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Ritual Use of *Cannabis Sativa* L.: A Historical-Ethnographic Survey

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Despite much writing to the contrary, there is but a single species of *Cannabis*—popularly called marihuana—and that is *Cannabis sativa* L., the cultivated hemp, so named by Linnaeus in 1753. Much of the confusion regarding the botanical identity of this historically and culturally fascinating plant stems from the botanical name changes it has undergone through time: to cite but a few examples, the pre-Linnaean botanists Bentham and Hooker treated *Cannabis* as a member of the nettle family, Urticaceae; later it was assigned to the mulberry family, Moraceae, and given its own tribe, Cannaboideae. More recently, anatomical and morphological studies assigned *Cannabis* to its own family, Cannabinaceae, within the order Urticales.

Although the common name “hemp” has come to be inextricably associated with this genus and species, there are actually more than twenty plant families that produce products known as hemp; the term can apply to any of a number of fibers of plant origin, so that *Cannabis* and hemp are not in fact synonymous.

There is only one species of *Cannabis*, but there is evidence to suggest that the plant has undergone natural selection and selection by man for perhaps 6000 years, and this fact, coupled with migration, has led to recognition of three varieties within the single species: *mexicana*, *americana* (*gigantea*), and *indica*. The North American and Mexican varieties may achieve heights of up to twenty feet; the Indian variety (*indica*) is relatively small, but it produces a more potent resin and in greater abundance than the other varieties, which have developed in America since the introduction of *Cannabis* some time after the discovery and conquest of the New World.



Fig. 33. A flowering plant of *Cannabis sativa*.

There is a certain degree of variation in the growth habits of *Cannabis*; most commonly it is found growing as an annual, which must be re-planted each year, but occasionally it assumes the habit of a perennial, developing in the process a heavy, woody stem. Sexes are usually found on separate plants (the dioecious condition), but occasionally a single plant is found to have both male and female parts, borne separately (the monoecious condition).* The leaves are digitate, with varying numbers of lobes and serrate margins.

All the plant parts bear trichomes, or hairs, of varying sorts. Some are simple and unbranched, others branched, and still others terminate in a gland which secretes resin. Another type of hair, called a scale, consists of a series of cells flattened in a plane parallel to the leaf surface; this type of trichome is also secretory. The frequency of capitate resin-producing glands supported by uniseriate or biseriate stalks is greatest on the female carpels. The frequency of glandular hairs is also greater on the female flowering parts than on the rest of the plant. The fruit coat covers the seed coat in such a manner as to conceal it and is densely

* Sex is determined by a $2n = 18 + xx$ or xy system, but variation in sex can be accounted for by heterozygous genes on x chromosomes and an occasional yy individual.

covered with glandular trichomes. Hairs with calcium carbonate deposits at the base are referred to as cystoliths. These are characteristic of *Cannabis* as well as of several genera in other families (cf. *Urtica*). The flowers of *Cannabis* are so minute on the female as to be quite inconspicuous, except as axillary clusters. On the male they are pendulous and conspicuous by reason of the yellow anthers, which produce pollen. After flowering (anthesis), the male plants die; however, the females persist until completion of fruiting.

The green pigment chlorophyll is essential to the growth of *Cannabis*. Therefore, we must regard as nonsense reports of seeds flushed into a sewer giving rise to plants that grew in darkness and were silver or white rather than green, and more potent than other plants. Accordingly, the oft-repeated tale of "Manhattan Silver" as an especially powerful variety of *Cannabis sativa* (Bloomquist, 1968) has no foundation in fact and is botanically unsound.

The herb that Linnaeus christened *Cannabis sativa* over two centuries ago originated somewhere in the desert region to the south and east of the Caspian Sea. As a cultivated plant it does not seem to be as old as some of the better-known Old-World food plants, but it certainly boasts respectable antiquity among cultigens. That it manifests itself today in a number of forms and that it has become adapted to a wide variety of climates and physical environments, ranging from the equator north to 60° latitude, is due largely or wholly to the intervention of man over a very long time: human exploitation of *Cannabis* is thought to reach back as far as 6000 years, with actual cultivation of *Cannabis* for a variety of purposes beginning only slightly more recently. If we are to believe Boyce (1900), a cloth made of the fibers of *Cannabis sativa* stem was found among 6000-year-old cultural remains in a cave in Europe. One may assume that the edible seeds of the plant were not ignored by the ancient cave dwellers. Of more exotic uses we cannot be certain. However, the earliest civilizations of Mesopotamia brewed intoxicating beer of barley more than 5000 years ago; is it too much to assume that even earlier cultures experienced euphoria, accidentally or deliberately, through inhalation of the resinous smoke of *Cannabis* while clothed in the coarse fibers of its stem?

THE CULTURAL USES OF *Cannabis*

China

It is quite certain that the ancient Chinese did not ignore the properties of this herb, for we have the pharmacopœia of the legendary Em-

peror Shen-Nung, allegedly compiled in 2737 B.C.* The ancient herbal recognizes both male and female plants, but there is a decided bias in favor of the female, or pistillate plant, evidently because it is the only sex that produces a significant amount of intoxicating resins. Shen-Nung, or "Divine Cultivator," is said to have founded Chinese medicine with the appearance of this herbal; during his experimentations with different plants he is said to have taken as many as twelve "poisons" a day. He must have tried exudate of *Cannabis* and given his approval, for he recommended it for "female weakness, gout, rheumatism, malaria, beriberi, constipation, and absent-mindedness."

By the fifteenth century B.C. the Chinese book known as the *Rh-Ya* was compiled, and in it there is mention of the herb *Ma*, the *Cannabis sativa* plant. Not only were the fibers and potent resins employed at this time, but the *Rh-Ya* describes the first ritualistic or shamanistic use of the plant.

The most detailed early account of the uses of *Cannabis sativa* in early China is to be found in the *Shu-King*, written in 500 B.C. (Bretschneider, 1870). When the plant grows under favorable conditions, the main stem becomes highly lignified, or woody. It was the practice of the early Chinese to carve this wood into the likeness of a serpent coiled around a rod (not unlike the caduceus or Staff of Aesculapius, which had its origin in the Greco-Roman world and is still with us as the traditional symbol of the physician). This image was used in curing rituals; a relative of the patient beat on the sickbed with the snake rod in order to dispel evil spirits.

Despite these descriptions, it is rather difficult to estimate the prestige of the plant in ancient China, for while we have early conservative warnings in which it is cursed as a "liberator of sin," we have equally ancient texts that call it the "giver of delights." In any event, its medical uses persisted in China for many centuries. In A.D. 220 the celebrated Chinese physician and surgeon Hua-T'o performed surgery using *Cannabis* resins mixed with wine, known as *Ma-Yo*, as an anesthetic, rather like the use of *Mandragora officinarum* roots and leaves mixed with *Atropa* leaves by the early Greeks. Both these preparations proved efficacious in relieving pain (*Cannabis* lulls the sensation of pain, while the mandrake and nightshade render the patient unconscious). Hua-T'o records testimonials by his patients praising their pain-free operations. Bloomquist (1968) states that the Chinese had no use for "technicolor

* Regarding the herbal of Shen-Nung, known as the *Pen Ts'ao Ching*, F. N. L. Poynter and H. L. Lei (1969) are of the opinion that it was really compiled in the late Han Dynasty, about the first century A.D. This is based on evidence that there was no written language in China in the third millennium B.C.

fantasies from hemp exudate"; I would suggest, rather, that the conservative element in China may have realized the potential threat to authority in a liberated younger generation given over to using the exudate of hemp, and for this reason inveighed against it. Conservative resistance was similarly manifested against the introduction of alcohol, tobacco, and even coffee.

Ancient Mediterranean

Nepenthe, that "potent destroyer of grief" of which the poet Homer wrote in the ninth century B.C. and which was first discussed in an Egyp-



Fig. 34. The legendary Chinese Emperor Shen Nung, the "Divine Cultivator," who is credited with the introduction of agricultural implements and the discovery of the medicinal properties of plants in the third millennium B.C. His pharmacopoeia, which mentions both the male and female plants of *Cannabis sativa*, with their respective medical uses, is said to have been first compiled in 2737 B.C. Note the typically shamanic horns in the eighteenth-century French portrait, copied from an earlier Chinese painting.

tian papyrus dated ca. 1600 B.C., has been taken by some—most recently Andrews and Vinkenoog (1969)—to refer to *Cannabis sativa*. I believe this to be in error. If we combine the testimony of Homer with that of Diodorus Siculus, who wrote of the women of Thebes dispelling their anxiety with nepenthe, we cannot escape the conclusion that the herb or preparation in question was not *Cannabis* but the exudate of the unripe capsules of the opium poppy, *Papaver somniferum*, or poppy milk mixed with *Mandragora* (mandrake), *Hyosyamus* (henbane), *Atropa* (deadly nightshade), and other herbs of similar soporific powers. Thus, it was not *Cannabis* that Helen used to assuage her anguish but the milk of the opium poppy. So popular was the latter that early Greek cameos show the goddess of night, Nix, distributing poppy capsules; terra-cotta figurines from Knossos with slit poppy capsules as coronas can also be seen in museums. One city in early Greece was even known as Opion, the City of the Opium Poppy.

Actually, the confusion should never have arisen in the first place. The use of nepenthe and *Cannabis* was clearly differentiated. There is a classic Greek term, *cannabeizein*, which means to smoke *Cannabis*. *Cannabeizein* frequently took the form of inhaling vapors from an incense burner in which these resins were mixed with other resins, such as myrrh, balsam, frankincense, and perfumes; this is the manner of the shamanistic Ashera priestesses of the pre-Reformation temples in Jerusalem, who anointed their skins with the mixture, as well as burned it. *Cannabis* is also the plant which Democritus (ca. 460 B.C.) knew as *potamaugis*, and which he said was drunk with wine and myrrh to produce delirium and visionary states. Democritus observed the “immoderate laughter” that occurred erratically following a draught of this decoction.* The first Greek botanist, Theophrastus (371–287 B.C.), wrote of *Cannabis* under the name *dendromalache* and gave one of the first accurate accounts of the plant.

Lucilius was the first Roman writer to give an account of *Cannabis*, ca. 100 B.C. It was said to be so like hemp-agrimony in appearance that some herbalists called it the cultivated hemp-agrimony.† There is no doubt that the fiber obtained from the stem of *Cannabis* was prized over that of *Agrimonium*, for the former was the cordage of most of the early vessels; Hiero II, King of Syracuse, bought hemp fiber for the ropes of his vessels in Gaul (France). So esteemed was the fiber that it figured

* Democritus himself was called by his compatriots “the laughing philosopher.”

† Actually, the resemblance is superficial, in that both have palmate leaves with conspicuous serration along the margins. Both also produce a high-quality fiber from the stem. However, hemp-agrimony (*Agrimonium cannabinum*) belongs to the sunflower family, Compositae, and no competent botanist could mistake the two plants. One is at a loss to account for the choice of *Agrimonium* to adorn the cover of a book, by Andrews and Vinkenoog (1969), which purports to be an authoritative history of *Cannabis*.

prominently in mythology: it was said to be the stuff that Penelope wove and tore apart to discourage her suitors during the absence of her husband, Ulysses, and the cord that Circe wove magically during the night. Could it also have been the mythical thread that *Atropos* measured out and severed in order to determine the life of a man? All these legends involve manufactured fiber as well as a mystical state of mind, and they are associated with cultures that were well aware of the plant, which embodied both economic and mystical properties.

Elaborating on the writings of the botanist Dioscorides, who preceded him by a century, the famous physician Galen (A.D. 130–200) spoke of *Cannabis* as a medicinal, but he also recorded a nonmedicinal, non-ritualistic use of *Cannabis* mixed with wine as a sweetmeat terminating heavy banquets. This confection promoted warmth and excited pleasure.

To ethnobotanists, one of the mysteries of the Ancient World is why the Egyptians should have preferred the cultivation of *Linum*, from which they obtained flax, or linen, to the cultivation of *Cannabis*. Certainly soil conditions and climate were favorable in the Nile Valley. Moreover, the fiber of *Cannabis* is in no way inferior to that of *Linum*; quite the contrary. Nevertheless, an analysis of the wrappings of numerous mummies has revealed that only flax fiber was used. Also, recent studies of embalming practices in ancient Egypt show that linseed oil, myrrh, balsam, and other oils and resins were used to coat the bodies, but not *Cannabis* resin. Both *Linum* and *Cannabis* provide an edible seed from which meal and oil can be obtained. Although both wine and beer were consumed in great quantities and also poured as libations to the gods, there is nowhere mention of hemp resins as part of such religious usage. Finally, it should be noted that no elements of any *Cannabis* cult are to be found in the Babylonian tablets relating the epic of Gilgamesh.

Arabia: Hasan and Scheherazade

Of the man from whom hashish got its name, al-Hasan ibn-al-Sabbah (A.D. 1124), only the sketchiest biographical data have survived.* He was probably a Persian by birth, some say from Tus. At an early age in the town of al-Rayy, he was tutored in the Batinite tradition. (The doctrine of *batin*, meaning inner, or esoteric, was founded in the ninth century A.D. by the Ismailites; its adherents believed the Koran should be interpreted allegorically and religious truth ascertained by the discovery of inner meaning, of which outer form was "but a veil intended to keep that truth from the eyes of the uninitiated.") A year and a half in

* For an authoritative analysis of Moslem sects, including that of al-Hasan, see Philip K. Hitti, *History of the Arabs* (London: Macmillan, 1968), from which some of the historical data in this section were drawn.

Egypt were sufficient to prepare him for his expected position as a missionary of the Fatimid caliphate, last of the medieval Moslem states, which had its center in Cairo. Back in his native land, it soon became obvious to those around al-Hasan that he was driven by strong personal ambition. He claimed to be a direct descendant of the Himyarite kings of South Arabia, and this assertion, together with his undoubted personal charisma, drew many young men to him. These dissenters from orthodox Moslem thought became known as hashishin, those of the "new word" (the full name of al-Hasan was Hashishin ibn-al Sabbah.) This term has become Anglicized as "Assassins."

In 1090 al-Hasan and his followers gained possession of the mountain fortress Alamut, situated in an extension of the Alburz mountain chain at 10,200 feet above sea level, near the towns of Baghdad and Basra. The name Alamut has been translated as "nest of the eagle," an apt description since it overlooked the shortest caravan route between the Caspian shore and the Persian highlands and thus gave al-Hasan and his men a most strategic position from which to launch surprise raids on those passing below.

The movement of the Assassins was essentially religiously motivated. Al-Hasan was not driven to assassinate those around him by bloodthirsty personal ambition, as has sometimes been claimed; rather, he and his followers felt that in order to promulgate their new religion, they first had to eliminate by whatever means necessary those who taught contradictory philosophies. As the sect developed, it drew away from the Ismailite tradition and became increasingly agnostic. The number of his followers grew to more than 12,000. All were part of a hierarchy, of which Hasan was "Grand Master," his closest companions "Grand Priors," those below them "Spreaders of the Faith," and those of the lowest order "Fiad'is," the executioners of all who were considered to be a threat to the faith. Alamut was maintained by the spoils derived from plundering the caravans from the East headed for Baghdad, and soon the fortress grew into elegant palaces, gardens, and pavilions of great wealth. Perhaps this was one of the attractions for the young men who joined the cult as "Fiad'is."

Marco Polo, who passed through the region in 1271, a half-century after al-Hasan's death, left this account of the "Grand Master's" court:

He kept at his court a number of the youths of the country, from twelve to twenty years of age, such as had a taste for soldiering. . . . He would introduce them into his garden . . . having first made them drink a certain potion which cast them into a deep sleep. . . . When therefore they awoke and found themselves in a place so charming, they deemed it was Paradise . . . and the ladies and damsels dallied with them to their heart's

content. When the Old Man would have any prince slain, he would say to such a youth: "Go thou and slay So and So; and when thou returnest my Angels shall bear thee into Paradise."

There is no historical basis for the allegation that the slayers of al-Hasan did their work in states of malice or frenzy, intoxicated with hashish, or for the tales of depravity and debauchery at the court. These were promulgated by enemies of the Assassin cult and popularized by Marco Polo, among others. Most of the information we have about the Hashishin actually comes from the descendants of the Mongolian Hulagu, who in 1256 seized the fortress and palaces in Persia. At this time all the books and records of the cult were destroyed. In truth, the slaughter performed by the Assassins was less bloody and wanton than that which was then and later carried on in the name of another religious movement—Christianity. We do know that a member of the Assassins, Nizam-al-Mulk, was a founder of hospitals, observatories, and universities and was himself a statesman and scholar—hardly a picture that accords with the vicious character attributed to the sect and its adherents.

Attitudes of the time toward *Cannabis* are well reflected in that great favorite of Eastern and Western literary tradition, the Arabian epic *A Thousand and One Nights*. In a story told by Scheherazade on the 798th night, a Sultan in disguise has the misfortune of being deliberately urinated upon in the house of a *cadi*, or lowly magistrate, by another guest, a fisherman. The fisherman believed himself to be Sultan, for he had swallowed enough hashish "to destroy a hundred-year-old elephant." In the morning *cadi* and fisherman were called to the palace, where the Sultan revealed himself as the hapless guest of the night before. The *cadi* fell to his knees to beg for mercy, while the fisherman, to the Sultan's delight, replied, "What of it? You are in your palace this morning, we were in our palace last night." To the Sultan this truth was the "sweetest noise in all our kingdom," and he said to the fisherman, "We are both Sultans of this city." The implication, of course, is that the consumption of hashish was at least accepted, if not encouraged. This is supported also by the fact that at the beginning of the tale Scheherazade says, "Allah had willed that the *cadi* should also be given to the use of hashish." If hashish consumption had been beneath contempt, as al-Hasan's detractors claimed, tales of this period would hardly implicate Allah himself in the practice.

Asia Minor

The historically documented use of *Cannabis* in the funeral customs of the ancient Scythians, a nomadic people who ranged eastward as far as what is now central Siberia, appears to have originated with their defeat and brief domination by the Thracian Getae in the early sixth

century B.C. The Getae were a well-organized society of horsemen and hunters, with a body of laws and a belief in the soul and a hereafter comparable to the Christian heaven or Germanic Valhalla. Their shamans, known as Kapnobatai, used hemp smoke to induce visions and oracular trances.

According to the German botanist Ludwig Wittmaack (1839–1929), we may assume from the discovery of *Cannabis* seed found in a Scythian funeral urn that the Scythians used hemp for nourishment and pleasure at least as early as the fifth century B.C. De Candolle (1869) goes so far as to suggest that the Scythians were disseminating *Cannabis* to other areas around 500 B.C. Non-Oriental Scythian shamanistic practices with *Cannabis* doubtless stemmed from the Getae. After anointing their heads, the mourners placed posts in the ground and wrapped them with cloth. They then rolled heated rocks from funeral fires and placed them in censers; it was on these rocks that the hemp was thrown, and the resulting vapors were inhaled. Herodotus, born in 484 B.C., tells that the Scythians howled with joy after such vapor baths, and that they danced and sang. An account by Aeschylus (525–456 B.C.) reports that the hemp was simply thrown on the fire and the smoke inhaled. Still another contemporary account tells of the smoldering herbs being covered with large skin blankets, which were periodically lifted so that all might inhale the accumulated vapors.

Herodotus makes no mention of shamanistic ritual in the ceremony, but he was given to such oversights. We can be reasonably certain that among the Scythians, as among other Turko-Tartar peoples, shamanic ecstasy played an important role in curing as well as funeral rites. It was one of the shaman's duties to act as psychopomp for the soul of the deceased, escorting it on its difficult journey to the netherworld. This the shaman was able to do by transporting himself into a state of mystical ecstasy, in which his soul left his body to serve as spiritual guide.* Then as now, psychotropic plant preparations played an important role. It is interesting that in a number of related Indo-European languages,

* The Soviet archaeologist S. I. Rudenko discovered additional archaeological evidence for the use of *Cannabis sativa* to induce trances in Scythian funeral rites during his excavations of the great burial mounds (*kurgans*) at Pazaryk, in the Altai, between 1947 and 1951. Rudenko found metal support rods and bronze censuring vessels containing not only stones which had been heated to produce hemp-seed vapors but even the seeds themselves, some of them burnt. According to Rudenko, all these objects were used for purification ceremonies after the funeral, similar to those described by Herodotus in his report on the Scythians living on the shores of the Black Sea (Badasz, 1968: 65–66). The Swiss classical scholar K. Meuli (1935) suggests that the "howling" reported by Herodotus was nothing else but the characteristic shouting by shamans in their trances and that the entire purification rite must have been a form of shamanism, related to the shaman's role as psychopomp, the guide of the soul to the beyond. Interestingly enough, Meuli sees a relationship between the Scythian ecstatic vapor bath and the well-known curative vapor bath of Arctic peoples and American Indians.—Ed.

bangha, the Iranian word for hemp, simultaneously refers to mushroom intoxication, hemp intoxication, and the hemp plant itself. Today in India, certain concoctions of *Cannabis* are known as *bhanga*, and there are those who still insist that *bhanga* is the Soma of the Vedic hymns, a contention with which R. Gordon Wasson especially has taken sharp issue.

Shamans or shaman-priests also used the ecstatic state for spiritual instruction. Zarathustra, the founder of Persian religious thought in the sixth century B.C., considered himself a shaman, or, as he himself termed it, a psychopomp. According to the Gathas, united in ecstasy with Zarathustra, the dead as well as the living disciples could commune between heaven and earth. Both melotherapy and versotherapy (music and chant) were necessary to the process, which had to occur in a *maga*, or enclosed space. This is curiously reminiscent of curing and divining rituals by shaman-like curers in Mexico and Peru, who intoxicate both themselves and their patients or supplicants with psychotropic plant decoctions in order to enter a mystical realm where causes and cures of illness or misfortune may be learned.

Sara Bentowa, of the Institute of Anthropological Sciences in Warsaw, has studied the original text of the Old Testament and its Aramaic translation, the Targum Onuclos, and finds that the word for cane (*kane* or *kene*) appears both alone and linked to the adjective *bosm*, the Hebrew word for aromatic (in Aramaic *busma*) (Bentowa, 1936). According to the Polish scholar, both *kane bosm* of the Old Testament and the Aramaic *kene busma* refer to *Cannabis sativa*. In the Mishna, the collection of traditional Hebrew law, the *kanbos* bears an unmistakable affinity to the Assyro-Babylonian *kannab*, the Sanskrit *cana* and *sana*, and the Scythian *cannabis*, to mention but a few of the more than 100 synonyms compiled by Dr. Bentowa for this plant. She further traces the migration of the word with the migrations of the Semites through Asia Minor. A number of traditions developed around the hemp harvest that involved rituals based on intoxication from the volatile resins and oils. One such tradition was the offering of hemp seed as a sacrifice to one's ancestors. There seems to be an obvious link between such ritualistic gestures and the funeral ceremonies of the Scythians.

India

The most likely route of migration for *Cannabis* is from the tribes of Iran into India, where it did not grow indigenously. The contemplative nature of Hinduism had already led these people to the tranquilizing root of *Rauwolfia serpentina* and the sedative root of *Withania somnifera*. It may be that the prior acceptance of these plants facilitated the easy assimilation of *Cannabis* in India; in any event, it was soon inseparable

from most of the religious philosophies. Consequently, the greatest vocabulary for *Cannabis* and its derivatives emerged from India. It became known as the "heavenly guide," and just as "Father Peyote" resides in the psychotropic cactus for some Indians of the southwestern United States, so a Guardian lived in the leaves of *Cannabis* for the early Indo-Iranians. Even a dream of the hemp plant was considered an omen of good fortune, and to long for it implied a future happiness. The resins had a pharmacological significance comparable to that outlined in the pharmacopœia of Shen-Nung. The Indian dispensaries claimed that it was efficacious in treating dysentery, sunstroke, phlegmatic tempers, indigestion, lack of appetite, lispings, and muddled intellect, among other disorders. It was believed that to experience *Cannabis* intoxication was to fix one's eyes on the Eternal. Hence, decoctions of *Cannabis* resin were used before reading holy writings or entering sacred places.

Andrews and Vinkenoog (1969) cite the hymns of the Rig-Veda in support of their contention that the sacred plant they celebrate (especially throughout the ninth book) as *soma* is *Cannabis*. However, although one of the earliest Sanskrit names for *Cannabis* is *sana*, meaning a hollow reed or cane, it cannot be equated with *soma*. *Soma* as a deity was the brother of Indra, and the Vedic hymns, which date prior to 1000 B.C., mention both *Soma* the god and *soma* as a plant. Although the two are inextricably intertwined and mention of the plant is made in at least three books of the Vedic hymns, none of the rather obscure descriptions fits *Cannabis*. R. Gordon Wasson, the undisputed authority on *soma*, has identified the sacred plant of the Rig-Vedas as the mushroom *Amanita muscaria*. Others have attempted to identify *soma* as *Sarcostemma acidum*, a leafless prostrate Asclepiad which is native to north India and Pakistan. Both *Amanita* and *Sarcostemma* have psychotropic properties, and either would be better suited to the descriptions of the Sanskrit *soma* than the distinctive leafy *Cannabis*.

It is true, however, that according to one tradition in India the resin of *Cannabis*, under the name *Vijaya*, was the favorite drink of the god Indra and that he gave it to the people so that they might attain elevated states of consciousness, delight in worldly joy, and freedom from fear. Hence it is customary for Hindus to throw idols into the river and rejoice with friends by embracing and drinking *bhanga* * on the last day of the *Durga pooja*.

Africa

The route by which *Cannabis* entered Africa remains obscure, but presumably it came from India or Saudi Arabia. It seems to have been

* *Bhang* is a decoction of water, milk, *Cannabis* resin, cucumber and melon seeds, sugar, and black pepper.

in the Valley of the Zambezi in pre-Portuguese times—that is, before A.D. 1500. None of the more elaborate techniques of using *Cannabis* in the Mediterranean or the Near East accompanied the plant into Africa, and practices in the central part of the continent in the thirteenth century were very simple. The confections which were known to Galen, such as *Cannabis* wine, or the date, fig, raisin, nut, and *Cannabis* confection of the North Africans, apparently had not reached central Africa at this early date. The simple but efficacious practice of throwing hemp plants on the burning coals of a fire and staging what might today be called a “breathe-in” seems to have been popular initially. This was elaborated into a ritual in which members of a given tribal unit would prostrate themselves in a circle around the fire and each would extend a reed into the fumes in order to capture the volatilized resins, without the accompanying irritation produced by standing over the vapors and inhaling. At a later date the fire was elevated to an altar, where a man could sit or stand while inhaling through a tube extending into the smoke.

The dervishes used *Cannabis* resins mixed with oils of seeds to produce a “hypnotic” which, when drunk in that strength, induced a trancelike sleep in which revelation was considered inevitable. In milder doses it was used as a medicinal in cases of madness, hysteria, and convulsions or spasms.

As the weed moved southward in Africa, the techniques of its consumption became more elaborated. The tribes of the Upper Zambezi made a variety of pipes of gourds, bamboo stalks, and even coconut bowls for smoking the resins and crude leaf material. It was the North Africans who developed the water pipe, which cooled and to some degree purified the smoke. Resins alone were used under the name *Kif* in this apparatus.

When von Wissmann visited the Congo, in the late nineteenth century, he noted vestiges of *Cannabis* usage among the Balubas, a Bantu-speaking tribe of the Belgian Congo. This was significant in that many other tribes were subjugated by the Balubas, and their rituals were essentially the same. Hemp-smoking in this area seems to have originated in 1888, when Kalamba-Moukenge, then chief of the Balubas, ordered all the ancient idols and fetishes of conquered territories to be publicly burned. He realized that a multiplicity of tribal gods would hardly serve as a unifying force, so he acted to strengthen his overlordship and bind his subjects into one “nation” by replacing the old idols with a new and more powerful one—*Cannabis*! On state and feast days, the Baluba smoked hemp in gourd bowls one meter in circumference. In addition to ritualistic use of *Cannabis*, men of the tribe frequently smoked hemp as a pleasant evening pastime. Some subjects of Kalamba-Moukenge were

so impressed with the new *Cannabis* ritual that they united themselves under the name *bene-Riamba*, or sons of hemp.

The eminent composer and writer Paul Bowles, who has lived in North Africa for a number of years, identified more than twenty terms that apply to *Cannabis* or *kif* and its use in various guises among the North Africans (Bowles, 1962). So important is *Cannabis* in this area that, according to Bowles, the plant has been involved with some important areas of esthetics: "Music, literature and even certain aspects of architecture have evolved with *Cannabis*-directed appreciation in mind." Some homes actually have *kif* rooms, where family groups gather to sing, dance, and relate histories based on ancient cultural traditions.

North African men carry their *kif* in a *mottoni*, or pouch, of two to four compartments, each containing a different grade of *Cannabis*. Degrees of esteem or friendship are indicated by the quality of *kif* offered to another. Bowles points out that large numbers of Moslems have used *Cannabis* because alcohol is forbidden by Koranic law; any attempt to impose the Dionysian tradition upon these peoples, for whatever reasons, can lead only to a confusion of moral values. Although *kif* is outlawed in North Africa, the district of Ketama in the western Rif still produces crops of hemp on its steep hillsides and supplies most of Morocco. Lack of success in eradicating the habit is confirmed by recent visitors to the area, as well as by the trade in *chquofa*, clay pipes designed specifically for *kif* smoking.

Substitution of the physiologically addictive poison alcohol for the nonaddictive euphoriant *kif* seems to be inevitable in Africa. However, a new nationalistic trend, increasingly more apparent, may help to preserve the old traditions.

The Origin of a European Ritual

Although *Cannabis* must have been available in Western Europe since relatively early times, little interest was shown in the plant until *ca.* 1800, when Napoleon's battered army returned to France from the Egyptian campaign with hemp resins to sustain them. From Egypt itself the earliest records of hemp cultivation and the use of hemp resin date from the eighteenth century. The custom was not readily assimilated by the populace of cosmopolitan France, but in Paris a group of avant-garde writers and artists found considerable pleasure in this new euphoriant and founded a *Cannabis* ritual, well documented by Theophile Gautier, who wrote of the odd gathering in a *feuilleton* of *La Presse Medicale* (n.d.) and in the *Revue des Deux Mondes* of 1846. The ritual was certainly French in character, notwithstanding both Egyptian and Algerian antecedents.

A certain Dr. Jacques Joseph Moreau, of the Hôpital de Bicetre, was

responsible for introducing the use of *Cannabis* resins in the hospital for the mentally ill. Dr. Moreau had investigated some of the potions used in the Middle Ages for treating mental illness and had used extractions of *Datura stramonium*, or Jimson weed, with some success in treating his patients. In 1841 Dr. Moreau substituted hashish for *Datura* and, after three years of experimentation, published his studies along with an appendix of observations by Gautier. Almost a decade before the association with Dr. Moreau, Gautier had attained his literary laurels with the perverse and brilliant *Mademoiselle de Maupin*. In the preface to this chronicle of a transvestite, Gautier proclaimed that abandonment to the senses was the will of God, an attitude that later became the manifesto of the decadents. It is not surprising that a man to whom the "superfluous" was the most essential element of life should found an organization devoted to the veneration of the senses in the form provided by *Cannabis*.

Le Club des Haschischins, formed in 1844, found a home in the elegant Hotel Pinodan on the fashionable Île St. Louis. Gautier's description of the hotel, built by Lauzun, suggests an atmosphere that was certainly conducive to hallucinations. Meetings were held monthly, as regularly as any religious service and with equal attention to the appointments to the ceremony—flickering lights, ceilings painted with mythological scenes, Venetian goblets, fine porcelain, velvet tapestries from Utrecht, and Egyptian chimeras, all provided elements of the phantasmagoria that was part and parcel of *Le Club*. Doctor Moreau would dispense the intoxicating resins from a crystal vase, pronouncing with each spoonful the sententious dictum, "This will be deducted from your share in paradise."

Each participant would down the green paste and then drink coffee in the Arab manner, without sugar and heavy on the grounds. A banquet followed the *Cannabis* *hûrs d'oeuvres*. It was not until the end of the feast that the members would begin to feel the intoxication that would culminate in hallucinations. The environment reinforced this vision state, and music was introduced for the further delectation of the guests. According to Baudelaire, the uninitiated were bound to be disappointed in their expectations of marvelous visionary experiences, for "man cannot escape the fatality of his physical and moral temperament. Hashish will be for a man's familiar thoughts and impressions a mirror that exaggerates, but always a mirror." However, it is difficult to assess the writings of Baudelaire on the effects of hashish, since he was so given to a mixture of opium and alcohol that the influence of the different drugs is likely to have been inseparable.

Perhaps the most interesting aspect of the European use of *Cannabis* is its ritualistic nature. Baudelaire had had access to *Cannabis* in his

earlier travels in India, and Gautier had used this substance in his experiments with Dr. Moreau; however, they and the other members of *Le Club* preferred a group ceremony in which their visions might to some degree be shared with the other participants—shades of howling Scythians! *

A New World Ceremony in Mexico

Although *Cannabis* was unknown in the New World prior to the Conquest and most Indian groups continue to spurn it as alien to their indigenous culture, of late there have been reports of rituals in which marihuana has come to replace hard-to-get aboriginal hallucinogens. As early as 1902 the pioneer ethnographer Carl Lumholtz reported that "Tepecanos" (Tepehuano) in northwest Mexico sometimes substituted *Cannabis sativa*, which they called *rosa maria*, when peyote was not available from neighboring Huichol Indians.

A particularly interesting account of a Tepehua (no relation to "Tepecano") Indian ceremony with *Cannabis* was published in 1963 by the Mexican ethnologist Roberto Williams García of the University of Veracruz, Mexico.† The Tepehua, who live in scattered communities in the mountains of Veracruz, Hidalgo, and Puebla, belong linguistically and culturally to the Totonac of Veracruz, northernmost branch of the Maya language family, but their culture, especially the non-Christian elements in their religious beliefs and rituals, are very close also to those of Nahua and Otomi-speaking Indians of Veracruz and adjacent states in southeastern Mexico.

In his account of Tepehua religion and ritual, Williams García (1963: 215–21) describes in some detail a communal curing ceremony focused on a plant called *santa rosa*, "The Herb Which Makes One Speak," which he identified botanically as *Cannabis sativa*:

The ritual takes place in the community of San Pedro, under the direction of a diviner or shaman named Antonio. The reputation of the

* And, for that matter, of marihuana-using G.I.'s in Vietnam. CBS News in 1970 broadcast an extraordinary film of a marihuana "ritual" in which soldiers employed a shotgun—"anthropomorphized" as "Ralph"—to inhale large quantities of marihuana smoke. As depicted in the television news film, the combat unit's leader ejected the shells from his shotgun, inserted a lighted marihuana pipe in the breech and then blew the smoke through the barrel directly into the mouth of each of his men in turn! There are some interesting implications in such a use for a weapon of death, especially since bamboo was readily available to achieve the same effect (but without the same symbolism). The use of a gun here is reminiscent of the manner in which the Waika Indians of Venezuela blow charges of a powerful hallucinogenic snuff into one another's nostrils with a long tube. This tube, though shorter than the blowgun, is otherwise similar to this deadly hunting weapon. It is unlikely that the Army unit had access to this bit of anthropological information, so that their particular communal way of ingesting the euphoriant must be regarded as spontaneous ritualization.—Ed.

† I am indebted to Peter T. Furst for this reference.

herb is great, for it is said to have the power to induce a fleeting "madness" which can be calmed only by the shaman. In the hut of Antonio there is an altar with candles, plates, crystals, and small archaeological clay heads used in divination. On an upper platform are images of saints, and especially of the Virgin, who is considered to be a companion of the divine Sun. Boxes beneath the altar contain cutout bark-paper spirit figures (*muñecas*, or dolls),* which are taken out for this ceremony of purification. Ashes, representing the extinction of life, and earth from the cemetery are symbolically placed on the altar to represent the sacred place where such a ceremony should properly be performed. They also have the effect of removing impure air and freeing the people of evil spirits.

Two female attendants wash the hands and feet of the diviner, and he in turn ritually washes ears of corn. He enters the room, distributes flowers, and squats to pray; upon rising he cleanses the participants with branches of lemon. *Costumbre* (native ritual) music is played by temple musicians while Antonio stands at the altar and arranges branches that have been purified by the smoke of a censer. The participants are invited to seat themselves, holding burning candles. Antonio prays, blows on a whistle, and rings a bell. He touches them on the shoulder with the purified branches, upon which they are required to spit.† One of the women does the same for Antonio. He then lights the altar candles and concludes the homage to the ancestors and the purification of the participants.

The group then moves to an adjacent hut which contains an altar bearing the Sacred Heart of Jesus and a plate, covered by a cloth, with the herb *santa rosa*. This is taken back to the temple and distributed ceremoniously to the participants, to be eaten by them. The female participants dance in a circle and speak in a high voice. The atmosphere is by no means solemn; rather, there is light conversation, occasionally interrupted by laughter. Leaving the temple the group moves to a cross in an adjoining patio, where they genuflect and prostrate themselves, after which they re-enter the temple. Speech now becomes oratory and the entire atmosphere changes to one of fervent music, song, declamations, ringing of bells, rhythmic movement, dancing, whistling, and prayer.

* These cutout spirit figures are characteristically Otomí, attesting to the strong influence Otomí culture has had on the Tepehua. Otomí shamans use them widely for curing and sorcery as well as in connection with fertility rituals for crops and fields, as do the shamans of the Tepehua. Although the art of bark-papermaking survives in several parts of Mexico, the real center of this ancient craft is the Otomí village of San Pablito, in the Sierra de Puebla, where bark paper is traded widely. The art of bark-papermaking is an old one; stone bark beaters have been found in archaeological contexts dating to 900 B.C.—Ed.

† Spittle in general, but especially in a ritual context, is a symbol of transcendence.—Ed.

One old man, who had been given a considerable quantity of *santa rosa* for assisting Antonio, is said to be speaking to the sanctified herb. Antonio prays and then dances with a handkerchief, an act signifying that children of the village who are sick with the grippe are now cured. Soon the music ceases and soft drinks are passed around. Day breaks, the intoxication is wearing off, and the ceremony is near an end. Only a few ritual ingredients remain to be used up by the participants before they return to their everyday pursuits.

According to Williams García, *santa rosa* is considered both herb and intercessor with the Virgin. It is worshiped as an earth deity and is thought to be alive and comparable to a piece of the heart of God. It is also dangerous: were it not for prayers and rituals, it could affect people adversely. It could assume the form of a man's shadow (soul) and make him sick, put him in a rage, or even lead to his death.

A recent personal communication from a North American ethnobotanist, David Wheeler, who has spent several years in the state of Oaxaca among several groups of Indians, provides interesting corroboration of Williams García's observations among the Tepehua. As is known, mushroom cults focused on several varieties of hallucinogenic fungi flourish in Oaxaca. Less well known is the fact that several other hallucinogenic plants, including *Heimia salicifolia*, *Calea zacatechichi*, *Genista canariensis*, *Salvia divinorum*, *Rivea corymbosa*, and *Ipomea violacea*, are also used in Oaxaca, either when mushrooms are unavailable or as the preferred mystical substance in curing and other rituals. *Genista canariensis*, as the name implies, is an introduction from the Canary Islands, and one of the mushrooms used ritually is also an importation from the Caribbean. In cultures so attuned to the use of psychotomimetics it is perhaps not surprising that yet another alien plant, *Cannabis sativa*, should have found ready acceptance, at least in one area of the highlands.

The advantages of growing *Cannabis* in the volcanic soils of the highlands are considerable. Of the nine-odd cannabinols found in *Cannabis sativa*, the delta-1 form is by far the most active. However, the amount of ultraviolet light striking these plants may convert relatively inactive isomers into potent forms. The agricultural traditions among the Indians here are very ancient; long experimentation has led to the production of a variety of excellent crops perfectly adapted to the varied climates and soil conditions of the mountains and valleys. It is hardly surprising that such experienced farmers should have discovered in short order that the finest *Cannabis* is derived from plants that do not flourish in the usual sense but have been "tortured" by an extreme environment and by unusual pruning practices.

According to Wheeler, when the plants are just beyond the cotyledonary, or seedling, stage, they are pinched so as to remove the apical meristem which terminates the shoot tip. This part of the plant is responsible for the production of auxins, plant hormones, and the absence of this site of synthesis causes lateral meristems, or side shoots, to become active. Thus, instead of the usual tall cane, a small bush is produced. Once every week the plant is pinched in such a manner as to keep it within a few feet of the ground. The form it assumes in the course of such pruning is that of an urn. Shoots which would normally fill the interior are removed, so that as resins are formed they volatilize within the confines of the urnlike shrub. At maturity this strange crop resembles a topiary of sorts, the grotesque "urns" being so heavily coated with resins that the surface of the plant has a crystalline appearance. Pinching is so frequent as to interfere with the normal flowering of the females, and the auxin changes also lead to changes in pigmentation in some instances. Cyanins, which give a red appearance to plants, may accumulate, lending the plants an acharacteristic color as well as form. The leaf morphology is so changed that palmate leaves are no longer characteristic, being replaced by verticillate balls of entire leaves and abortive flowers. Indeed, the botanist would be hard pressed to identify the genus of these tortured plants.

That these practices figure in the syncretic Christo-pagan religious traditions of the local population is hardly surprising. The red color, the copious exudation of crystalline resin, akin in appearance both to sacred copal and to traditional shamanistic rock crystals, and the urn shape probably all contribute to ritualization of this psychotomimetic botanical import. Of great interest in this connection is the peculiar mode of harvesting *Cannabis*. As the bloodlike color begins to appear, the plants are "crucified" by inserting wooden splinters through the stem at right angles to one another just above the ground. The effects of this practice on the physiology of the plant are not known, but one might assume that this act of crucifixion has implications beyond the purely ritual, even if the Indians are concerned only with the latter. It is possible, for example, that wound hormones produced in response to the piercing with wooden splinters may enhance the quality of the resins even beyond what is accomplished by the pruning practices described above.

Be that as it may, the resultant material is especially effective, acting rather like hashish. However, it does *not* constitute the hashish of illegal drug traffic, since it is utilized exclusively in the area in which it grows and for ritual purposes akin to those involving the use of indigenous hallucinogens.

CHEMISTRY AND EFFECTS OF *Cannabis* RESINS

It is the resins of the *Cannabis* plant that are responsible for the euphoriating properties. In Nepal, one of the few areas of the world where marihuana use is now legal, the resins were once collected by having naked men run through the fields planted to marihuana and then scraping off the sticky substance that adhered to their skin; a more sanitary mode of harvesting was to have the men wear leather aprons which were scraped, eliminating body hair and perspiration that might impede marketability. At one time the resins were listed in the U.S. Pharmacopoeia as a tincture for treating fatigue, fits of coughing, rheumatism, asthma, delirium tremens, migraine headaches, and the cramps and depressions associated with menstruation. The Tax Act of 1937 imposed such rigid controls on the use of *Cannabis* that it was effectively eliminated from most drug dispensaries. Cannabinols, of which more than eighty have been isolated from *Cannabis sativa*, form the group to which the active principles belong. Although a number of these have been ascertained to be active euphoriants, the delta-1 form of tetrahydrocannabinol is believed to be of primary activity, and in laboratory synthesis the synthetic product obtained has most of the quality that occurs in resins.

The drug acts mostly on the central nervous system. In moderate doses the effects on laboratory animals and in man are the induction of euphoria, or a dreamy, nonaggressive, semisomnolent state. Unless one is working with synthetic THC (tetrahydrocannabinol), dosages are difficult to determine because of the qualitative differences in resins coming from different varieties of plants in nature.

Massive doses of the resins have been given to dogs without causing death, and there is no recorded fatality from overdosing with either the natural resins or THC in man, stories to the contrary notwithstanding. Fitzhugh Ludlow, who popularized *Cannabis* in alarmist language in a chronicle which appeared serially in *Harpers' Magazine*, owes much to his reading of De Quincey's *Diary of an English Opium Eater*, and one can hardly take his claims of "horrible addiction" seriously. The death of Baudelaire, attributed by some to hemp resins, may be more realistically laid to advanced tertiary syphilis, opiate addiction, and alcoholism.

Most *Cannabis* in the United States is smoked as a crude leaf material, known as marihuana. The "high" it produces lasts from two to four hours, whereas ingestion of the resins lasts twelve or more. The state produced has been described as having a duality in which the individual may be both high and objectively aware of his subjective state. Thus, it is possible for a person to be under the influence of marihuana and

yet perform routine duties with considerably greater competence than an individual who is lightly intoxicated by alcohol. Surprisingly, this has been shown to apply even to driving an automobile, in tests conducted by the University of Oregon and the Oregon Department of Motor Vehicles with both alcohol and marihuana. (Needless to say, because of individual variability and other reasons, one would hardly advocate mixing marihuana smoking with driving.)

Perhaps the only noticeable effect of marihuana use is altered time and space perception, which also accounts for obviously altered speech pattern while under *Cannabis* influence. Weil and Zinberg (1969) have reported on interference with retrieval of information from immediate memory storage in the brain, but at this writing this is the only scientifically acceptable study that points to a "danger" from using moderate amounts of this material. We must await the findings of more scientific studies and long-term research to ascertain whether or not there might be other major health hazards associated with the use of these resins. Recently it has been pointed out that inexperienced individuals (the drug-naive group) show lessened motor coordination when under the influence of marihuana while experienced users may actually show improvement, as evidenced by standard performance tests (Weil, Zinberg, and Nelsen, 1968).^{*} Other physiological changes, such as hunger, increased urination, etc., are curious but negligible effects.

SOME CONCLUSIONS

Available evidence to date suggests that *Cannabis* may have been used as a gathered, if not cultivated, plant as early as the Late Neolithic and that, with the exception of Egypt, it was one of the most prominent cultigens in Bronze and Iron Age civilizations. The Scythians may have

^{*} Results of an interesting study on the disposition and metabolism of delta-9 tetrahydrocannabinol in man by four researchers of the National Institute of Mental Health were reported by Lemberger *et al.* in the journal *Science*, Vol. 170 (1970), pp. 1320-22. The researchers found that the major active component of marihuana, D-9-THC, administered intravenously to normal human volunteers persists in plasma for more than three days, that tetrahydrocannabinol is completely metabolized, and that the radioactive metabolites are excreted in urine and feces for more than eight days. The report suggests that THC, as a nonpolar compound, may accumulate in fat or other tissues, such as those of the lung, which have an affinity for drugs. "If, indeed, the D-9-THC is found in the lung, then in man this would be even more significant since inhalation is the usual route of administration," according to the researchers. THC accumulation in the tissues, they write, may explain in part the phenomenon of so-called "reverse tolerance" in chronic users of marihuana (who may need progressively smaller doses to achieve the desired euphoriant effect, in contrast to the need for ever-larger doses in addictive narcotics such as heroin); possibly, the report states, "a critical degree of tissue saturation must be attained before effective threshold levels of D-9-THC can be achieved." It may also explain in part why novice users of marihuana often report no effect whatever from their first experimentations with *Cannabis*.—Ed.

cultivated the plant for some time before employing it ritually, for De Candolle in 1869 adduced evidence that they transported *Cannabis* from Central Asia and Russia during their westward migrations just before the Trojan War, or ca. 1200–1300 B.C. He mentioned that it might have been disseminated by earlier incursions of the "Aryans" into Thrace and Western Europe but was unable to produce evidence to support this.

Shamanistic traditions of great antiquity in Asia and the Near East had as one of their most important elements the attempt to find God without a vale of tears; that *Cannabis* played a role in this, at least in some areas, is borne out in the philology surrounding the ritualistic use of the plant. Whereas Western religious traditions generally stress sin, repentance, and mortification of the flesh, certain older non-Western religious cults seem to have employed *Cannabis* as a euphoriant, which allowed the participant a joyous path to the Ultimate; hence such appellations as "heavenly guide."

The North African tradition involving *Cannabis* is closely bound up with the Koranic injunction against alcohol. The cultural context of *Cannabis* use is the family tradition, in which the members gather in a special *Kif* chamber for the purpose of relating oral histories. Recent attempts to substitute alcohol for *Cannabis* amount to forced culture change, with potentially harmful effects on the traditional system.

The adoption of *Cannabis* by Mexican Indians into their syncretic traditional-Christian rituals and beliefs, especially in connection with curing, is particularly interesting since *Cannabis* is of Old World origin, introduced after the Conquest into a cultural area already strongly predisposed toward the use of mind-altering substances. It would be too much to say that *Cannabis* is replacing aboriginal sacred hallucinogens, such as morning-glories, peyote, or mushrooms. But it does appear to have taken root and even been sanctified in local areas, perhaps because more traditional psychotomimetics are difficult to obtain or, like *Datura*, are actually physiologically dangerous. Of some interest also is the spontaneous development of marihuana "rituals" in the United States, which is otherwise increasingly undergoing secularization. These rituals are in clear opposition to the cultural traditions of the larger society, which values aggressiveness and achievement as opposed to introspection and passivity.

Studies to date on *Cannabis* are inconclusive with respect to total physiological effects, especially on chronic users. Excessively large doses of hashish over a period of time may well have deleterious effects, but this would apply to a very small number of *Cannabis* users—a fraction, certainly, of the number of persons who habitually use alcohol to excess. Clearly much more research is needed, not only in Western societies, where *Cannabis* is rapidly becoming a "social drug,"

but historically in societies that have focused on *Cannabis* (and other psychotropic substances) in a ritual way. In the meantime, is it not obvious that the social costs of enforcing laws based essentially on the hysteria of the 1930's rather than on dispassionate scientific research are out of proportion to the actual or presumed harm done by this ancient euphoriant? Surely one of the most deleterious results of the law—modified recently, to be sure, but still punitive—is precisely a cause-and-effect relationship so often charged to *Cannabis*: that it leads to the use of other, more dangerous, and truly addictive drugs. The cause-and-effect relationship is not physiological, however, but social, because by having driven *Cannabis* underground the law forces young people into contact with criminal elements whose motivation is neither ritual nor altruistic but commercial.

There is an additional factor, which touches on the relationship of the dominant white society to its minorities. On a television program on drug abuse produced by KNXT, the CBS station in Los Angeles, in 1970, a young female participant from the Spanish-speaking community observed that marihuana had become so expensive that only affluent middle-class whites could afford it, while minority youth seeking momentary relief from unbearable pressures were forced by economics to resort to more readily available and cheaper amphetamines and other potentially far more harmful drugs.*

To an ethnobotanist concerned with the complex interrelationship, through time, between man and the plant kingdom, especially its numerous intoxicants and euphoriants, it is ironic that *Cannabis*, which only a few years ago was associated in the public mind exclusively with the poor black and brown minorities, should have joined the long list of social drugs of our drug-oriented, affluent, white middle-class society, while being priced out of reach of those on the bottom rung of the economic ladder. It is doubly ironic if we speculate that some of the remote Mediterranean, Near Eastern, and African ancestors of these minorities might have been among those who long ago 'used *Cannabis* as a divine plant and "guide to heaven."

* It may be recalled that it was the avowed intent of the U.S. Justice Department's "Operation Intercept" to drive the price of marihuana beyond the reach of young people by impeding its importation across the Mexican border. One could also attribute the widespread experimentation with potentially deadly, wild-growing plants for hallucinogenic purposes at least in part to the economics and legal dangers of the marihuana market. To cite only one example, a recent "underground" publication, *Herbal Highs*, by one "Maryjane Superweed," lists a number of deadly poisonous plants as psychedelics and encourages them as "legal highs." The popularity of this spurious guide is such that I was barely able to get the last copy in a Hollywood "head shop." Several of the listed plants are misidentified, as are some of the illustrations; on the whole these "alternatives" to marihuana are frightening. The author, whoever he or she may be, may be responsible for the death of or permanent injury to a number of misinformed youths.