant-messenger) or "Thunderbird." When the Road Chief passes around oblong-cut, dried cornhusk or blackjack-oak leaves and tobacco (Bull Durham is ritually required), participants each roll a cigarette, lighted by a carved firestick provided by the Fire Chief. The smoking is regarded as individual prayer to the Father Peyote. All movements within the tipi must be "sunwise" or clockwise and it is bad manners to pass between a smoker and the altar thus interrupting the prayer. But at other times, on permission from the Road Chief, a person may leave in clockwise circuit under strict necessity, such as vomiting from eating too much peyote.

The Road Chief sings the "Opening Song," which tends to be the same traditional one all over the Plains, holding the shaman's staff in the left hand and shaking a sacred gourd-rattle (often carved with some peyote symbolisms and beaded on the handle) in the right hand, after which each person begins with eating four buttons (the Plains ritual number) to the singing of individual peyote songs, often "caught" during an earlier meeting. The singer holds the shaman's staff and rattle which are always passed to the left, singing to the accompaniment of the Drum Chief (first for the Road Chief and then in succession by the drum-partner to one's right). The drum is made of a small Sears-Roebuck, three-legged iron kettle, half-filled with water and four quenched coals symbolizing lightning as the drumming symbolizes thunder. The deerskin drumhead is laced and secured under the kettle in a Morning Star pattern over seven stone bosses. Since each person sings four songs, a circuit of four times around a moderately large meeting takes almost all night.

At midnight the Road Chief sings the "Midnight Song," calling back the staff and the drum from wherever it is at the time; possibly for Freudian reasons, the drum-kettle must always be passed *under* the shaman's staff. Then the Road Chief goes outside the tipi, whistles at the cardinal points with an eagle wingbone whistle, at which time communicants may

leave briefly, always clockwise, for micturition. Toward dawn the lively and favorite "Morning Song" is sung by the Road Chief after which the ritual breakfast is brought in and placed in line from the fire west-to-east in this order: water; parched corn in honey-water; stoneless fruit; and boneless meat. (One of my fellow ethnographers reported a Northern Cheyenne meeting in which the ritual meal consisted of Cracker Jack, canned peaches and canned corn beef – yet it must be admitted that these still fulfilled the requirements of the ancient Mexican ritual of parched corn in honey-water, stoneless fruit and boneless meat.) Sometimes an honored White person is given a fork or spoon to eat with, but I soon learned to sit as the first person south of the door and could thus eat hygienically with fingers in approved Indian fashion, being thus the first to eat from the enameled and figure-painted food vessels. After everyone has eaten in clockwise order, the Road Chief sings the "Closing Song," and people may then pass into the morning sunlight.

During the forenoon after a meeting, the men lounge under a *ramada* or willow-thatched shade, recounting their peyote visions and consulting one another about possible meanings. About noon a secular and more ample meal is served by the women, under the tutelage of the Road Chief's wife, who represents "Peyote Woman" of the origin legend. Usually the food is provided by the Road Chief, or by some individual who has "vowed" the meeting for a cure or some other special purpose, but others may and do contribute to the cost of food and of the peyote imported from Mexico. If not all eaten, the food, according to good manners, is taken home by the participants, and the peyote meeting is over. Meetings are usually held on a Saturday night; afterward there is ample time on Sunday for participants to return home, sometimes from an appreciable distance. There is no after-effect that cannot be imputed to fatigue from a sleepless night.

There is some ethnographic and archeological evidence that a "Red Bean Cult," using *Sophora secundiflora* beans, preceded the diffusion of peyotism in trans-Pecos Texas and in the Plains. This, however, was a male-initiation ceremony limited to a half-dozen tribes and shared traits too unspecific to have influenced the essentially Mexican-Texas form of the peyote rite. Besides, there has been some question whether the Red Bean, which is highly toxic, contains a true hallucinogen; the ethnobotanist William Merrill (1977) has cautioned us that, beyond the ritual use in a scant dozen tribes, the mere presence of mescal-bean artifacts in several dozen tribes does not establish use as an hallucinogen. The archeologist Newcomb (1967), however, has argued convincingly that the rock art of Texas Indians in the Pecos River Style was associated with the use of the mescal bean by a medicine society. The archeological sequence in the Mexico-Texas region appears to be, from the bottom up, the use of: *Ungnadia speciosa* or Texas buckeye (which is, however, highly toxic); next, *Sophora secundiflora* or the Red Bean; and finally, peyote or *Lophophora williamsii*. Adovasio and Fry (1976) make the highly plausible suggestion that Indians substituted successively less toxic and more effective hallucinogenic plants over prehistoric times. The place of psilocybin mushrooms, which are quite non-toxic but which are not reported archeologically from this same northeastern region, would be most interesting in this sequence. But their earliest occurrence appears to be in highland Guatemala as testified by the "mushroom stones" of Borhegyi (1961).

Mescaline is not notably toxic, though use of synthetic mescaline causes protracted stomach cramps in some individuals. There are no known human deaths from the use of mescaline or of pan-peyotl, though Indian users boast that they have eaten 30 or more buttons at one meeting. Indians commonly believe that the use of peyote cures alcoholism, but I consider that the reasons for this are at best psychological. However, the drinking of alcohol with peyote might easily result in vomiting. *Lophophora williamsii* is now known to contain more than 30 alkaloids and their amine derivatives – an unusual number, even for a cactus – which has led Schultes to call peyote a veritable chemical factory. These alkaloids are mostly phenethylamines and the biogenetically-related simple isoquinolines. Mescaline itself is a phenethylamine and is the chief substance producing "hallucinations in Technicolor."

Because of this pharmacodynamic fact, young persons of the counterculture took up mescaline in the 1960s, among other hallucinogens like LSD. It is doubtful, however, whether they very often actually obtained mescaline. The Toronto-based Addiction Research Foundation found that *none* of the 23 street-drug samples they collected, sold as "mescaline," actually contained any of this substance; my former student, Dr. Frances Cheek of the New Jersey Neuro-Psychiatric Institute in Princeton, in a three-year sampling of East Coast street drugs, found that none sold as "mescaline" actually contained it in pure form (STASH Staff 1974).

Indian tribes have persistently stated that there were two kinds of peyote, but since their distinction was based on a folkloristic male/female dichotomy in a non-dioecious cactus, their contention was largely

dismissed. An earlier belief in two botanical species of *Lophophora* was destroyed taxonomically by the observation of the two supposed species growing from the same root. It is therefore most interesting that Edward F. Anderson (1970, 1959) has now established to the satisfaction of botanists that there are two species of peyote, *Lophophora williamsii* and *L. diffusa* – the latter of more restricted provenience within the area of the former and perhaps phylogenetically ancestral to it.

Dr. John Raleigh Briggs of Dallas, Texas first brought peyote to the attention of doctors in 1887. In Bartlett's *Dictionary of Americanisms* (Third edition, 1860), there is reference under "Whiskey Root" to what was probably peyote, and some soldiers in Civil War times evidently knew the plant. The celebrated traveler, Sir Richard Burton, compared peyote to fly agaric (*Amanita muscaria*), which is "surely the first such comparison" (Bruhn & Holmstedt 1974). Mrs. Anna B. Nickels of Laredo, Texas was the next supplier after Briggs to the pharmaceutical firm of Parke-Davis. An earlier puzzle arising from Heffter's negative results can probably best be explained by his having been furnished with plants obtained in Querétaro, that is, with *Lophophora diffusa*, 90 percent of the alkaloids of which are pellotine with almost no mescaline (Bruhn & Holmstedt 1974). Another medically interesting point is that Furst and Coe (1977) believe the Maya and Huichol Indians both used peyote in an enema infusion. This would parallel a possible similar usage of *Trichocereus pachanoi* in Peru, as I have conjectured earlier.

Ever since the pre-Socratic philosopher Heraclitus, western science has accepted as veritable evidence only intersubjectively-accessible information. But, just as plainly, shamanistic and other religious revelation has relied heavily upon the overwhelming individual vision as the touchstone for supernatural truth – and I have suggested in an earlier presentation that hallucinogens may have been one source of such supernatural revelations. Schultes (1977a) now lists "some hundred species" of hallucinogens used by New World aboriginals. The fact is puzzling when compared with the small number known in the Old World – which has a far larger geographic area than the New World, and surely as varied ecological and climatic regions. Moreover, the Old World was far longer inhabited by humans or humanlike forebears who might have discovered hallucinogens in their food quest. I have suggested an anthropological answer to this legitimate botanical question: that hunting peoples in the New World have longer preserved the old shamanic vision quest, which Boas long ago considered the foundation of American Indian religions in both North and South America (La Barre 1970). That is to say, American Indians are in a sense *culturally programed* to find, use and retain plant hallucinogens because of their epistemological orientation toward the visionary experience in shamanic religion. Schultes agrees, I believe, that there are no objective floristic reasons for the great discrepancy in number of Old and New World plant hallucinogens. Incidentally, I would like to support strongly Dr. Schultes' suggestion that, with further exploration, Colombia will be found to be a center of native hallucinogens comparable with Mexico and Peru. Schultes (1977c) no doubt had good botanical reasons for his opinion, and I believe that quite independent and equally good ethnological evidence agrees with his conclusion.

I should like to conclude with some remarks, not quite so agreeable, concerning our own tribe, some of the chieftains of which I consider are irrationally stultifying scientific research in their insensate pharmacophobia. The Comprehensive Drug Abuse Prevention and Control Act of 1970 prohibits the manufacture, production, creation or distribution of mescaline, peyote, psilocybin and other hallucinogens; acts punishable by not more than five years imprisonment and/or a fine of not more than $15,000, with a second offense doubling these penalties. Simple possession, in small amounts for personal use, carries a penalty of one year imprisonment and/or $1,000 fine. Political pressures, sometimes panicky and quite undiscriminating among various chemical substances, are behind this drastic legislation, for it is politically profitable to be "against drugs." But it is largely "locking the barn door after the horse is stolen," because nothing is so old hat as last year's fads among the young who have given up the use of most soft drugs in preference for alcohol. Granted, there should be no lessening of the severity of laws against opiates, which along with alcohol and other central nervous system depressants are possibly the only truly addictive drugs. But the laws against marijuana are probably too Draconian and in any case (for ecological-botanical reasons) largely as unenforceable as the Volstead Act.

I was recently in Bangkok, Thailand and Singapore, Malaysia – having just before leaving read Emboden (1972) on *Mitragyna speciosa** as a possible withdrawal agent for opium addiction. In these oriental countries I found it impossible to obtain either *kratom* (the leaves) or *mambog* (the syrupy infusion) for experimental use by university pharmacologists, largely, I believe, because of the offical American pharmacophobia that is now apparently spreading all around the world. I am not a pharmacologist, but as an anthropological traveler I would like to suppose that we ought to thoroughly

investigate any substance that shows promise in withdrawal from opiates.

Again, when I investigated another matter in the early 1970s, I discovered that there were only half a dozen ongoing investigations of psilocybin. Only two of these were being conducted on human subjects and neither had any therapeutic bearing. However, on the basis of psychological study in two cases, I believe that the quite non-toxic drug, psilocybin, shows considerable promise for selective use in psychiatry, specifically in cases of acute obsessive-compulsive neurosis. Quite apart from its expected euphoriant effect on marked depressive components, I believe on psychodynamic grounds that the tapping of deeply repressed affective elements in such cases, *during the full consciousness of the subjects* (and hence rememberable) *as a startling didactic experience of discovery*, and *in conjunction with simultaneous psychotherapy*, shows distinct possibilities in speeding up psychotherapy in such log-jams as we find in the therapy of obsessive-compulsives. Because of the full consciousness of the subject under psilocybin, this use would be superior to that of the commonly-employed amobarbital, in which the patient falls asleep, thus perhaps aiding the psychiatrist in gaining knowledge about the patient, but without the conscious participation or consent of the patient and in no way overcoming psychological resistances in facing and understanding problems. But current experiments with psilocybin in psychiatry are, to my knowledge, exactly nil. This I regard as deplorable.

NOTE

*I have learned from Raffauf (letter of 7 November, 1977) that there has been some pharmacological work, largely disappointing, on mitragynine, considered to be the active agent in the compound. But to his knowledge no one had investigated the non-alkaloidal components of the plant. He was able to collect a sufficient quantity in New Guinea, which he regards as inferior in mitragynine content to the Thai and Malaysian material. The World Health Organization (WHO), in collaboration with the Thai government, apparently banned its cultivation, but evidently unsuccessfully since it was still available in the *klong* markets around Bangkok in the late 1950s and early 1960s.

REFERENCES

Adovasio, J.M. & Fry, G.F. 1976. Prehistoric drug use in northeastern Mexico and trans-Pecos Texas. *Economic Botany* Vol. 30: 94-96.

Anderson, E.F. 1970. Structure, development and taxonomy of the genus Lophophora. *American Journal of Botany* Vol. 57(5): 569-578.

Anderson, E.F. 1959. The biogeography, ecology and taxonomy of *Lophophora* (Cactaceae). *Brittonia* Vol. 21(4): 299-310.

Borhegyi, S.A. 1961. Miniature mushroom stones from Guatemala. *American Antiquity* Vol. 26: 498-504.

Bruhn, J.G. & Holmstedt, B. 1974. Early peyote research. An interdisciplinary study. *Economic Botany* Vol. 28(4): 353-390.

Bruhn, J.G.; Lindgren, J.E.; Holmstedt, B. & Adovasio, J.M. 1978. Peyote Alkaloids: Identification in a prehistoric specimen of *Lophophora* from Coahuila, Mexico. *Science* Vol. 199(4336): 1437-1438.

Campbell, J.E. 1958. Origin of the mescal bean cult. *American Anthropologist* Vol. 60: 156-160.

de Rios, M.D. 1969. Folk healing with a psychedelic cactus in north coastal Peru. *International Journal of Social Psychiatry* Vol. 15(1): 23-32.

de Rios, M.D. 1968. Trichocereus pachanoi — a mescaline cactus used in folk healing in Peru. *Economic Botany* Vol. 22(2): 191-194.

Diguet, L. 1907. Le peyote et son usage rituel chez les Indiens du Nayarit. *Journal de la Société des Americanistes de Paris* Vol. 4(1): 21-29.

Emboden, W. 1972. *Narcotic Plants Hallucinogens, Stimulants, Inebriants and Hypnotics. Their Uses and Origins.* New York: Macmillan.

Furst, P.T. (Ed.). 1972. *Flesh of the Gods. The Ritual Use of Hallucinogens.* New York: Praeger.

Furst, P.T. & Coe, M.D. 1977. Ritual enemas. *Natural History* Vol. 86(3): 88-91.

Howard, J.H. 1962. Potawatomi mescalism and its relationship to the diffusion of the peyote cult. *Plains Anthropologist* Vol. 7: 125-135.

Howard, J.H. 1960. Mescalism and peyotism once again. *Plains Anthropologist* Vol. 5: 84-85.

Howard, J.H. 1957. The mescal bean cult of the central and southern Plains: An ancestor of the peyote cult? *American Anthropologist* Vol. 59: 75-87.

La Barre, W. 1977. Letter to the editor. *Journal of Psychedelic Drugs* Vol. 9(4): 351.

La Barre, W. 1975. *The Peyote Cult.* New York: Shocken Books.

La Barre, W. 1974. Amerindian religion. In: Faruqi, I.R. & Sopher, D.E. (Eds.). *Historical Atlas of the Religions of the World.* New York: Macmillan.

La Barre, W. 1970. Old and New World narcotics: A statistical question and an ethnological reply. *Economic Botany* Vol. 20(1): 73-80.

La Barre, W. 1957. Mescalism and peyote. *American Anthropologist* Vol. 59: 708-711.

Merrill, W.L. 1977. An investigation of ethnographic and archeological specimens of mescal beans, *Sophora secundiflora. Research Reports in Ethnobotany* Report No. 6.

Morgan, G.R. 1976. *Man, Plant and Religion: Peyote Trade on the Mustang Plains of Texas.* Ph.D. dissertation, Department of Geography, University of Colorado, Boulder, Colorado.

Newcomb, W.W. 1967. *The Rock Art of Texas Indians.* Austin, Texas: University of Texas Press.

Schultes, R.E. 1977a. Avenues for future ethnobotanical research into New World hallucinogens and their uses. In: Du Toit, B.M. (Ed.). *Drugs, Rituals and Altered States of Consciousness.* Rotterdam: A.A. Bulkema.

Schultes, R.E. 1977b. The botanical and chemical distribution of hallucinogens. *Journal of Psychedelic Drugs* Vol. 9(3): 247-263.

Schultes, R.E. 1977c. Mexico and Colombia: Two major centers of aboriginal use of hallucinogens. *Journal of Psychedelic Drugs* Vol. 9(2): 173-176.

Sharon, D. 1978. *The Wizard of Four Winds.* New York: The Free Press.

STASH Staff. 1974. *Mescaline and Peyote: A STASH Literature Review.* Madison, Wisconsin: STASH Press.

Stewart, O.C. 1974. Origin of the peyote religion in the United States. *Plains Anthropologist* Vol. 19(65): 211-223.

Stewart, O.C. 1972. The peyote religion and the ghost dance. *Indian Historian* Vol. 5(4): 27-30.

Taylor, W.W. 1966. Archaic cultures adjacent to the northeastern frontiers of meso-America. In: Ekholm, G.F. & Willey, G.R. (Eds.). *Handbook of Middle American Indians.* Austin, Texas: University of Texas Press.

Troike, R.C. 1962. The origin of Plains mescalism. *American Anthropologist* Vol. 64: 946-963.