Preview

. . . a psychedelic drug is one which, without causing physical addiction, craving, major physiological disturbance, delirium, disorientation, or amnesia, more or less reliably produces thought, mood, and perceptual changes otherwise rarely experienced except in dreams, contemplative and religious evaluation, flashes of vivid involuntary memory, and acute psychoses.

Mind-altering substances have been used in all societies except among the Eskimos and some Polynesians, and thus many of the plants discussed in this book have long and exotic histories. Much of the history, including early New World native use, is undocumented, and much is veiled in legend. We may never know whether Buddha’s last meal was of mushrooms (“psy’s food”). However, many scholars have now accepted the identification of Fly Agaric mushrooms as the inspirational “Soma” in the world’s earliest religious text, the Rig-Veda, and evidence seems strong that ergot, an LSD-like substance, was the mysterious kykeon, used for more than 2,000 years in the annual ancient Greek Eleusinian Mysteries.

The anthropologist Weston La Barre characterized the use of mind-altering plants as being the source and mainstay of “the world’s oldest profession”—that of the shaman or medicine man. He adds that such a specialist was “ancestor not only to both the modern medicine man or doctor and the religionist priest or divine, but also ancestor in direct lineage to a host of other professional types.” Shamanism in the New World was fostered by indigenous psychedelics that are powerful and quite safe. The Old World had to rely on less dependable, more erratic substances, such as hashish, belladonna, thorn apple and Fly Agaric mushrooms. It is now evident that the prescriptions of specific plants in the recipes in witches’ brews of the Middle Ages was not as superstitious or random as earlier supposed.

After accompanying Columbus on his second voyage, Raimo Paul brought back word of cohoba snuffing among natives in Haiti. The earliest account of peyote was set down in 1560 in Bernardino de Sahagun’s History of the Things of New Spain. In 1615, botanical notes made by the Spanish physician Francisco Hernandez about the mind-changing effects of morning glory seeds were published.

The first report on use of Amanita muscaria mushrooms among Siberian tribesmen didn’t appear until 1730. Forty-one years later, a Swedish botanist accompanying Captain James Cook on his first voyage to the
Hawaiian Islands described kava-kava and the natives' ceremonial use of this substance. One year later, Sir Joseph Priestly, who first isolated oxygen, produced nitrous oxide (N\textsubscript{2}O). At the beginning of the nineteenth century, Baron Alexander von Humboldt, after whom the Pacific current is named, gathered together the first "scientific" report on the use of snuff in the Amazonian region.

Around the middle of the nineteenth century, the pace of knowledge of psychoactive substances greatly quickened. In 1839, W. B. O'Shaughnessy introduced Cannabis indica into the Western pharmacopoeia, and five years later Théophile Gautier established Le Club des Haschischins in Paris. In 1851, the British explorer Richard Spruce first observed ayahuasca practices among the South American natives; four years later, Ernst Freiherr von Bibra published an account of seventeen plants capable of affecting the mind. Urging others to study this field, he described it as "promising for research and fraught with enigmas."

In 1864, the earliest description of psychoactive effects from the African bush Tabernantha iboga appeared. It wouldn't be until near the end of the nineteenth century, however, that peyote investigations eventually produced the world's first psychedelic compound in crystalline form. Louis Lewin, another German important in the development of modern psychopharmacology, traveled to the southwestern United States and brought peyote back to laboratories in Berlin. Eight years later, Lewin's rival, Arthur Hoffmann, isolated "mescaline" from Lewin's specimens. After fractionating the alkaloids, or nitrogen-containing compounds, from this cactus, Hoffmann was able to locate the source of peyote's psychoactivity only by trying the various fractions himself.

The first account of the peyote experience from someone who had actually tried it appeared in 1896. This came from a distinguished author and Philadelphia physician, S. Weir Mitchell, who then forwarded "peyote buttons" to the prominent psychologists William James and Havelock Ellis. After ingesting them in his flat in London, Ellis called the resulting experiences "an orgy of visions" and "a new artificial paradise" (from the titles of his two reports). James, however, got a severe stomachache after using only one, declaring that he would "take the visions on trust."

Scientific curiosity about peyote dimmed shortly after the turn of the century but was revived in 1927 by the French pharmacologist Alexandre Robinet, who gave an extraction from the cactus to several students and published accounts of their "exotic" visions. A year later, Kurt Beringer published his 315-page study Der Meikalienrausch (Mescaline Inebriation). A year after that, an English monograph that attempted to catalog the elements of "mescal visions" was published. By this time, a continuing interest in what we now call psychedelic states was emerging. However, there was little indication yet that psychedelics would eventually affect and enchant a great many people.

That eventuality began to take shape in 1938, when the Swiss chemist Albert Hofmann synthesized diethylamino acid diethylamino tetratone—LSD-25. In mid-April 1943, Hofmann apparently absorbed some of this compound through the skin of his hands and thus learned what animal tests had failed to show: that this substance was a mind-altering drug that had about 4,000 times the potency of mescaline.

In 1947, Werner A. Stoll, the son of Hofmann's superior, broadcast news of this discovery in scientific literature. Within two years, Drs. Nicholas Bercel of Los Angeles and Max Rinkel of Boston brought LSD to the United States.

The change that would take place in our thinking about molecules and their ability to affect the mind was catalyzed during the mid-1950s. In a slender, much noted book, Aldous Huxley described how his "doors of perception" had been cleansed by 500 milligrams of mescaline sulfate. In May 1957, Life magazine published the third part of a "great adventures" series with ten pages of color photographs. R. Gordon Wasson described how he had become one of the first two white men to be "bemushroomed." Since then, knowledge about psychedelics has grown steadily, as have the numbers of people interested in them. 
Origin of the Word Psychedelic

In the early 1950s, researchers Humphry Osmond and John Smythies wrote a paper about the mental effects of mescaline that came to the attention of Aldous Huxley, who invited Osmond to visit him if he should be in the Los Angeles area. Huxley's wife, Maria, was initially apprehensive about such a meeting, fearing that Osmond "might wear a beard." When Osmond did go to L.A. for a psychological conference, Maria was satisfied that he was not a Bohemian or a mad scientist (he didn't have a beard), and he stayed with the Huxleys. Maria, ironically, finally asked about getting some mescaline for Aldous. Osmond's reaction to the proposal was favorable, with one reservation:

The setting could hardly have been better. Akious seemed an ideal subject, Maria eminently sensible, and we had all taken to each other, which was very important for a good experience, but I did not relish the possibility, however remote, of being the man who drove Aldous Huxley mad.

In the literature then available about what we now call psychedelic drugs, the term most commonly used to describe the effects was psychotomimetic (meaning psychosis-mimicking). Yet it is evident from Huxley's description in *The Doors of Perception* that when he tried mescaline sulfate he was not going through some kind of "imitation psychosis." Huxley believed he had experienced something akin to mystical experience. He was considered an authority on the subject, being the author of one of the classics in this field, *The Perennial Philosophy*.

Osmond was already sensitive to the lack of an adequate term for the mental state induced by mescaline and LSD. He and his colleague Abram Hoffer had been observing LSD's effects in the treatment of acute alcoholics, and the states produced in their subjects were not as expected. Having read in the literature that LSD produced temporary psychosis, they had reasoned that such a substance could be used to touch off a kind of artificial and controllable delirium tremens. About 10 percent of those who experience d.t.'s never drink again.

Osmond and Hoffer tried LSD on two patients—one recovered, the other remained an alcoholic. They began to use LSD as regular treatment for their worst alcoholic cases, and it gradually became clear that recovery seemed to occur most commonly when the d.t.'s hypothesis was forgotten altogether. Hoffer has since commented:

...by 1957 it was apparent that even though many of our patients were helped by LSD, it was not its psychotomimetic activity which was responsible. In spite of our best efforts to produce such an experience, some of our subjects reverted to a psychiatric experience.

The new term came out of a regular correspondence that developed between Osmond and Huxley. Psychedelic—coming from the Greek psyche (soul) and delein (to make manifest, or dehttn, to show, reveal)—was first proposed in 1956 by Osmond.

Huxley took the lead, proposing words derived from roots relating to "spirit" or "soul." He invented the word phanerothyme and encased it in a couplet for Osmond's consideration:

To make this trivial world sublime,
Take half a gramme of phanerothyme.

Osmond has since remarked that the word Huxley selected was too beautiful.

He replied:

To fathom hell or soar angelic,
Just take a pinch of psychedelic.

Especially noteworthy about psychedelic is the presence of the first e—which varies from the ordinary way of combining Greek roots and thus dissociates this word from the misleading connotations of psychotic. Soul-manifesting belongs to the category of meanings that make sense in terms of contrast: just as empty implies full, as child implies adult, so soul-manifesting implies an enlargement or actualization of consciousness. This point about psychedelics is often hard to get across.

For better or worse, Osmond's psychedelic has been largely accepted as a description of the state produced by the substances to be discussed in this book.
Similarities to Various "Synonyms" 7

Other Terms Proposed

The word *intoxication* is said to have more synonyms than any other word in English, but none of them conveys the essence of a psychedelic mental state. To be *psychedelized* is not at all the same as being drunk.

*Intoxication* by LSD is characterized by "lighting the golden trail"—a mystical feeling and "Yea-saying." However, it cannot approach the revelatory power of psychedelics, and it is well known to have drawbacks—loss of lucidity and sometimes of memory—put it in an altogether different category from LSD or mescaline. If any of the intoxication synonyms are to be used to describe soul-manifested states, the best is probably *inebriation*, because it lacks the connotation of poisoning contained in *toxic*.

*Hallucinogen* is another word commonly used for substances producing a psychedelic experience. There is some truth in the characterization, for users often say "visions," especially with the eyes closed. However, most users consider the hallucinatory effect to be only one part of the experience—often a minor part. Even so, the man who formulated the word *psychedelic* used *hallucinogen* in the title of a book he wrote later with Abram Hoffer.

Richard Evans Schultes and Albert Hofmann in their books about the botany and chemistry of these substances weight the various descriptive terms and settle on *hallucinogenic* and *hallucinogen*, while pointing out how inaccurate they are. The chemist Alexander Shulgin, after explaining that most MDA-like compounds evoke no visual imagery at all, labeled them "hallucinogenic" substances in his writings.

Even in the second edition of his book on the botany of psychedelics, the ethnobotanist William Emboden retained the title *Narcotic Plants*. These psychedelic plants and related compounds are quite the opposite of narcotics: unlike opiates, they are basically stimulating, and they are non-addictive. (Psychedelics also differ from true stimulants; they increase lucidity but not, as with amphetamines, at the expense of psychological warmth.)

The term *psychotomimetic* (stemming from a concept proposed in the late nineteenth century by the French doctor J.J. Moreau de Tours) was the first to raise the hope that chemicals could produce insights toward the alleviation of mental illness. The hope was only partially realized. While the psychedelic state may have some similarities to psychotic ones, the differences are more numerous and more significant, a main difference being that the induced state is known to last only a short while. By the 1960s, few of the therapeutic projects using psychedelics were attempting to bring about psychotic mental states. Yet the term *psychotomimetic* did linger, with papers describing blissful, beneficial results ascribed to some "psychosis-mimicking" drug.

Another psychotherapeutic aim that has much currency, especially in Europe, is *psycholytic*, which has been specifically limited to refer only to low dosage use of psychedelics in conjunction with therapeutic sessions. Shulgin
has compiled several more from the prominent psychotherapeutic literature: deliriant, delirianogen, psychedelics, mescaline, psilocybin, psilocybin, psilocybin, psilocybin, and ichthyogony. Many observers have favored Louis Lewin's suggestion of phasmatic, but this early formulation never caught on.

Several writers have turned to German or Sanskrit to find more appropriate words, but these have largely been ignored. More notable terms are peak experiences, a term popularized by the psychologist Abraham Maslow, altered states, popularized by the psychologist Charles Tart; alternative states, coined by Norman Zinberg; and cosmic experience, popularized in William James' The Varieties of Religious Experience.

The latest term proposed comes from the team of Black, Bigwood, Staples, Ott and Wesson, writing in the January-June 1969 Journal of Psychoactive Drugs. They felt strongly that "not only is 'psychedelic' an incorrect verbal formulation, but it has become so invested with connotations of the pop-culture of the 1960s that it is inauspicious to speak of a shaman's taking a 'psychedelic' drug." They offer entheogens, calling it a new term that would be appropriate for describing states of hallucinatory and ecstatic possession induced by ingestion of mind-altering drugs. In Greek, the word entheos means "god within," and was used to describe the condition that follows when one is inspired and possessed by the god that has entered one's body. It was applied to prophetic seizure, ecstatic possession and artistic creation, as well as to those religious rites in which mystical states were experienced through the ingestion of substances that were transsubstantial with the deity.

Combining this Greek root with the Latin word "gen" could speak of entbeogenr or, in an adjectival form, of entbeogenous. While it has not been used ritualistically, facilitate creative problem-solving and change the spiritual core in their users, have exhibited physical healing qualities, have been used in a stria sense, only those vision-producing drugs that can be associated with the deity.

After being around for a couple of years, the term entheogen has entered the ethnobotanical literature and is about to be included in the Oxford English Dictionary. So far as popular usage is concerned, it doesn't seem to sit as easily on the tongue as originally claimed. For now, the term psychedelics, which is that there are several components to the psychedelic experience, appearing in different combinations and intensities with each drug. If one tries to index psychoactivity according to response to color, for example, then the MDA and marijuana compound-clusters would be excluded by some. (Many people would exclude marijuana because it has a different chemistry than most of the others and acts more subtly. However, for some people it can be "inspiring" and it has widened the scope of the mind for many.)

Aside from the variations among mind-altering compounds, there are variations among users to consider. Some people seem especially sensitive to a very wide range of substances. Jean Cocteau felt quickening, mind- and soul-manifesting effects from opiates. The creative response he showed to a very wide range of substances. Jean Cocteau felt quickening, mind- and soul-manifesting effects from opiates. The creative response he showed to a very wide range of substances.

Researchers in related fields have had equal difficulty in trying to delineate the action of psychedelics—after decades of intensive investigation. Albert Hofmann, reacting to being known as the father of LSD, said: "It started off in chemistry, and went into art and mysticism."

Generally speaking, the psychedelics considered in this volume touch a spiritual core in their users, have exhibited physical healing qualities, have been used rationally, facilitate creative problem-solving and change the ordinary functioning of consciousness. Exactly which substances should be included in this category and which should not has been a subject of considerable controversy for several reasons. Andrew Weil has discussed some of these considerations in the foreword to this book. The main difficulty is that there are several components to the psychedelic experience, appearing in different combinations and intensities with each drug. If one tries to index psychoactivity according to response to color, for example, then the MDA and marijuana compound-clusters would be excluded by some. (Many people would exclude marijuana because it has a different chemistry than most of the others and acts more subtly. However, for some people it can be "inspiring" and it has widened the scope of the mind for many.)

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some of time and spatial relationships. They are neither addictive nor toxic. Because their most significant action is mental, and thus fairly non-specific, Andrew Weil has characterized a psychedelic as being like "an especially active placebo," meaning that the user's response depends very much on his or her expectations. Art Kleps, much experienced with psychedelics, was once asked, "What are the side-effects of LSD?" He said, forthrightly, "There are nothing but side-effects." The same could also be said about most of the substances to be discussed in this book.

Perhaps the easiest way to distinguish a compound as psychedelic is by means of two primary mental criteria: (1) that it induces enlargements in the scope of the mind, and (2) that these enlargements or new perceptions are influenced and focused by the user's "mind set" and by the "session setting." Osmond has provided a broad but usable definition of "enlargement," saying that "the brain... acts more subtly and complexly than when it is normal." "Mind set," usually shortened to set, refers to the user's attitudes, preoccupations and feelings toward the drug and toward other people in attendance at a psychedelic session; setting is a word for the complex set of things in a session's immediate surroundings: time of day, weather, sounds or music and other environmental factors. If results don't vary considerably with sets and settings, the compound almost certainly isn't a "psychedelic."

Most psychedelic substances fall into one of nine main compound-clusters. Each of the compounds in each cluster is unique. Many will be discussed ahead, but for the sake of continuity emphasis will be put on just a few representatives from each group. The nine clusters will be presented in the order of importance to regular users. Here is a listing of these clusters and their representatives:

Cluster 1: The LSD Family, the major catalyst opening "the psyche-delic age" and the archetype
Cluster 2: Peyote, Muscimole and San Pedro, a cluster once considered the most powerful, the "door opener" for psychedelics in the 1950s
Cluster 3: Marijuana and Hashish, the earliest recorded psychedelics, the most impressive visually
Cluster 4: Psilocybin Mushrooms, the easily identified, gently poetic and yet powerfully mind-changing fungi containing psilocybin and/or psilocin that re-introduced an appreciation of psychedelic stimulation may last in a more subdued fashion for some time. Memory of the experience is generally sharp and detailed, and physical after-effects are minimal. Feelings of elation are not uncommon and may continue for a day or longer after the experience has ended.

Whatever its duration, the experience widens the scope of awareness. One is transported immersively to what Huxley called "The Other World"—a locale experienced spiritually, aerthetically and intellectually. The environment perceived during ordinary states of mind isn't altered, but the perception of it is. This perceptual transformation of the external world is temporary, but the insights provided by it are often significant and lasting. The quality of psychedelic recognition can be compared crudely to seeing the same glass as half empty and then seeing it half full. A CIA agent illustrates such a switch-over in awareness resulting from his LSD experience. As he told it to John Marks, the agent began seeing all the colors of the rainbow growing out of cracks in the sidewalk. He had always disliked cracks as signs of imperfection, but suddenly the cracks became natural stress lines that measured the vibrations of the universe. He saw people with blemished faces, which he had previously found slightly repulsive. "I had a change of values about faces," he says. "Hooked noses or crooked teeth would become beautiful for that person. Something had turned seeing all the colors of the rainbow growing out of cracks in the sidewalk. He had always disliked cracks as signs of imperfection, but suddenly the cracks became natural stress lines that measured the vibrations of the universe. He saw people with blemished faces, which he had previously found slightly repulsive. "I had a change of values about faces," he says. "Hooked noses or crooked teeth would become beautiful for that person. Something had turned
reality.” Dr. Oscar Janiger, an early LSD researcher, listed these as “an unusual wealth of associations and images, the sharpening of color perception, the synesthesias, the remarkable attention to detail, the accessibility of past impressions and memories, the heightened emotional excitement, the sense of direct and intrinsic awareness, and the propensity for the environment to compose itself into perfect tableaus and harmonious compositions.

Thoughts often seem to occur simultaneously on several ‘levels’—a dramatic demonstration of the mind’s ability to resonate at different frequencies. The linear nature of ordinary thought is replaced with a more intuitive, holistic and “holographic” approach to understanding reality. Many investigators have compared the logic of this ‘Other World’ to that of dreams and other functions often associated with the right hemisphere of the brain.

Description of the psychedelic experience as a kind of dream state where one is wide awake and remembering or as a state in which right hemisphere brain functions are amplified is consistent with most experiential reports. These are usually full of comments about enhanced sensitivity to rhythm as well as new appreciations of music and dance.

Many observers feel that the rhythmic aspect of this experience marks a progression into deeper stages.” Robert Masters and Joan Houston describe four stages of deepening awareness in their *The Varieties of Psychedelic Experience.***

Walter Houston Clark, another LSD pioneer, is among those who speak of psychedelics as mainly “catalysts” to feelings, understandings and thinking. A psychedelic “adds nothing to our consciousness, but it brings to the surface many parts of our consciousness that had been lying dormant most of our lives.” Recently Clark gave out 140 questionnaires asking users about the nature of their experiences. He noted that “there wasn’t a single one of those responding who didn’t mention at least one—and most mentioned several—of the characteristics in the universal core of mysticism, as compiled by a leading religious scholar. Clark’s conclusion from his own observations and from those of the respondents has been that the typical person, wherever he’s found, turns out to be a mystic. His discovery is that all of us here in this room are potential mystics. As William James said in his chapter on mysticism, ‘Given the appropriate stimuli, mysticism will come to the surface.’

Aldous Huxley had a similar point of view. After writing about how use of psychedelics had deepened his feeling for the spiritual, he received a letter from Thomas Merton, a Trappist monk and noted poet. Questioning the validity of drug-induced mystical experience, Merton asked about distinctions that might be drawn between mystical and aesthetic aspects. In January 1959, Huxley responded with his evaluation of the ‘deeper’ aspects

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**FUNCTIONS OFTEN ASCRIBED TO THE BRAIN’S RIGHT LOBE**

- the craftsman
- the dancer
- feminine
- mysterious
- relational
- intuitive
- oblivious to time and space
- passion
- artistic endeavor
- spatial awareness
- balance
- non-linear, non-analytical
- awareness of one’s own body
- musical ability
- the “dark” side
- the dreamer
- passive
- recognition of faces
- holistic mentation
- language tone & accent
of the psychedelic experience (reprinted in his Moloka‘i writings, edited by Horowitz and Palmer). He stated that

there are those whose experience seems to be much more than aesthetic and may be labeled as pre-mystical, or even, I believe, mystical. I have taken mescaline twice and lysergic acid three or four times. My first experience was to me nearly aesthetic. Later experiences were of another nature and helped me to understand many of the obscure utterances to be found in the writings of the mystics, Christians and Oriental. An unapproachable sense of gratitude for the privilege of being born into this universe. "Gratitude is heaven itself," says Blake—and know how exactly what he was talking about. A transcendence of the ordinary subject-object relationship. A transcendence of the fear of death. A sense of solidarity with the world and its spiritual principle and the conviction that, in spite of pain, evil and the rest, everything is somehow all right.

Finally, an understanding, not intellectual, but in some sort total, an understanding with the entire organism, of the affirmation that God is Love. The experiences are transient, of course, but the memory of them, and the indelible revivals of them which tend to occur spontaneously or during meditation, coming when one least expects them, are of an order of magnitude which can only be described by one who has had the experience.

Andrew Weil, who has sought out and tried most of the psychedelics, recently told a gathering that their greatest impact for him—and he hopes for society—has been the elimination of limitations. Here are some of his comments:

I had begun to do hatha yoga. I was experimenting with being a vegetarian and I had never done any body-work before, and, for me, yoga was very discouraging. I found that there were a number of postures that not only could I not get in, but there seemed to be no hope of getting in. There was one in particular that was really a great stumbling block to me. I thought, "The Plough." I would lie on the floor... a number of postures that not only could I not get in, but there seemed to be no hope of getting in. There was one in particular that was really a great stumbling block to me, and that was "The Plough." I burst out laughing, it was so wonderful and suddenly I had this feeling that nothing was impossible, that all the limits I had imagined just weren't there. And I thought, "Could it be that, why didn't I do all these other things that I never thought I could do?" In fact, I began doing some of them.

The next day, still elated from this experience, I tried to get into The Plough. And a foot from the floor... I had begun to do hatha yoga. I was experimenting with being a vegetarian and I had never done any body-work before, and, for me, yoga was very discouraging. I found that there were a number of postures that not only could I not get in, but there seemed to be no hope of getting in. There was one in particular that was really a great stumbling block to me, and that was "The Plough." I burst out laughing, it was so wonderful—and suddenly I had this feeling that nothing was impossible, that all the limits I had imagined just weren't there. And I thought, "Could it be that, why didn't I do all these other things that I never thought I could do?" In fact, I began doing some of them.

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What are the Benefits to Humanity?

Many benefits are conferred upon humanity by these extraordinary substances that affect thinking and feeling; illustrations abound for nearly every psychedelic.

The first crest of the psychedelic movement, in the 1960s, coincided with a general recovery of the religious impulse, seen especially in the revival of interest in Eastern religions. A new flexibility in religious belief and spirituality came about at a time when influences such as existentialism had convinced many that “God is dead.” The psychologist Stanley Krippner has suggested that the psychedelics were “the single most important factor in bringing back dedication to this country.”

A sense of harmony spread with the use of psychedelics, along with a new appreciation of non-violence. However, these religious feelings weren’t organized; they occurred spontaneously within individuals and were accepted largely as recognitions common to people who had seen beyond ordinary states of consciousness. A large percentage of users became vegetarians after an eight- or nine-hour experience made them feel that they couldn’t eat flesh any more.

Mary Bernard raised the question of the possible religious origins and consequences of psychedelics in The American Scholar:

When we consider the origins of the mythologies and cults related to drug plants, we should easily ask ourselves which, after all, was more likely to happen: the spontaneously generated idea of an afterlife in which the disembodied soul, liberated from the restrictions of time and space, experiences eternal bliss, or the accidental discovery of hallucinogenic plants that give a sense of euphoria, dislocate the center of consciousness, and distort time and space, making them balloon outward in greatly expanded vistas?

Perhaps the old theories are right, but we have to remember that the drug plants were there, waiting to give men a new idea based on a new experience. The experience might have had an almost explosive effect on the largely dormant minds of men, causing them to think of things they had never thought of before. This, if you like, is divine revelation . . . .

Looking at the matter coldly, unimpassioned and unentranced, I am willing to prophesy that fifty theobotanists working for fifty years would make the current theories concerning the origins of much mythology and theology as out-of-date as pre-Copernican astronomy.

Psychedelics have brought us closer to an understanding of the human mind, as is evidenced by new directions in formal studies of the brain. Krippner, who has visited many investigators in fields dealing with “alternative realities,” has remarked that the main impact of psychedelics from a scientific point of view was to get people interested in research into consciousness: not only with psychedelics, but with sleep, dreams, biofeedback, hypnosis, meditation, etc. Many of the very prominent consciousness researchers today, though few will admit it, were turned on to this whole experience by their early acid trips back in the 1960s.
Krippner described the magnitude of these effects while introducing a panel discussion in July 1981 on the social and cultural implications of consciousness research.

I think it would be no exaggeration to compare the discovery of LSD and the use of LSD by such pioneers as Dr. [Stanislav] Grof, whom you heard last night, to the Copernican revolution, the Darwinian revolution, and the Freudian revolution that took the human being's planet out of the center of the universe and out of the center of its own solar system and put it on the periphery. The Freudian revolution placed the human being in direct descent from lower animals. The Darwinian revolution pointed out that much of human motivation is unconscious, rather than conscious. Human beings were still holding on to that little bit of conscious motivation that they had until Albert Hofmann came along with LSD, suggesting to us that what little conscious motivation we have is chemical to nature and that it can be influenced very radically by chemicals.

This was premature, because within the last few years there have been many experiments with enzymes and other neural transmitters which support this view. The chemical basis of behavior, of memory, of cognition and of perception is now taken for granted more than it was back at that time. For individuals, psychodrines have facilitated problem-solving and creativity, encouraging many users to take more responsibility for their destiny. Duncan Blewett, an early Canadian researcher, has described the effect of psychedelics on personality as akin to "the development of self-awareness," but which is the beginning of a progression or "move from being a self-aware organism to a state of being where an individual responds spontaneously in Zen terms." These drugs often encourage the conviction that reality is self-determined rather than predetermined. Many users agree with Krippner's notion that these substances promote "self-actualization" and that their use facilitates "re-imprinting" of more desirable attitudes.

The development in the 1960s of an "alternative culture" was the result of many influences, chiefly the Vietnam war, the availability of psychedelic drugs, and the prosperity that enabled "war babies" to become "flower children." Thousands and then millions of people began to experiment with chemical ban of Bebanor 19...
psychedelics, ending the earlier phase when the population of users was limited mainly to Native Americans and experimental subjects. Several important consequences were to flow from this change.

For many people, taking a psychedelic became something of a political act. Experimenting with marijuana, for instance, was a "statement" that the government's case against it was exaggerated. Benevolent experiences with marijuana led many users to question authority in other areas as well; if the government misinformed people about marijuana, what about our role in the Vietnam war? What else might be in error? Use of stronger psychedelics, no doubt, also contributed to people's skepticism.

Several important consequences were to flow from this change. In this survey (1960) the proper uses of these substances for therapy were not recognized almost never occurred. In this group, only one instance of a psychotic reaction lasting longer than forty-eight hours developed in fewer than 0.2 percent of the cases reported. The attempted suicide rate was just over 0.1 percent. Not one case of addiction was reported, nor any death from toxic effects.

Forty-four replied with detailed comments, covering more than 5,000 patients and volunteers given psychedelics in more than 25,000 sessions. The dosage range in the case of LSD went from 25 meg. (millionths of a gram) to 1,500 meg.; 200 mg. to 1,200 mg. was the range for mescaline.

This result was somewhat unexpected, because it had been assumed previously that a diseased liver would produce an adverse reaction. There was also a surprisingly low incidence of major mental disturbances. Despite the prolonged psychotic changes that occur when a person is under the influence of LSD or mescaline, psychotic and other adverse reactions lasting longer than forty-eight hours developed in fewer than 0.2 percent of the cases reported. The attempted suicide rate was just over 0.1 percent. Not one case of addiction was reported, nor any death from toxic effects.

If this sampling of 5,000 early psychedelic users is divided into two classes—mentally sound volunteers and people who were mentally unstable—the findings seem even more encouraging. Among those who volunteered for LSD or mescaline experiments, a major or prolonged psychological complication almost never occurred. In this group, only one instance of a psychotic reaction lasting longer than two days was reported, and there were no suicides. Among the mentally ill, however, prolonged psychotic states were induced in "one out of every 250 patients." In this group, "one in 810 attempted suicide," and one carried the attempt through.

In evaluating these statistics, it should be pointed out that at the time of this survey (1960) the proper uses of these substances for therapy were not
well understood. Some of the negative reactions, furthermore, were deliberately brought about, since many of the doctors were trying to produce "model psychoses" in their patients, and some even gave the drugs in conjunction with electroshock treatment. Nevertheless, such statistics clearly demonstrated that the dangers in using these powerful drugs were far less than had been expected.

Since this 1960 survey, new and more appropriate techniques have been introduced, and the methods of administering psychedelics have been refined. These advances have resulted in the reduction of potential hazards.

As psychiatric and psychological experiments, many mental patients and volunteers (an example of the latter is the novelist Ken Kesey) were exposed to the effects of LSD and other psychedelics. Sandoz deserves most of the credit for this, because it distributed LSD and psilocybin to licensed researchers all over the world, mostly free of charge. This was done with the hopes that a researcher somewhere would find a medical use for these novel compounds.

But then the picture changed. Books like Huxley's, first-person accounts from a number of others (like the nutritionist Adelle Davis, writing about Exploring Inner Space under the name June Dunning), and additional research such as that with psilocybin by the psychologist Timothy Leary and associates at the Concord, Massachusetts prison system, led people to long for heightened expectations. Many millions of people developed a desire to experience a "psychedelic trip"—in contrast to a "psychotomimetic" one, which appealed to few. Many people, who lacked access to certified dispensing pharmacies, soon determined that they would get some one way or another. As psychiatric experimentation expanded into personal experimentation and interest in psychedelics spread, the supply of pure drugs manufactured by pharmaceutical houses ran short of demand. The underground chemists went to work. The first underground lab to attract public attention belonged to Owsley's lab assistant, Tim Scully, and believes that speed was never added.

By 1965, the first massive manufacturing and distributing operation had come into being—Owsley's marvelous "tabs." Yet Stanley Owsley came from a background of interest in amphetamine, and some users soon raised questions as to whether he liked to add "speed" to the product. Bruce Eisner, who has written much about the question of psychedelic purity, talked with Owsley's lab assistant, Tim Scully, and believes that speed was never added.

By 1967, DOM—also called STP—was introduced to the counterculture, but soon withdrawn amid controversy over excessive dosages and impurities. It still appears on rare occasions, sometimes sold as STP but often disguised by a less stigmatized name. "Orange Wedge" appeared in early 1968, in strong dosages and available internationally; it was followed in early 1969 by another massive psychedelic production effort—the "Sandline" trip. In both cases, allegations sprung up that these products had been adulterated with speed, STP, strychnine, etc.

By the early 1970s, doubts about the purity of underground products were common—and for good reason. There were weak "harmics" of LSD, requiring four or five to "get a buzz." At about this time, nearly a hundred drug analysis organizations, the most prominent being PharmChem in Palo Alto, began to examine the quality of underground psychedelic products. What they found was not reassuring. Quality control was non-existent. A summary from PharmChem for the year 1973 showed the following:

- Of 80 samples said to be LSD, 91.0% were as alleged, 3.2% had no drug at all, 5.8% were actually DOM, PCP and other stimulants.
- Of 20 samples said to be DOM, 93.5% were as alleged, 5.0% had no drug at all, 1.6% was nicotine, and 2.4% had PCP and cocaine in addition to DOM.
- Of 405 samples said to be THC, 99.5% were as alleged, 0.5% had no drug at all, 0.1% was nicotine, and 0.4% had PCP and cocaine in addition to THC.
- Of 50 samples said to be BCC, 99.5% were as alleged, 0.5% had no drug at all, 0.0% was nicotine, and 0.0% had PCP and cocaine in addition to BCC.

The rest is LSD and other stuff.

As psychiatric experimentation expanded into personal experimentation and interest in psychedelics spread, the supply of pure drugs manufactured by pharmaceutical houses ran short of demand. The underground chemists went to work. The first underground lab to attract public attention belonged to Owsley's lab assistant, Tim Scully, and believes that speed was never added.
Of 185 samples said to be mescaline, 17-37% were as alleged; 6.8% had no drug at all; 61.9% were LSD; 14.9% were LSD + PCP; and their were three that were MDA and two others as well. A single sample of DMT was as alleged. Of 59 samples said to be MDL, 71.2% were as alleged, with the rest (28.8%) composed of DOI, DOM, 2,5-DMA, PMA, MDA, PCP and LSD + PCP. A single sample said to be ADHMS was found to be LSD. A single sample of 

Doubts by the 1970s

While most attention has focused on purity to account for the bumerangs experienced by many using black market acid, it should be noted that the psychedelic molecules are delicate and should be handled gently in transport. Also, most substance fairly easily and should be kept away from light, heat and water.

Use and Misuse

The question of use and misuse has always been a difficult one in regard to psychedelics, and it can never be answered satisfactorily because the experience depends so much upon circumstances, attitudes and the presence or absence of a ritual. These points will be amplified throughout this book: the traditions of sacramental use, the "Good Friday experiment" and the work at Spring Grove Hospital will be given as examples for setting up good rituals. If users think of the psychedelic experiences as sacramental, as a special event to be prepared for, the results are bound to be better than if they're viewed as "recreational," as a way to stave off boredom.

Timothy Leary goes to the heart of this matter in an essay entitled "After the Sober, Serious, Safe and Sane '70s, Let Us Welcome the Return of LSD." He restates a controversy that raged among the pioneers of the psychedelic age as to whether these substances should be reserved for use by only a few or whether they were appropriate for "democratization, even socialization." In any event, the choice was probably beyond the control of the early users. Scanning up what he sees as the results from "seven million Americans" having used LSD, Leary concludes:

Our current knowledge of the brain and current patterns of LSD usage suggest that the Huxley-Burns-Barrett position was ethically correct and that the Ginsburg-Leary position was morally wrong. Our current knowledge of the brain and the mental setting. We failed to understand the enormous genetic variation in human nature. …

LSD and psilocybin do seem to be fool-proof intelligence-increase (I + drugs because our experiments seemed so successful). In thousands of ingestions we never had an undesired "bad trip" or a sensation "black-out." Sure, there were moments of terror and confusion aloft, but confident guidance and calm-ground control navigation routinely worked. Our mistake, and it was a grave one, was that we failed to understand the aristocratic, elite, virtuous self-confidence that pervaded our group. …

It was the Huxley-Burns-Burns once again. We produced wonderful, insightful, serene, life-enhancing sessions because we were a highly selected group dedicated to the scientific method. We were relatively accepting of ambiguity, relatively secure, good-looking, immensely helpful and romantic. So we fabricated the realities which we expected to create. It's only now that we realize that we were wonderful and expected looking for wonder and not discovery.
Dealing with Difficulties

Dr. Stanislav Grof provides a useful start in evaluating the possibility and meaning of a turbulent experience with a psychedelic:

"The problem is the definition of a "humane." Difficult experiences can be the most productive if properly handled and integrated. The best set and setting and quality of LSD cannot guarantee a "good" trip, if this means easy, pleasant, uncomplicated. The problem is more manageable than the experience itself. We can increase the productivity of sessions. Although Dr. Grof's book isn't designed as a session guide for tripping, it is appropriate here to provide some background on minimizing tight moments that may develop. The management of a session and the role of "guides" are outlined in Masters and Houston's Psychedelic Experience, in Leary, Alpert, and Alpert's The Psychedelic Experience and in Cohen and Alpert's LSD.

John Bercowford, a psychiatrist who has had much experience with psychedelics since the early 1960s, outlines a basic strategy:

"Confrontation is precisely what should be avoided when a person who has taken LSD shows signs of agitation or depression or in some other way is manifesting resistance to the normal flow of the experience. What the person helping can do is search for and suggest an image or idea which complements the image or idea which acted as the springboard of resistance. The resistance is undone and the normal flow of the session can proceed. Art Kleps, with more than two decades of interest in psychedelics, makes many suggestions in his The Psychedelic Bible about the often crucial role-played by the guide:

As long as there are complaints about or fears of loss of ego the ego is not lost, nor is it diminished in any simple way. You are not, in this situation, dealing with a six year old child, who can easily be put to bed or laid down the garden path. The ego at bay is a mobilized ego, alert to all danger, suspicious of your every move and word. Its function is to protect the person from unconscious wishes and desires and from fear of becoming anything more than a servant, "ground control" or whatever the hell you want to call it. The fact of the matter is that tripping is impossible in this situation anyway; there are no standards, no third party, no precedent, no law. It all depends, and it depends on nothing constructible, circumstance, and circumstances only.

Finally, here is a list of some "do's" and "don'ts" that Bonnie Golightly and I compiled in our LSD—The Problem-Solving Psychedelic:

1) User is in control and can change direction. Under the influence of such substances, the user is not simply asleep, a tourist cast off at the mercy of the elements and in the grip of forces that cannot be influenced. He or she is, instead, in control and can change direction. Because of the overwhelming variety of responses to psychedelics, the user is in control, not just of the situation, but of the experience.

2) The user under the influence of a psychedelic can function normally and can also alter the experience. This should be fully grasped before taking this type of drug. Once into a session, the user should take time out and practice "reversing" sensations. Water may taste like wine just by thinking it; a light object can be made to feel heavy; or another's glistening tears can be turned into a dried-up expression of joy. When sufficiently skilled, the user will be able to "select hallucinations" as well.

3) Preparing for "take-off." For the initiate, some difficulty may be a natural by-product of his LSD. Since the transition is comparable to a jet flight, care should therefore be taken to reduce rigidity and indecisiveness. The best approach: quietly, gently, is made with the aid of a "fluid." As mentioned previously, disorientation is the definition of a "bummer." Difficult experiences can be the most productive if properly handled and integrated. The best set and setting and quality of LSD cannot guarantee a "good" trip, if this means easy, pleasant, uncomplicated. The problem is more manageable than the experience itself. We can increase the productivity of sessions. Although Dr. Grof's book isn't designed as a session guide for tripping, it is appropriate here to provide some background on minimizing tight moments that may develop. The management of a session and the role of "guides" are outlined in Masters and Houston's Psychedelic Experience, in Leary, Alpert, and Alpert's The Psychedelic Experience and in Cohen and Alpert's LSD.

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5) "Going with" negative states. During the eight or ten hours of altered reality under the influence of most psychedelics, much that is frightening or disorienting may occur within the user, especially unfiltered fantasies of physical harm, economic ruin, and existential despair. These are part of the natural psychic sensitivity to their bodies and senses in surgical detail the actions of internal organs. These physical sensations also preoccupy the layperson, of course, and birth experiences—being born or giving birth—are within the ordinary line of psychedelic events. As mentioned previously, dissociation with regard to time may terrify the most valiant. Many frightening "hallucinations" are merely subjective experiences with little basis in everyday fact. If the user fears them to "go away," the best remedy is to dismiss them with the mental response, "Get with it." "Fusion with them" or "going one's own little dog-slow illusions of vision and the "screen" is cleared for something else."

Psychedelic "Tight Spot"
Facing terrifying psychedelic events may call for courage and stamina in early sessions.

4. **Forcing the experience.** If resistance remains high, the experience may become repetitious, leading up to a crucial point but without a breakthrough. The user vacillates—hot and cold, back and forth, endlessly affixed to the same treadmill. He or she cannot make decisions, and has been through all this many times before.

In such instances, "boosting" may be called for. An additional dosage is usually enough to "break the set" and move the user off his or her plateau. Dr. Duncan Blewert gives the rationale:

One of the things we’ve discovered is that if you don’t give a large enough dose of the drug, a person gets into a sort of interim position, with one foot in the camp of the usual frame of reference and the other in the camp of unhabited perception. The user finds it impossible to make a break between these two—this is a large enough dose of the drug is used, or the person is jettisoned rapidly out of the old context and becoming more uninteresting as you would think—he or she becomes much more comfortable and able to accept as valid the new and novel way of seeing the world.

A reason for the occasional vortex-like recurrence of the same material seems to lie in the fact that the drug effects come in waves, and if the user is allowed to persist in one area too long, he or she may become caught in an undertow.

The favored method for breaking through this "hang-up" is to change the subject matter completely—with the intention of returning to it later if it seems worthwhile. If the recurrent material is deliberately brought up again after some time has passed, the subconscious will have had a chance to devise other approaches and the insight level will probably be more acute. A good technique in such instances, borrowed from hypnosis, is to suggest that in a specified length of time the user will return to the problem and then be able to resolve it.

5. **Recognizing physical symptoms.** Delirious delusions or hallucinations (such as children, rivers, pressure on the spine, cockroaches, Tuesdays, or "a pain in the kidneys") are often the body’s way of avoiding hallucinatory effects. With practice, and to a lesser extent with sacred meals and morning glory seeds, these effects may be attributed to the drug, but LSD and most other synthetics such symptoms are most frequently a sign of resistance. The guide should, in such cases recognize those symptoms as an indication that the drug is about to take effect, and should reassure the user that these physical symptoms will soon pass, with "the psychedelic experience" taking their place.

6. **Forcing is verbal attack.** Another common of the full psychedelic experience may involve overt or subconscious threats to have and to be, throughout the session. Because language depends upon familiar ways of thinking, reliance on words keeps much that is non-verbal from developing and restricts the psychedelic experience. To carry on a lengthy conversation without "psychedelia" even further, since the user when questioned or spoken to is somewhere "out in orbit" and must then come back and touch down before replying. For the average person, a period of verbalization may not develop into a problem, but a rigidly defensive person, on the other hand, may see words to avoid the experience, and as time passes may become increasingly despairing, or even aggressive, reacting with hostility towards the guide. A variety of meaningless mechanisms may be imputed to the guide. In such a situation the guide should refuse these various "moves," gently reminding the user what he or she is there for.

7. **Physical comfort.** If terror grips the user continuously during the session, physical comforting may lend the needed reassurance. But as pointed out previously, this is a delicate matter unless the guide is certain that the user will not misinterpret the gesture. Because attendant psychedelic distortions may seem too vile or alien to be shared, the user who has helped in a serious case most successfully be brought out, if other means have been unsatisfactory, by the guide’s taking him or her into the arms and soothing the frightened sipper.

8. **Counter-darkness.** "Knowing" any disturbing "hallucinatory" material has not dispersed anxiety-counter-distractions should be attempted. The user should be encouraged to try some appropriate physical activity such as dancing, keeping time to music, altering the stain or even gardening. Taking deep breaths and paying attention to the lungs or to the body as a whole is quite effective. Such diversionary efforts will in all probability become the new focus of attention.

**Extra resources.** The skilled guide always has extra resources up the sleeve or is capable of first, imaginative thinking. One example, which can serve as a pattern for the future occurred when a user decided she was made of mud and was unable to move. "Oh, yes,—the friendly robot in that TV serial," the guide remarked gaily, and as so the user was familiar with the program referred to, she immediately recognized herself and began moving gaily in a deliberate parody of an automaton’s gyrations. Leary had an amusing and instructive episode to recount along these lines. An electronics engineer had taken psychadelics and was roaring with great anxiety.

... his traveling companion was unable to calm him down. The psychologist in charge happened to be in the bathroom. He called to his wife, who was drying the dishes in the kitchen: "Straighten him out, will you?" She dried her hands and went into the living room. The distressed engineer stood out: "I love my wife!" she put her arms around him, murmuring: "Your wife is a river, a river, a river!" "Ah!" he said more quietly. "I want my mother!" "Your mother is a river, a river, a river!" She expanded and constricted, the engineer gave up, and drifted off happily, and the psychologist’s wife went back to her dishes.

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10. **Removing unpleasant "hallucinations."** Propagating the source of an unpleasant "hallucination" can eliminate it rapidly. One user, for instance, convinced that the house was on fire, said he could actually see his "charred" limbs in the ruins. He was set straight when he was shown a burned-out candle in an ashtray, still smoking because the wax had been set afire by cigarette butts. Another person was able to deal with disordered psychic material when
told that he was "merely a visitor passing through a slum" and that "a better neighborhood would soon emerge."

11) "Game-playing." Critics do sometimes arise even in well planned sessions. If the user is unable to cope with them in a sober manner, the guide may suggest "game-playing." The user should be instructed to think of himself or herself as a versatile actor who must portray a character in a serious role, stand aside and let the play begin.

12) Getting home. If the user has missed operating a stroll through heavy traffic, wants to drive a car or understands some other illness or mishap, and if the guide has been instructed or has control, the user should remind himself or herself that what is happening is due to the psychedelic taken and that it will all end, one way or another. If the user should become extremely anxious, he should stay how it was done the day before. Since evaluating distance may be difficult, it is important to obey all traffic signals rigorously in crossing streets, taking a cue from the surge of the crowd. Any inclinations towards bizarre behavior should be curbed, bearing in mind that the mission is simply to get home.

If the user has been driving a car, upon realization of the situation (or upon recognition of the fact by others), the proper safe procedure is obvious. Although the user may not believe it, most people will have no idea of his or her condition, either through their own preoccupations or the simple fact that it is not always easy to detect psychedelic drug behavior.

In point of fact, "hysteria" and out-of-control sessions are extremely unusual. Once a psychedelic experience has been completed, the carry-over effects are of much less importance than the immediate effects. The illegal status of LSD, psilocybin and MDA came about as a result of two factors. First was the fact that there were undoubtedly drug abuse convictions. The second was that the substances were used in ways that were regarded as criminal. Today the psilocybin and MDA have already resulted in more subtle possibilities. In the future, we may have psychedelics that go beyond LSD for power and interest.

Drugs and psychedelic use have been greatly exaggerated. Much of the bad press for psychedelic drugs originated from these occurrences. The illegal status of LSD, psilocybin and MDA came about as a result of the dangers inherent in self-experimentation during the 1940s. A variety of psychedelic substances are now widely used throughout our society, even though it is usually legal to buy, sell or even possess them. Although this author believes that the dangers have been vastly exaggerated and (are much less than the dangers of alcohol), abuse of these substances can and has occurred. Almost all of this at present can be characterized as involving unauthorized use.

Because alterations in consciousness produced in psychedelic states can possibly lead to impairment, care in choosing the circumstances, dosage, quality of drugs, companionship and related matters should always be exercised. Thoughtless and reckless use of these compounds is a violation of their positive, indeed sacred, characteristics.

The best psychedelic experiences are life-changing and life-enhancing. In the future, we may have psychedelics that go beyond LSD for power and interest. Related to these developments have been interest and experimentation in the heretofore untried substances and capabilities—the visual from the auditory, the tactile from the sense of smell and so on. Use of MDMA to induce a relaxed mental set prior to taking LSD, or employment of DMT together with another psychedelic, qualitatively alter the consequences that would ordinarily come about in psychedelics. L.M. Boyd, who writes a syndicated newspaper column about oddities called "Grab Bag," once gave an analogy in his column: "Imagine a meal where you get out of meat. Curious. You don't get out of beans what you get out of meat. You don't get out of rice what you get out of meat. But although the vegetable proteins are incomplete, they're complementary. So you do get out of beans and rice together what you get out of meat.

Cautious
Impressive breakthroughs have been made recently in mapping "receptor-sites" for chemicals entering the brain, in photographing neural "receptor-sites" for chemicals entering the brain, in photographing neural
systems. Impressive breakthroughs have been made recently in mapping "receptor-sites" for chemicals entering the brain, in photographing neural systems. By the end of this century we will have accepted the opportunities offered and
emerging phenomena as joyfully as dolphins in the water."

He described his expectation about the major influence from
psychedelics as essentially producing "an everyday mysticism underlying and
evoking significance to everyday normality, everyday tasks and duties, every-
day human relationships." That, no doubt, is occurring now and will in the
future. This is but one of the prominent areas catalyzed by these drugs,
however, and their eventual impact upon society involves much more.

That experiences caused by psychedelics have now become much more
manageable is evidenced by the closing of "psychiatric rescue services" and
by a decline in users seeking help at hospitals. We can anticipate that future
usage will make significant contributions to psychological and physical
health, to creative innovation and to an understanding of some of the
stranger aspects of human behavior.

The fact is that, as the science fiction writer Norman Spinrad says,
"psychochemistry has caused states of consciousness that had never
evoked before." Taking a psychedelic dramatically changes the traditional
notions of "free will." Spinrad's view is that "psycho-chemicals are a declar-
ation of independence from the minds we were born with," and that hence
"we will no longer be able to count on our "naturally evolved" brain chemistry
as a benchmark of sanity."

Even though many psychedelic experiences do not have much re-
sonance, others have consequences all out of proportion especially when people
apply the heightened sensitivity prompted by these substances to disciplines
that they have pursued for years. Shulgin, again, provides a good example.
He has described in a book entitled Mind-Drugs how he has been able, under
the influence of MDA-like compounds, to twist molecular arrangements
around in his head, and thus could view them differently and from unusual
angles. That ability has turned out to be unusually productive. A more dis-
quieting example, to emphasize the "amorality" of science, is that of a futurist
associated with a think tank on the East Coast who spent much time during
his first psychedelic session considering bombing patterns over China.

As these examples suggest, the consequences from the experiences of
psychadelic trips might come to have great significance. It should be empha-
sized that even if all psychedelic substances were to be wiped off the face of
the earth, tremendous effects they have already catalyzed would nonetheless
continue on by themselves. This aspect of psychedelic consequences was
perhaps most clearly stated when a physician remarked to a medical gather-
ing that although he hadn't actually ever taken a psychedelic, LSD had
"changed my life completely."
CHAPTER ONE

The LSD Family (the archetype)

April 19, 1943—Preparation of an 0.05% aqueous solution of d-lysergic acid diethylamide.

4:20 P.M.: 0.05 cc (0.25 mg LSD) [250 micrograms] ingested orally. The solution is tasteless.

4:50 P.M.: no trace of any effect.

5:00 P.M.: slight dizziness, unrest, difficulty in concentration, visual disturbances, marked desire to laugh . . .

HISTORY

Of all substances that excite the visionary powers of the mind, LSD is the most potent. It belongs to a class of substances that can be divided into two groups. One group occurs naturally, in the fungus ergot and in members of the woodrose and morning glory families. The other group is produced semi-synthetically, the most important member being LSD. Both groups exhibit a four-ring crystalline chemical structure. Unlike most of the psychoactive molecules dealt with in this book, which are called amines, these LSD-type compounds are all amides.

In a curious circle of coincidence, knowledge about the psychoactivity of the natural group came along only after the synthesis of LSD by Dr. Albert Hofmann. He wrote the lab notes quoted at the beginning of this section. Unlike most chemists, who even today work mainly with synthetics, Hofmann was drawn toward study of natural substances at the end of the 1920s. Under the supervision of Dr. Arthur Stoll, who isolated the first ergot alkaloid in a pure chemical form, Hofmann later synthesized a number of ergot analogues (closely related compounds) at Sandoz Pharmaceuticals in Basel, Switzerland.

The First LSD Experiences

Hofmann's laboratory syntheses of ergot analogues resulted in the construction of many new lysergic acid derivatives. Several turned out to be useful in medicine—especially in obstetrics, gynaecology and the treatment of migraine headaches. The twenty-fifth compound in the series his team produced—lab coded LSD-25—was expected on the basis of its molecular
Dr. Albert Hofmann, discoverer of LSD
tph structure to be a circulatory and respiratory stimulant. Tested on
experimental animals in 1938, it made them restless and caused them to
display strong "uterine-constricting" effects. These results were not of suf-
ficient interest to the Sandoz staff; further testing ceased.

In the spring of 1943, Hofmann received "a peculiar presentiment." He felt that LSD-25 might possess properties other than those observed in
Sandoz' initial investigation. He therefore set about resynthesizing this
substance, intending to resubmit it to Sandoz' pharmacological department
for further examination. That was "in a way uncommon," he wrote in his
first Observations of LSD's Effects autobiography, "for experimental substances were as a rule definitely struck
from the research program, if they were once found uninteresting from the
pharmacological aspect."

In the course of recrystallizing "only a few centigrams" (hundreds of
a gram) for analysis, a strange thing happened to Dr. Hofmann:
1 suddenly became strangely inebriated The external world became changed
as in a dream. Objects appeared to gain in relief; they assumed unusual
dimensions, and colors became more glowing. Even self-perception and the
sense of time were changed. When the eyes were closed, there surged upon
me an uninterrupted stream of fantastic images of extraordinary plasticity
and vividness and accompanied by an intense, kaleidoscope-like play of colors. After about two hours, the not unpleasant inebriation, which had been
experienced whilst I was fully conscious, disappeared.

Hofmann's was the first human experience of LSD, an accident that
would never have occurred under careful laboratory conditions. "It was
possible that a drop had fallen on my fingers and had been absorbed by the
skin." One drop.
The most powerful psychedelic agent known at that time was mescaline.
To receive a psychedelic effect, the average human body has to absorb a third
of a gram or more of mescaline. However, LSD is about four thousand times
as strong as mescaline. A drop on his skin was enough—perhaps 20-50
micrograms (millions of a gram, abbreviated meg.)—to give Hofmann a
light trip lasting noticeably for two hours. If LSD were only a thousand
times as strong as mescaline, Hofmann would probably not have felt its
mental effects.

But he did notice. Three days later he resolved to apply methodical
analysis to his accidental discovery.
A cautious man, Hofmann started by ingesting a quarter of a milligram
(250 meg.), intending to increase the dosage as necessary to complete a full
description of the effects of the drug. That at least was his intention.

40 minutes after administration of the conservative first dose, less
than fifty words along in his efforts to record observations, came a far
more powerful reaction: the first intentional human experience of LSD.
Hofmann was unable to continue his description in the lab notebook as "the
last words could only be written with great difficulty":

I asked my laboratory assistant to accompany me home as I believed that
my condition would be a repetition of the disturbance of the previous Friday.
While we were still cycling home, however, it became clear that the
symptoms were much stronger than the first time. I had great difficulty in
speaking coherently, my field of vision swayed before me, and objects
appeared distorted in the images incurred motion. I had the impression of
being unable to move from the spot, although my assistant told me afterwards
that we had cycled at a good pace ....

Expecting another short, "not unpleasant inebriation," Hofmann found

found a somewhat weak pulse but normal circulation. Six hours after he began the test of lysergic acid diethylamide tartrate for mental effects, the extremely small quantity he had ingested "to be a substantial overdose," Hofmann's condition "improved definitely," though morning and curiously rejuvenated. nearby Lucerne. After a night of frightening visions, he felt relieved the next taking" from his wife and family, who had traveled earlier that morning to Hofmann was particularly concerned that he hadn't made a proper "leave-

The LSD Family

the extremely small quantity he had ingested "to be a substantial overdose," causing a profound disruption of ordinary perception.

The faces of those present appeared like grotesque colored masks; strong agitation alternating with paranoia; the head, body and extremities sometimes cold and numb; a metallic taste on the tongue; throat dry and shriveled; a feeling of suffocation, confusion alternating with a clear appreciation of the situation. I lost all control of time; space and time became more and more disorgan-
ized and I was overcome with fear that I was going crazy. The worst part of it was that I was clearly aware of my condition though I was incapable of stopping it. Occasionally I felt as if I were outside my body. I thought I had died. My "ego" was suspended somewhere in space and saw my body lying dead on the sofa. I observed and reported clearly that my "alter ego" was moving around the room, morining. A doctor arrived after Hofmann reached "the height of the crisis" and found a somewhat weak pulse but normal circulation. Six hours after he began the test of lysergic acid diethylamide tartrate for mental effects, Hofmann's condition "improved definitely," though the perceptual distortions were still present. Everything seemed to stimulate and that proportion were distorted like the reflections on a choppy water surface. Everything was changing with unpleasant, predominantly poisonous green and blue color tones. Even closed eyes showed metamorphosing shapes. I could see that my body was moving, and the sounds were transposed into visual sensations so that from every sense of noise a comparable colored picture was evoked, changing in form and color hallucinolysically. Fearing he had poisoned himself with a substance he himself had made, Hofmann was particularly concerned that he hadn't made a proper "leave-

The LSD Family

senced, mind-altering plants. LSD was something genuinely new in two important ways. First was the extreme potency of this compound—which figures out at 100,000-300,000 substantial closes to the once. Second, LSD was the first psychedelic that does not occur in nature. Mescaline had been synthesized after analysis of peyote, but it was the same drug as in the plant. LSD never existed before Dr. Hofmann synthesized it. When his superior, Arthur Stoll, read the report, he telephoned immediately to ask, "Are you certain that you have made no mistake in the weighting? Is the stated dose really correct?" Professor Ernst Rothlin, director of the pharmacology department at Sandoz, and two of his colleagues then repeated the experiment using only a third of what Hofmann had tried. Even with this reduction, the effects were "extremely impressive and fantastic." As Hofmann has put it since, "All doubts in the statements of my report were eliminated.

Subsequent studies were carried out by Werner Stoll, the son of Arthur Stoll, involving forty-nine administrations to twenty-two people at the University of Zurich. In 1945, he published the first article on LSD's mental effects in the pages of the Swiss Archives of Neurology. This was followed in 1949 by his second communication on LSD to this journal, entitled "A New Hallucinatory Agent, Active in Very Small Amounts." Two further studies on clinical experiences with LSD were issued that same year.

Six years after Hofmann's discovery, LSD made its way to the United States. It was taken to Los Angeles by Nicholas Bercel, a psychiatrist now specializing in the electroencephalograph (EEG), who had been handed some casually by Werner Stoll with a request that he try it. LSD was requested and received through the mail at Boston's Psychopathic Hospital, where it was first given to Dr. Robert Hyde, the Assistant Director. After swallowing 100 mg., he became panicoic and claimed that there was no effect and that the hospital had been cheated. He even insisted on making his hospital rounds. As an associate commenting later said, "That was not Dr. Hyde's normal behavior; he is a very pleasant man."

The psychiatrists A.K. Busch and W.C. Johnson also sent for LSD, looking for "a good deliriant" for use in therapy. They thought LSD "might shake up things," as Busch later remarked. By August 1956, they were discus- cussing the drug's role as a possible aid in psychotherapy in an American journal. Diseases of the Nervous System: "We believe that LSD-25 is a drug which induces a controllable toxic state within the nervous system, that reacts on anxiety and fear with apparently just enough exports to permit recall of the provoking experiences. It does this without the sluggishness or speech difficulties so frequently encountered during E.T. (Electroconvulsive Therapy).

On the basis of the preliminary investigations, LSD-25 may offer a means for more rapidly gaining access to the chronically withdrawn patient. It may also serve as a tool for sharpening psychotherapy. We hope further investiga-

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generally, like barbiturates and tranquilizers. Sandoz thus distributed LSD at Hofmann's light first experience, Sandoz hoped that it might be marketed power of LSD came to be understood, there was panic. On the basis of experimentation, can be seen in microcosm in Dr. Hofmann's first two experiences of the drug: initially there was keen interest and optimism; as the discoveries about mood alteration, researchers in many fields were poised to make a frontal assault on the disordered mind and regarded LSD as very promising. On the basis of an analogy with malaria and yellow fever, it was thought that duplicating psychosis or schizophrenia using LSD for an eight- or ten-hour period might well produce insights leading to an eventual cure. Little of this work panned out as hoped, since there are significant differences between the LSD state and the various psychoses, in which hallucinations, for instance, are usually auditory rather than visual. The analogy was wrong, but it launched LSD into a new decade.

A Decade of Clinical Use

At the start of the 1950s there were only handfuls of papers discussing LSD by the end of that decade more than five hundred had appeared. This output is a good measure of how fascinated psychotherapists were with the many possibilities LSD offered. Recently it has come to light that much of this work was encouraged and supported by the CIA and later by Army, Air Force and Navy intelligence. In effect, these agencies triggered an explosion of interest in and use of LSD during the 1960s. In the meantime, many research scientists entered this new field, fascinated by its possibilities.

In 1953, Dr. Ronald Sandison established the first LSD clinic open to the public at a small mental hospital in England. Before long, additional centers sprang up in Germany, Italy, France, Holland, Czechoslovakia, several Scandinavian countries, Canada and the U.S. Nearly all used low doses in a variety of therapeutic approaches. Slowly they changed the image of this "psychosis-mimicking" drug.

Samples of LSD along with a bundle of "driving the brainwaves" instructions—and started at about three cycles, took it up to sixty and back and forth, and put it carefully in the middle of the "alpha" range, and then the "theta" range and "delta" range, and then ended the experiment.

And that somehow found my body again—and ended up very impressed.

Janiger set about his study in 1955. His third subject was an artist who had access to psychedelic substances.

Dr. Grof, who was intrigued by the informational leaflet's description of LSD as an agent capable of producing a temporary "model psychosis," tried to introduce this drug to research and medical scientists. In 1954, Dr. Oscar Janiger, who had been interested in LSD since reading Stoll's first account, was given a chance to try the drug in a mountain retreat: "From that moment on my mind didn't stop for one minute." He wrote Sandoz requesting LSD for a "naturalistic study" and received a "material's grant" (an ample supply). Janiger set about his study in 1955. His third subject was an artist who

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We were doing all kinds of experiments. My preceptor, who gave me LSD, was interested in the EEG among other things, and also in something that was called "driving the brainwaves"—which you can do either using a stroboscopic light or an acoustic input. And then you study whether the corresponding brainwaves would pick up the frequencies that you are feeding into the cell. I would come in every week and I would bring down the record of the session. And then the nurse would come and say, "Oh, Dr. Grof, I would like to try the drug on other people and develop the possibilities."

Dr. Grof went on to manage LSD observations on human subjects at the Psychiatric Research Institute in Prague and later did similar work at Spring Grove Mental Hospital near Baltimore. Eventually observing more than 3,500 sessions, he introduced views about the LSD experience quite different from those appearing in the early literature. On the basis of his research, he came to believe that psychiatric concepts were inadequate, and he saw the LSD-induced "psychomimetic" reaction as potentially healing—when, for example, a disruptive experience was allowed to continue to

While this was happening, the nurse very carefully was following the instructions—and then shut off those three cycles, took it up to sixty and back and forth, and put it carefully in the middle of the "alpha" range, and then the "theta" range and "delta" range, and then ended the experiment.

And then I somehow found my body again—and ended up very impressed. So what I did, I joined a group of people who had access to psychedelic substances.
The LSD Fat

claimed the experience was the equivalent of “four years in art school” and
urged Janiger to give it to other artists. Janiger wasn’t expecting this
development, but he eventually gave in and started a subproject in which one
hundred artists drew a Kachina doll before, during and after LSD ingestion.
By the end of his investigations in 1962, Janiger had given several thousand
administrations of LSD to 875 individuals, many from the creative com-
munity in Los Angeles, as well as “plumbers, carpenters, and housewives—
whatever that means—and people from different educational and ethnic
backgrounds.”

Another important figure during the 1950s was the enigmatic, flam-
bayant Al Hubbard, who bought 4,000 vials of Sandoz LSD and became an
early “Jonny Appleseed,” repainting a circuit across Canada, down the West
Coast to L.A., and back. He gave LSD to many luminaries, including Aldous
Huxley and Gerald Heard, and helped establish a long-running LSD clinic in
Vancouver, B.C. While most LSD investigators at this time were very
cautious, Hubbard saw value in using what were thought to be “massive
doses,” a practice that became common during the 1960s.

Toward the end of the 1950s, Dr. Sidney Cohen, a psychiatrist
affiliated with the Veterans Hospital at UCLA, procured large supplies of
this novel drug. He became interested when he heard that this substance
was a “superior delirient.” After self-experimentation, he told his colleagues
that although LSD was not a “true delirient,” it was worth intensive study.
An account of Cohen’s first trip can be found in his The Beyond Within
(p. 196), which he wrote but attributed to an anonymous doctor.

As Janiger recalls, it was from Cohen’s group that social (non-experi-
mental) use of LSD might conceivably have arisen in the United States:

These people had first taken it experimentally, because that was the only
way it was given at all. Then it was just a short step for people who had taken
it to say, “Let’s try it” and to make up some circumstances which would
justify it. At the beginning, nobody would dare say, “Let’s just take it.”

As in somebody’s home there would be six or eight people, and they would
say, “Well, let’s take it.” And it would go from there. And there was one
man—I won’t mention names, Dr. Frankland and Heard, and you would meet
this strain of people. It was here that you met those people who were some of
their subjects—she had shown some of their subjects—who she had shown a
special affinity toward or interest in the drug.

Other distribution routes to the general population were developing.
From about 1957, a leak sprang up at Sandoz’ Hanover, New Jersey plant.
Chester Anderson, author of The Butterfly Kid and several other books
about this period, says that large amounts of LSD and psilocybin with the
Sandoz label were being conveyed into “beatnik” Greenwich Village and
being taken by musicians, theater people and many others living Bohemian
lifestyles.

A fair amount of peyote had also become available as interest in
psychedelics spread. Many people had read Aldous Huxley’s Doors of

Dr. Stanislav Grof, who received LSD in 1954 and subsequently observed
more than 3,500 sessions.

Al Hubbard, left, an evangelical
distributor of LSD during the 1950s.
The LSD family

Perception, in which he describes mystical feelings evoked by mescaline sulfate, and R. Gordon Wasson's Life magazine account of the discovery of "sacred mushrooms" and their ceremonial use in Mexico. The newcomers attracted to LSD were not looking for a psychotic-type experience, nor were they interested in basic research. However, they also weren't taking it just for fun or to get high. The drug had acquired a mystical aura. Although it was used less solemnly and with less forethought than before, its use incorporated overtones of spiritual or artistic value. Many were using it to enhance creative behavior.

In Palo Alto, California, LSD was being studied both at the Veterans Administration Hospital and at Stanford University. At Stanford, the anthropologist Gregory Bateson — who had been introduced to LSD by Dr. Harold Abramson, one of LSD's pioneers — arranged in 1959 for the poet Allen Ginsberg to take it as part of a research program that was secretly sponsored by the military. The novelist Ken Kesey also received LSD in Palo Alto, using his experiences as the basis for his One Flew Over the Cuckoo's Nest. Kesey's further adventures with LSD are celebrated in Tom Wolfe's The Electric Kool-Aid Acid Test. From Palo Alto LSD began seeping into San Francisco. Abbie Hoffman, whose first LSD was supplied by the Army, relates how interest in the drug burgeoned along the West Coast toward the end of the 1950s.

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With the closing of the decade of clinical use came perhaps the most important discovery since Dr. Hofmann first synthesized LSD. Late in the summer of 1959, Hofmann received a parcel of seeds from a researcher he had made contact with while investigating the sacred Mexican fungi. The seeds were of what was then called Rivea corymbosa, otherwise known as olooliuqui, a Mexican morning glory. In the summer of 1960, Hofmann isolated the active principles and identified them chemically. They were ergot alkaloids. "From the phytochemical point of view," commented Hofmann when disclosing these results, "this finding was unexpected and of particular interest, because lysergic acid alkaloids, which had hitherto been found only in lower fungi in the genus Claviceps, were now, for the first time, indicated for the higher plants, in the phanerogamic family Convolulaceae." First synthesized in a laboratory, LSD was now found to have a counterpart in nature.

A Decade and a Half of Covert Use

The CIA became aware of LSD in the very early 1950s. That 1/100,000ths of an ounce could damage an individual for eight to ten hours was a matter of great concern to people there. They sought to find out more about its potential than could be gleaned from a few journal articles. They wanted to know how it could be used as a weapon, and whether it would work as a truth serum Learning about "psychotomimetics" such as LSD became still more important to the CIA in 1951 when military intelligence reported, erroneously, that Sandoz had sent fifty million doses to the Soviets.

In 1953, a military operative in Switzerland indicated that Sandoz wanted to sell 10 kilograms—22 pounds, or about 100 million doses—on the open market. A secret coordinating committee that included CIA and Pentagon officials recommended unanimously that the CIA should buy it all for just over a quarter million dollars in order to keep it "out of the hands of the Russians or other possible buyers." CIA chief Allen Dulles approved, and soon two Agency representatives were sent to Sandoz to negotiate.
As it turned out, their informant had mistaken a milligram for a kilogram, miscalculating by a factor of a million. The president of Sandoz told the visitors that all production until then amounted to less than 40 grams—under 1/2 ounces. The error used by Sandoz as a starting material had taken many years to find. As a result, it seemed likely that the world supply of LSD would always remain small.

Nonetheless the Swiss company indicated a willingness to step up its efforts and produce as much LSD as the CIA wished. It further agreed to keep the CIA informed about all future production as well as requests for purchases coming in from other parts of the world.

The CIA established a research team in the Chemical Division of its Technical Services staff. Richard Helms, then heading Counterintelligence Services, recommended the project in early April, 1953; a week and a half later—almost exactly a decade after Hofmann's first trip—Allen Dulles approved. The project was dubbed "MKULTRA" (succumbing "Project ARTICHOKE," mentioned in the Psilocybin Mushrooms chapter) and given an initial budget of $300,000. The goal: "to investigate whether and how it was possible to modify an individual's behavior by covert means." Heading the group of about half a dozen was a protege of Helms, Dr. Sidney Gottlieb, who was authorized to draw on the Agency's account.

This group was interested in determining the effects of LSD and other drugs in diverse situations. Unlike Sandoz, which was seeking therapeutic applications, the CIA was providing grants through front organizations to encourage any research. Gottlieb and his associates soon became sponsors of LSD studies conducted at a number of prestigious institutions: Boston Psychopathic Hospital, Mount Sinai Hospital and Columbia University, the Addiction Research Center of the National Institute of Mental Health, the University of Oklahoma and the University of Rochester. "Suddenly there was a huge new market for grants in academe," wrote John Marks in his newest book on covert American intelligence, "patterns of American Intelligence." Among people who received grants were Abramson, a New York immunologist, and the University of Rochester group, which—unknown to the others—he had spiked with LSD. All but two tried the drug. Among those who partook from Gottlieb's glass was Dr. Frank Olson, a specialist in airborne delivery of chemical weapons, who came to believe that he had revealed important secrets during his subsequent efforts and produce as much LSD as the CIA wished. As a result, it seemed likely that the world supply of LSD would always remain small.

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The LSD Family

LSD trip. He became depressed and was sent, accompanied by Gottlieb’s assistant, to see Dr. Harold Abramson. Reluctantly, Olson agreed to enter a mental hospital. The night before commitment, he died after crashing through a window on the tenth floor of the New York Statler-Hilton Hotel.

Any CIA involvement with LSD was quickly covered up, only coming to light in 1976—twenty-one years later—as a result of the Rockefeller Commission’s review of illegal CIA domestic activities. In 1977, Olson’s family was invited to the White House for an apology, and Congress passed a bill to pay Mrs. Olson and her three children $750,000 in compensation. Gottlieb was reprimanded by his superiors. For a short while his supply of LSD was taken from him. CIA outposts in Manila and Aotug, Japan were told not to use the LSD that had been shipped to them.

Richard Helms persisted in advocating that the “dirty tricks” branch of the CIA continue to experiment with LSD, and soon Gottlieb resumed distributing the drug. George White, promoted to Regional Narcotics Chief, moved his subhouse operation to San Francisco two years later, where he continued dosing people until 1966.

Military intelligence in each branch of the armed services also heard about LSD, and they were fascinated. By the mid-1950s, they too were funding LSD studies. This secret CIA and military involvement is carefully documented by John Marks (1979). The Chemical Warfare Service at the Army’s Edgewood Arsenal stockpiled enormous quantities of LSD and other psychoactive compounds, synthesizing known psychedelics like LSD and others that may still be unknown to the outside world. For example, MDM (see Chapter Five), which has only recently been recognized as a psychedelic agent, is identical to Edgewood’s “EA [Experimental Agent]-1475.”

Army spokesmen began talking publicly about large-scale use of LSD in war. In contrast to the emphasis on individualized administration favored by the CIA, Army officials were showing Congressmen and the press films of soldiers who were unable to march in formation after being dosed with LSD in their morning coffee. LSD was advocated as a way to conduct “humane warfare” against an enemy. Dr. Albert Hofmann later revealed that the Army was contacting him “every two years or so” to request Sandoz’ active participation in its efforts. The requests were denied.

The Army engaged in covert “field operations” overseas. A notorious example is the torture of James Thornwell, a black American soldier in France, who was suspected of having stolen classified documents in 1961. We will probably never know the full story on at least nine others, referred to as “foreign nationals,” who were subjected to the Army’s LSD interrogation project, “Operation THIRD CHANCE.”

Thornwell, then twenty-two, was first exposed to extreme stress, which included beatings, solitary confinement, denial of water, food and sanitary facilities and steady verbal abuse. After six weeks, he was given LSD without his knowledge. The interrogators threatened “to extend [his] shattered state indefinitely,” according to an Army document dug up later, “even to a permanent condition of insanity.” In the late 1970s, Thornwell sued the U.S. government for $715 (the approximate cost of manufacture at the time). Benefield had tried other psychedelics, was impressed by the mind-body questions they posed, and was eager to test this new product. Results were clear. He therefore gave part of his gram—over time—to a few associates, including an acquaintance known as Michael Hollingshead.

Hollingshead is important to this chronicle because he managed before long to give some of this gram to Donovan, Paul McCartney, Keith Richard, Paul Krassner, Paul McCartney, Paul Lee, Richard Katz, Pete La Roca, Charlie Mingus, Saul Steinberg, Timothy Leary, Richard Alpert, Ralph Metzen, Alan Watts and many others who contributed to the coming international awareness of LSD. “There is some possibility,” wrote Hollingshead later, “that my friends and I have illuminated more people than anyone else in history.” His memoir bears the publisher’s title, The Man Who Turned On the World.

With his part of gram “H-00047,” Benefield, with Jean Houston and Michael Czermak, opened an LSD foundation in Manhattan in 1962, the Agora Scientific Trust. The impressive, valuable work carried out there is...
described in Robert Masters and Jean Houston’s book entitled *The Varieties of Psychedelic Experience.*

That same year Myron Studoff and associates established another important LSD study center, the International Foundation for Advanced Study in Menlo Park. This institution was set up to examine the effects of LSD and mescaline upon carefully selected subjects. The results from several hundred administrations were significant, especially in regard to “learning-enhancement” and “creativity.”

By 1962, the number of people who knew about LSD had increased geometrically. Some were enthusiastic about trying the drug but had no access to LSD psychotherapists, the original “gatekeepers.” In response to the demand for LSD, the first generation of “acid chemists” arose.

A notable early effort was a batch of 62,000 tablets of questionable content synthesized in 1962 by Harrold Roseman and Bernard COPely. These tabs figured in the first “LSD bust,” when Food and Drug Administration agents charged the two with “smuggling” (manufacturing of LSD was then perfectly legal).

Stanley Owsley entered the trade after having been frustrated in his efforts to obtain pure LSD. His trademarks—“White Lightning,” “Purple Haze”—and others such as “Batman,” “Purple Double-Domes” and “Midnight Hour”—were associated with “tabs” of high quality. An enormous amount of this production was given away, yet Owsley became perhaps the first LSD millionaire. When he was captured in 1967, 200 fresh grams—a million substantial doses—were confiscated.

The first big wave of popular interest was gathering momentum. In 1962, the Gamblers issued the first record including a song about LSD. Many folk musicians were getting “cerebrally electrified.” Talk of LSD spread beyond Bohemian and university circles; even Nancy Luce, publisher of *Time* and *Life* magazines, and her husband had “tried the stuff.” Luce, wandering out into his garden in Arizona, heard a symphony in his head that impressed him greatly because he had previously considered himself tone-deaf. He also acquired affectionate feelings for the cacti there. This may not sound like much, but he claimed it was important personally because he previously “had hated them.”

To centerstage came Dr. Timothy Leary.

Already engaged in psilocybin research at Harvard, Leary was one of those who partook of “Lot No. H-00047.” He took a tablespoon and a half from Hollingshead’s mayonnaise jar of LSD cut with sugar-icing—and didn’t talk for five days. Richard ALpert, his close associate, “told everybody not to touch the stuff—we had just lost Timothy.”

Leary’s LSD experience, coming after more than a hundred psilocybin trips, changed his life. “I have never recovered from that shattering ontological confrontation,” he wrote later. “From the date of this session it was inevitable that we would leave Harvard...” The break was not long in coming. “LSD is more important than Harvard,” proclaimed Leary in 1962. Before Timothy Leary, the academics had never quite come clean about their experimenting with LSD. Leary alone emphasized publicly that the drug was “ecstatic,” “sensual” and “fun.” “It gives you levity and altitude,” was his explanation once, “where you see the implausibilities and you see the incongruities and the ridiculousness of what you had taken so seriously before.”

He gave the media a clear and emotionally charged image to transmit. Before long Leary’s name was tied indelibly to the compound now known simply as “LSD.”

Leary and associates tried in many ways to train people in the use of this drug, which they saw as a key to the “new age.” Even before leaving Harvard, they established an off-campus organization known as IFIF (the International Federation for Internal Freedom) and laid plans for an experiential LSD center on the beach at Zihuatanejo, Mexico. When they advertised this opportunity the next summer, IFIF received more than 1,500 applications. Leary requested 100 grams of LSD, about a million doses, and 25 kilograms of psilocybin, about 2½ million doses, from Sandoz, and sent a...
check for $10,000 as a deposit. Sandoz returned the check when Leary couldn't provide proper import licenses. The Mexican center lasted only a short while, because of hyped media attention after an American whom they wouldn't allow to participate caused trouble and after an unrelated murder in the vicinity. Leary and his colleagues tried to set up an experimental center on the Caribbean island of Dominica but their visas were canceled the day the main group arrived.

Finding haven at last on a 2,500-acre estate in Millbrook, N.Y., they announced formation of the Castalia Foundation. Here they began turning on many influential people as well as conducting advertised "sounding workshops" in consciousness change. They started their Psychedelic Review in the summer of 1963 and traveled around the United States lecturing about LSD. They pioneered in the presentation of "light shows." Leary eventually set up a religion—the Z^ague for Spiritual Discovery. This was not intended as a mass organization, but was limited to a hundred people centered around the Millbrook estate who were dedicated to showing others how they themselves could "help recreate every man as God and every woman as Goddess." I-eary emphasized that it would "not repeat the injunction classically used by religious prophets: Follow me, sign up in my flock. It imposes no dogmas except one: Live out your own highest vision."

The Monterey, California Pop Festival of 1963 (four years before the film Monterey Pop) marked a new relationship between LSD and music. Many there took LSD to celebrate and enhance their appreciation of this festival. Musicians and artists soon began wide-scale experimentation with ways to perform that would complement, direct and heighten the effects of LSD, or present a "flash" of the experience for the uninitiated. Within a year, the Beatles were singing to everyone, "Turn off your mind, float downstream/This is not dying" (words taken directly from The Psychedelic Experience, a book issued by Leary and associates).

By the middle of the 1960s, an important shift in avant-garde energies took place in San Francisco that was to reverberate powerfully throughout the Western world. This shift involved a geographical move of only a few miles—from North Beach to a vicinity near the crossing of Haight Street and Ashbury Avenue close to Golden Gate Park. Here LSD users banded together, soon signaling the dawning of the new age.

North Beach had served for years as home ground for beatnik activities and had become a center for cultural ferment in America. The beats generally favored stark contrasts of black and white, in their dress and in their thinking. They emphasized the role of the Artist and the Bohemian, celebrated blacks as culture heroes, and were politically active against the Bomb. Their style found expression in after-hours poetry and jazz in coffeehouses. Their taste in drugs inclined to pot, speed and heroin. The Haight-Ashbury community, catalyzed by LSD, wore the colors of a rainbow and was not emphatically male-dominated. It celebrated not the agonies and triumphs of the Individual Artist but rather was "into" communal living and a new "Bay Area" style of music and dancing. Its approach was softer. If it emulated anyone, it was the tribal American Indian.

By 1966, Haight-Ashbury was ripe with new energies provided by LSD-using musical groups such as the Jefferson Airplane, the Grateful Dead, Big Brother and the Holding Company and Country Joe and the Fish; by artists such as Mouse, who with his colleagues re-established the powerful appeal once accorded posters; and by the Diggers, who gave away food and clothing. That year, the brothers Ron and Jay Thelin opened the nation's first "headshop" and helped launch the first "psychedelic newspaper," The San Francisco Oracle.

Similar but less conspicuous developments took place in East Greenwich Village at about the same time—and half a year later the new style was evident in the low-rent centers of most large U.S. cities. The participants were mainly whites in their teens to thirties, the "baby boom" sons and daughters of people who were secure financially.

An LSD or "flower-child" lifestyle was further encouraged through other "be-ins," rock music performed with light shows, dozens of psychedelic newspapers and communal living. This proselytizing occurred throughout the U.S. and to a lesser extent in Western Europe, radiating especially from London, Hamburg and Amsterdam.

The LSD family

The movement was proclaimed at the time as a second Renaissance. Seen in retrospect, it was at the very least life-altering for millions. Some three or four years of social experimentation, touched off by mass use of LSD, can be credited with having sparked a host of liberation movements. This period changed American attitudes toward work, toward the police and the military, and toward such groups as women and gays. It began our now-established concern with consciousness-raising and personal growth.

Artifacts reflecting the creative ferment during this time are best displayed in *Psychedelic Age* with commentary by Robert Masters, Jean Rizs.
The LSD family

The First Cresting

Houston and Stanley Krippner. Lester Grinspoon and James Bakalar from Harvard have compiled a list of LSD's contributions—largely missing before then—to our popular language:

turned on, straight, freak, freaked out, stoned, tripping, tripped out, spaced out, far out, flower power, cop trip, hit, on, ono, plan (meaning "right")

Movement cartoonist R. Cobb here reflects the hippies' conviction that their alternative was both obvious and compelling:

going with the flow, laying [a] trip on someone, game-playing, mind-thrashing, mind-jamming,以人民 as, entropy, communing, acid, acidhead, good trip, bad trip, better show, deep a cap or tab, lemon, numura, man in gravy, rolling, crash, downer, flash, vibe, acid, man in gravy, doing your thing, going through changes, upright, getting into spaces, wiped out, where it's at, high, ball, top, rock, and so on...

The big LSD wave crested during "the summer of love," 1967. "Wear flowers in your hair," several hundred thousand people came to San Francisco. "Gonzo journalist" Hunter Thompson recalls the atmospherics of this period;

San Francisco in the middle sixties was a very special time and place to be a part of. Maybe it meant something. Maybe not. In the long run . . . but no explanation, no mix of words or music or memories can touch that sense of knowing that you were there and alive in that corner of time and the world . . .

You could strike sparks anywhere. There was a fantastic universal sense that whatever we were doing was right, that we were winning . . . Our energy would simply prevail. There was no point in fighting—on our side or theirs. We had all the momentum; we were riding the crest of a high and beautiful..."
LSD Becomes Illegal

With the LSD wave came a wave of establishment panic. The federal ban on LSD and related drugs was the first bill proposed by President Johnson in 1967. A clash between traditional American mores and the values adopted by users of Hofmann's crystal had been on its way ever since Harvard University sent Dick Alpert and Leary packing over the issue. The media hurried the conflict to its moment of crisis: for a while it seemed there wasn't a nationally distributed magazine that didn't have an LSD article, usually sensational. Time was the first to jump in with a series of articles appearing in late 1965 and early 1966 in its Psychiatry section. These articles railed against LSD oddball cult groups **(December 1965)**. 

No one can guess how many more self-styled 'acid heads' there are among the system have tried LSD (though not all have suffered detectable ill effects). We must try to get an accurate count: "By best estimates, 10,000 students in the University of California system have tried LSD (though not all have suffered detectable ill effects)."

With the LSD wave came a wave of establishment panic. The federal law until after it passed because "the problem is so urgent." 

**The FDA and Federal Narcotics Bureau launched new "drug education" programs. Three Senate subcommittees investigated LSD use. Bills that made possession of LSD and other psychedelic drugs a felony were introduced into state legislatures throughout the nation. New York State Assembly Speaker Anthony J. Tocci, passing legislation that called for a minimum sentence of seven years, declared that he would delibe public hearings on the law until after it passed because "the problem is so urgent." **

Walter Winchell issued an item reading, "Warning to LSD Users: You may go blind."

Bill Trent, writing in the Canadian *Evening Telegram* about an architect's serious and successful attempt to solve a design problem by taking LSD, said his story "The Demented World of Kyo Izumi." The mass-market *Confidential Flash* assisted in a full-page cover headline, "LSD KILLS SEX DRIVE FOREVER." The *Police Gazette* reprinted a report from *The Journal of the American Medical Association* with a new title: "LSD and Sex Misunderstand." 

In one of the Senate LSD hearings, Senator Robert Kennedy repeatedly asked why the studies conducted by the National Institute of Mental Health, which had been so valuable a month earlier, "no longer were considered so?" 

**It was a question almost nobody wanted to hear or have answered. In short, existing programs were drastically cut back. Before long, there were new, tighter regulations. Any investigator who had ever experienced the drug personally was now forbidden to conduct LSD research of any kind whatsoever. And yet, as the Consumers Union's book on Licit and Illicit Drugs notes, "by shutting off the relative trickle of Sandoz LSD into informal channels, Congress and the Food and Drug Administration had unwittingly opened the sluices to a veritable LSD flood. By 1970 it was estimated that between 1,000,000 and 2,000,000 Americans had taken an LSD trip."

**The headlines prompted an appetite for still more coverage. Special interviews with district attorneys, college presidents, narcotics agents, doctors, biochemists and others who might be considered authorities appeared, creating an atmosphere of national emergency. The chairman of the New York County Medical Society's Subcommittee on Narcotics Addiction said that LSD was "more dangerous than heroin."

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4. Adulteration.
5. Mistaken attribution.
6. Side effects of law enforcement.
7. Lack of supervision.
8. Misunderstanding of panic reactions.
11. Preexisting pathology.
12. Unwitting use.

For a more careful accounting of "LSD casualties," see "Adverse Effects and Their Treatment," pp. 157-191 in *Psychedelic Drugs Reconsidered*. In 1967, Dr. Maimon Cohen, a geneticist from Buffalo, N.Y., made an announcement that significantly prejudiced the public's view of LSD. Returning from a visit to the Haight-Ashbury area, Cohen decided to examine chromosomes from a fifty-seven-year-old man who had been given LSD on four occasions during a fifteen-year hospitalization. The patient was found to have more chromosomal breaks than usual. Dr. Cohen also spilled LSD into a test tube containing human cells and observed damage to the chromosomes. Later it was pointed out that similar results could be achieved with the same amount of milk and that Cohen's patient had received regular treatments of Librium and Thorazine, now proven chromosome-breakers.

Nonetheless, on the basis of his examination of a single patient and his cell-spilling experiment, Cohen published his conclusions in *Science*. By evening, the charge that LSD could break chromosomes was in all the nation's media. Shortly thereafter, two doctors in Portland, Oregon reported that they had found an excess of chromosomal breaks in users of street acid. The chart they provided revealed that extra breakage occurred only among users of acid who were also users of amphetamine, which has since been established as a chromosome-breaker. Once again the papers had a field day. A full-page ad for a McCaFly article on LSD featured a baby broken into parts. Ironically, the article itself cast doubts on the charge of chromosome damage.

Retractions of mistaken opinions and findings about the use and effects of LSD are quiet and very rare, and so it was in regard to the chromosome charge. Even though studies conducted by the National Institute of Mental Health and others disproved the allegation, even though Timothy Leary's chromosomes were examined and showed no abnormal breakage, even though other drugs have now clearly been established to be chromosome-breakers while LSD has not, the media took little if any notice of the new evidence.

"Timothy Leary, much to our surprise, showed, in 200 cells, only two with chromosome aberrations, one in each cell. This finding is about as it be the amount of LSD that he probably has taken in the past 10 years. I am at a loss to understand or explain this negative."—Hermann Lisco, M.D., Cancer Research Institute, New England Deaconess Hospital, Boston, Mass.
As a footnote it should be pointed out that at the trial of Stephen Kasel (the “MAD LSD SLAYER” of the April headlines) it was learned that he had taken LSD five times in minimal doses (10-55 megs.) between the summer of 1964 and March 1966 (a month before the murder of his mother-in-law). Other drugs may have been influential in the slaying. The defendant made no mention of having taken LSD just before the killing of Mrs. Cooper, but said on April 6, a Saturday, “I felt funny. I had an indescribable feeling and took one-and-half grains of psilocybin” and could recall nothing more until after the murder. The following Monday... — N.Y. Times, October 10, 1967

Both doctors held the jury of eleven men and one woman that Kasel had told them he had drunk three quarts of lab alcohol, cut with water, and taken more sleeping pills on the days in question.

LSD and Resurgence

In 1977, the National Institute on Drug Abuse (NIDA) issued a National Survey on Drug Abuse based on a sampling of 4,594 people. The report estimated that about ten million Americans (6 percent of the population over the age of twelve) had by then used a strong psychedelic, mostly LSD, with somewhat over a million falling into the category of “regular users.”

The peak years were from 1965 to 1968, followed by a substantial decline in LSD use. Many were frightened by the chromosome-damage charge or by experience with adulterated or badly made LSD. Others were put off by the overwhelming nature of “high-dose tripping” or by its illegal status, fearing that the need to act furtively would interfere with and badly taint the LSD experience. Large numbers of previous users turned to meditation to get high.

Some of the leading underground chemists had been arrested. The LSD available was generally weaker and less pure, though there were exceptions—tabs known as “Mighty Quinn,” “Blue Cheer,” “Pink Swirls” and the red, white and blue “Peace Sign.” Appearing in 1968, “Sunshine” acid (an orange tablet less than a quarter of an inch across) was the first large operation after LSD possession was made illegal. Tim Scully, a prominent second-generation chemist, made some but said that most “Sunshine” came by way of Ronald Stark, who brought approximately thirty-five million doses over ten years from Europe.

Then came “computer acid” (one hundred dots in rows of twenty by twenty on a sheet of blotter paper—sixteen of a dollar bill, which was of pretty good quality and very convenient for distribution. As about the same time arrived “Windowpane” (also known as “Clearlight”), which contained ISO-320 dots, had considerable less LSD than Owsley once thought proper but appeared to be good quality. Though available in crystalline or liquid form, most LSD is still distributed on blotter paper, which is convenient but exposes the drug to almost the greatest possible oxidation and damage from light.

Nearly a quarter million of these instruction books and booklets were sold during this period were shown to be almost entirely non-psycho-active; and many had LSD or PCP added (usually in small amounts). In 1976, successful methods for growing the Stropharia (often called Psilocybin) cattensis mushroom species were published with clearly identifying photographs. Nearly a quarter million of these instruction books and booklets were sold over the next few years, allowing great numbers of people to experience—or re-experience—psychedelic effects from a natural source. Many who tired synthetic products because of the uncertainties of quality and identification were willing to give natural psychedelics a try. They had been used for millennia, and nothing had been charged against them in terms of chromosomal or other damage. Thanks to the gentle psychoagents in the Stropharia cattensis mushroom species, many people discovered or renewed an interest in LSD.

Several conventions of “psychedelic activists” were initiated by Weston La Barre and especially R. Garcia Watson, and their call for a re-examination of mushrooms was gradually generalized to other psychedelics, including LSD. In 1977, Dr. Albert Hofmann and his wife Anita flew to the Olympic Peninsula in Washington State for a Mushroom Conference. Watson, Hofmann, Carl Ruck and Danny Staples presented evidence that the famous Eleusinian mysteries were catalyzed by lysergic acid amides extracted from psalms on the nearby Roman Plan. Their thesis has since been published as The Road to Eleusis.

Similar gatherings occurred in Santa Cruz (October 1977), in San Francisco (September 1978), in Los Angeles (January 1979), in Santa Cruz (July 1981) and in Santa Barbara (March 1982). Another generation of young LSD chemists seems to have taken over from those who were active in the 1960s. At the time of this writing (mid-1982), acid is widely available in mental terms. Almost all current products contain considerably less LSD than Owsley once thought proper but appear to be good quality. Though available in crystalline or liquid form, most LSD is still distributed on blotter paper, which is convenient but exposes the drug to almost the greatest possible oxidation and damage from light.

By the end of the 1970s, it was evident that a general reassessment of the earlier, massive LSD experimentation had taken place and that a less flamboyant reacquaintance with LSD had begun. The quality of the products soon available, coming from many different sources, was no longer so uncertain in question. Of great importance to this resurgence of interest was the widespread home-production of psychedelic mushrooms. LSD came back into limited public discourse as a sideline in conferences on the effects of psycho-active mushrooms.

Throughout the 1960s and early 1970s, very few people actually experienced sacred mushrooms. The bulk of mushrooms examined at testing facilities during this period were shown to be almost entirely non-psycho-active; and many had LSD or PCP added (usually in small amounts). In 1976, successful methods for growing the Stropharia (often called Psilocybin) cattensis mushroom species were published with clearly identifying photographs. Nearly a quarter million of these instruction books and booklets were sold over the next few years, allowing great numbers of people to experience—or re-experience—psychedelic effects from a natural source. Many who tired synthetic products because of the uncertainties of quality and identification were willing to give natural psychedelics a try. They had been used for millennia, and nothing had been charged against them in terms of chromosomal or other damage. Thanks to the gentle psychoagents in the Stropharia cattensis mushroom species, many people discovered or renewed an interest in LSD.
Recent blotters range in appearance from graph paper (containing fifty times fifty, or twenty-five hundred, “hits”) to fancy color imprints on separated half-inch squares. These are often intricately designed, featuring a four-color Mickey Mouse as the Sorcerer’s Apprentice in *Fantasia*, Rosicrucian symbols, a phoenix, a dragon or an Eye of Horus. Some users of LSD object to the more flippant symbols—Plutos or Snoopys; they argue that such designs in combination with the usually low dosages encourage an LSD experience that is little more than recreational.

LSD has recently appeared in a hardened gel in the shape of a tiny pyramid. This is convenient for distribution, yet the hardened surface reduces potential for oxidation. Tablets with LSD spread throughout offer a similar advantage in stability over blotters, one example being the “Om” tab. An appropriate direction in the packaging of LSD would be to emphasize known dosage and purity, as was the case with the original Sandoz ampules which contained one milligram per milliliter of water in a resealable glass container. That kind of quantitative and qualitative care has not appeared as yet.

The course of LSD history over the past few years has been influenced by the establishment of several publications and institutions, including *High Times* and similar magazines, the Fitz Hugh Ludlow Memorial Library in San Francisco, NORML (the National Organization to Reform Marijuana Laws), PharmChem in Palo Alto and other drug-testing facilities and the tradition of annual Rainbow Gatherings in various parts of the U.S. Also notable are books from Stanislav Grof, Albert Hofmann, Carlos Castaneda, Timothy Leary and many others.

Dosage is down, causing less potential for panic, along with less spectacular results. The number of people interested seems on the rise. Charlie Haas summed up a decade’s change in his “Notes on the Acid Renaissance” for *New West* magazine (August 13, 1979):

LSD—the scariest and most tantalizing thing you can buy without a prescription, the white hope for instant psychotherapy that became a CIA toy and a bacillus in the Bohemian arsenal, the portable Lourdes that oiled the transition of American youth from Elvis to Elvish and made all those honor students start dressing funny and printing up those unreadable purple-and-aqua posters—that LSD is, as naturally popular now as it was ten years ago, despite the fact that the same media which then could speak of nothing else are now virtually silent on the subject. Among people who swallow it or sell it, or who monitor its use from the vantage point of drug-abuse counseling, there is some sporting disagreement as to whether acid has been enjoying a renaissance for about two years or never went away in the first place, with the former view in the majority. But there is a consensus on at least two points: The bad trips and mental casualties that made such hot copy in the ’60s seem to have diminished radically, and the volume of acid changing hands suggests that there are actually more users now than there were a decade ago...
CHEMISTRY

Resemblances and Differences Between LSD and Other Substances

LSD-25 is a crystalline molecule that shares, along with many other psychedelics, a two-ring "indole" nucleus—composed of one atom of nitrogen, eight of carbon and seven of hydrogen—in its chemical structure (a drawing of indole appears on page 262). This basic structure is common to the short-acting tryptamines, lysergic, psilocybin, harmaline and other psychedelics, and it bears considerable resemblance to the chemical structures of serotonin and dopamine, neurotransmitters that carry electrical impulses across synapses in the brain. Muscimol and MDA-like compounds contain only one of these rings. Nitrous oxide (N2O) and the THCs in marijuana have considerably different chemical structures.

On top of the indolic nucleus, there are two additional rings in the structure of the LSD molecule. These are typical of the LSD family of chemicals to synthesize LSD and its analogues, one has to obtain the preformed lysergic acid "skeleton" first and then manipulate its chemistry through quite difficult processes. Such is not the case with the one- and two-ring psychedelic compounds, which can be synthesized more readily and altered to a much greater extent.

Lysergic acid, usually appearing as a metabolic product of the fungus Claviceps purpurea (growing on rye or barley), has an unusual chemical structure with what might be considered two asymmetric centers. Dependence of pharmacological action on the asymmetry of such compounds has been widely observed. Researchers have shown that psychedelic agents such as LSD interact with serotonin in synapses throughout the brain. Related drugs that are not psychedelic almost always lack such action.

Other Psychoactive Lysergic Acid Derivatives

Through the systematic production undertaken by Sandoz, a great many lysergic acid derivatives have been created and studied. Originally produced for medicinal purposes, these derivatives were re-examined after discovery of LSD's psychoactive effects. Some are psychically inactive, while others have varying psychoactive potentials. The most powerful is LSD-25. Among the many known lysergic acid amides, a slight change in the four-ring structure has considerable consequences in terms of psychic effects. For example, LSD-25 turns a beam of polarized light clockwise (this is represented by the "dextro" at the beginning of its chemical name). The "levo-rotary" form, its mirror image, turns such a beam counterclockwise and has virtually no psychoactive effect.

Comparing the structure of LSD-25 to that of the two most active ingredients in related botanicals—the baby Hawaiian woodrose and certain morning glories to be discussed at the end of this chapter—you'll see that these sources of LSD-like effects have different chemical structures.

LSD (left), and the two major psychoactive agents (middle and right) produced in baby Hawaiian woodroses and some morning glories.
BOL-148 is of special interest because it played a considerable role in psychedelic history. BOL-148 differs from LSD 25 by a single bromine atom, which renders it inactive in terms of mental function. Yet it is capable of producing more anti-serotonin activity than LSD, and it also produces some cross-tolerance with LSD. This compound seems to contradict the expectation of producing more anti-serotonin activity than LSD, and a similarly cross-tolerant substance could be found, then it would nullify psychos just as BOL-148 nullifies the psychoactivity of LSD-25.

It is still possible that serotonins and dopamine have something to do with LSD's effects, but after almost four decades of investigation of this compound, there's still no clear and accepted explanation for LSD's action. Speculating on the mystery surrounding the psychoactive agent he discovered, Albert Hofmann wrote:

"When we investigate the problem of how LSD produces its effects, we enter into the unknown, where there is still much that is mysterious, and we must rely on our intuition to determine the answer, just as we do in the field of theoretical chemistry.

The fact that it blocks, or is cross-tolerant, with LSD was one reason for the spread of interest in LSD as a psychotomimetic: the theory was that if psychosis had a chemical cause, and a similarly cross-tolerant substance could be found, then it would nullify psychosis just as BOL-148 nullifies the psychoactivity of LSD-25.

It is perhaps no coincidence but of deeper biological significance that of the four possible isomers of LSD, only one, which corresponds to naturally occurring lysergic acid, causes pronounced mental effects. Evidently the mental functions of the V-system organism, like fertility functions, are particularly sensitive to those substances which possess the same configuration as naturally occurring compounds of the vegetable kingdom.

LSD is generally considered cross-tolerant with mescaline but not with psilocybin — meaning that use of LSD a day before taking mescaline will reduce the impact of the mescaline (less tolerance develops if the order of the compounds is reversed). It is well established that LSD is cross-tolerant with itself — self-limiting, in the sense that if a second dose is taken a day later the effects will be considerably diminished. This tolerance endures significantly for three days and does not fully dissipate for a week. Abram Hoffer has marked that LSD is its own greatest enemy. This feature acts as a control for three days and does not fully dissipate for a week. Abram Hoffer has marked that LSD is its own greatest enemy. This feature acts as a control for three days and does not fully dissipate for a week.

**PHYSICAL EFFECTS**

LSD can be swallowed, taken on the tongue (producing perhaps the most rapid effects), or absorbed through the skin (particularly with DMSO). It has been ingested in the form of eye-drops and baked in cookies or cake frosting. It has been ingested by almost every means except smoking. LSD taken by mouth has effects almost as rapidly as by intramuscular injection. Anywhere from twenty minutes to an hour after being swallowed, the chemical—which often produces an immediate "mutilal taint"—may cause one or a few of the following physical sensations: slight chill, dilation of the pupils, vague physical unease concentrated in the muscles or throat, tinnitus, nausea, vomiting, tingling in the extremities, drowsiness. When a novice is asked, "How do you feel?" he is more likely to be, "I don't know" or "I'm different." If asked about feeling all right, the experiencer will probably not be very sure.

The physical sensations which accompany LSD are usually minor. Often they cannot accurately be likened to sensations ever felt before. As time passes, such physical effects usually disappear. In a few instances, however, they persist throughout much of the experience.

The effect of a particular dosage varies greatly from person to person. Body weight is certainly a factor, but time of day, use of other drugs, mental and physical setting all play important roles. Generally, 100-250 meg. is considered a good initial dose, and this can be adjusted at the time of the next session to suit the individual.

Another consideration is the extent of other drug usage. Chronic alcoholics and heavy narcotics users who are on maintenance doses usually need twice the ordinary amount of LSD to arrive at comparable effects. (Narcotics users who have been free of opium for less than a year are often hyposensitive, and their dosage must be adjusted with great care. Potentiation with a minor tranquilizer may be indicated.)

**Distribution of LSD throughout the Body**

LSD is a very curious chemical. When given by injection, it disappears rapidly from the blood. It can be observed when tagged with Carbon 14 in all the tissues, particularly the liver, spleen, kidneys and adrenal glands. The concentration found in the brain is lower than in any other organ—being only about 0.01 percent of the administered dose. Sidney Cohen, in *The Beyond Within* (p. 380), has estimated that an average dose results in only some 3,700,000 molecules of LSD (about 2/100ths of a microgram) crossing the blood-brain barrier to interact with the billions of cells that make up the average-size brain—"and then for only a very few minutes."

LSD is highly active when administered orally, absorbed through mucous membranes or through the skin, and is almost completely absorbed by the gastrointestinal tract. Concentrations in the organs reach peak values after only ten to fifteen minutes; then they decrease very rapidly. An exception to this rapid decrease has been observed in studies with mice, which show activity as the small intestine increasing over a period of a few hours. Some 80 percent of injected LSD is excreted via the liver, bile system and intestinal tract, with only about 8 percent appearing in urine. After two hours, only 1 to 10 percent is still present in the form of unchanged LSD; the rest consists of water-soluble metabolites—such as 2-oxo-2,3-dihydro-LSD—which do not possess any LSD-type influence on the central nervous system.

Psychic effects of LSD reach their peak about one to three hours following ingestion, when much of the substance has disappeared from the body's major organs, including the brain, though measurable amounts persist in the blood and brain for about eight hours. It is not at all uncommon to find users experiencing alarming symptoms or sensations, especially during the early phases—the impression of giving birth, melting into the floor, being born, and so on. A few feel that their heart has stopped beating or that their lungs aren't operating regularly any more. These symptoms should also be taken as a sign of altered perception.
No one is on record, for instance, as ever having suffered an LSD-provoked heart attack. However, it is possible for the body to tolerate such amounts, as the only case of death reportedly caused by overdose to date was reported by S.C. Becker in the Journal of the Kentucky Medical Association 75:172-173. The quantity of LSD in the blood indicated that 320 mg (320,000 meg.) had been injected intravenously. Those concerned heretofore had assumed that 320 mg. (320,000 meg.) had been injected intravenously. Those concerned about this might also look up "Coma, Hypertension, and Bleeding Associated with Massive LSD Overdose: A Report of Eight Cases," by J.S. Kiefer, U. Beumer and C.E. Backer in Clinical Toxicology, Vol. 8, No. 2, 1975. Large amounts were taken on the assumption that LSD was cocaine; no one died.

One should not waste any time in locating the right lobe of the brain, for the right lobe is "the seat of the soul." The LSD family includes compounds that are known to affect the right hemisphere of the brain. For a full discussion of how the right hemisphere processes information and how LSD affects it, consult Roland Fischer's "Cartography of the Psyche." Fischer discusses quite a number of hypotheses regarding the right hemisphere and how LSD affects it, including the idea that LSD increases the "scope" of the mind, brings artistic, spatial, and linguistic capabilities to the fore, and allows the user to experience a variety of states of consciousness.

Measurable Effects on the Brain

LSD produces slight changes in the EEC, usually with decreased amplitude and increased frequency of brainwaves. Generally, there is a decrease in the alpha rhythm — though, in some cases, there is an increase. Many chemical changes occur in the brain — most of them in the multirn, which regulates awareness and modulates emotional responsiveness. Recent attention has focused on the role of the brainstem and the dopaminergic system, both responsible for more complex experiences. Hoffer and Osmond's "The Hallucinogens" discusses quite a number of theories that can be summarized: LSD doesn't affect perception, though anticipation of such an effect may, on a few occasions, cause small alterations.

Brain Activity

As suggested above, our understanding of how LSD works physiologically and neurologically is still rudimentary, at best speculative. By the beginning of the 1970s, the most intensively examined hypothesis dealing with the interface of mind and body—regarding the displacement of serotonin at the synapses—came to be regarded as "a red herring." Other theories, such as those emphasizing specific "receptor sites," have not really been verified. Brimblecombe and Pinder summarize the controversies in their Hallucinogenic Agents (1975):

...most of the evidence that has emerged since 1966 lends support to the mode-of-action of LSD proposed by Faden and Hoffer, that is that interaction with the S-HT (serotonin) receptor is the primary action of the drug and that the observed changes in manifestations of basic amines are secondary phenomena. Other biochemical changes attributed to the action of hallucinogens, particularly LSD, such as the effects on brain monoamine homeostatic levels (Thompson, Teising, and Webster, 1955), are not contradictory to the idea of other life forms of the drug's actions (Goldstein, Stolzfus, 1963; Hoffer and Osmond, 1967; Brown, 1972, Chap. 7). Nevertheless, a large number of questions remain unanswered. It is not clear whether LSD is acting as an agonist or as an antagonist, neither is it known whether the drug has direct or indirect psychosomatic actions. And, most important of all, the ways in which the drug-expectant interaction and the phenomenon are very uncertain.

One discovery that may seem particularly relevant is the "complementary reversal of amplitude linearity," described by Goldstein, Schildkraut and associates in 1972 after they made chronograms of the electrical activity of left and right occipital EEGs of right-handed volunteers before and after administration of several psychedelics. They found a "progressive narrowing of interhemispheric EEC amplitude differences with eventually complete reversal (to the right) of their relationships." In simpler language, the processing in the left hemisphere is preferentially shifted by the influence of LSD from the more analytical left hemisphere to the visuo-spatial right hemisphere. This seems an economical and fairly satisfactory explanation of how a psychedelic like LSD increases the "scope" of the mind, brings artistic, spatial, and linguistic capabilities to the fore, and evokes phenomena that Freud referred to as manifestations of the "unconscious.

One often hears that much of the brain is usually dormant. Depending on dosage, LSD may increase mental power perhaps by activating the visuo-spatial centers. In this sense, LSD and other psychedelics could be considered as "deliberate and unconscious agents of the right lobe. For a full discussion of the implications of this theory, consult Roland Fischer's "Cartography of the Psyche."
The LSD Family

Medical Value

A substantial number of cases entered in medical records have now established LSD as a competent agent in the cure of such physical ailments as arthritis, partial paralysis, migraine headaches, hysterical deafness, skin rashes, and so on.

Dr. Peck reported on his study of 216 mentally disturbed patients who were given LSD. Forty-six of these patients suffered also from some physical illness—including various forms of arthritis, asthma that did not respond to hypnosis, migraine headaches and lasting rashes. Thirty-one of the forty-six made an "excellent" recovery from their symptoms, while five others found marked relief. Other doctors who have treated similar problems with LSD have found that such stubborn conditions can often be eradicated in the course of a few sessions. In their book on the use of LSD in the treatment of neurosis, Drs. Ling and Buckman list five case histories of successful migraine cures—all of which had previously been considered hopeless. They also give a full-length account of LSD's use in treating a severe case of psoriasis, with impressive photographs showing the patient before and after treatment (again, the condition had previously been adjudged hopeless). S. Kurumaru and co-workers in Japan have shown that this multi-functional substance can be used with good results even in the treatment of phantom limb pain.

Effects upon Chromosomes

It has now been well established that the pure LSD molecule doesn't affect chromosomes at all. This is evident from repeated tests made before and after administration of up to 2,000 meg. quantities. A summary of the first sixty-eight studies and case reports—the bulk conducted by NIMH—can be found in Science magazine (April 30, 1971). The article concludes that "pure LSD ingested in moderate doses does not damage chromosomes in vivo, does not cause detectable genetic damage, and is not a teratogen or carcinogen in man.

LSD and Physical Health

The preceding sections give some idea of how the body reacts during the ten to twelve hours of the LSD experience. In some cases, there are also long-lasting physical effects that should be mentioned. Many doctors have reported, often with pleased surprise, that their patients have achieved spontaneous relief from organic ailments after using LSD. Dr. T. T. Peck, Jr., for instance, at the Josiah Macy, Jr. Conference on LSD, remarked:

"In treating patients for various and sundry psychological complaints, we found that some would come back a week or two later and say, 'The headache is gone.' We asked, 'What headache?' They replied, 'Oh, the headache I've had for 10 or 15 years.'"

These photographs were taken before and after treatment of severe psoriasis with LSD and Ritalin.
Pain Reduction

The most commonly "acid heads" are aware that LSD is not—and
never can be—a panacea, a solution to all of this planet's problems. This
most powerful psychoactive compound hasn't been demonstrated to help us
from aging or to reverse the course of fatal diseases. However, it does with-
out doubt offer important benefits for people confronted with terminal ill-
ness. This is an area in which research, particularly at the Veterans Hospital
in L.A., the Menninger Clinic in Topeka and Spring Grove Hospital near
Baltimore, has improved skepticism.

Allen Hudyk observes special credit as the inspiration for this
research, because he wrote about its possibilities in his last novel, Adolf H.
took LSD on his deathbed. The medical world became aware of LSD's ability
to change the perceptions of death in the mid-1960s when the American
Medical Association published a report on fifty dying patients who had been
given the drug in a Chicago hospital. In this preliminary study conducted by
a medical psychiatrist, Dr. Lae Kast, LSD was shown to be more effective as an
analog of pain reliever than any of the frequently used morphine derivatives.

In 50 patients, most with advanced cancer and some with gangrene, LSD
relieved pain considerably longer periods than such powerful drugs as
morphine and dihydro-morphine and 52 hours with 100 mg. meperidine; three hours with
100 mg. meperidine and dihydro-morphinone. On the average, freedom from pain
lasted two hours with 100 mg. meperidme. three hours with
meperidine and dihydro-morphinone. Later studies have confirmed how impressive the short
weeks in some cases. Later studies have confirmed how impressive the short

MENTAL EFFECTS

A few pages can only hint at the range and variety that LSD has caused.
Here are a couple of greatly condensed paragraphs attempting definition.

From the brevity of summation of the psychological effects
would like to indicate the following: Changes in visual, auditory, tactile-afferent, gustatory, and
kinesthetic perception; changes in experiencing time and space; changes in the cost and content
of thought-body image changes; hallucinations, visual images— eidetic images— seen with the
eyes closed; greatly heightened awareness of odor, abrupt and
frequent mood and after changes; heightened suggestibility; enhanced recall or memory;
personification and ego dissolution; dual, multiple, and frag-
mental consciousness; sensing awareness of internal organs and
processes of the body, the
surrogate of unconscious materials; enhanced awareness of linguistic
memories; increased sensitivity to
unusual words; sense of capacity to communicate much better by
unconscious means, sometimes including the telepathic, feelings
of empathy, regression and "personalization"; apparently
absolved of personality; a perception of the
unconscious; heightened capacity for commu-
nication; magnification of shar-
nonverbal sensations, even the telepathic; feelings
of anxiety in extremes of
violent imagery; -vividness.

The drug's subjective effects are spectacular if taken in large
doses. They are similar to those produced by other hallucinogenic drugs but in an adequate scale (500 mg.
are a large dose to sixty) and include stimulation of the central and
even minor nervous systems; changes in mood (sometimes
sophisticated and megalomania, sometimes humorous, joky, and
anxiety-stirring); a sense of threat to the ego; an intensification of all colors so that they seem brighter;
intensification of the other senses so that inaudible sounds become amplified; new tastes
in food and colors; a sense of dis-
personalization, of being simultane-
ously both within and without oneself; a clearly related feeling of merger (disolving)

A few pages can only hint at the range and variety that LSD has caused.
Here are a couple of greatly condensed paragraphs attempting definition.

The paragraph on the left is from The Varieties of Psychedelic Experience by Robert Masters and
Jean Houston; the one on the right is part
of the definition of LSD-25 as in Robert R. Langeman's revised and updated
editions of Down From Dr. Strangelove. More of these summaries, distilled from many de-
scriptions of the drug's mental effects, are comprehensive and yet incomplete in conveying the quality of the LSD experience.

Variety of Effects

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personalization, of being simultane-
ously both within and without oneself; a clearly related feeling of merger (disolving)

Acute panels and perceptual changes; an apparent indef-
initude of psychological processes that makes evident the inter-
action of distant, autonomous, and with internal unconscious
processes; complex with philo-
sofical, cosmological, and re-
ligious questions; and, in general, apprehension of a world that
has dished the chains of normal categorical ordering, leading to an
improvised mission in self and
world and also to a range of re-
tests seem
comprehensive and yet incomplete in conveying the quality of the LSD experience.
General Effects

If the experience is all it is said to be, how can anyone go "through this kind of thing without turning into a terrorized blob of babbling jelly?" Art Kleps might have just finished reading either of the above descriptions when he asked this question.

The state is difficult to describe because it is akin to mystical experience, which is... ineffable!

"How to describe it?" exclaimed Henri Michaux, the French poet and painter, speaking of the psychedelic experience. "It would require a peripatetic style which I lack not possess, made up of surprises, of nonsense, of sudden flashes, of bounds and rebounds, an unstable style, subterranean and practical."

However, I must now turn around and add that in many ways LSD can also be viewed as a relaxant, as a means to mental calm and to centering. It frequently puts the user in a serene state of mind, at ease. Many users describe it as bringing on the feeling, perhaps for the first time, that they are... home.

If that sounds like a contradiction, so be it. The states of consciousness brought about are often paradoxical. This might be expected from a catalyst that channels the brain from a dualistic to a unitary way of looking at things.

Here's what Allen Ginsberg had to say when Playboy magazine asked what LSD does:

"What does a trip feel like? A creeping sensation comes over your body, a change in the planetary nature of your mammal eyeballs and hearing orifices Then comes realization that you're a spirit inhabiting a vast animal body containing giant apertures, holes, circulatory systems, interior canals and mysterious back alleys of the mind. Any one of those back alleys can be explored for an hour, a day, a whole lifetime, you're that much more free to explore the psyche."

Then you realize that all these exist in your mind only as you approach the mysterious feeling that if all these back alleys exist in your mind at the same time, then... why? Does that also exist only in your mind? Then comes a felicity of thought—''Is this the mind?''—then comes a felicity of thought—"
Dosage Considerations
The action of LSD is difficult to classify because it isn’t specific, like aspirin or Miltown. Most confounding, it also has variable effects at different dosages. Dosages estimated by weight result in widely fluctuating reactions in different animals. Furthermore, within a given species there may be idiosyncratic responses—even when subjects are all of the same age, weight and sex. Dosage can be one of the most important determining factors.

Most users are affected by doses above about 20 meg. Amounts just above this produce effects somewhat like a long-lasting “bad high.” Hofmann’s initial trip is a fair example. From about 75 meg. up to about 125 meg., the amount usually taken, LSD can elicit internal phenomena, although it is frequently used at this level for interpersonal matters, problem-solving or for the enhancement of sensations (for example, at a rock concert). A heavy dose—one on the order of 200-250 meg.—produces a predominantly interior, revelatory experience. Higher doses tend to intensify the trip rather than lengthen it, above 400-500 meg., there seems to be a “saturation point,” beyond which increases make little difference.

Therapy and Everyday Problems
From the beginning of its history, LSD has been used as an aid to psychotherapy. The first report in the literature, which stressed low oral dosages (20-30 meg.), gives an account of how the compound was administered to sixteen normal subjects and to six schizophrenics.

Until the time research with LSD was dramatically curbed in 1966 more than 40,000 mental patients had received it in dosages running from 20 meg. to upwards of 2,500 meg. It was administered privately in some instances, and in others it was given to whole hospital wards. Some people received only one dose; others had as many as 120. In most instances, LSD was used in small doses as an adjunct to psychotherapy. Other patients took it in a one-time, high-dosage treatment.

Many early investigators screened out psychotics and schizophrenics, but some did not and often claimed surprising success with such cases. Patients usually received the treatment from only one therapist; but several researchers came to believe that better results could be obtained when the compound was given by several persons.

Among many varied techniques, hypnotism was sometimes used in conjunction with LSD. Other people installed nurses as “parent surrogates” for their patients. Still others encouraged their patients to “act out” aggressions during the LSD session, giving them objects to tear up or hit. Some therapists depended primarily upon symbolic interpretation of familiar objects and universal insignia. Others concentrated on dream materials. Some used only LSD; some combined it with Ritalin, Librium, Dramamine or amphetamine. Others added one or another of the mind-altering drugs, such as CZ-74 (a psilocin derivative).

Psychotherapeutic Use

Almost from the beginning, psychiatrists and psychologists realized that many effects of this drug had implications relevant to personal growth. R.A. Sandison was one of the earliest practitioners to recognize the potentials of LSD:

...here are good reasons for believing that the LSD experience is a manifestation of the psychic unconscious, and that its material can be used in the psychotherapy of dreams, phantasies and projections. Can the psychotherapy be useful?

A characteristic of the LSD experience particularly fascinating to Freudian analysts has been its power to cause the patient to regress to early traumas, which could then be relived. This chemical is still used as an aid in “transference.” Dr. Czordon Johnsen, of Modern Studien und Forschung in Norway elaborates:

If we get sexual partners, for example, we may question what kind of treat- ment to give them, we want to find out a little more about them. We could run three or four weeks finding out, but we shortcut that and say we will try if we can find out more in one or two LSD sessions. We use small doses here. We find that the symptoms are clearer; they are willing to speak more openly to us; we can get clearer pictures of the diagnosis. We have used it in that way-

By the time of the Josiah Macy, Jr. Foundation conference on LSD at the end of the 1950s, it had become clear that this semi-synthetic drug seemed to affirm the concepts of most of the psychological “schools.” The Freudians were using LSD to abreact their patients and to explore Oedipal and other notions. The Jungians found that this drug manifested mandalas and rebirth experiences in their patients. A fascinating account of an extended Freudian treatment appears in I.Q. and I. written by the Kirlian researcher and para-psychologist Thelma Moss (under the name Constance Newland). Dr. Donald Blair, an English consulting psychiatrist, summed up his view of LSD’s results:

...People who have had psychotherapy or psychoanalysis for some time, such as eight years, and haven’t gotten anywhere, do so with the drug; it dis- appears; they have psychotherapy or psychoanalysis for eight years, they have no degrees; they are using LSD and thanks to the effect of the drug, they do get better.

Experiments with large, “single-shot” LSD doses began in the late 1950s. A great many therapists using this approach varied in use in their patients what Sherwood, Stolaroff and Harman later termed "the stage of immediate perception":

...he comes to experience himself in a totally new way and finds that the age- old question “who am I?” does have a significant answer. He experiences himself as a far greater being than he had ever imagined, with his conscious self a far smaller fraction of the whole than he had imagined. Furthermore, he

"..."
Some studies using different procedures have not been as successful. In instances, the patients were chosen from the worst cases that could be found. Using different methods achieved substantially identical results. In most cases, they are especially impressive when one considers that independent studies constitute the firmest quantitative data so far on the effects of this substance.

LSD program:

More than 800 hardcore alcoholics who had been treated in the Canadian LSD program:

When pschydelic therapy is given to alcoholics using methods described in the literature on one-thousand will remain sober after the therapy is completed, and one-third will be benefited. If schizophrenia and schizophrenia [those showing a particularly purplish component of urine] are excluded from LSD therapy the results should be better about 35 percent. Then no published papers using pschydelic therapy which show it does not help about 50 percent of cases. Our conclusion after 3 years of research in this area is that properly used LSD therapy can convert a large number of alcoholics into sober members of society.

Dr. Stanislav Grof's results, independently rated, showed 76 percent of the patients with character neuroses, depressive reactions, anxiety, phobias or conversion symptoms were "greatly improved" or "cured." In an evaluation of his work at Mariborough Day Hospital in London, Dr. Ling states: An analysis of 41 patients (mainly veterans) . . . shows that 36 are completely well and socially well-adjusted. Six are improved, one abandoned.

The majority of LSD therapists had agreed just before being denied access to LSD that this drug is superior to other forms of treatment in its effect on the whole range of neuroses and disorders that ordinarily respond to psychoanalysis. Typical reports indicate that even with severe problems only 10 to 15 percent of patients failed to achieve any improvement. When Hollywood Hospital in San Francisco treated 100 patients for an average of fifty-five months, it found that 45 percent had a total remission of their problem, 56 percent were improved and 11 percent were unchanged. At the University of Erlanger's Psychiatric Hospital, Dr. Hanscarl Leuner's results, independently rated, showed 75 percent of the patients with character neuroses, depressive reactions, anxiety, phobias or conversion symptoms were "greatly improved" or "cured." In an evaluation of his work at Mariborough Day Hospital in London, Dr. Ling states: An analysis of 41 patients (mainly veterans) . . . shows that 36 are completely well and socially well-adjusted. Six are improved, one abandoned.

It seems that his own self is by no means so separate from other selves and the universe about him as he might have thought. Nor is the existence of this newly experienced self so intimately related to his corporal existence. These realizations, while not new to maternal, and possibly not new to the subject in the intellectual sense, are very new as an experiential sense. That is, they are new in the sense that makes for altered behavior. The individual sees clearly that some of his actions are not in line with his new knowledge and that changes are obviously called for.

Records kept of alcoholic, recovery rates following ingestion of LSD constitute the firmest quantitative data so far on the effects of this substance. They are especially impressive when one considers that independent studies using different methods achieved substantially identical results. In most instances, the patients were chosen from the worst cases that could be found. (Some studies using different procedures have not been as successful.)

Dr. Fred F. Langner used LSD effectively with a number of severely disturbed persons, mainly "schizophrenics." After he used LSD in over 2,000 patient sessions, he concluded that pseudo-neurotics and paranoid schizophrenics do not respond favorably and may, in fact, suffer clinical setbacks. However, he observed that schizoid personalities, whose eyes are not too brittle, may through LSD have their first experience with "feeling." One of his patients said: "I know now that I never knew what people were talking about when they talked about feelings till I took LSD. I didn't know till toward the end of my second year in therapy that feelings could be good as well as bad."

LSD has been described by Aldous Huxley as a means of insight into the "Other World." As an instrument of therapy, it has brought many back into contact with reality. Here is another paradox, another example of the unfailing actions of LSD. Consider a comment by Norma McDonald, a recovered schizophrenic:

One of the most encouraging things which has happened to me in recent years was the discovery of LSD. I could talk to normal people who had had the experience of taking mescaline or lysergic acid, and they would accept the things I told them about my experiences in mind without asking stupid questions or withdrawing into a safe ungodly world of oblivion. Schizophrenia is a lonely illness and friends are of great importance. I have needed talk friends to help me believe in myself when I doubted my own mind, to encourage me with their praise, to me out of bleak ideas with their humor and teach me by their example how to work and play. The discovery of LSD-25 by those who work in the field of psychiatry has widened my circle of friends. The best accounts of "acid therapy" in English are Stanislav Grof's LSD Psychotherapy (1980) and Milan Hausner and Erna Segal's The Highway to Mental Health: LSD Psychotherapy (1969). The latter details Hausner's use of LSD as an adjunct to psychotherapy for more than twenty years in Czechoslovakia. In reviewing this volume, John C. Bhead, who participated in LSD experiments as a doctor at Spring Grove Hospital, wholeheartedly welcomed encouraging signs that good work with psychadelics is still go-
The fundamental belief in the capacity of the human psyche to be self-healing under the proper circumstances is but one of the many striking parallels between Dr. Hausner's conclusions and those of the group at the Maryland Psychiatric Research Center — many passages of Dr. Hausner's book sound very much like things that my colleagues and I have thought and written.

Examples of these similarities are found in the following areas: the critical importance of interpersonal trust in conducting successful psychotherapy with psychotics; the use of music; the importance of having the therapist experience LSD in part as an official adequate training to do his type of work, the unique value of editorial products seen by the patient for both assessment of functioning as well as integration of emerging unconscious material; the presentation during the LSD session of significant objects from the patient's life (e.g., photographs) in order to stimulate associations and fresh insights and perspectives; the need to include the concepts of many diverse schools of psychotherapy thought in order to understand and utilize LSD; the importance of working through and integrating the experiences that emerge during LSD sessions and the fundamental value or reality of the mystic or peak experiences that frequently occur.

I believe that these similarities stand but curious and well-informed investigators independently having taken the time to grasp rather thoroughly the entire elephant. As is commonly noted in the literature of comparative religion, there really does appear to be only one elephant.

Even though a decade and a half has passed since the panic of the mid-1960s, federal regulations and hospital "Human Rights" committees continue to block requests to use psychedelics on humans. They are afraid of negative publicity and lawsuits. When Walter Houston Clark inserted a questionnaire addressed to research professionals in Pennsylvania and the newsletter of the Association for Humanistic Psychology, nearly all who replied stated that they would like to do psychedelic research.

Of the first hundred people who responded to Clark's request, half had been associated at one time with controlled drug studies. Asked why they weren't engaged in such work any more, eighty-one mentioned governmental red tape, sixty-six cited other bureaucratic obstacles, seventy-eight were sure that they weren't able to secure clearance and fifty-three indicated lack of funding as "large reasons." Asked to rate the promise of psychedelics in the mental health area, "assuming opportunity for controlled experimentation," none called it negative, one thought it might be neutral, seven per cented it as meager, fifteen felt it was moderate, thirty-four considered it high and thirty-six believed that investigation of psychedelics held out "breakthrough possibilities" (another seven didn't answer this question).

The Yorkton hospital consists of small, cottage-like clusters of rooms, thirty to a unit, joined together by underground passages. There are many windows, low and unbarred, eliminating the old, dismal barracks aspects of most psychiatric hospitals. The walls are painted in pleasant, the colors, and each patient has his own room in one or another of the clusters, rather than a bed in an amass, nearly bare wall. The beds are low to the floor, and the rooms are furnished with regard to making it easier to define the floor as a mere floor, not a bed. Also, the furniture is comfortable and not unlike that with which the patient is familiar at home. The closest problem has been solved by sending large, movable cabinets which the patient can clearly see possess both a back and a front. Clocks and calendars abound, while floor tiles are sparingly used. The emphasis throughout pats patient needs foremost, without sacrificing utility.
In 1955, Berlin, Guthrie, Weider, Goodell and Wolff reported on four prominent graphic artists who made paintings during an LSD experience. A panel of art critics judged the paintings so as having greater value than the artists’ usual work—noting that use of color was more vivid and lines were bolder, though the technical execution was somewhat poorer. Similar results were reported by Frank Barron in his Creativity and Psychological Health and by Oscar Janiger, who gave LSD to a hundred artists and had them draw an Indian Kachina doll before, during and after their experience (July-August 1955 issue of The California Clinician).

By way of contrast, studies made with volunteers who were not particularly interested in LSD’s creative potential reflected no significant changes in creativity. William McGonigle, Sidney Cohen and others, and then the team of Zegans, Pollard and Brown, reported these findings in the Journal of Nervous and Mental Diseases (1964) and in the Archives of General Psychiatry (1967) respectively. Six months after three 200-mcg. LSD sessions, the McGonigle team found only one major distinction: 62 percent of their subjects reported “a greater appreciation of music.” An increase in the number of records bought, time spent in museums and number of musical events attended was also significantly greater than for two control groups, who were given either 25 mcg. of LSD or 20 mcg. of amphetamine per session. Cohen wrote in 1964: “All that can be said at this time about the effect of LSD on the creative process is that a strong subjective feeling of creativeness attended was also significantly greater than for two control groups, who might disagree with this judgment.” Five stated that their psychedelic experiences had not influenced their work in any way, but most were enthusiastic about the effects. The painter Achon Shkar-Wreation, who had gone through only one LSD experience is representative: “It opened thousands of doors for me and dramatically changed the content, intent, and style of my work.”

The California Clinician.

When asked how psychedelic experiences influenced their art, none said his or her work had suffered, “although some admitted that their friends might disagree with this judgment.” Five stated that their psychedelic experiences had not influenced their work in any way, but most were enthusiastic about the effects. The painter Achon Shkar-Wrejatine, who had gone through only one LSD experience is representative: “It opened thousands of doors for me and dramatically changed the content, intent, and style of my work.”

By way of contrast, studies made with volunteers who were not particularly interested in LSD’s creative potential reflected no significant changes in creativity. William McGonigle, Sidney Cohen and others, and then the team of Zegans, Pollard and Brown, reported these findings in the Journal of Nervous and Mental Diseases (1964) and in the Archives of General Psychiatry (1967) respectively. Six months after three 200-mcg. LSD sessions, the McGonigle team found only one major distinction: 62 percent of their subjects reported “a greater appreciation of music.” An increase in the number of records bought, time spent in museums and number of musical events attended was also significantly greater than for two control groups, who were given either 25 mcg. of LSD or 20 mcg. of amphetamine per session. Cohen wrote in 1964: “All that can be said at this time about the effect of LSD on the creative process is that a strong subjective feeling of creativeness attended was also significantly greater than for two control groups, who might disagree with this judgment.” Five stated that their psychedelic experiences had not influenced their work in any way, but most were enthusiastic about the effects. The painter Achon Shkar-Wrejatine, who had gone through only one LSD experience is representative: “It opened thousands of doors for me and dramatically changed the content, intent, and style of my work.”

Of the 180 artists surveyed, 114 said that their psychedelic experiences had affected the content of their work; they mainly cited their use of colored, or clouded, imagery as a source of subject matter. Fully 135 responded that there had been “a noticeable improvement in their artistic technique,” most often mentioning a greater ability to use colors. In addition, 142 attributed a change in creative approach to the psychedelics. Many indicated that dominant interests in art and music had been activated by psychedelic sessions. LSD has helped to end writer’s block. Ling and Buckman’s The Use of LSD and Ritalin in the Treatment of Neurosis cites the example of a well-known European writer whose major work, translated into twelve languages, was written subsequent to LSD usage. Previously, he had had a “burning desire” to write but had been unable to finish a single manuscript. Under the influence of LSD, he was confronted with a sudden awareness that he could die. “With this horror of death realized, I started to experience a most fan-
Krippner quotes the Dutch writer Ronny van den Eerenbeemt as having responded similarly:

When very young, I started writing stories and poems. The older I got, the more I had a feeling of not being able to find something really worthwhile to write about. My psychedelic experiences taught me that what I used to do was no more than scratch the surface of life. After having seen and felt the center of life, through the psychedelics, I now think I do have something worthwhile to write about.

At the conclusion of his survey of the effects from LSD and similar psychedelics, Krippner writes:

LSD, Krippner writes, has a unique potential to study the creative act. Creativity has been a perpetual enigma; now, at last, it may be prepared to divulge its secrets.

A final point about the creative process: it does not seem to have too much to do with conventional I.Q., as measured by existing tests. Frank Barron, a Research Psychologist at the University of California Institute of Personality Assessment, compared more than 5,000 productive and creative individuals with others in their field who had similar I.Q. but limited productivity.

The thing that was important was something that might be called a cosmological commitment. It was a powerful motive to create meaning and to leave a testament of the meaning which that individual found in the world, and in him/herself in relation to the world. This motive emerged in many ways, but we saw it come into life and over again when we compared highly creative people to people of less actual creative ability. The intense motivation having to do with this making of meaning—or finding meaning and communicating it in one form or another—was the most important difference between our criterion and control groups.

I think that as a result of the psychedelic experience there’s a heightened sense of the drama of life, including its beauty, and a realization both of the importance of one’s individual life and of the fact that a sacred task has been given to the individual in the development of the self.

Religious Considerations

At the core, LSD enables the users to transcend ordinary reality and feel religious effects. Aldous Huxley described the experience with a term from Catholic theology, “gratuitous grace.” He wrote, Father Thomas Merton also used the term in a similar fashion perceived by one user to spontaneous mystical experiences:

A friend of mine, saved from alcoholism, during the List fatal phase of the disease, by a spontaneous theophany, which changed his life as completely as St. Paul’s was changed by his theophany on the road to Damascus, has taken lysergic acid two or three times and affirms that hispanoence similar finding is identical with the spontaneous experience which changed his life—the only difference being that the spontaneous experience did not last as long as the chemically induced one.

Alan Watts, philosopher and Zen master, had a bad first impression, characterizing his LSD experience as “mysticism with water wings.” During two later experiments conducted by associates of the Langley-Porter Clinic in San Francisco, he quickly changed his mind.

I was amazed and somewhat embarrassed to find myself going through states of consciousness that corresponded precisely with every description of major mystical experiences that I had ever read. Furthermore, they coincided both in time and quality with the spontaneous mystical experiences of this kind that had happened to me in previous years.

The religious aspect of LSD ingestion registered strongly among the group at Harvard running the Pilgrims Research Project. Shortly after the project had begun, Michael Hollingshead showed up with a jar filled with LSD; it was given to third-year Ph.D. students in behaviorism. Hollingshead reflected in 1981 on that small class of students and their instructors:

Al Cohen—he runs the Maker Baba group. He got his Ph.D. in behaviorism. Alpert already had his Ph.D. Too. He’s a Hindu saint. Galary already had his Ph.D. He became the High Priest.”

Ralph Metzner—he got his Ph.D. He is now running healing work and holistic therapeutic groups in San Francisco and Berkeley, the total opposite of behaviorism. Ralph accepts that within each person there’s a spiritual entity which can be moved if it’s once awakened and allowed not only to see but also to be.

Gunther Weil is now the director of the Media Center of the University of Massachusetts, but he’s also been running the Gurdjieff group in Boston. He intensely identified with the Gurdjieffian work. He has put our records, he has tried to create an “art movie,” he’s lectured on the acceleration of the psychedelic experience.

AlAlschuler—well, he’s still at Harvard in the School of Education as far as I know. He has moved away from strict behaviorism into creative educational techniques, but through the system.

Paul Leary already had his Ph.D. He became the High Priest.”

Paul Leary—who, when I first met him, was one of the students. He was Paul Tillich’s right-hand man. And he had this profound experience. He’s now teaching herbs in Santa Cruz.

Rolf von Eckartsberg—he’s in Philadelphia, running the Open House System, where certain houses are always open to ex-prison inmates.

Hollingshead concludes that for these people LSD was instrumental in the realization of the importance of their religious nature:

To see Aldous Huxley’s expression, “the doors of perception” vanishing, and they saw inside the house—this house of many mansions which is also

Contrived Religious Experience 87
of effects from LSD):

this most important aspect of psychedelics (based mainly on his observation

consciousness. “Cure for dipsomania,” William James once said, “is religio-

terms of religious criteria. In their

religious images that arose among their subjects.

For the 206 psychedelic sessions guided or observed by Masters and

emergence of religious impulses. Lesser amounts generally have lesser effects,

although small doses on occasion have induced psychically powerful results.

if they take the drugs under naturalistic conditions, meaning by this

influence the direction his experience will take. Among subjects who have

strong religious inclinations to begin with, the proportion of those having

religious experiences jumps to three-quarters. If they take them in settings

for people who are in the house to dance. And they began to move off into

Vedas, they began to discover Eastern writings, the

imagination, which accounts for why they are where they are now.

Houston Smith, Professor of Philosophy at MIT, similarly described

this most important aspect of psychedelics (based mainly on his observation

of effects from LSD):

... given the right set and setting, the drugs can induce religious experiences

unattainable from ones that occur spontaneously. Not set and setting

to be expected. The way the individuals are currently making, it looks as if from

these observers became interested in this compound in the 1970s, when the

usual dosage had dropped to 50 to 100 meg., far below dosages taken in the

extended dosages lasted as long as six hours. The 1970’s, when the

laboratories. It is interesting to observe that those few subjects who attain to this level of

mystical apprehension in the course of their lives either actively sought

the mystical experience in meditation and other spiritual disciplines or have

a type of Religious Impulse

RELIGIOUS IMAGERY

Religious images of some kind:

Religious architecture, temples and churches:

Religious symbols: cross, yin yang, Star of David, etc.

Religious sculpture, painting, stained glass windows:

Religious architecture, temples and churches:

The lysergic acid used for the synthesis of LSD was originally obtained

from a rye-attacking fungus called Claviceps purpurea. The sclerotiun, or

the head, and the souls of the dead arise out of the earth

that the soul may manifest itself anyway.

If “recreation” is the user’s only aim, LSD is riskier than most other drugs:

emergence of religious impulses. Lesser amounts generally have lesser effects,

and the psychiatrist Norman Zinberg—have recently argued that LSD’s

to substantiate the comment from Ram Dass’ guru that religion would come to

America by way of a pill.

A number of commentators—notably the sociologist Richard Reno and

the psychiatrist Norman Zinberg—have recently argued that LSD’s

effects are essentially in line with “recreational drug use.” However, most of

these observers became interested in this compound in the 1970s, when the

usual dosage had dropped to 50 to 100 meg., far below dosages taken in the

1960s, which frequently exceeded 250 meg. Dosage is a primary factor in the

emergence of religious impulses. Lesser amounts generally have lesser effects,

although small doses on occasion have induced psychically powerful results.

If “recreation” is the user’s only aim, LSD is riskier than most other drugs:

the soul may manifest itself anyway.

BOLOGICAL SOURCES OF LYSERGIC ACID AMIDES

The lysergic acid used for the synthesis of LSD was originally obtained

from a rye-attacking fungus called Claviceps purpurea. The sclerotiun, or
The LSD Fa'

fructing body of this filamentous fungus is known as ergot and contains the "skeleton" for making the psychoactive molecule. Many times during the Middle Ages, and on other occasions up until the first quarter of this century, it was baked inadvertently into bread. Those who ate it fell the terrifying, sometimes deadly, consequences of ergot poisoning, which appeared in gangrenous and convulsive forms and was often called "St. Anthony's fire." Poets thus affected often experienced ecstasies, but frequently they went into "St. Virus' dance." Sometimes bodily extremities blackened and fell off. Thousands died.

Raven, Evert and Curtis in their Biology of Plants note that in one such epidemic in 994 A.D., "more than 40,000 died. In 1722 ergotism struck down the cavalry of Czar Peter the Great on the eve of battle for the conquest of Turkey, and thus changed the course of history." When it was realized in the seventeenth century that ergot-infected rye baked into bread was the cause of these outbreaks, they became less frequent and less extensive. The last ergot epidemic occurred in southern Russia during 1926-1927. (A popular book and many writers have erroneously described a mass poisoning in 1951 in the southern French city of Pont-St. Esprit as the result of ergotism. Thirty people felt that they were being pursued by demons and snakes, and five died. The cause, however, was actually an organic mercury compound that had been used to disinfect seeds.)

At least thirty alkaloids appear in different kinds of ergot, varying in strength and chemical arrangements with the host medium, the weather and other local circumstances. The most common are "peptide alkaloids" of an ergotamine-ergotoxine grouping (not soluble in water) and these have been responsible for the two forms of ergotism. The other alkaloids are lysergic acid amides (which are water soluble), the most important being ergine (\(\beta\)-lysergic acid amide) and ergonovine (\(\alpha\)-lysergic acid-1,2-propanolamide). The latter was isolated independently by four groups of researchers in the 1930s and thus was variously known as ergometrine, ergobasin, ergotecinc or ergostetrine.

These distinctions of botanical chemistry are important to this story because of a challenging question R. Gordon Wasson posed to Albert Hofmann in July 1975: "whether Early Man in ancient Greece could have hit on a method to isolate an hallucinogen from ergot that would have given him an experience comparable to LSD or psilocybin?"

Hofmann's response a year later was yes, such effects could have occurred with ergot grown on wheat or barley (rye wasn't known in ancient Greece), and an even "easier way would have been to use the ergot growing on the common wild grass Paspalum." On April 1, 1976 Hofmann confirmed this a possibility when he took an oral dose of 2 mg. of ergonovine maleate, equivalent to about 1.5 mg. of the ergonovine base, which is about six times the normal dose used in medicine for postpartum hemorrhaging. He found that this dose produced mild psychedelic activity that lasted more than five hours.
Fully-developed capitula (f 10).

The LSD family

the Mysteries (1978). They demonstrate that the potion used for more than 2,000 years in these annual “mysteries” (mysterious to the uninitiated because the penalty for revealing the ceremony was death) involved water infusions of infected barley and the sclerotium of *Claviceps paspali* growing on the wild grass *Paspalum distichum*, which flourished throughout the area and particularly on the Rarian plain. The complex historical reconstruction of these events, in the words of Jonathan Ott, “for the first time places the sacred mushroom [of ergot] in our own cultural past.”

Hofmann wrote in his autobiography, “The cultural-historical meaning of the Eleusinian Mysteries, their influence on European intellectual history, can scarcely be overestimated. Here suffering humankind found a cure for its rational, objective, split intellect, in a mystical totality experience, that let it believe in immortality, in an ever-lasting existence.”

Up to three thousand people annually were initiated “in a perfect way” (for two millennia until the suppression of these rites under Christianity in the fourth century A.D.) Anyone who could speak Greek and who hadn’t committed murder could present themselves once for this initiation. Half a year of preparatory rituals began in the spring, culminating in September in a procession lasting several days from Athens to the temple at Eleusis. The ceremony occurred at night, ancient writers hint that important things were seen—in a room “totally unsuited for theatrical performances” (as Ruck described the temple). Among those initiated were Aristotle, Sophocles, Plato, Anaxilas, Giano, Pindar and possibly even Homer, plus many Roman emperors (such as Hadrian and Marcus Aurelius).

Aristides the Rhetor in the second century A.D. called the experience “new, astonishing, inaccessible to rational cognition.” The “Homeric Hymn to Demeter,” which tells us most about what occurred, states “Blessed is he among men on Earth who has beheld that! He who has not been initiated into the holy Mysteries, who has had no part therein, remains a corpse in...
The LSD Family

gloomy darkness.” Pindar remarked “Blissful is he who after having beheld this enters on the way beneath the Earth. He knows the end of life as well as its divinely granted beginning.” Cicero said of Eleusis: “Not only have we received the reason there, that we may live in joy, but also, besides, that we may die with better hope.” Aristotle revealed only that these Mysteries were an experience rather than something learned.

The Road to Eleusis appeared in 1978; so far as I know, nobody since then has tried an aqueous solution of ergot, which is understandable, given the history of ergotism. On the other hand, Paspalum dutichum, as described by Hofmann, contains “only alkaloids that are hallucinogenic and which could even have been used directly in powder form.”

In the January-June 1979 issue of the Journal of Psychedelic Drugs, Jeremy Bigwood, Jonathan Ott, Catherine Thompson and Patricia Neely report on their attempt to replicate Hofmann’s finding in three experiments with ergonovine maleate each time in one pastoral setting. They were following up Wasson and Ruck, who tried the same amount as Hofmann but “did not experience distinct entheogenic effects.”

With Thompson acting as a guide, three of them took 7.5 mg. of ergonovine maleate, which appeared as a slightly phosphorescent bluish solution in water. Fifteen minutes later they felt like lying down and looking at the sky; then there were “very mild visual alterations, characterized by perception of an ‘alive’ quality in inanimate objects.” Most of this effect passed within an hour; walking along the beach, they experienced mild leg cramps. Bigwood saw eidetic imagery before going to bed, and the three “slept easily... awakening refreshed in the morning.”

The other experimenters were “convinced that ergonovine was psychoactive, but only J.O. was persuaded the drug was entheogenic.” They decided to try it again two weeks later in an increased dosage of 5 mg., but Neely took only 3.75 mg. “Again, we experienced lassitude and leg cramps, more pronounced than in the earlier experiment.” The psychic effects were more intense than previously, particularly eidetic imagery. “Now it was clear to all of us that ergonovine was entheogenic... The psychic effects, however, were very mild, while the somatic effects were quite strong. We had none of the euphoria characteristic of LSD and psilocybin experiences.”

To determine if higher consciousness alteration was possible, they tried larger oral doses of ergonovine maleate a week later. This time, Neely took 7.5 mg. and the others took 10 mg. One of us (J.O.) described “flashes in periphery, opening in ears, inner restlessness” 40 minutes after ingestion, and later noted “mild hallucinosis...” 2 hours later he felt the cramping in the legs as painful and debilitating. The psychic effects did not increase with the same magnitude as the somatic effects—“That seemed like hours, we lay on our backs atop a small pump house, watching fluffy cumulus clouds pass silently above us. The effects were still quite intense six hours after ingestion. None of us experienced abundant
eidetic imagery, rapidly changing, colorful geometric patterns, undulating, never still. We all had a slight hangover the following morning.”

Morning Glories

When the Conquistadores subdued the Aztecs, early chroniclers recorded that the Indians made religious and medicinal use of peyote, another psychoactive plant named cacti, and a small bean-like seed called coihuite. The third, alleged to have been used also for purposes of divination, came from a vine known in the Nahuatl language as coihute (or “snakeplant”).
When he published some botanical notes by the Spanish physician Hernandez, Ximenez stated in 1615 in regard to ololiuqui: “It matters little that this plant be here described or that Spaniards be made acquainted with it.” He expressed the generally negative Spanish attitude—Hernandez and others had described the plant, indicating that it was held in great veneration, and illustrations—as in the Florentine Codex—suggested that it was a member of the familiar bindweed or morning glory family (Convolvulaceae), but knowledge of this species and its seed was lost to all but a few Zapotec, Mixtec, and Nahuatl tribes, dwelling mostly in Oaxaca in southern Mexico for more than four centuries.

The ethnobotanist Richard Evans Schultes sent samples of a cultivated Mexican morning glory to Hofmann in 1959, when it was still called Rivea corymbosa. He had seen it employed in divination by a Zapotec shaman in Oaxaca. Corymbosa is now considered one of five Turbina species—the only one appearing in the Americas. Though there are more than 500 species of Convolvulaceae widely scattered around the globe, they seem to have been used for their psychoactive properties only by tribes in the New World.

In 1960, Hofmann analyzed the constituents of these seeds and deduced that Rivea (Turbina) corymbosa contained ergot alkaloids. This information was hard for the scientific world to accept because: (a) previous chemical analysis, recommended in 1955 by Humphry Osmond after self-experimentation with morning glory seeds, had shown no psychoactive principles, and (b) until that time ergot alkaloids had been found only in the rye fungus Claviceps purpurea, which belonged in an entirely unrelated wing of the plant kingdom. “Chemotaxonomically,” said Schultes, commenting on the unexpected discovery of lysergic acid amides in morning glories, “such an occurrence would be highly unlikely.” Hence, many researchers suspected that spores from fungi already in Hofmann’s lab had somehow invaded the tissues of the morning glories examined. Later, however, chemical analyses substantiated Hofmann’s claim.

The principle agent in this plant was found to be \( \text{14}-\text{lysergic acid amide} \), which had already been synthesized and was known as both ergine and LA-111. Other alkaloids of lesser importance found to be psychoactively influential in Turbina corymbosa were \( \text{14}-\text{isolysergic acid amide} \) (isoergine), chlormethyl, dihydromelitine, and lysergol.

In 1960, Don Thomas MacDougall reported that seeds of \( \text{Ipomoea violacea} \) were used as sacraments by certain Zapotecs, sometimes in combination with \( \text{ololiuqui} \), and sometimes not. These morning glory seeds, called \( \text{budok negro} \), come from the same botanical family—but are jet black rather than brown and are long and angular rather than round. When analyzed, the \( \text{budok negro} \) seeds were found to have the same mentally-affecting amides as \( \text{Rivea (Turbina)} \) corymbosa, except that ergometrine—a strong uterotonic—showed up in place of lysergol.

Some people believe that \( \text{budok negro} \) is the seed the early Spanish...
The effect of these alkaloids in combination is similar to LSD and other hallucinogens, but more tranquil. Some people experience nausea during the first hour. Large doses are not recommended. After the major effects have worn off one usually feels very soft and relaxed.

It is not advisable for people with a history of hepatitis, jaundice, or other serious liver disease to take these lysergic acid amides. Because several of the alkaloids in this family of sacraments have powerful uterus-stimulating properties we recommend that they not be taken by pregnant women.

Hawaiian Woodroses

Chemical investigations have confirmed the appearance of ergot alkaloids in other Convolvulaceae (bindweed or morning glory) species, notably in the *Argyreia* genus (in at least eleven species), the large Hawaiian woodrose and in *Stictocardta tilafolia* (which contains six amides of lysergic acid in its seed).

Of these plants, the one that has been most used as a psychedelic is the baby Hawaiian woodrose. This actually isn’t a rose, but rather a woody climbing vine or liana with silvery foliage and violet flowers. When dried, the leaves turn tan on the outside and a light, warm saddle brown on the inside. The pods have the color of caramel. This beautiful arrangement has resulted in its use in floral displays and corsages. Native to India, it is now cultivated throughout the world’s tropical regions.

Otto Degener in his monumental *Flora Hawaiana* in the 1950s described the baby Hawaiian woodrose as thriving in the Islands in drier regions at lower elevations, flowering during August and early September and then becoming “a prolific seedler, the ground under a large vine often being crowded with erect, bud-covered seedlings.” According to William Emboden, this has been used as an inebriant by poorer Hawaiians. It has been only occasionally taken by those in the American drug subculture, though advertised in *High Times*. At art fairs in California, a mixture of five of these baby seeds ground up together with ginseng, damiana, gotu kola and bee pollen and pressed into a date has been sold under the name “Utopian Bliss Balls.”

Lysergic acid amides are quite concentrated in the seeds of this ornamental, much more so than in psychedelic morning glories. Four to six seeds (the contents of one or two pods) are the equivalent of 100 to 150 Ipomoea morning glory seeds and will produce a full-blown experience. The result is generally more tranquil than what is induced by LSD. While LSD is penetrated by most users as having stimulant effects, to which a few people are particularly sensitive, the botanical sources have more of a slowing or depressant effect. Some users complain that they have had a hangover, which has been characterized by Emboden as possibly involving “nausea, constipation, vertigo, blurred vision and physical inertia.”

Lysergic acid amides including chanoclavine, ergine, isoergine and ergonovine are present in the psychoactive *Argyretia* species—*speciosa*, *aurantiaca*, *capitata*, *severum*, *wallichii*, *splendid*, *bainanensis*, *obtusifolia* and *pseudorubrica*, mainly concentrated in the seeds. The larger Hawaiian woodrose (*Stictocardta tilafolia*) also produces such amides, but like the others is not nearly as potent as the baby Hawaiian woodrose. A recent thesis at Harvard illustrates the interest so far: it lists more than 250 references to *Argyretia nervosa*.

**FORMS AND PREPARATIONS**

The plant sources of lysergic acid amides contain not just one psychoactive molecule but several; variations in effect are possible due to growing seasons and other environmental influences on the chemistry of the plant. Again, I should mention that in the American varieties of psychedelic *Ipomoea* there is a stimulant effect—hence these should not be used by...
pregnant women. It's a good idea to check as well to see if the seed company has added anything toxic to the seeds. This should be indicated on the package. In the case of the proper (hence morning glories, each seed is the equivalent of about 1 meg. LSD, the usual dose lies between 100 and 200 seeds. Many early investigators failed to get any reactions at all. The reason in almost every instance was found to be that they had failed to grind the seeds first. The seeds should be ground to a flour before use; it's also a good idea to soak them in water — the psychoactive components are soluble — and then to strain the liquid through cheesecloth. The amides of value are in the liquid, which is ready for consumption.

As for the baby Hawaiian woodrose, the dose usually taken is four to eight seeds, although some users advise that no more than two or three should probably be taken the first time. With Hawaiian woodrooses or morning glories, high dosages are not advisable — beyond a certain level, experience so far has shown a tendency for limbs to get bluish. (From reports I've seen, it's not clear whether the seeds had been dissolved and the amides strained out before ingestion.)

Albert Hofmann has remarked that when he produced ALD-52, it had to be kept in solution and cold because it was quite unstable. Most of the other analogues have been tried by only a few people in research studies and have never appeared on the black market. A methylated form that produces LSD-type effects lasting only four to six hours has recently been distributed in Europe.

LSD appears in crystalline, liquid and many other forms. As a crystal, a substantial dose can barely be seen by the naked eye. Usually, it is dissolved in ethyl alcohol or another solvent and then dropped onto a carrier, usually blotter paper. When Sandoz distributed LSD, it delivered it in sealed vials or in bottles of calibrated dosage from which precise amounts could be removed by syringe. Such quantitative, not to mention qualitative, care hasn't appeared yet in the black market. More than a few users have discovered considerable differences in the dosage of blotters on the same sheet of paper. Some acid is strong enough to provide four trips from a single tab or blotter; while in other instances the amounts are in the range of 25 to 50 meg per blotter. Ergot was the starting material used until the early 1960s. At the beginning of that decade, the Farmitalia Company of Milan, Italy developed a method for growing this fungus in vats on Claiiceps paspall. It offered this for sale at $10,000 per kilogram until well past the mid-1960s, when such work was suspended.

In The Psychedelic Reader, Gary Fisher described dosage levels for psychotherapeutic sessions as being quite high (generally over 250 meg.) He also touches on the use of other drugs in conjunction with LSD, particularly small amounts of amphetamine and psilocybin as initial pretreatment.

LSD deteriorates slowly over time, oxidizing into iso-LSD. In about a decade, potency decreases by about half. Some writers have exaggerated the deterioration involved. It does, however, disintegrate rapidly in the presence of light, oxygen and moisture.

Determining the purity of an "acid" sample is not easy for most users. In the first appendix to this book, some of the techniques are detailed; Bruce Eisner discussed many of the relevant issues in the January 1977 High Times in an article entitled "LSD Purity: Cleanliness is Next to Godliness." Analyses of LSD quality can, however, be obtained by sending a sample to PharmChem, 3905 Balfourmen Dr., Menlo Park, CA 94025, along with $15 and a random five digit and single letter code. Mark the outside of the envelope "Hand Cancel" and then call (415) 328-6200 two or three days after you suspect they have received it for results.

PharmChem's analyses are based on thin-layer and gas chromatography. It had been criticized for not taking into much account some of the possible by-products, such as "lumi-LSD," that may be present, but it currently checks for 350 psychoactive compounds and a large number of impurities. Until 1976, this and other testing stations were allowed to make quantitative assays, but this has now been curtailed by federal regulations except for those having the proper licenses. "It doesn't make sense for LSD users not to be able to know what they are using," Jeremy Bigwood comments about the current situation, "even if the state believes it to be illegal at the time."

Checking Purity

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CHAPTER TWO
Peyote, Mescaline and San Pedro

The white man f>oes into his church house and talks about Jesus;
the Indian f>oes into his tepee and talks to Jesus.
~Quanah Parker

HISTORY
Peyote, a slow-growing, smoketive and acid-tasting cactus, appears
to be native to two areas of northern Mexico, each with its own species. The
yellow-green Lophophora diffusa grows in a high desert in the state of
Queretaro, some three hundred miles south of Laredo, Texas. The green-
blue Lophophora williamsii inhabits approximately one hundred thousand
square miles south of the Rio Grande.

In Lophophora diffusa, 90 percent of its alkaloids are in the form of
"pellotine" and there are only trace amounts of mescaline (the first synthe-
sized psychedelic compound). It has larger and whiter flowers than its more
familiar relative L. williamsii and appears to be an earlier evolutionary form.
Its growing range is less than fifty miles in diameter, and it is relatively little-
known and unavailable to most people.

Lophophora williamsii contains a substantial amount of mescaline.
Its rangeland, shaped something like a mushroom, extends as far south as
Zacatecas, but the cactus is most plentiful in the central desert of northern
Mexico.

Mesoamerican Accounts
Many people writing about the discovery of peyote suggest that some-
one lost and starving in the desert came upon this plant and ate it. Native
accounts emphasize that the starving wayfarer heard a voice saying that this
plant should be eaten. The plant was carried back as a divine gift to bring
courage and peace to the user's tribe.

Archaeological evidence discovered recently in Texas, including
stores of still-psychoactive cacti, indicates that peyote was used ceremonially
3,000 or more years ago. When the Conquistadores wrote about its wide-
spread use, they remarked mainly on the Chichimeca, Toltec and Aztec
regions. However, many anthropologists think it was first used by the
Tarahumaris, who live close to its growing area.
In his History of the Things of New Spain, also known as the Florentine Codex (circa 1580), the Spanish priest Bernardino de Sahagun chronicled from events in Indian chronologies that peyote had been used at least 1,800 years earlier. Most Aztec records were destroyed by Cortez and his successors — especially Juan de Zumarraga, the first archbishop of Mexico. In the words of Edward F. Anderson, Zumarraga “searched throughout the former Aztec empire for manuscripts and other pieces of information about their civilization and, in an orgy of unparalleled destruction, burned thousands of Aztec documents and other items.” Sahagun tried to recover and record the medical knowledge of Aztec and other priests.

Sahagun, a Jew converted to Catholicism, probably under duress, spent most of his adult life in Mexico and became a great collector of pre-Columbian cultural data. His informants, Aztec noblemen who also had been converted to Catholicism under threat of death, left us our best information about native life prior to the Conquest of the New World. Their manuscripts, filled with hundreds of drawings, are available now in an English translation of the Spanish by Arthur Anderson and Charles Dibble alongside the original Nahuatl language of the Aztecs in a twelve-volume set; a final 1982 volume offers background material and Sahagun’s prologues and interpolations.

The Spaniards “discovered” such things as chocolate, potatoes, corn and tobacco in the New World, along with three psychoactive agents: mushrooms, morning glories and peyote. Peyote was associated by the Spanish with the bloody sacrificial rites of the Aztecs and condemned shortly thereafter as “Raiz diabólica” (the devil’s root). An observation from 1591 (like many others) reported that under the influence of peyote the Indians would “lose their senses, see visions of terrifying sights like the devil and were able to prophesy the future.” Once European notions of witchcraft came into play, the Holy Office of the Inquisition enacted the first drug laws in the New World. In 1620, use of peyote was formally denounced as an act of superstition because it was for “purposes of detecting thefts, of divining other happenings and foretelling future events.” As late as 1760, peyote was equated with cannibalism in a Catholic text.

The Spaniards made very determined efforts to stamp out peyote practices. Over a period of two centuries, a great many Indians were flogged and sometimes killed when they persisted in using it. In one instance, an Aztec’s eyeballs were said to be gouged out after three days of torture. “Then the Spaniards cut a crucifix pattern in his belly and turned ravenous dogs loose on his innards.” With the breakup of the Mesoamerican civilizations and their extensive transportation and communication routes, peyote distribution was interrupted, and familiarity with the cactus receded to the Chihuahuan Desert.

Use of peyote continued among the rural Indians of north Mexico. Anthropologists believe that the peyote rites practiced today among the Huichol, Cora, Tepecano, Yaqui and Tarahumara tribes are close to those that existed in pre-Columbian times. In this tradition, peyote has been used for divination in shamanic rituals, in the treatment of ailments, in festivals and even in games (among the Tarahumaras, it has been used for dominance in twenty- and forty-mile foot races).

Among the Huichols, an annual pilgrimage for gathering peyote still occurs at the end of the rainy season in October or November. Representatives of the tribe — numbering approximately 25,000 people — undertake a sacred journey of over 300 miles to the desert regions where the peyote grows. In the past, the gatherings often used to be gone for over a month.
Today they are accompanied by automobiles and usually return in much less time. Reverence for the "hunt" remains unchanged and is marked by vows of fasting, of celibacy, and quite often of silence. The hunt involves certain purification rituals, such as a "confessional" the first night out, during which the pilgrims in turn recount their sexual history. Prayers offered during the search culminate in special ceremonies when the first plant is sighted. Upon their return to the tribe, the pilgrims are greeted with dancing and many expressions of happiness. Preparations for drying the peyote begin, and fresh buttons are consumed. Peter Furst comments in his Hallucinogens and Culture on the intensity of the religious exuberance in the peyote country and in the Sierras: "Huichols will literally saturate themselves with peyote, chewing it incessantly for days and nights on end, getting little sleep and eating little normal food, until the entire social and natural environment and the individual's relationship to it take on a wholly mystical dimension."

**Peyote Passes to the U.S.**

Up until the time of the Civil War, there were few recorded instances of peyote use north of the Rio Grande. During the war, some white soldiers experienced the effects of this cactus, and several U.S. marshals, who were jailed once Texas went Confederate, got inebriated on this "green whiskey." After the war ended, contact between Indians north and south of the border increased. By the beginning of the 1870s, peyote had definitely begun to spread northward.

A peyote religion eventually developed throughout the entire United States as a result of proselytizing by Bert Crowlance, Mary Buffalojack Bear Track, Elk Hair, John Rave and many others. The Plains Indians especially valued "visions."

Much of the subsequent history of peyote in the U.S. was influenced by three exceptional men who were active at the time of crisis among Indians, when they were being herded onto reservations. The Indians had lost their buffalo and all hope that their lands would be restored by the Ghost Dance. This was the time of the Wounded Knee massacre.

The first of the three was a Caddo-Delaware-French individual named John Wilson, who had been renowned as a Ghost Dance leader. Having learned of peyote from a Comanche, Wilson went with his wife into the forest, where he consumed about fifteen buttons a day for two weeks. As Francis Speck described the effect in his "Notes on the Life of John Wilson, the Revealer of Peyote, as Recalled by his Nephew, George Anderson" (1933), "Wilson was continually translated in spirit to the Sky realm where he was conducted by Peyote." He was shown the "road" that led "from Christ's grave to the Moon in the Sky which Christ had taken in his ascent." He was told to walk in this path for the rest of his life and to remain faithful to peyote's teachings. He was taught ceremonial details, such as how the face should be painted. He was also instructed on how to sing the songs that were to form a principal part of the worship ceremony (he knew more than two hundred of these). Wilson introduced many Christian elements into subsequent peyote practices.

A second figure influential in the spread of a Christian peyotism was the half-Comanche Quanah Parker, a chief who in 1884 became deathly ill. Late Nineteenth Century Diffusion

Quanah Parker (1839-1911) contributed greatly to spread of the highly ritualized Christian practices associated with peyote. He insisted that women not be restricted from these ceremonies.
When he failed to recover under the care of at least one white doctor, his aunt finally took Parker to a curandera, thought to have been a Tarahumara, who revived him with peyote tea in only a few days. That experience changed Parker's life. A militant before, he decided to turn his back on violence and to help spread peyote as a unifying force for "pan-Indian movement." The third man was James Mooney, an anthropologist from the Smithsonian Institution. In 1891, he traveled into the still-dangerous Oklahoma territory, where he became a participant in peyote practices. He became convinced that the Indians ought to unite in a Native American Church (the name is thought to have been his suggestion) to protect their right to use peyote. Mooney called for a meeting of "Roadmen," peyotist representatives and to help spread the peyote cult had already developed among some Apache and Tonkawa and then among the Comanches and Kiowas by the turn of the twentieth century. As time passed, use of this plant became common in more than fifty American tribes, including the Cheyenne, Shawnee, Pawnee, Arapaho, Chippewa, Blackfoot, Crow, Delaware and Sioux. Instead of the ceremony of chanting, meditation and prayer, blending Christian elements into their theology in most instances.

By 1922, the number of ceremonial peyote users had grown to about 13,000. It has been said that at present more than half of all North American Indians belong to the Native American Church (about a quarter of a million peyotists altogether). Although there is a good deal of individual and group variation, peyote meetings regularly begin at sundown on Saturday night. Remarkably, there are few church buildings in this religion. Some wooden chapels have been built, and some groups have constructed cement altars, but ordinarily, peyote ceremonies are conducted at a hogan or in a tepee set up for the occasion. Most often, fewer than a score of people participate, gathering around a fire that lights a crescent-moon altar to "Father Peyote." They stay together until some time after sunrise. Then they join others in a large communal meal.

The experience is presided over by a Roadman or Road Chief, who represents the Great Spirit and shows "the peyote road." At least three others officiate: the Fire Chief, who represents the Angelic Host—guards the door, tends the fire, and builds and strikes the fire; the Cedar Chief, representative of the Holy Ghost, who brings any disoriented participants back into communion with the others by waving cedar incense; and the Drum Chief, who represents Jesus and keeps up a beat all night long. Usually, each participant in turn sings four peyote songs. A point of transition leading to a kind of "second wind" for the experience is reached at midnight, when the Roadman goes out of the tepee and blows a whistle "in the direction of the four corners of the earth." Another drum in masked form at the arrival of fake dawn, when a woman representing "Peyote Woman" enters the tepee bearing water and simple food. Many observers agree with anthropologist J.S. Slockin, who testified in congressional hearings in the late 1930s that he had "never been in any white man's house of worship where there is either as much religious feeling or decorum." John Wilson and others emphasized sobriety and the creation of better family lives in their teachings, and many testimonials since indicate that Indians have used this powerful mental drug in socially acceptable ways. "It is the only holy thing that I have become aware of in all my life," said the Winnebago Crash-Dancing Thunder when he was convicted to peyotism by an experience with the cactus at age forty-five.

Legislation against peyote has been introduced at the federal level a number of times, succeeding only recently. But earlier laws banning peyote were passed in eleven states, mostly in the Southwest. In 1906, Judge Yale McFate of Arizona handed down a definitive opinion overturning the state law and sanctioning peyote use by Native Americans under the Fourteenth and First Amendments' protection ensuring religious freedom. Since then, Indian peyotists appear to have had no further trouble with law enforcement agencies. The federal legislation barring the use or possession of peyote and mescaline contains a special exemption for the "holy use of peyote in bona fide religious ceremonies of the Native American Church." 5

Scientific Scrutiny and Diffusion among Non-Indians

Some people claim that Mrs. Anna B. Nickels, a resident of Laredo, initiated modern pharmacological and scientific studies of peyote in the early 1880s by sending samples to Parke, Davis and Co. and to other investigators in North America and Europe. The records are lost, however, and other historians declare that it wasn't until 1887 that Parke, Davis and Co. began

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Dr. Louis Lewin, a scientist and artist often called the “father of modern psychopharmacology,” received some of this material, labeled “Muscale Button,” in Germany in 1887. The next year, he traveled throughout the southwestern United States and took dried specimens back to Europe, where he soon isolated numerous alkaloids from peyote. He gave some of his samples to the botanist Paul Hennings of the Royal Botanical Museum in Berlin for study. In 1888, he stimulated other pharmacological investigations by publishing the first report on the cactus’ chemistry.

The first account (by a white) of “peyote inebriation” was published in 1897 by the distinguished Philadelphia physician and novelist Weir Mitchell. Soon after, he sent “peyote buttons”—the part of the plant growing above ground—to Havelock Ellis, a pioneer in psychological and sexual studies. Ellis had read Mitchell’s narrative and soon published two influential accounts of his own experiments under the influence of peyote in the British Journal of Medicine.

The scientific examination of peyote stimulated by Lewin’s enthusiasm resulted in the isolation of the principal psychoactive component in 1897 Arthur Heffter, Lewin’s colleague and rival, made this identification by systematically ingesting a number of alkaloid “fractions” made from peyote, as in the case of psilocybin later: animal testing had been inconclusive as to their various psychoactivities. Heffter named the active compound “mescaline” (which soon became “mescaline”) and reported that “mescaline hydrochloride, 0.15 g, produces a pattern of symptoms which differs in only a few respects from the one obtained with the drug (peyote).”

Over time, scientific interest in mescaline—first synthesized in 1919 by Ernst Spath—supplanted further investigations of peyote. The last extensive study in this period of the cactus’ mental effects was reported in 1927 by the French psychologist Alexandre Rouzier, who caused a stir with his accounts of the exotic “visions” experienced by his subjects.

Also in 1927, Lewin’s colleague Dr. Kurt Beringer, a friend of Hermann Hesse and Carl Jung, issued a 315-page description of the effects of mescaline entitled Der Meskalinrausch (The Mescaline Inebriation). At the same time a short book by Heinrich Kliiver took issue with Ellis’ earlier opinion that the chief feature of mescaline “visions” was that they were “indescribable.” Kliiver tried to catalogue the visual forms of the “hallucinatory constants” induced by this mysterious substance as basically gridwork, spirals, cobwebs and runnels.

Through the first half of the twentieth century, peyote aroused very little interest in North America among non-Indians, aside from a few isolated instances. A “peyote meeting” held in an apartment in New York City in 1912, for example, was described by Mabel Dodge Luhan in her Movers and Shakers.
S. Weir Mitchell, a Philadelphia physician and novelist, published the first description of peyote’s mental effects. He sent the cactus to Havelock Ellis, pioneer in sexual studies, who tried it in London; he also sent it to the psychologist William James, who ingested one button, got “violently sick” and wrote his brother that he would “take the visions on trust.”

Kurt Beringer (1893-1949), an associate of Carl Jung and Hermann Hesse, published a description of his mescaline studies in 1927—Dix Mescalinrampeln (The Mescaline Inductions). One of his subjects became fascinated with trying to put the “Jurian succession” of mescaline images on film—later, Walt Disney hired him as the chief visualist for Fantasia.

Awareness of peyote was slow to develop even among the anthropologists studying native practices. Most of them were mainly interested in recording earlier Indian traditions and thus failed to notice the burgeoning religion of their time. Contemporary Indian practices began to draw attention only after a series of papers on Winnebago peyote rites were published by Paul Radin starting in 1914. Wences La Barre’s The Peyote Cult—a book that became something of a bible among members of the Native American Church—was based on field work undertaken during the summers of 1935 and 1936. The Peyote Religion by J.S. Slotkin—the next major anthropological study—wasn’t...
Peyote, Mescaline and San Pedro

Re-awakened Interest at Mid-Century

published until 1956. Slotkin spent a good deal of time among the Menomini and other Indian tribes; thanks to his defense of peyote in lawsuits, he became known affectionately as the "national secretary" of the Native American Church. David Aberle's The Peyote Religion Among the Navajo (1966) is an exhaustive study of how peyote spread to a tribe opposed to its use. The Navajos had had many objections to peyote; they didn't feel it was traditional. However, federal interference with their traditional but "unecological" methods of sheep grazing eventually brought many of the tribe into the pan-Indian movement and then into the Native American Church.

A Decade Opening the "Psychedelic Doors"

In the early 1950s, the story took a significant turn. The British psychiatrist Humphry Osmond—along with Canadian associates John Smythies and Abram Hoffer—began to examine the properties of mescaline in connection with their research on psychosis and schizophrenia. In 1952, Osmond and Smythies published a six-page article about their findings in the Journal of Mental Science. Their provocative theories about the actions of brain chemicals attracted the attention of the novelist Aldous Huxley, who soon of ferred himself as a guinea pig for further experimentation. Thus it was that on a lovely May morning in 1953, in the Los Angeles hills, Huxley took mescaline sulfate—the first of ten psychedelic experiences. This event was to change the way many people look at the world today.

Being the center of controversy was nothing new to Huxley, a renowned author whose ideas expressed in thirty-nine previous books had been discussed at practically all levels in Western society. He had been honored for decades by the literary world after a series of novels whose "cynical" and "immoral" characters had shocked the sensibilities of many people. Still, he must have been surprised by the intensity of the enthusiasm and the antagonism with which his The Doors of Perception (1954) was received.

In this book of less than one hundred pages, written in a month, Huxley reported on his initial mescaline sulfate experience and speculated on the nature of such radical mental transformations. Many readers were outraged by his apparent conformance of an experience so alien to our culture—so "pagan" and "mystical." The book shone as an unexpected bright light through the gray complacency of technological civilization. Some of his literary followers didn't at all like his lead this time; they claimed that his thinking had become "mushy." R.C. Zaehner, a professor at Oxford specializing in the study of Eastern religions, took mescaline sulfate with the intention of testing Huxley's assertion that a profound "mystical state" had been induced by a drug. In Mysticism: Sacred and Profane, Zaehner described his experience as a minor "pre-mysticism" that reminded him mostly of Alice in Wonderland.

The interest in mescaline and peyote awakened by Huxley's book was greatly augmented by Robert Dolepp's popular Drugs and the Mind (1957) and by David Ebin's The Drug Experience (1961). Both provided lengthy accounts of "classic" peyote and mescaline experiences. By the early 1960s, the media were definitely fascinated by these substances. Alice Marriott wrote about peyote in The New Yorker, John Wilcock in the newly established Village Voice and Allen Ginsberg in Birth (Ginsberg's poem Howl was composed following a night on peyote walking through the streets of San Francisco.) Here is the text of a signed letter, to give another instance, sent to Life magazine after it published an account of the "sacred mushrooms" of Mexico in 1957:
Sirs: I’ve been having hallucinatory visions accompanied by space suspension and time destruction in my New York apartment for the past three years—produced by eating American-grown peyote cactus plants. I got my peyote from a company in Texas which makes COD shipments all over the country for $8 per 100 “buttons.”

Peyote could then be acquired by mail from Laredo and nearby areas simply by requesting it, and it soon became a fairly familiar object on many college campuses and in beatnik and artistic circles. In 1960, one of the first peyote busts among whites occurred at the Dollar Sign Coffee House, an East Greenwich Village café that sold the ground up cactus over the counter in capsules. The proprietor, Barrett Bruchlos, had mail ordered 100 lbs. of this cactus, certified by the Agriculture Department to be without pests. His supply was confiscated, but he was never charged.

Huxley’s book opened an era when a number of pioneers of the psychedelic movement first turned on. Robert Masters, who published the earliest account of its effects in the sexual realm in his *Forbidden Sexual Behavior and Morality* (Julian Press, 1962), had his first experience with peyote during the 1950s in Louisiana. In 1960, Arthur Kleps wrote to Delta Chemicals Co. in New York for mescaline sulfate and tried 500 mg. The experience resulted in his leaving his job as a state prison psychologist, in addition to other considerable changes in his life. Here is how he described what occurred:

At that point I retired to the bedroom and closed my eyes (having occurred to me that if I kept them open a monstrous gobbler from outer space might come around the corner any moment) and found myself watching a 3-dimensional color movie on the inside of whatever it is one looks at when there isn’t anything there. All night, I alternated between eyes open terror and eyes closed astonishment. With eyelids shut I saw a succession of elaborate scenes which lasted a few seconds each before being replaced by the next in line. Far-out oriental civilizations. Jungles. Organic computer interfaces. Animated cartoon. Abstruse light shows. Tempests and echoes of a distinctly pre-Columbian American type. There was no obvious narrative connection between scenes or aesthetic coherence to the whole. The most awesome and subtly well executed spectacles, things that compared quite well with the best in Western art, alternated with gross caricatures. There was never any hint of a “technical” breakdown though—if something merely silly was being presented it was always dressed with all the skill and perfection of a Walt Disney feature—even if the whole thing was being pirated. I’ve always been a little unmoved by the idea of a Walt Disney parody, plus all kinds of critics insisted Disney could never have afforded it. Let’s say that “disguise” was being deployed in the form of the conventional cartoon cartoon on a cartoon sub—two-dimensional Pied Piper sub—something that couldn’t be imagined. Well, just for kicks why not add a transparent ocean, perfectly and variously tinted, in which bob a billion seahorses, singing and playing perfect tiny musical instruments? Certainly. Coming right up. That was the spirit of the thing. No job too large, no job too small. The difficult we do right away, and the impossible...we do right away too.

Art Kleps is Chief Boo Hoo of the Neo-American Church. Author of *The Boo Hoo Bible* and *Millbrook*, he has experimented with mescaline sulfate in 1960.

But I have exposed the conclusions I arrived at later in the terms of my description. What I was seeing was a kind of language of the gods, the ultimate vocabulary of the mind, which was, naturally, much more than just a collection of nouns. I didn’t think it through until later, but at the time the tip-off was a radio discussion I turned on in a vain attempt to make the visions stop. Every single word emanated from the radio got a magnificent image to go with it, as if the trivia being spoken had been the life’s work of generations of media technicians on planets given over to the production of such artistic wonders—all for the purpose of this one showing in Art Kleps’ one man screening loom...
This columnar cactus attains from nine to twenty feet in height in part of Ecuador, Peru and Bolivia, mainly at elevations between 6,000 and 9,000 feet but occasionally as low as sea level. Some U.S. commercial cactus outlets carry it for sale, and it seems to grow easily anywhere if given plenty of sunlight.

Archaeological evidence relating to the San Pedro cactus goes back well over 3,000 years. A Chavin stone carving from a temple in northern Peru, which shows the principal deity holding the San Pedro, dates from 1,300 B.C., almost equally ancient textiles from this region depict the cactus with jaguar and hummingbird figures. Ceramics made between 1,000 and 700 B.C. show the plant associated with deer. Other pottery of a somewhat later date exhibits the plant in conjunction with the jaguar again and with spirals, thought to represent the cactus’ mental effects.

After the discovery of mescaline in the San Pedro cactus, it was soon found in other tall, columnar Trichoceris as well as in a Sclerocephorus species from South America, in Cereus jamacantu from Brazil, and in the giant Parodia gigantea-abundans of Mexico. The Mexican cactus contains another psychoactive compound—peptine—which also appears in the Carnegiea gigantea of the U.S. Southwest, where it is called “oventine.”

In 1972, mescaline was identified in a cactus native to the U.S.—Sclerocephorus aselliformis. This “hatchet cactus” has traditionally been used in native rituals but has been assayed for mescaline content at less than 0.00002 percent of the dried cactus’ weight. Alexander Shulgin calculated that one would “need about 300,000 cacti to achieve an effective dose of mescaline.”

The San Pedro cactus in the fresh form has about 0.01 percent mescaline, which is a fairly typical percentage for nine of the ten Trichoceris known to contain mescaline. Trichocerus peruvianus, however, is at least ten times as potent as the others. This branching, candelabra type of cactus, originally collected in Peru, has a mescaline content equal or superior to that in peyote. Jeremy Bigwood comments that it would not be all that surprising to find that this cactus has been used in Andean shamanistic rituals, although no archeological evidence has been presented to date.

Mescaline and Peyote Go “Underground”

Throughout the 1950s and 1960s, mescaline could be purchased from several chemical supply houses in the form of sulfate or hydrochloride crystals. In 1970, mescaline and peyote were “scheduled” as part of a Comprehensive Drug Abuse Prevention and Control Act, which established penalties for possession, manufacture or distribution: “a term of imprisonment of not more than 15 years, a fine of not more than $25,000, or both.” Title 21 prescribes possession of “all parts of the plant presently classified as Lophophora williamsii, whether growing or not, the seeds thereof, any extract from any part of such a plant, every compound, salt, derivative, mixture or preparation of such a plant, its seeds or extracts.”
Various forms of mescaline have continued to appear over the last dozen years but generally only in small amounts made for a few people in the counterculture. Older U.S. citizens wishing to have a mescaline experience have therefore traveled to the Chihuahua Desert of northern Mexico to get peyote. Many of these have taken large quantities back home with them. Because of the law against possession of peyote and its constituents, recent mescaline use has been mostly sporadic and thus unritualized, exploratory and recreational.

Indian peyotists provide the main contemporary example of mescaline and peyote use as a means of psychic exploration. A quarter million practitioners have taken this potent psychedelic—often quite frequently, often for esoteric and communal interaction.

The Church of the Tree of Life, centered in the San Francisco Bay area, tried for years to develop a ritual somewhere between that of the Native American Church and that followed by the Huichol Indians of Mexico. Some members felt that the Native American example was too constricted and focused; they desired a non-denominational ritual encompassing greater possibilities for expression and introspection. (“The NAC,” commented one, “hasn’t produced the marvelous, artistic, creative explosion seen among the Huichols.”) Although the attempt to find a middle ground was pursued one, “hasn’t produced the marvelous, artistic, creative explosion seen among the Huichols.” Although the attempt to find a middle ground was pursued seriously, the results were unsatisfactory—or “somewhat hazy.”

Native and Non-Native Use under The Bill of Rights

The Church of the Tree of Life attempted to obtain the legal exemption allowed to Indian practitioners. So did the Church of the Awakening, an Arizona-based group founded by John and Louisa Aiken after the deaths of their two sons in the 1950s. Claiming peyote as one of its sacraments, the Church of the Awakening took its case up to the Supreme Court. Years later, the justices refused to hear the appeal. Only in regulations relating to the use of peyote does the government depart religious freedom and actively discriminate on the basis of skin color.

A recent case testing this law involves the Native American Church of New York, which has met regularly and openly in East Greenwich Village since the early 1970s. This group is particularly interesting because of the legal conundrums that have resulted from its religious use of psychedelics. In the mid-1970s, this church was granted legal status under the authority of the New York State Health Commissioner’s discretionary power to grant exemptions to Schedule III drugs, soon brought the 2nd District Court. The results of the 2nd District Court trial were perplexing. Judge Milton Pollack ruled that the church was not bona fide because it was selling peyote. On the other hand, he declared that Birnbaum—although he, too, was selling peyote—was bona fide because he sincerely believed that “peyote was God.”

New York state police came to the church on a separate matter, and Birnbaum showed them receipts of purchase for the 30,000 peyote buttons on the premises. Remarkably, the police left without confiscating any. However, new “Racketeer drug laws,” which limited the Health Commissioner’s power to grant exemptions to Schedule III drugs, soon brought the police back. They said they didn’t want to arrest Birnbaum. But they did want to take the 30,000 peyote buttons, and the only way they could do that was by arresting him.

Judge Pollack’s ruling that the church was not bona fide was appealed on constitutional grounds and denied because in the opinion of the new judge Birnbaum hadn’t been found bona fide! He also declared that if anyone were to be accepted as bona fide, then peyote could be used in worship by everyone in the jurisdiction of the 2nd District Court, which includes Vermont, Connecticut and New York.

An appeal that the Birnbaum case be dismissed “in the interest of justice” has been denied. Birnbaum is now facing a sentence of fifteen years to life.

While generating all these complications, the judicial system has lost sight of the principle at issue, articulated very simply by Alice Marriott and Carol Rachlin in a comment on the NAC as a whole: “That the Bill of Rights of the United States Constitution grants each man his right to worship God in his own fashion is incontrovertible.”

Trekking Back to Peyote Country

Several books—such as Fernando Harmo’s In the Magic Land of Peyote, Barbara Myerhoff’s Peyote Hunt and Joan Halifax’s Shamanic Voices—along with shorter accounts from Peter Furst, Michael Harper and others describe the Huichol Indians’ annual trip to gather peyote. These reports have encouraged many Americans to make similar journeys.

Prem Das, a white who apprenticed himself for five years to Huichol shamans Ramondo Medusa Silva and Muxtana recently led a group from the Esalen Institute in Big Sur to peyote’s native area. The Mexican doctor...
Peyote seekers line up by the highway near the city of Zacatecas for a blindfolding ceremony that precedes symbolic passage through the mythic “cloud gates” and entrance into the sacred country.

Salvador Roquet is another who has taken people to the home of hikult (peyote). An author from the Harvard Divinity School has even written an account of experiencing peyote sixty paces from the Huichols. Not being Huichols, he explains, whites don’t go to exactly the sacred spots. After ingesting peyote, they may “learn how to be a Huichol” by watching them from a respectful distance.

Much of the peyote growing in the more accessible parts of the Chihuahua Desert has been picked by people without the sense to leave the root. It can still be found in remote areas but is in danger of extinction.

**BOTANY**

In their four-volume *The Cactaceae*, written at the turn of the century, Britton and Rose describe 1,213 species of cacti; the number of clearly identified species has since gone well beyond 3,000. Peyote is unusual among cacti, displaying spines only as a seedling. It has been found to produce more than sixty separate alkaloids and is thus, as Richard Evans Schultes described the plant, “a veritable chemical factory.” In *Peyote—The Divine Cactus*, Edward Anderson presented the results of twenty-five years of study of its botanical aspects, concluding that “*Lophophora* seems to stand by itself in possessing a particular combination of morphological characters unlike any other group of cacti.”

The root of peyote, which is quite large in relation to the portion above ground, looks like a turnip or carrot and is topped by the “button,” which resembles a dull bluish- or grayish-green pincushion with a bit of fluff in its center. This wool-like fluff may have given peyote its name, which is thought to be derived from a root in the Na*huatl* language meaning “cocoon-silk” or “caterpillar’s cocoon.” The flowers and the black, “woolly” seeds emerge from this fluffy center.

Richard Heffern, in his *Secrets of the Mind-Altering Plants of Mexico*, describes some characteristics of this plant:

Instead of thorns, the peyote cactus has small, short tufts of cotton-like material. Buried in the center of each tuft is a tiny, thin-walled, fleshy pod containing several very tiny black seeds. The plant grows outward and downward from
Peyote, Mescaline and San Pedro

Peyote, Mescaline and San Pedro

Peyote produces delicate flowers that are reddish-pink and usually appear between March and September.

Not

The first person publishing a binomial name for it was the French botanist Charles Thunberg, who in 1847 described it as Echinocactus williamsii in a horticultural catalog. He didn't provide an illustration. Above is the first published image of peyote, appearing in Curtis’ Botanical Magazine in 1847.

It is interesting to note that peyote is one of the slowest-growing plants in existence. The period from the time a seed germinates until the plant is large enough to bloom for the first time is approximately thirteen years. When peyote was sold in the United States cactus nurseries up until a few years ago, the problem of slow growth was partially overcome by grafting the peyote cactus to the root of a very fast-growing Opuntia cactus. This technique greatly accelerated the growth of the peyote cactus. Regardless of what method is used, however, the plant will never grow to more than about four inches in diameter. Instead, new plants appear at the base of the old one, forming the characteristic peyote clusters.

There are problems of nomenclature confusion that are worth sorting out. Much of the muddle stems from confusion of the name mescaline (which Heffter derived from the Mescalero Indians) with the mescal bean, which is highly toxic, or with the mescal plant, which is a maguey and the source of a famous Mexican fermented liquor known as "pulque." Confusion with the bean is particularly interesting in that the tree it comes from—Sophora secundiflora—is often found together with peyote. About the only thing aside from cacti that blooms on the desert, growing up to thirty-five feet with flamboyant, large violet-blue and scarlet, highly fragrant flowers somewhat reminiscent of wisteria, the presence of the mescal bean tree is often taken as a clue to peyote location. There is evidence that its bean was used as an oracular medium as far back as 10,000 years ago. It is still honored.

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and worn by peyotists. The mescal bean, however, is highly poisonous and can produce death, reportedly even if as little as a half of a single seed is ingested.

A great deal of botanical pother about the peyote plant results from its having been classified first by Lemaire in 1845 as *Echinocactus alliium* then by Voss in 1872 as *Axelklawia villumii* and then by Courier in 1891 as belonging to the *Monstrella* genus. By the end of the nineteenth century, botanists had placed it in five separate genera. It was only in 1894 that it began to be known by its present name *Lophophora*. The name *Lophophora* derives from the crest in the center; it means "crest-bearer."

**The Lophophora Genus**

For a long time after the adoption of the designation of *Lophophora*, debate continued as to whether there were actually two variants—the *villumii* and the *leumii*. This controversy was ended in the late 1930s when Richard Evans Schultes discovered a photo of a single plant bearing the characteristics of both. Since then, *L. villumii* has become the standard designation. Those who saw a difference between the *villumii* and *leumii* types were actually seeing a difference between an early stage of the plant and a later stage. A greater concentration of mescaline appears as the plant gets older. The oldest plants are revered by the Indians and kept as personal amulets or placed on the crescent altar to represent "Father Peyote."

In 1967, a botanical description of another *Lophophora* species was proposed: *Lophophora diffusa*. The plant in question appears to be restricted to a tiny area in the state of Queretaro in central Mexico. Yellow-green rather than blue-green in color and lacking ribs, *L. diffusa* seems to have a considerably different chemical makeup, and some botanists now think it is an earlier evolutionary form of the more familiar *L. villumii*.

Since the description and acceptance of the *L. diffusa* species, Swedish investigators have re-examined the plant material used in Germany by Lewin and his associates. They found that it was composed of both *L. villumii* and *L. diffusa* species, which look somewhat similar. However, 90 percent of the alkaloids in *L. diffusa* are in the form of a sedative called "pellotine," with only trace amounts of mescaline present, so it's understandable that the initial studies came to different, contradictory conclusions. (Anderson recounts the complexities wrought by this error on page 136 of his authoritative *Peyote—the Divine Cactus*.)

In the mid-1970s, two Czechoslovakian botanists proposed two more species in the *Lophophora* genus. *L. fricii* was reported to have been first collected in 1931 and then again in 1974 from the vicinity of San Pedro in Coahuila, Mexico. It was to be differentiated from *L. villumii* by a greener skin by the shape of its ribs and seeds, and by its "carmine-red flowers." *L. jourdaniana* was described in 1975 as having come from an unknown location in Mexico; it was said to differ from other *Lophophora* in having...
The first peyote to be scientifically examined came to the laboratory in Germany in dried form. When dried, the succulent part of the cactus shrivels greatly, while the center tufts remain much the same. Boiling the specimens only partially restored their original appearance, as indicated by this drawing from 1888.

"Rose-violet" flowers and in being impossible to fertilize with the pollen of the other species. The specimens chosen to typify these proposal species—the "holotypes"—reside in an herbarium at a university in Pizen, Czechoslovakia.

More than five years have passed since division of the Lophophora genus to include these possibly new species was proposed (detailed morphological descriptions can be found in The Journal of Ethnopharmacology #1 and in Anderson’s book). To date, botanists seem skeptical, although few have done relevant field work. Schuites comments that he hasn’t seen the plants in question but doubts that there are significant differences. Anderson severely criticizes the descriptions provided by the collectors and says about the chemical reports issued in 1977 and 1978 that they "do not clarify the status of these taxa, especially when L.fruticans from Coahuila and within the center of distribution of L. williamsii is reported to have an alkaloid constitution similar to that of L. diffusa from Queretaro."

High Times has on occasion run ads offering Ariocarpus fissuratus—often called "living rock" or "peyote cimarron" cactus—and Ariocarpus retusus for sale as a kind of "peyote." These forms, triangular-knobbed cacti are known among the Tarahumaris and Huichols as tsuwiri and sunami, "false peyote." Although they contain alkaloids similar to mescaline, the Indians regard them as "an evil," dangerous because they are somewhat stronger than peyote and "will drive people mad" when ingested. They are not recommended.

*Trichocerei*

Ten species of Trichocerei are known to contain mescaline: T.pachanoi, T. bridgesii, T. macrogonus, T. terscheckii, T. werdermannianus, T. cuzcoensis, T. fulvinanus, T. squarrosulenta, T. valdivia and T. poeppigianus. These
Peyote, Mescaline, and San Pedro

Cacti are the next richest botanical source of mescaline after Lophophora williamsii—T. peruvianus containing about equal concentrations, the other nine with less than a tenth of peyote's psychoactive strength.

Trichocerei grow much faster than peyote—which may take five years when grown from seeds to reach a Vi-inch diameter—and they contain only a few alkaloids in addition to mescaline. When planted in shallow soil, half-inch slices from the cactus root easily. A two-foot-high San Pedro grows an additional four inches or so in about half a year.

CHEMISTRY

B-Phenethylamines and Tetrahydroisoquinolines

The sixty or so alkaloids in Lophophora williamsii fall mainly into two groups: the B-phenethylamines, to which mescaline belongs, and a larger assortment of tetrahydroisoquinolines. Both kinds differ from LSD and most other compounds regarded as psychedelics in that they don't have a full indole structure.

Most of the alkaloids found in peyote have never been tried on humans in pure form. Only four of these besides mescaline have been described subjectively. Much of this work was done by Arthur Heffter, who identified mescaline back in 1897. In 1977, Alexander Shulgin summarized the human tests at a conference in San Francisco:

- *Anhalone*: leads to sedation at levels of 300-250 mg. in man—a slightly opiated state, but absolutely no central [nervous system] effects of any type whatsoever.

- *Peilocine* has actually been the most explored, and has actually been introduced as a drug—in Germany in the 1920s, as a possible sedative. And, indeed, in 15-30 mg. doses in man taken orally, there is a sedation, a quieting. At levels of 50 mg. administratively, a person is led very gently into a quiet sleep, with no other effects and no hangover. It appears to be a very effective sedative.

- *Heffier* ran it up to 240 mg.—at which point, he achieved a state of dizziness, a state of gastric upset, but apparently nothing beyond sedation in terms of effects upon consciousness.

The third compound, *oralmetone*, is one of the methylene-dioxy groups that has been evaluated. It has been evaluated at 100 mg., with no central effects whatsoever.

The fourth compound—the most toxic—is *lophopherine*, which has actually been tried on cold-blooded animals, and was approached very cautiously by Heffter in his evaluations. At 20 mg., he had quite a radical vaso-dilation and an immediate headache. He pursued it religiously up to 50 mg.—at which there was quite a drop in heart rate and a compensatory increase in blood pressure, but no mescaline-like central effects whatever; no visual effects and no interpretative effects akin to mescaline.

Shulgin's conclusion, after three decades of interest in the chemistry of peyote, is that "the tetrahydroisoquinolines have to be more or less discarded as being major contributors" to the cactus' ability to affect mental states. He feels that these compounds may have secondary effects and may augment or interact with mescaline. "But for a first approximation, mescaline itself has to be considered as the principle component of the peyote that is active."

Escalene, Proscaline and Similar Synthetic Compounds

The mescaline molecule is the simplest of the B-phenethylamines. Hundreds, if not thousands, of similar compounds have been synthesized in
laboratories. These compounds bear a chemical structure that resembles ephedrine, which in the 1920s was "the primary reference standard" for stimulatory action in the central nervous system.

Gordon Alles, a pharmacologist associated with the Medical School of the University of California in Los Angeles and the initial sponsor of Edward Anderson's peyote studies, was very interested in this area of chemistry and eventually synthesized a number of psychoactive compounds that have chemical structures similar to that of mescaline. The best known of these are amphetamines and MDA. His discoveries inspired further investigations that led to the creation of quite a number of "converting" substituted phenylisopropylamines, which look much like mescaline on the molecular level but so far rarely have been found in the natural world. Many of these compounds will be discussed in Chapter Five.

Five compounds are identical to mescaline except for modification at one point on the molecule's ring, but these are expensive to make and so far have been experienced by only a few people.

\[
\text{OCH}_3
\]

Mescaline (CiHnOlN, or \(-3,4,5\text{-trimethoxyphenethylamine})

Escaline and proscaline are the best known of these analogues and differ from mescaline only in that the methyl group in the 4-position on the ring has been replaced by an ethyl or by a propyl group. Both compounds, in Shulgin's words, "appear to be qualitatively indistinguishable from mescaline in their action." There are two main differences: these "substituted" compounds cause less nausea than mescaline and are active in dosages of 40-80 mg., and thus exhibit about a five-fold increase in potency.

Also synthesized are 2,6-dichloral-TMPEA (trimethoxy-8-phenylisobutylamine) and 2-chloral-TMPEA—these are the 2,6-dichloral and 2-chloral analogues of mescaline—and 4-thiomescaIine, a compound in which a sulfur atom replaces oxygen in the 4-position. The last has been found to affect the central nervous system. In the Journal of Psychopharmacology for January-June 1979, Shulgin discusses escaline and proscaline, and makes this important note on the substituted variant:

It is active in humans at 10.25 mg-sc in comparison to a 12-fold increase in potency over mescaline. Of all the compounds mentioned in this review, it comes closest to being what should properly be called a psychotomimetic & produces a very similar and degenerative psychotic state that has some aspects of visual distortion but primarily disrupts the mental integrity.

PHYSICAL EFFECTS
Taste and Nausea
Peyote has a bitter taste and causes many users to feel nauseous. Referring to ingestion, Indians have often said that peyote is "a hard road." San Pedro has a similar taste, but among those who have tried both cacti it is generally considered easier to swallow and keep down. Crystals of mescaline, while lacking the acrid taste, may also cause nausea in a substantial number of people. Discussing this aspect of the mescaline experience, Robert DeRopp has commented that use of peyote "is about as unpromising a passport to an artificial paradise as can be imagined."

For some peyote, the nausea is an insurmountable barrier. William James had perhaps the most extreme reaction on record: eating just one button, which wouldn't be enough to prompt mental activity, caused him to be "violently sick" for twenty-four hours.

Nausea and gagging occur sufficiently often in Native American Church practices that there is usually an official, aside from those already described, who is designated as the "shovel man." He is prepared with a tin can to deal with any such difficulties.

Many of the Huichols and North American peyotists claim that when one eats peyote, one is "tasting oneself": if the user is pure, this cactus is "sweet." Barbara Myerhoff, accompanying the Huichols during their 1965 and 1966 hunts, recorded that they urge new participants to "Chew it well. It is sweet, like tortillas." No one vomited, but no one savored it either.

Huichols eating it look like anyone else with a mouthful of peyote-grey granules, sucking in their chins and moving their eyebrows up and down in a most characteristic manner—a reaction to the shockingly sour taste of the cactus. The Indians generally fast before using peyote to diminish the potential for nausea, consumption of food and especially alcohol prior to peyote ingestion greatly increases the chances of vomiting. Sometimes the gag reflex is triggered purposefully, as when they are trying a cure.

The Indians are interested in the mental and healing effects brought about by peyote, so they consider the initial problem of taste and nausea as inconsequential. Certainly, it is much less trying to the physical organism than other traditional methods used to achieve "visions" of the Great Spirit. Though peyote may be a shock to the stomach, its brief stress hardly compares with...
going out into the wilderness alone for a fortnight, carrying along just a meager cloth and a loin cloth, much like with some of the other ordeals related to raise altered states of consciousness—one extreme example being that of swinging by ropes inserted around muscles in the chest.

It's interesting that some of those who wrote about their use of peyote during the 1950s and 1960s were able to reconcile themselves to peyote's gagging effect as basically compensatory. Baringer earlier had described this experience as one in which the user gets the hangover first, then the inebriation. More than a few people believe at some level that they may not have a profound or even enjoyable experience without having to pay for it.

A surprising effect noticed among many who have gagged after ingesting peyote is that this frequently results in their getting enormously "high." Even when it seemed that nothing could have been kept down, results can be profound. After nausea has confirmed a certain amount on the experience, there is probably some psychological release felt at the point of vomiting that propels these people immediately into a psychodelicized state.

A myth that purports to explain the bitterness and nausea associated with the psilocybin cactus has gained some currency. Some people believe that the trip and entering of the peyote button contain strychnine; others have made the same assumption about the core of the San Pedro. Strychnine is absent in both cases.

The trip in peyote is inert, and in at least one experiment a whole handful of this hairy material was ingested without producing any effect. The Hackels always cut these "bushes of the peyote." Some people prefer to remove this non-psychoactive section, but it is a personal preference, like not eating the inner "choke" of an artichoke. As to the San Pedro core, the Indians of the Andes slice up and then boil the entire cactus when they are preparing their psychoactive concoction.

One might well ask: "If there is nausea and vomiting, then doesn't That mean the plant must be toxic?" Masters and Houston answer in their The Variety of Psychedelic Experience that "although toxic elements are present, the margin of safety is very great and serious poisoning is virtually unheard of."
When I went into general practice as a country doctor in Texas, I was very impressed that some of our Latin American patients, despite their poverty and living conditions, were extremely healthy. One day, I looked one of my patients in the eye and said: "Just look at the health of this man ... the very sight of his face ... the robustness of his hands ... that I became interested in those drugs that could promote physical as well as mental health.

In the late nineteenth century, American medical professionals became aware of peyote's health benefits after observing its effects among Indians. Once he became familiar with use of the cactus in treating illnesses, James Mooney recommended it to Dr. D.W. Premiss and Dr. Francis P. Morgan, the latter a noted pharmacologist, and they decided to undertake tests with the peyote buttons Mooney supplied.

Their subjects were suffering from a variety of physical complaints—chronic bronchitis with asthmatic attacks; neurasthenia; nervous prostration; chronic phthisis with facial neuralgia and catarrh; persistent cough; and even "softening of the brain." A report by Premiss and Morgan appeared in the August 22, 1896 Medical Record, proclaiming that the "effect of the drug was little less than marvelous" in one case; they sang the praises of peyote as a medicine. Among Indians, these qualities are regarded as being much the same: peyote is thought to put them in contact with the spirit world from which illness is derived. From their point of view, these substances by observing the webs constructed under the influence of one or the other psychedelic. The web is more regular or "perfect" under LSD and more abstract and irregular under mescaline. This difference is especially interesting because most "blind" studies of mental effects have shown that human volunteers are unable to differentiate between these two compounds. McCleary and his colleagues at California State University, Fullerton, to be controlled studies of comprehensive scope. One constituent in peyote—peyocactin, which is also called hordonine—has been shown by James Masters and Houston specify the agent ingested by their 206 subjects (of whom 89 received mescaline) but then seem to take it for granted that stages and characteristics of mescaline experience will be the same as those under LSD. They noted no great differences between the effects of LSD and mescaline in the creativity studies cited in Chapter One. Aldous Huxley, writing to Humphry Osmond in December 1955 about his first experience with LSD (175 meg.), emphasized the re-similarities and re-emphasized them later after more experiences with LSD:

The psychological effects, in my case, were identical with those of mescaline, and I had the same kind of experience as I had on the previous occasion—external transfiguration of the external world, and the understanding through a realization involving the whole man, that Love is the One ... I had no visions with my eyes shut—even less than I had on the first occasion with mescaline, which the moving geometries were highly organized and, at moments, very beautiful and significant though elusive, very trivial. Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) ____ Evidently, if you are not a congenital or habitual visualizer, you do not get internal visions beautiful and significant (though at others, very trivial) __...

In many of the writing about psychedelics, little effort has been made to clarify the differences between LSD and mescaline effects. In The Varieties of Psychotic Experience, for example, Masters and Houston specify the agent ingested by their 206 subjects (of whom 89 received mescaline) but then seem to take it for granted that stages and characteristics of mescaline experience will be the same as those under LSD. They noted no great differences between the effects of LSD and mescaline in the creativity studies cited in Chapter One. Aldous Huxley, writing to Humphry Osmond in December 1955 about his first experience with LSD (175 meg.), emphasized the resemblance and re-emphasized them later after more experiences with LSD:

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that is only sometimes prompted by LSD. Shulgin remarks that under mescaline “There is a benign empathy shown to both inanimate and living things, especially to small things.” Allen Ginsberg and others have suggested that mescaline—more than other psychedelics—produces a state of mind very receptive to the complex of benevolent attitudes expressed in Wordsworth’s nature poems.

There haven’t yet been any studies comparing effects from mescaline with those from peyote. The Church of the Awakening used both fairly extensively and characterized mescaline effects as “identical with those we had obtained through the use of peyote itself (in John Aiken’s words).”

There are many reports about the effects of peyote and mescaline coming from people who have used these substances in remarkably different ways and in a multitude of settings, from use in experimental laboratories to
recurrent use to use as part of a meditative regimen. These reports emphasize a variety of major effects, which will be illustrated under the following categories: sacramental aspects, visual effects, auditory effects, dimensions outside time and space, creative potential, psychological safety and psychotherapeutic potential. Several may occur within a single experience. In his studies, Beringer found that he was unable to predict what would come up in any particular mescaline session, even if he knew the experience well. Prem Das, writing in *All of the Huichol Indians*, agrees that the “spirits” in peyote don’t do “what one expects.”

**Dosage and Timing**

Some prefatory comments about dosage and timing are in order. Generally speaking, three fairly large peyote buttons—each perhaps 1.25 cm. across—are required to achieve any marked effect upon feelings, intellect and cognition. Peyotists in the Native American Church often take thirty to forty over a single night. (James Mooney recorded having heard of someone who took ninety!) Peyotists in the Native American Church often take thirty to forty over a single night. (James Mooney recorded having heard of someone who took ninety!)

The Huichols often use one to four buttons for lesser effects, inhibiting “anger, thirst, fatigue, and sexual desire” (according to Karl Müller, who lived for two years among these Indians). During their annual pilgrimage, peyote buttons consume many more, which are further potentiated by fasting and sleeplessness to produce “visions” and “communication with deities.”

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Heffter and Osmund assess an average peyote button as containing less than 25 mg of mescaline. Early studies of mescaline, detailed in Klüver’s book, generally involved doses of a fifth to a half of a gram. Shulgin puts the average dosage used in experimental investigations at between 300 and 500 mg of the sulfate salt, which is equivalent to 225-375 mg of the hydrochloride.

When mescaline or peyote is swallowed, mental changes usually begin to occur within an hour. Injection of mescaline brings them on more quickly. Over the next two to four hours, the experience flows to a peak and then descends over another four to six hours, if the mescaline was taken all at once. The salutary, possibly jaw-tightening effects from lophophorine and other alkaloids wear off fairly quickly. If peyote is taken over an entire night, then is in good humor and “at languid ease” (as Weir Mitchell expressed the transition).

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terms of the "majesty of its impersonal nature." Mitchell told the American Neurological Society in 1896 that peyotese revealed "a certain sense of the things about me as having a more positive existence than usual."

From people most sensitive to religious matters come still more impressive reports. John Blofeld, who was especially interested in Buddhism, had great doubts about Huxley’s claim that mescaline could induce yogic experiences of a high order (see Ralph Metzner’s The Ecstatic Adventure). After taking a quarter of a gram of mescaline, he began to contemplate the patterns that embellish sacred buildings, and "for the first time, I saw them as not arbitrary decorations but profoundly meaningful." His first mescaline experience wasn’t pleasant—it started with a sense of "tingling mental terror." Eventually Blofeld made a "total surrender" and "ceased to cling . . .  to self, loved ones, sanity, madness, life or death." The experience was transforming: "I actually experienced the momentary rising of each "impulse" are analogous to electrical charges, and "This was as fully apparent as are the individual bricks to someone staring at an unplastered wall. I actually experienced the momentary rising of each impulse and the thrill of communion with which it immediately ceased to be."

"I was to some degree aware of them all simultaneously." He wrote that the emanation theory and elaborately delineated layers of Indian cosmology were "designated by terms such as grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants." For instance-grating, lattice, fretwork. Flights, honeycomb or chessboard. designs represented one form-constant. Closely related were cobweb figures. Writers also used "private" and "inner" realms. "Designs" were their primary aspect, and he attempted to describe them using a limited number of "form-constants."
shorn keeping out of the typewriter all night, and he kept "reading" and chanting what he saw. The next day the other pilgrims told him that during the whole night he had performed as a "sorcerer," singing in a complicated ritual, and that surely the gods wanted him to become a shaman. The earliest reports among whites were by skilled literary men—Weir Mitchell and Havelock Ellis. Writing toward the end of the nineteenth century, both emphasized the visual qualities of peyote:

Havelock Ellis: The display which for an enchanted two hours followed was such as I had hoped to describe in language which shall convey to others the beauty and splendor of what I saw. Skies, delicate floating films of color, then an abrupt rush of countless points of white light swept across the field of view, as if the unseen millions of the Milky Way were to flow in a sparkling river before my eyes...along lines of very bright color...the wonderful lucidity of unfolding clouds of more vivid color combinations I could trace them...All the colors I have ever beheld are still in comparison to these. Ellis: All that time was merely a vague play of light and shade which suggested pictures, but never made them. Then the pictures became more definite, but too confused and involved to be described, beyond saying that they were of the same character as the images of the kaleidoscope, symmetrical groupings of opaque objects. Then in the course of the evening, they became distinct, but still indescribable—merely a vast field of golden jewels, studded with red and green stones, ever changing...The visions never resembled familiar objects: they were extremely definite, but yet always novel, they were constantly approaching, and yet constantly eluding, the semblance of known things. I would see films, glorious fields of jewels, solitary or clustered, sometimes brilliant and sparkling, sometimes with a dull rich glow. Then they would spring up into flower-like shapes beneath my gaze, and then seem to turn into gorgeous butterfly forms or endless folds of glistening, indescribable, infinite wings of wonderful beauty...Havelock Ellis gave a small amount of this peyote to the poet William Butler Yeats, who wrote back to Ellis about the impressive "visuals":

"Bovrin," which went and came in letters of light on the other side of the river. I call them up, but always with some inexplicable change...In the evening I went out on the Embankment and was absolutely fascinated by an advertisement of "Divines," which went and came in letters of light on the other side of the river. I can not tell you the intense pleasure this moving light gave me and how dazzling it seemed to me. Several investigators have since argued that the early emphasis on peyote's aesthetic appeal probably doomed scientific study. It may well be, as Levin felt, that visuals are not the most important part of the experience.

Nonetheless, heightened color and luminosity are transformations in consciousness experienced by most users and must to some extent be acknowledged as hallmarks of this chemical. Colors appearing most commonly in Indian experiences are said to be yellow, blue, green and red, inspired perhaps by the colors in fire and on the tepee or Hogan walls. In the experiments carried out by Ellis and others, the color emphasis was on blue or violet, though Huxley later found no color to be excluded.

Writing about colors and visions seen under a psychedelic, Huxley addressed himself to the central questions. Once blinded, and thus especially appreciative, he expected that visual transformations can have resonance on other levels. He had expected to enter into "the kind of inner world described by Blake and A.E. (George William Russell)." That wasn't what happened: The change which actually took place in that world was as in some revolutionary...at no time were there faces or forms of men or animals. I saw no enormous trees, no magical growth and metamorphosis of buildings, nothing remotely like a drama or a parable. But,

I was not looking now at an unusual flower arrangement. I was seeing what Adam had seen off the morning of his creation—the miracle, moment by moment, of naked existence:...

The books, for example, with which my study walls were lined. Like the flowers, they glowed, when I looked at them, with brighter colors, a profound significance. Red books, like rubies, emerald books, books bound in white jade; books of agate; of aquamarine; of yellow topaz; lapis lazuli books whose color was so intense, so intrinsically meaningful, that they seemed to burn the point of leaving the shelves to thrust themselves more insistently on my mind.

A rose is a rose is a rose. But these chair legs were chair legs were St. Michael and all angels:...Confronted by a chair which looked like the Last Judgment—or, to be more accurate, by a Last Judgment which, after a long time and with considerable difficulty, I imagined as a chair—I found myself...all at once on the brink of panic. This, I suddenly felt, was going too far. Too far, even though the going was into immeasurable, deeper significance:...

Huxley brought to bear a great deal of tradition in art, philosophy, mysticism, history, and psychology. There is probably no better discussion of color transformation and the psychedelic's ability to transport the user to what Huxley called "The Other World" than in the book he published in 1955 entitled Heaven and Hell.

Auditory Effects

As mentioned at the beginning of this chapter, Indian myths concerning the discovery of peyote generally involve a voice. A prominent auditory
Carlos Castaneda, described opposed to peyote, which he described as a Psychedelia), sensations (see Osmond's description of drumming and his reaction in *Psychedelic*).

Discrimination of tones under the influence of mescaline can become acute. To quote Lewis and a physician to whom he gave mescaline, music was sensed as "sweet and harmonious" and as coming "from infinity, the music of the spheres." When Slotkin first took peyote, he was greatly impressed with his altered auditory responses:

> It was about an hour before I began to notice any sensory effects. The drumming remained constant to me, but the singing seemed from high to low pitch in a way that no singer could ever do. Then the song seemed to come from all over the tipi, rather than just from the singer, and for a while it seemed to come from the top of the tipi. If I closed my eyes, I had no idea of where the music was coming from—ever when the singer was the man next to me.

At a later meeting, Slotkin noted that under peyote's influence he could hear whispers from some distance away.

Out-of-body experiences associated with the San Pedro cactus are discussed in Douglas Shaw's *Wizard of the Four Winds*—the story of Eduardo Palomino, a Peruvian sculptor, teacher, fisherman and shaman. Asked about the cactus' effects, Eduardo told Shaw's that first there is a slight dizziness that one hardly notices. And then a great "vision," a clairvoyance of all the senses of the individual. It produces a light numbness in the body and afterward a tranquility. And then comes a detachment, a type of visual focus in the individual inclusive of all the senses: seeing, hearing, smelling, touching, at moments—all the senses, including the sixth sense, the telepathic sense of transmitting oneself across time and space. It develops the power of perception ... in the sense that when one wants to see something far away ... he can distinguish powers or problems or disturbances at great distance, so as to deal with them. ... Then the individual, sometimes by himself, can visualize his past or ... the present, or an immediate future. By means of the magical plants, and the chants and the search for the roots of the problem, the subconscious of the individual is opened up like a flower, and it releases these blockages. All by myself it tells things. Shaw spent four years with Eduardo, eventually becoming his apprentice and helping in nine curing sessions. At first he had been skeptical about Eduardo's claim that he could see events and people at a great distance. Edwards tried to explain:

> The flight is spiritual ... One invokes, and his spirit goes to these events. One asks for the lagoon, invokes, and then the spirit makes the trip. The journey of the spirit also causes one to visualize the lagoon ... , an almost objective manner. ... Spiritually one is there and one sees it up close.

Q: Does your being actually arrive there?

My material being, no. My spiritual being arrives, yes; and I perceive in an objective fashion, as if I were in the place.

As for changes in time perception, consider an extreme example, the experience of Christopher Mayhew, a Member of Parliament during the 1950s who offered to take mescaline under the supervision of Humphry Osmond and before BBC cameras—surely one of the best-documented trips ever.

Although many people under the influence of psychedelics have seen "trails"—the simultaneous perception of several discrete moments, like the arc of a lighted cigarette in a dark room—Mayhew experienced this phenomenon to an unusual degree. For the London Observer he described his experience as an "Excursion Out of Time":

> The Spiritual Flight 147

Dimensions Outside Time and Space

As with other psychedelics, "out-of-body" experiences occur in many peyote and mescaline trips. Users have often felt weightless and had a sense of "flying." More than a few have reported seeing their body become "lumin- ecent" or "transparent" as they looked on from some distance away. One of Ellis' subjects felt a blue flame waving from the back of his head, then found himself becoming transparent like a Chinese lantern.

One of the most striking experiences associated with the San Pedro cactus is the so-called "Greek of the Four Winds"—the story of Eduardo Palomino, a Peruvian sculptor, teacher, fisherman and shaman. Asked about the cactus' effects, Eduardo told Shaw's that first there is a slight dizziness that one hardly notices. And then a great "vision," a clairvoyance of all the senses of the individual. It produces a light numbness in the body and afterward a tranquility. And then comes a detachment, a type of visual focus in the individual inclusive of all the senses: seeing, hearing, smelling, touching, at moments—all the senses, including the sixth sense, the telepathic sense of transmitting oneself across time and space. It develops the power of perception ... in the sense that when one wants to see something far away ... he can distinguish powers or problems or disturbances at great distance, so as to deal with them. ... Then the individual, sometimes by himself, can visualize his past or ... the present, or an immediate future. By means of the magical plants, and the chants and the search for the roots of the problem, the subconscious of the individual is opened up like a flower, and it releases these blockages. All by myself it tells things. Shaw spent four years with Eduardo, eventually becoming his apprentice and helping in nine curing sessions. At first he had been skeptical about Eduardo's claim that he could see events and people at a great distance. Edwards tried to explain:

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What happened to me between 12:30 and 4 o'clock on Friday, December 2, 1955? After brooding about it for several months, I still think that my first, aston-
singing conviction was right—that on many occasions that afternoon I existed outside time.
I don't mean this metaphorically, but literally. I mean that the essential part of me... had in existence, quite conscious of itself... in a timeless order of reality outside the world as we know it.

Mayhew's experience began with color hallucinations but soon led to a preoccupation with the very strange "behavior" of time. Time kept slipping out of sequence—he would see a cup at his lips before he actually removed it from the table—and he couldn't tell how far along he was in the experience. Even his watch did not help. Although his eyes registered various clock times, the hours were not in proper sequence, and he would see two-thirty from the table—and he couldn't tell how far along he was in the experience.

Time worked even more extravagant magic when it sent him into an end.

Another dimension, where "I would be aware of a pervasive bright pure light, like a kind of invisible sunlit snow": another part of reality outside the world as we know it.

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For several days afterward, I remembered the afternoon of December 2 not as so many hours spent in my drawing-room interrupted by those strange "excursions," but as condition years of complex bliss interrupted by short spells in the drawing-room.

On the first occasion when I "came back" in this way from an excursion I assumed that a vast period of time had elapsed and exclaimed, in astonishment, to the film team: "Are you still there?" Their patience in waiting seemed extra-

The conditional optimal prompt for creativity is to have a defined problem in mind that is stated in familiar terms—at least this was the assumption made at the Institute for Advanced Studies in Menlo Park, where qualifying volunteers were given mescaline. The results were that few of the subjects were able to solve artistic and technical problems after a single session.

The organic condition for prompting creativity is to have a defined problem in mind that is stated in familiar terms—at least this was the assumption made at the Institute for Advanced Studies in Menlo Park, where qualifying volunteers were given mescaline. The results were that few of the subjects were able to solve artistic and technical problems after a single session.

The case of architect Eric Clough is illustrative: he needed a design for an arts and crafts shopping center in a resort-university community. In Metzner's The Ecstatic Adventure, Clough describes receiving the mescaline in the morning and then, blindfolded, traveling in his mind through jungle terrain and scenes from pre-Columbian civilizations. About an hour after a small lunch, Clough was asked to concentrate on his design problem:

I looked at the paper I was to draw on. I was completely blank. I knew that I would work with a property 500' square. I drew the property lines (at a scale of 1" = 40') and I looked at the outlines. I was blank. I began to draw... my senses could not keep up with my images... my hand was not fast enough... I was impatient to record the picture (it had not faded one particle)... I worked at a pace I would not have thought I was capable of. I completed four sheets of fairly comprehensive sketches. I was not tired.
but I was satisfied that I had caught the essence of the image. I stopped working a few minutes later. I drank coffee— it was a magnificent day. While making drawings two weeks later, Gough found that his image of the shopping center remained sharp and that he was able to complete the drawings without referring to his original sketches. He also discovered he could view the project from different angles and examine minute construction details. His design was subsequently accepted, and since then he has been able to design other projects in the same way. Interviewed by the architect about his use of mescaline, Gough suggested that “All architects ought to have this experience.” He also confirmed that this faster, sharper and clearer procedure of “imaging” projects remained with him.

Psychological Safety

A 1971 report to the American Psychological Association by Dr. Robert L. Bergman, chief of the U.S. Public Health Service's mental health program on the Navajo Reservation, should be of interest to those concerned about the possibility of psychological damage from peyote and mescaline:

For a period of four years, we have followed up every report of psychotic or other psychiatric episodes said to arise from Peyote use. There have been forty or fifty such reports. The vast majority have been heard that could never be traced to a particular case. Some have been based on a physician's belief that Navajo people see Peyote and it is a particular person became delirious, it must be so for this reason.

The study found “one relatively clearcut case of acute psychosis and four cases that are difficult to interpret.” The clearcut case involved a Navajo who attended a peyote meeting after having had several drinks. “Ordinarily, no one is allowed to participate if he has been drinking, but the real man did not realize that the person had done this.” The Navajo became panicly and disorriented, then violent, but recovered within twenty-four hours and was reported to have remained well at a follow-up six months later. “It is noteworthy,” Bergman adds, “that members of the church warn that the combination of alcohol and Peyote is very dangerous.” Reactions in the other four cases were milder, and their relationship with Peyote was doubtful.

There is only very rare evidence for serious psychological problems arising from use of peyote or mescaline. In John Allan's analysis, mescaline experiences can be unpleasant but not harmful. Hollister and Osmund cite three instances of prolonged reactions, which are about the only such citations in the literature.

Bergman’s summary of how Native Americans minimize potential hazards is worth reading: “There is no one is allowed to participate if he has been drinking, but the real man did not realize that the person had done this.” The Navajo became panicly and disoriented, then violent, but recovered within twenty-four hours and was reported to have remained well at a follow-up six months later. “It is noteworthy,” Bergman adds, “that members of the church warn that the combination of alcohol and Peyote is very dangerous.” Reactions in the other four cases were milder, and their relationship with Peyote was doubtful.

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Bergman’s summary of how Native Americans minimize potential hazards can be generalized to other users. The crucial factors seem to be a positive experience held by Peyote, an emphasis on the spiritual world rather than the world within the individual, an emphasis on communion rather than personal detachment during the drug experience, and an emphasis on adherence to the standards of society rather than on the freezing of impulses.

Minimizing Dangers

The whole spirit of the religion seems best characterized as communion—with God and with other men. Meanings are experienced as a time of being close and growing closer to one another. Dimensions of time seem an important aspect of peyotism, and the activities of the service take place at precisely defined times of the night.

Road men are trained to look after people who become excessively drunk. If a participant begins to stare into the fire fixated and seems unaware of the others in the meeting, the road man will speak to him, and if necessary go to him to pray with him. In the process of praying with each person, he may fan him with an eagle feather fan, splash drops of water on him and fan cold ice over him. All of these processes are regarded as started and helpful, and it appears that they provide stimuli to several sense modalities to draw one back to the interpersonal world. Another safeguard is the custom that no one is to leave the meeting. Considerable efforts are made if necessary to prevent someone who has been using Peyote from going off into the night alone. This factor is probably important, too, in the customary activity of the meeting after the meeting. Everyone stays together and socializes until well after the time the drug effect is over.

Psychotherapeutic Potential

The direct experience of mental health professionals with peyote and mescaline was an early benefit from clinical investigations, significantly changing some treatment directions. In Psychedelic!, E. Robert Simner reviews how taking 200 mg. of mescaline sulfate with three “psychiatric residents” enlarged his sensitivity:

Although I had had much clinical experience working with schizophrenics as well as academic preparation in clinical psychology and two years of psychoanalytically oriented psychotherapy, new vistas and understandings were made available to me. . . . It seemed to me that the implications for doing in hallucination and psychotherapy with psychotic patients are far-reaching . . . I had not been able to intuitively understand the silly laughter of the hebephrenic or inappropriate affect until this time. Also, I was unaware of the social plight of the schizophrenic, who must receive feedback of his strange ness even from highly trained professional staff . . . I look on the mescaline experience as having been a provocative, rich source of data for speculation—rich, I am embarrassed to say, than much of my formal scientific research and study.

Few studies have involved giving mescaline to mental patients, although Hollister and Osmund discuss some from the 1950s in The Hallucinogens (pp. 38-39). Results indicated that larger than usual dosages were needed for schizophrenia, who generally responded with exacerbation of their symptoms. In the early 1960s, Charles Savage and associates gave a single high-dose combination of LSD and mescaline to seventy-four chronic neurotics and reported that psychological tests before and six months after their sessions showed “marked improvement in twelve, some improvement in twenty-two, and slight improvement in twenty-six.”
In my book *Psychedelic Baby Reaches Puberty*, a friend described how he benefited psychologically from his use of mescaline. His account indicates some of the psychological possibilities in mescaline visions:

"...I suddenly became aware that it takes a lot of energy to survive in the world, and that up till then this was effort I had been unwilling to expend...

But during the moment Frank was pulling me out flat on the couch, I knew without question that I needed to exert my will. I knew I had to do things myself. So I said, "All right, I won't be cold any more!" And I threw off the blankets. 

Frank was so absorbed with yanking on my feet and, as he pulled, I could see his face averted from me, probably quite sickened with his own sense of power. "All of a sudden I knew I could ignore my fears of my subconscious mind. The fear of my subconscious mind was not a real fear. I could conquer the fear. All at once I felt as though I could ignore anything and do anything. Problems suddenly seemed unimportant."

I turned to Frank and told him that I'd solved everything and that I might as well go home. "No home?" he asked. "Man, you're really under it!" He insisted that it was so bad, and finally I agreed. Since all my problems seemed solved, since I no longer was preoccupied by the psychological aspects of the experience, I began paying attention to music and colors and had a very pleasant time.

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**FORMS AND PREPARATIONS**

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I turned to Frank and told him that I'd solved everything and that I might as well go home. "No home?" he asked. "Man, you're really under it!" He insisted that it was so bad, and finally I agreed. Since all my problems seemed solved, since I no longer was preoccupied by the psychological aspects of the experience, I began paying attention to music and colors and had a very pleasant time.

**FORMS AND PREPARATIONS**

Psychedelic baby reaches puberty, a friend described how he benefited psychologically from his use of mescaline. His account indicates some of the psychological possibilities in mescaline visions:

"...I suddenly became aware that it takes a lot of energy to survive in the world, and that up till then this was effort I had been unwilling to expend...

But during the moment Frank was pulling me out flat on the couch, I knew without question that I needed to exert my will. I knew I had to do things myself. So I said, "All right, I won't be cold any more!" And I threw off the blankets.

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Peyote, Mescaline and San Pedro

or from other advertisers in High Times. It is usually sliced up and boiled for six to eight hours. A portion 6 to 10" long and 2 to 3" in diameter constitutes a normal dose.

Many ingenious techniques have been used to make peyote and San Pedro more palatable—to facilitate absorption of the psychoactive molecules without triggering the gag reflex. In most Native American Church rituals, the peyotists simply put a dried button in the mouth until it is soft enough to be chewed and swallowed. That takes some time. They pass around milk and may smoke. When peyote is ingested in this fashion, its caustic, soapy, bitter taste is soon displaced substantially by a numbness.

The next most popular method seems to be grinding peyote up and swallowing it inside gelatin capsules. Probably the most efficient method is to take it as a suppository or douche, which would cause it to be absorbed better. In been down so long it feels like up to me, Richard Farina suggests mixing cream, ice and rum in a blender, dropping in sliced bits of peyote and quickly swallowing the whole thing, the theory being that the rum is for taste and for anesthetizing the stomach while the cream lines the stomach and passes the peyote bits quickly to the intestines.

With fresh peyote, a good procedure is to chew it with the front teeth, then toss it in small bits to the back of the mouth and swallow immediately. Most efforts to cover up taste don't really work.

Peyote will burn if it is dried and powdered, and it can be smoked with grass. Many adherents of Indian practices will not use it this way. Themselves intensify the effects of marijuana; it gives a lovely, light high that sharpens vision without sending one on a major trip.

Mescaline usually appears as a clear crystal in the form of a sulfate or hydrochloride. The crystals are up to 1/6 (1/3 cm.) long. Shulgin puts the usual dosage of the sulfate salt at 300-500 mg., which is equivalent to 22½-37½ mg. of the hydrochloride. He adds that this dose is often administered in two installments about an hour apart in order to minimize nausea.

In the 1960s and 1970s, much that was sold as mescaline wasn't mescaline. The size of a capsule can be a helpful indicator, since at least a third of a gram is needed if the compound is to manifest psychoactive effects. Pharm-Chem indicated at one point that the chances were only one in fifty that a capsule sold as mescaline was the genuine product. Nowadays, however, most of what passes as mescaline is authentic.
CHAPTER THREE
Marijuana and Hashish

... icon for the faithful, a windfall for the glib, a bonus for under-employed experts, a thrill for the naive, a whipping-boy for the ambitious, a tool for mystic explorers, a tantalizing mystery for scientists, a cash crop for peasants, hassles, joy, sobering, tranquility, apoplexy, fear, rebellion all wash over Western man in the presence of the little green weed. —William Daniel Drake, Jr.

HISTORY
Ancient Forms and Distinctions about Usage

Origin of the marijuana plant is lost in pre-history, although it is likely native to central Asia, or possibly China. It is among humanity’s earliest cultivated crops, going back to the beginning of agriculture. Now it may well be the most widely distributed cultivated plant. Earliest archaeological evidences date back some 10,000 years and show twisted strands of hemp being used in Taiwan in the making of patterns on clay pots. The ancient Chinese wove clothes, shoes and rope from the fibers of this plant, and produced the first paper from it.

Even today (late 1982), debate continues as to whether there is more than one species of the Cannabis plant. Most experts now agree that there are at least three species, with the most important differences among them appearing in the seeds, stalk, growth habits and, to a lesser extent, resin content.

The species probably appearing first in China is known scientifically as Cannabis sativa Linneaus, classified in 1753 by Linneaus, the father of modern botanical identification. Until quite recently Cannabis sativa was the main species spread throughout North America. This form is distinguished by its height, often up to fourteen to sixteen feet—sometimes over twenty feet. It produces strong fibers but generally not very much resin, which contains the psychoactive ingredient in marijuana. However, certain strains of the species, such as “Acapulco Gold” and “Homegrown Haze,” exude a considerable amount of resin.

The earliest reference to mind-altering effects from Cannabis appears in the Atharva-Veda of the second millennium B.C. when it was already regarded as one of the five sacred plants of India. Ernest L. Ard in his Marihuana: The First Twelve Thousand Years, discusses much of the early use of Cannabis in the daily life of China and India. Schurmond Hoffmann in Plants of the Gods documents its use in Tibet.
Three Species of Cannabis

The Tibetans considered Cannabis sacred. A Mahayana Buddhist tradition maintains that during the six steps of asceticism leading to enlightenment, Buddha lived on one Hemp seed a day. In Tantric Buddhism of the Himalayas, a specific role in the meditations was used to facilitate deep meditation and spiritual awareness. Both medical and recreational use of Hemp is taken for granted in this region that the plant is taken for granted as an everyday necessity.

Cannabis indica Lamark, classified by Lamark in 1783, is a shorter plant that's more densely branched. Seldom over eight feet tall, it has short, brittle fibers and thus is not very useful for fiber but generally contains the greatest amount by weight of 'Cannabis' resin. Until recently, its cultivation has been mainly restricted to India, Persia and the Arab countries, where its leaves are often made into a milkshake and its resin is pressed into hashish.

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Cannabis ruderalis Janischewsky, was identified in 1924 in southern Siberia, but it also grows wild in other parts of Russia. Rarely over two feet tall, this species has little psychoactivity in its resin but matures much faster than the others (in about seven weeks).

The earliest record we have of Cannabis ruderalis comes from the timeless Greek traveler Herodotus, often considered the first Western historian. In 450 B.C., he described the funeral rites that took place when a king died among the Scythians, a nomadic tribe that roamed the steppes from Turkestan to Siberia. To purify themselves the Scythians sat up small tepee-like structures covered by rugs, which they would enter to inhale the fumes of hemp seeds thrown onto red-hot stones. "It smolders and sends forth such billows of smoke that no Greek steambath could surpass it," comments Herodotus. "The Scythians howl with pleasure at these baths."

Historians considered this passage by Herodotus to be romantic embellishment until the late 1940s, when in the Altai mountains of Siberia Scythian tombs were found that had been covered with ice since about 400 B.C. Alongside these tombs were well-preserved corpses and little tepee-like structures covered by rugs, which they would enter to inhale the fumes of hemp seeds they were declared to be of the ruderalis species. C. ruderalis remains largely unfamiliar to botanists outside the U.S.S.R.

The Spread to Europe and Africa

Of the three species of Cannabis, the salvia type was the first to be spread widely around the globe, probably because of its having strong fibers and lots of edible seeds. The earliest known pharmacy book, published in China in the third millennium B.C. recommends hemp for everything from rheumatism to constipation—even absent-mindedness.
Differences in the internal structure of wood between Cannabis sativa (left) and C. indica. These microscopic cross-sections illustrate how the usually single conductive vessels in the former species vary with the consistently grouped vessels in the latter.

There appears to have been little acquaintance with this herb in the West until classical Greek times, when it was brought westward by various barbarian tribes, notably the Scythians. Democritus wrote that it was occasionally drunk with wine and myrrh to produce visionary states; Dioscorides and Galen indicated that it was valued for its medicinal and therapeutic uses. Galen also recorded that this herb was often passed around at banquets to promote hilarity and joy.

Strangely, the ancient Greeks and Romans paid hardly any attention to the fiber in this plant, although its use for ropes and sails had been introduced from Gaul as early as the third century B.C. It was not until the first century A.D. that Pliny the Elder outlined the grades and preparations of hemp fiber. Scythians and other tribes introduced hemp into northern Europe as well. An urn containing leaves and seeds of the Cannabis plant, unearthed near Berlin, is believed to date from about 500 B.C. Although few records remain from this time, it is evident that the hemp plant soon made its way to England, Scotland and Ireland. Archaeological remains show that hemp was growing at Old Butkenham Mere in England by 400 A.D. From this point on, there was a tremendous spread of its cultivation in the British Isles. The plant was valued then for its fibers (made into cloth) and its seeds (which, as earlier in China, were used for food and oil).

Paradoxically, often regarded as the father of alchemy, Paracelsus, first became acquainted with Cannabis products while in Basel, Switzerland, where the pharmaceutical firm of Sandoz now stands. It was also there that the botanist Leonard Fuchs sketched a charming, classic drawing of the sativa plant in 1543. By this time, the inebriating effects of sativa resin had been discovered by Europeans. Francisco Rubialles, writing in the early sixteenth century, devoted three small chapters of his Third Book of Patience to this herb's botanical and psychoactive properties.

Meanwhile, the indica species of the plant spread gradually from the Far East to Egypt and Persia. Schultz and Holmman cite a "questionable specimen of hemp" in an Egyptian tomb dating as far back as three or four thousand years ago. Arab traders brought Cannabis to the Mozambique coast of Africa around the thirteenth century. From there, its use spread rapidly inland to virtually all African tribes. Archaeological evidence of this transmission includes fourteenth-century waterpipes containing Cannabis residue.

European interest in the indica species of Cannabis began in the nineteenth century, as a result of the British colonization of India and Napoleon's conquest of Egypt (his doctors brought back many kilos of hashish in the 1790s). By the 1840s, monographs by Aubert-Roche, O'Shaughnessy and Moreau had spurred inquiry into how the drug would be useful in Western medicine.

W.B. O'Shaughnessy brought Cannabis into Western medical practice. He had been associated with the British East India Co. as a surgeon and was a professor of chemistry at the University of Calcutta. In 1839, he published a forty-page article describing the history of Cannabis products in the East, tests he had carried out on animals confirming the drug's safety and his successes with this agent as an analgesic in the treatment of rheumatism, severe convulsions and tetanus.

French psychologist Jean Joseph Moreau de Tours, observing the effects of Cannabis preparations in Egypt and other parts of the Near East, suggested that this drug might be used by doctors, enabling them to understand and to empathize with psychotic states experienced by asylum patients. His view predated the classification of any pharmaceuticals as "psychotomimetics." Awareness of the effects of Cannabis spread beyond medical circles after Moreau gave a sample to Theophile Gautier, one of the leading French literary figures at the time. The after-dinner experiences at "Le Club des Haschischins" became notorious, and perhaps as a consequence accounts of the drug were somewhat exaggerated. Dr. Moreau, who usually administered the drug, noted that he became aware that the effects had begun when he
Marijuana and Hashish

W. B. O'Shaunshoe, Professor of Chemistry and Natural Philosophy at the Medical College in Calcutta, introduced Cannabis into Western medicine in 1839.

found himself fencing with a bowl of fruit. Baudelaire claimed that if you are smoking, by some sort of transposition or intellectual quid pro quo, you will feel yourself evaporating and will attribute to your pipe, in which you feel yourself crouching and packed together like tobacco, the strange power of smoking yourself...

A contemporary drawing of Théophile Gautier, founder of "Le Club des Haschichus."

13. Mme. de Tour: observed that Cannabis could produce a "model person" for those who needed to study abnormal mental states. She also supplied extracts from the plant to small children to moderate "Le Club des Haschichus."
Early American Experience with Cannabis

In the Journal of Psychedelic Drugs (vol. 11, p. 78), Dr. José Luis Díaz from the University of Mexico presents suggestive but unverified evidence that marijuana may have been known to the Nahuas and other New World tribes before the arrival of the Spaniards. Whether or not Cannabis was growing in the Americas already, the Spanish seem to have taken their own to Chile in 1545 and then to Peru in 1534.

In 1606, the British took it to Canada to be cultivated for maritime purposes. In 1611 (at the time of the Jamestown Settlement), they brought it to Virginia; in 1632, the Pilgrims brought hemp to New England.

During the century and a half that preceded the American Revolution, Cannabis production for textiles throughout New England was subsidized. By 1762, Virginia farmers were penalized if they didn’t grow it. It has been estimated that about half of the clothes worn at the time of the American Revolution were made of hemp.

Several of our Founding Fathers, including George Washington and Thomas Jefferson, cultivated Cannabis. In an entry in his diary, Washington expressed his desire to be present for the separation of male and female hemp plants. Some have argued that he may have been interested in the resin yield of the female plants, but it is more likely that he wanted to improve the fiber quality of the females (which decreases when they are pollinated). No hard evidence indicates that Washington or any of his contemporaries was interested in using Cannabis recreationally.

During the War of Independence, as Kentucky and Ohio were being opened up for settlement, vast tracts in both these states were set aside for hemp planting to provide the fiber with which to make clothes, rope, bags, altar cloths, feed bags and fine paper.

By the middle of the nineteenth century, medical interest in Cannabis indica passed from Europe to North America. Soon such Cannabis preparations were available at the corner drugstore.

In 1857, Fitz Hugh Ludlow acquired a tincture of the indica species, staining some to try it out. Afterward he paid six cents a dose for “Tilden’s Extract.” Afterward, he paid six cents a dose for “Tilden’s Extract.” Ludlow called the preparation the “drug of the traveler” because it allowed him to journey mentally around the globe as well as into more mystical, often frightening regions. Encouraged by writings from Bayard Taylor, an American who had reported on his use of Cannabis products in the Near East, Ludlow set about recording his experiences. Ludlow’s article in Putnam’s Monthly Magazine (1856) and his anonymous The Hashish Eater (1857) were the first accounts of the psychoactivity of Cannabis published in North America. Although Cannabis extracts were readily available over the counter, few people at this time were ready to dabble in psychic experiments.

With the end of the Civil War, the importance of hemp as a commercial crop declined. Emancipation of the slaves cut into the number of laborers harvesting hemp. More importantly, the invention of the cotton gin gave cotton a decided economic advantage over hemp and flax. The development of cheap wood pulp reduced the need for hemp as a source of paper, although it was still used in the manufacture of cigarette papers, money and Bibles.

Recreational use of hemp among Americans first showed up in about 1910 in New Orleans and in a few border towns as marijuana cigarettes were brought over by Mexican laborers. (They had already been used in central
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South America and the Caribbean regions for half a century.) Marijuana caught on as a cheap substitute for alcohol among border guards and river travelers and within five years this practice was carried up the Mississippi River into the Ohio Valley. From there, it spread east into New York (especially Harlem). With the passage in 1920 of the Eighteenth Amendment, prohibiting sale of alcohol in this country, interest in Cannabis as a euphoriant rose.

The Anslinger Era

A year of considerable importance to this history is 1930, when Treasury Secretary Andrew W. Mellon appointed his niece's husband, Commissioner of the newly created U.S. Narcotics Bureau, Harry J. Anslinger, as Commissioner for three decades. Anslinger was to the inhibition of Cannabis use what Andrew Comstock had at the turn of the century been to the inhibition of American sexual freedom. Although not particularly concerned about marijuana when he took office, he soon became obsessed with "the evils" of this weed, using it as a cure for humanity in the leaves and flowers of the Cannabis plant.

Fear about this largely unknown substance had already been stirred up, especially in the southwestern states, where it was used mainly by blacks and Mexicans. Prohibitions against nonmedical usage had been enacted in California (1915), Texas (1919), Louisiana (1924) and New York (1927). In the mid-1930s, Anslinger did his best to escalate the fear into hysteria. Drawing on his experience as a journalist with a staccato, sensational style, he came out with "Marihuana, the Assassin of Youth," the first in a series of articles and books recounting the horrors committed under the weed's influence: murder, suicide, seduction of schoolchildren by "friendly strangers." (Several of his examples have since been refuted.)

Once Anslinger got going, he showed little interest as Commissioner in any news about the drug unless it could be worked into his atrocity file on "The Killer Drug," which he claimed was "a powerful narcotic in which lurks Murder, Insanity, Death!" The nation's papers loved it. By 1937, forty-six of the forty-eight states had banned marijuana.

Anslinger abandoned his earlier hopes for federal prohibition, because even he had come to doubt the constitutionality of such a law. Someone suggested that the U.S. might impose a "transfer tax" to be collected by the U.S. Treasury. Nonpayment of the tax would constitute a felony. In the ensuing congressional hearings, the Narcotics Bureau took a firm line; Anslinger even told legislators, "You smoke a joint and you're likely to kill your brother." In all of the testimony, only one person raised any substantial objection to the Anslinger proposal. Dr. William Woodward, a legislative counsel for the American Medical Association, argued that Cannabis in medical preparations had not been abused and that the new provisions would cause hardship for doctors. He was quickly hooted down. House hearings concluded with no significant changes in the proposed bill, which then sailed through the Senate. In August 1937, FDR, who had come into office on a platform of repealing Prohibition, signed the Marijuana Tax Act. In addition to imposing a requirement, the law also declared Cannabis a narcotic. The new penalties for its use or distribution to five to twenty years for a first offense, ten to forty for a second.
Marijuana and Hashish

The tax was to be assessed at $1 per ounce for those who registered and were considered legitimate users; for "illegitimate transfers," the tax was $100 per ounce. "At that time," comments Larry Sloman in his Reefer Madness, "cannabis was going for thirty-eight cents a pound on the licit market."

The year before, some twenty firms using hempseed oil in products such as soap, paint and linoleum had imported more than 30,000 tons of seeds, which became contraband under the new law because they could be used to grow plants. The only exception allowed was for sterilized seed for the birdseed industry, then producing four million pounds annually. Industry lobbyists maintained that birds deprived of Cannabis seeds would not sing.

The Narcotics Bureau hinted originally that special provisions would be made for medical usage but did not follow through. At the time, twenty-eight medicinal Cannabis preparations were for sale by companies such as Parke-Davis, Squibb and Lilly. Packages of marijuana cigarettes were even being sold as a cure for asthma. The new law put all of these products out of existence, and in 1941 the drug was dropped from the American Pharmacopoeia—after about a century of widespread use.

Much of Anslinger's efforts then went into eradicating this weed wherever it was growing. In 1937, more than 10,000 acres in the U.S. were under hemp cultivation. The plant was hardy and prone to escape into neighboring fields, making it all the more difficult for Anslinger to check the natural spread of hemp.

Anslinger had to give way after the Japanese took over Manila and the government became concerned about its supply of rope. In a crash program in 1943, 140,000 acres in the U.S. were seeded in half a dozen midwestern states. The Department of Agriculture produced a film about cultivation entitled Hemp for Victory. Despite great efforts to eradicate Cannabis traces later, patches remained in Indiana, Illinois, Wisconsin, Iowa, Kentucky and elsewhere. The strains, grown for rope, produced only small amounts of resin. Marijuana was not produced for its resin in any quantity in the U.S. until the 1960s.

In 1943, Anslinger turned his attention instead to a campaign against marijuana-smoking jazz musicians, and his instinct for the sensational got him all the funding from Congress that he ever requested. Anslinger may have used personal favors to gain congressional support: in 1978, Capitol Hill journalist Maxine Cheshire revealed that Senator Joseph McCarthy was addicted to morphine and regularly obtained it "through a droggist near the White House, authorized by Anslinger to fill the prescriptions."

After retiring from the Narcotics Bureau, the indefatigable Anslinger went to head the American delegation to the U.N. concerned with drug use. By 1961, he managed to get sixty nations to sign a "Uniform Drug Convention," which pledged to end Cannabis use within twenty-five years. Signing nations can, however, drop out by request. Shortly after, serious efforts to legalize marijuana usage got underway in the West.
Governmental Investigations and Other Reports

This publication, "Marijuana"-a powerful narcotic in which lurks Murder, Insanity! Death! by the friendly stranger, contains the Killer Drug "Marijuana," the resulting secret volume was made for the military. Here are some conclusions:

Taylor). The final report ran to seven volumes (5,281 pages); an additional army officers, hemp dealers, ganja palace operators and the clergy" (Norman fakirs, heads of lunatic asylums, bhang peasants, tax gatherers, smugglers, probably stand as the most extensive, systematic examination of the subject which established a Commission in 1893 to look into the use of

An example of the anti-Marijuana literature produced during the 1940s. The report of the Indian Hemp Drugs Commission, a panel from the National Academy of Sciences, in 1982 urged the removal of penalties for commission, a panel from the National Academy of Sciences, in 1982 urged the removal of penalties for cannabis users to more than 1.1 million. Similar findings have come from South Africa, Australia and from a New York Academy of Sciences Conference on Chronic Cannabis Use in Manhattan in 1976, The latest such commission, a panel from the National Academy of Sciences, in 1982 urged removal of penalties for cannabis use, after finding "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of "harder drugs," affects the brain structure or causes birth defects."

In 1951, the U.N.'s Bulletin of Narcotic Drugs released results of a survey indicating that there were then approximately 200 million Cannabis users in the world. It also produced a bibliography of 1,100 titles that related to Cannabis, only some 350 dating from before the twentieth century. A more substantial bibliography was prepared in 1951 that included 1,840 titles. O.J. Kalant revised the list at the end of the decade; he cited 1,073 titles in English, 380 in French, 232 in German, 116 in Italian and 111 in other languages. Ernest L Abel toward the end of the 1970s produced a bibliography for NIMH of 3,045 titles. A U.N. report in 1982 increased the worldwide estimate of Cannabis users to more than 500 million.

Popular prejudice has over and over again caused cases of insanity to be ascribed to ganja which have had no connection whatever with it, and then statistics based on this premise are quoted as confirming or establishing the prejudice itself. . . .
The poet Allen Ginsberg, who first smoked pot in 1948, appeared at one of LeMar’s earliest demonstrations to legalize marijuana—February 1965, outside the Women’s House of Detention in Manhattan.

Marijuana Use becomes Commonplace

Moves toward Decriminalization

In 1961, Americans generally showed little interest in marijuana’s mental effects, although the casual use of “tea” was widespread in jazz, beatnik and artistic circles. Later in the 1960s, fascination with LSD and “magic mushrooms” changed the image of Cannabis; many people started to regard it as a similar but considerably milder substance. Folk and rock musicians greatly encouraged this new image as they made oblique and enticing references in their lyrics to marijuana. Many of these songs made it to radio and were played nationwide. Writers such as John Rosevear, author of Pot, also spread the word.

In 1964, the Thelin brothers opened the first “headshop.” Soon every major city in the U.S. was bristling with headshops peddling books, records, posters, and paraphernalia related to pot. Reprints of marijuana posters from the Anslinger era, such as one headlined “Reefer Madness,” were snapped up for laughs, and many bought a new one showing the poet Allen Ginsberg with a sign that declared, “POT IS FUN.”

By the mid-1960s, a flood of articles, books and records had dramatically changed the lurid image of “Marihuana, the Killer Drug,” and experimentation with marijuana became commonplace among Americans of all classes. Cannabis, although still illegal, moved a long way toward being accepted socially and morally, attaining a status similar to that of whiskey during Prohibition.

At about this time, a group called LeMar was organized in Manhattan and at the University of Buffalo for the purpose of lobbying for marijuana’s legalization. Before long, a similar group formed in England, going by the name S.O.M.A. A Marijuana Review began making periodic appearances. Before the 1960s were over, the National Organization for the Reform of Marijuana Laws (NORML) was lobbying for marijuana law reform.

In 1970, Anslinger’s “transfer tax” on marijuana was declared unconstitutional by the U.S. Supreme Court. In 1973, following the lead of such university cities as Ann Arbor, Eugene and Berkeley, Oregon became the first state to take steps toward legalization by minimizing the penalty for possession of small amounts. In 1975, the Supreme Court of Alaska ruled that the constitutional “right of privacy” protected marijuana possession for personal use in the home by adults. Alaska legalized possession of any amount of marijuana for private use, with a one-ounce limit for public possession. Personal cultivation was also legitimized.

During our bicentennial year, California, Colorado, Ohio, South Dakota, Minnesota and Maine made possession of small quantities (generally an ounce) a misdemeanor to be settled with a small fine. Massachusetts and Texas, which had enforced some of the harshest anti-marijuana laws in the world, lowered their penalties drastically. Texas released just under 300 prisoners convicted under its previous marijuana laws. In New York, in spite of the unreasonably harsh “Rockefeller laws,” only cases of excess have been tried and many of these have been reversed since.

In 1970, marijuana use became common among Americans of all classes.
In 1976, the board of governors of the California State Bar voted 11-2 against sanctions on personal cultivation of marijuana: "unless one hopes to promote marijuana traffic, it is irrational to punish people more for producing their own marijuana than for buying it."

Later that year, the outgoing Ford Administration accused the previous federal stand against decriminalization, encouraging discussion of this issue for the first time in a policy statement from the Strategy Council on Drug Abuse. Ford's chief advisor on drugs, Robert DuPont, stated that marijuana was less harmful than alcohol or tobacco and argued decriminalization of limited home production.

The media, once Anslinger's chief allies in whipping up anti-marijuana hysteria, adopted a calmer tone, as evidenced by the following excerpt from the New York Times, January 5, 1976:

Scientists Find Nothing Really Harmful About Pot
Several recent studies of chronic marijuana users, conducted independently in half a dozen countries, indicate that the drug has no apparent significant adverse effect on the human body or brain or on their functions.

The research essentially corroborates and expands on the results of an earlier study of marijuana use in Jamaica that found no significant correlation between heavy use of the drug and impaired physical, intellectual, social and cultural activities.

The findings were reported Tuesday in research papers delivered at a New York Academy of Sciences Conference on Chronic Cannabis Use that attracted more than 100 researchers from ten countries.

Lenny Bruce used to say that pot would be legalized in America after two conditions were fulfilled: (1) when the sons and daughters of politicians got busted, and (2) when law students began smoking weed and then graduated to practice law. Both conditions were met during the 1970s. Among those busted were Kim Agnew, two Kennedy's, McGovern, a Coburn, a Cahill, a Ford and two Carters. In November 1975, Marion Hugh Scott Cahill, the daughter of then Senate Republican leader Hugh Scott, was convicted of having sold an ounce of hashish to a narcotics agent and sentenced to two days of "socially useful" work each week for six months, a $100 fine and two years probation. Earlier, the same charge could have resulted in life imprisonment. After Jack Ford publicly admitted that he smoked pot, his father praised him for his honesty.

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Swallowing and Cash Crooks
In 1969, U.S. Customs officials confiscated 7.164 pounds of marijuana—somewhat under 30 tons. During 1975, six years later, the figure for confiscations had risen to 253.3 tons—and the next month alone brought in 86 tons, almost three times what was intercepted during all of 1969. In another six years, the announced 1983 confiscation amounted to 74,000 pounds of hashish and about 1,500 tons of marijuana.

Until the 1960s, nearly all of the strongly resinous marijuana smoked in the U.S. had been imported, generally in small batches. By the mid- and late-1960s, pilots—many trained in Vietnam—were flying loads from Central or South America in greatly increased numbers, enough to attract notice.

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In the early 1970s, much of the powerful grass arriving on the East Coast of this country originated in Jamaica. During 1974, the DEA began "Operation Buccaneer," its first overseas paramilitary effort, and set to "at the request of the Jamaican government." American aircraft, helicopters, flamethrowers and herbicides, according to former High Times editor Pamela Lloyd, soon "scorched one-fifth of the island's surface." U.S. Customs and the Coast Guard made their first massive busts at sea, intercepting vessels headed for the southeastern U.S. coast. A year later, vast stands of Mexican marijuana were sprayed with the deadly herbicide paraquat.

Marijuana from Jamaica and Mexico soon became a rarity in the U.S. Massive amounts arrived from Colombia—selling wholesale in New York for about $300 a pound and to users for $25-$35 per ounce, and sometimes—yes, the drug carried on surprisingly well; one Colombian official even

Scientists Find Nothing Really Harmful About Pot
Several recent studies of chronic marijuana users, conducted independently in half a dozen countries, indicate that the drug has no apparent significant adverse effect on the human body or brain or on their functions.

The research essentially corroborates and expands on the results of an earlier study of marijuana use in Jamaica that found no significant correlation between heavy use of the drug and impaired physical, intellectual, social and cultural activities.

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expressed outrage in 1977 at "the DEA's attempt to convince us to destroy a crop with such great economic potential." Colombian marijuana dominated the import market during the late 1970s, although its potency began to decline, perhaps because the demand was too much. In this as in all areas of economic enterprise, quality tends to go down as the pressure for production increases.

Meanwhile, the potency of home-grown Cannabis products quickly increased. Word spread rapidly that some of the marijuana from Hawaii and California was superb. By 1977, many people were paying up to $250 an ounce for "Hawaiian," which was about as expensive as Cannabis ever got. The $250 price tag on an ounce of a "weed" was an economic development with economic consequences. Clear instructions became available soon after for producing the potent "sinsemilla" (seedless female) version of marijuana. Regions of the country blessed with favorable growing conditions began experiencing a considerable economic revival.

Several agriculture officials in California, a particularly good growing region, noted in 1982 that the economic value of Cannabis exceeded that of ordinary crops—even all of them taken together. Nationally, revenue generated by Cannabis production was said to rank with the revenues of Exxon and General Motors. A assistant D.A. in Santa Cruz County, California, Ralph Boroff, put the new valuation squarely before the state's legislators when he declared, "I don't understand why everybody isn't growing at least five plants, because it is just so lucrative. You are looking at a thousand dollars a plant. It is something that is very easy to do."

If one plant alone can be worth $1,000, the grower becomes very interested in obtaining the best seeds available. So reasoned a few people who were selling single seeds for up to $5. (The seed business also fills a need brought about primarily by growing sinsemilla. Normally seeds would be available to start the next year's crop from the old crop.)

Other Developments
Marijuana's future as part of American life was further enhanced by the rediscovery of its medical potential. In 1974, Dr. Frederick Blanton from Fort Lauderdale reported on the successful treatment of glaucoma using Jamaican ganja. In 1976, government-grown pot from the University of Mississippi was prescribed for a glaucoma victim, and three years later, Florida, New Mexico, Hawaii, Indiana and Illinois legalized marijuana for medical research. Far from being the "killer drug," marijuana has been shown to be more effective than any other means in relieving the nausea associated with cancer chemotherapy.

Over the last decade, perhaps as much has been learned about Cannabis as was discovered over its entire previous history. The chemistry required equipment not available until just before this, and serious genetic
work on hybridization is a recent development. This is changing the traditional image of pot greatly, with many strains now being as much as a dozen times as strong as most pot known in the 1960s. A recent idea that is sure to occur to many growers in the future is the making of sinsemilla hashish. This chapter can only touch the surface of the profound change in American attitudes toward marijuana and its impact on American life. The myths promulgated by Anslinger have been almost entirely discredited because of massive personal experimentation. By the 1980s, the domestic pot industry had grown to at least $8 billion in volume annually, with total daily U.S. consumption conservatively estimated at about thirty tons. There are several interesting and important stories yet untold. One concerns the efforts of Rastafarians to use it legally in their religion. Another concern renewed efforts by U.S., Florida and California officials to poison pot users with the pesticide and plant killer known as paraquat. Yet another is the Supreme Court's refusal in January 1982 to hear the appeal of a Georgia man sentenced to forty years in prison for the sale of nine ounces of marijuana (for $200); even at this late date, that sentence isn't considered "cruel and unusual punishment."

BOTANY

Considerable species are exceptional, unique from many viewpoints in biology, chemistry and pharmacology. They are among the oddest manifestations in the plant kingdom, something perhaps tossed off by the Creator as a wild afterthought on the seventh day.

Cannabis was originally classified as a member of the nettle family (Urticaceae) and then of the mulberry family (Moraceae). It is now considered most closely related to the hop plant and is thus a cousin to the fig tree! Classification is difficult because structurally it belongs in one place, while its sexual characteristics suggest it should be elsewhere. Over the last century or so, there have been a plethora of technical names for its variants: kif, vulgaris, pedemontana, chtnensis, erratica, foetens, lupulus, mexicana, macroserma, americana, gigantea, excelsa, compressa, sinensis, etc., and there are those yet arguing for a single species. The law is beginning to accommodate to modern findings of three: saliva, indica and ruderalis. "In spite of its great age as one of man's principal narcotics and its utilization by millions of people..."
These drawings of Mexican Cannabis illustrate typical differences between male (at left) and female plants.

in many cultures,” remark Richard Evans Schultes and Albert Hofmann, “and notwithstanding the great economic value of the plant for uses other than as an intoxicant, Cannabis is still characterized more by what we do not know botanically about it than what we know.”

Life Cycle

These amazing plants tend to put off most pests—and thus don’t rely on insects for pollination. Instead, Cannabis as a genus has gone its own way with individual plants being male or female but sometimes hermaphroditic.

In the wild, Cannabis grows about half male, half female. Environmental conditions can change this ratio by as much as one to nine—the more light available, for instance, the more females. Generally speaking, adverse conditions result in more males.

If conditions become extreme, the plant often becomes hermaphroditic with separate male and female branches, fertilizing itself for reproduction.

Its favorite conditions include light, dry, sandy, slightly alkaline soil. Still, it grows just about anywhere thistles or dandelions will sprout, except in clay or undrained soil. Distributed by hand, the seeds attain as much as a 60 to 80 percent germination rate. Because germination vigor is increased considerably with even slight care, seeds are often poked into the soil (1/2” to 1” deep) with the pointed end up, rounded end down. Cannabis can also be reproduced by means of cuttings.

It is to be transplanted, both the plant and the soil should be watered the night before. The new soil should be as similar as possible to the old. Transplanting should take place on a cloudy or drizzling day or in late afternoon, because bright and sunny conditions can provide a shock that may stunt further development.

When planted closely, Cannabis tends to develop fibrous qualities and to stretch taller. (Cannabis produces about four times as much useful fiber per acre as hemp.) To promote root development, it is best to keep soil levels at least six feet apart. Nourished by humans or other sources of nitrogen and by a fair amount of light and water, the yield can be close to eight or nine tons of resinous flowers and leaves per acre—about a kilogram per square meter—or enough for about fifteen million joints.

In the northern hemispheres, seeds are usually planted in April or May. Depending upon conditions—more than ten hours of light a day, for example, greatly hastens growth—maturation of the male plants takes ten to twelve weeks. For about the first month, the two sexes are indistinguishable; then the males tend to get taller and the females become bushy and squat. Eventually, the young female plant has at least twice the weight of the male.

The male reaches the day of flowering after about three months, toward the end of the summer when days get shorter. About two hours before sunrise, the developing flowers swell; about an hour later, the first flower opens, usually two-thirds of the way up and near the stem. Gradually the rest of the flowers open, spreading out toward the extremities. The final unopened flower at the top often completes this phase some eight to ten hours later, but flowering can take up to a week for some strains. This daily cycle of flowers opening is repeated up to two weeks.

At the first breeze the entire load of pollen drops—apparently the supreme moment for the male. It begins to lose its color and waxy texture soon after, then gradually wrinkles and dries over the next few days, from the base of the plant up. Contrary to a rumor circulated for years, leaves and flowers of the male plant are psychoactive, though they diminish in potency rapidly after pollination. They should be harvested before shedding their pollen, unless the pollen is needed for seed production.

In the wild, the female reaches its mature stage at the same time as the male. It prepares for conception by lowering its leaves and thrusting forth its pistils. If the female is pollinated, seeds begin to grow and ripen some ten days to four weeks later. Then the seeds of most types drop off and the plant itself dies. If the seeds are kept dry and under 75° F., they remain viable for years.
The stalk of Cannabis can get quite thick, above shallow, matted roots.

Under cultivation, pollination can be interrupted to prevent seed production; the female plant reacts by producing larger amounts of resin in the terminal flowering clusters. In certain areas of India, someone called the “ganja doctor” traditionally weeds out all the males when sexual characteristics are first noted in a crop—not because there’s no psychoactive effect, but because removing the males will prevent pollination and greatly increase the females’ resin production.

The stage of development at which pollination normally occurs is when the maximum amount of flowers appears. Resin accumulates quickly in the flowers, especially if the lower parts of the plant have been pruned or cutback. As time passes, the resin content diminishes once again. Researchers at the University of Mississippi pot farm have shown that resin content varies as well in terms of the time of day.

The first sign of differences along the main stem can be identified behind the leaf spur. The males can be identified by their curved claw shape, followed by the differentiation of round pointed flower buds having five radial segments. Females are recognized by the enlargement of a symmetrical tubular floral sheath that appears earlier. In some instances, especially among hybrids, small non-flowering limbs will form at the nodes that are often confused with male flowers.
A male plant bagged for pollen collection.

The most potent crop is that made out of females that have not been allowed to seed when mature (“sinsemilla” from the Spanish for “without seeds”). Anyone interested in the cultivation of this connoisseur’s grass should consult Jim Richardson’s Sinsemilla Marijuana Flowers, Robert Connell Clarke’s Marijuana Botany or Kayo’s The Sinsemilla Technique. These books illustrate the great variety in appearances this single type takes, offering clear graphics to help farmers distinguish between the sexes. This crop is somewhat painstaking to grow, because all male plants have to be culled and the seedless buds should be picked by hand. It also results in less weight, because there are no seeds (which add substantial weight). Many think sinsemilla production is very much worth undertaking, and it is increasing over time. Domestic grass is becoming very potent as we see the improvements in selectively bred generations.

CHEMISTRY

Cracking the THC Molecule

For more than a century, numerous attempts to isolate and to synthesize the psychoactive components of marijuana resin were unsuccessful. Only in the last twenty years have researchers gained a chemical understanding of this complex and large family of molecules.

The first important discovery came in 1895, when three Cambridge chemists isolated the parent molecule of the group, cannabidiol, and established the family’s skeleton structure. One of the three Englishmen nearly
lost his life in a lab fire while undertaking further experimentation. The other two did lose their lives—in separate lab explosions as they tried to probe deeper into the cannabinols. Unlike most of the compounds covered here, Cannabis is not an alkaloid and had to be extracted at that time with some highly flammable and explosive substances. Despite many subsequent efforts, cannabinol wasn’t successfully isolated again until 1932.

By the beginning of the 1940s, Roger Adams and coworkers at the University of Illinois—commissioned by the LaGuardia Commission—were able to demonstrate a simpler method for synthesizing cannabinol and isolated the second important member of this family: cannabidiol. From their work, and that of A.R. Todd at about the same time, it became clear that these first two molecules are barely psychoactive and that the important components are produced by tetrahydrocannabinols (THCs). Here are the structures of the three principal tetrahydrocannabinols and of the parent, which differ mainly in chemical bonding:

### Analogues and Mixtures

The molecules at the top seem to be the main constituents that affect the mind and are particularly interesting because, unlike other psychedelics, they don’t contain nitrogen. More than sixty cannabinols—generally referred to as “cannabinoids” in scientific papers—are produced in a typical flower (which contains yet another four hundred identified compounds). As a researcher into these areas has noted, “cannabinol and all reduction products of its toluene ring can be considered to embody cannabis activity.” To put this another way, the quality of marijuana is much determined by the mix concocted in each plant; variation in effect is akin to the differences in wine that are due to winds, soil, sun and seasons.

Hemp growing wild generally appears as a diploid plant (meaning it has two sets of chromosomes per cell). During World War II, a government researcher named H.E. Warmke was looking for a way to improve the fiber of hemp and cut down on resin content. He discovered that Colchicine, a highly toxic alkaloid frequently used nowadays to alter a plant’s chromosomes, brought about tetraploid (meaning multiples of chromosomes per cell) hemp plants in second and later generations—which produced greater concentrations of THC in the resin. Unfortunately, the procedure is dangerous and generally kills the treated seeds. If you’re interested, you can read the somewhat disputed details in W.D. Drake’s Connoisseur’s Handbook of Marijuana or in Robert Connell Clarke’s Marijuana Botany. Warmke showed that through some contriving the THC yield can be increased so as to give more psychoactive effects. Since then there have been a number of reports hinting that we’re well on our way toward a Luther Burbank solution to the growing demand for more THCs in marijuana. In Canada, a government test station almost a decade ago produced Cannabis three times as strong as the average imported marijuana available on the streets, and the US test station in Mississippi soon after reported a five-fold increase in strength. Domestic Cannabis (conversely) from California has been analyzed at over 12 percent THC.

A stimulating and lightgrass is distinguished from grass that is heavy or puts one to sleep by the distribution and quality of cannabidiol and various THC components. The differences are reflected in a considerable extent in the color and smell of the leaf. Although few people have tried anything more psychoactive than the delta-9 and delta-8 THC molecules, chemists have now produced more than eighty cannabinoids synthetically—including some that contain nitrogen, and acetylated ones that are very potent. More than 3,000 papers have been published on various THC analogues, the most prominent being “Nabilone” (from Eli Lilly) and “levantradol” (from Pfizer). These and many others exhibit no psychoactivity but have some of the medically beneficial effects of THC. These patentable compounds have been of special interest to chemical companies looking for something more reliable and with less problems for some patients than THC.

It may well be that as researchers continue to explore different molecular bondings and arrangements, they may find a way to remove some sleepy components or otherwise spice up the effects. Just as the cigarette called “Merit” is said to emphasize certain fractions of more than 2,000 available in tobacco, similar techniques of analytical fractometry may help bring about similar consequences as production of marijuana becomes more sophisticated.
A means of chemically altering and improving low quality marijuana is already available. "Isomerization" changes "lower-rotating" forms of cannabinols into those that are "higher-rotating." Simple processes use sulfuric acid and long, low-temperature boiling in alcohol, changing cannabidiol and THC-acid—which are prevalent in weak grass but are not psychoactive—into THCs. In pamphlets such as Cannabis Alchemy (Level Press/High Times) and The Marijuana Consumer's and Dealer's Guide (Chthon Press), this inexpensive technique is detailed.

With the "Isomerizer," the process is much easier. More than 200,000 Isomerizers are said to have been sold with the expectation that the device will increase potency of weak marijuana up to six times. After five or six years on the market, however, the isomerizing process hasn't really become popular. The main reasons appear to be because it's still too much trouble and most people don't enjoy the taste of the "Iso-hash" or oil which result since there is generally a lingering odor from bicarbonate of soda that is used to neutralize the sulfuric acid. Some complain that Iso-hash doesn't get them all that high. Robert Connell Clarke's Marijuana Botany provides a fuller discussion.

PHYSICAL EFFECTS

According to the fifth annual report prepared for Congress by the National Institute on Drug Abuse, appearing in February 1976, more than half of all Americans between eighteen and twenty-five had at least tried marijuana by 1975. Dr. Robert DuPont, then the government's top official on drug abuse, announced that alcohol and cigarettes were far more dangerous to health than marijuana, which, he said, lacks the lethal effects of either alcohol or tobacco. He asked that young people are more likely to start with alcohol and tobacco, moving on to marijuana, than the other way around.

It has been well established that marijuana has almost no dangerous physical effects. Unlike most euphoriant drugs, it has few drawbacks: (1) there's no addiction, not even, as one writer has put it, "at the remotest cell," (2) while it may impair immediate memory, it doesn't often obliterate recall later as alcohol can; (3) it produces some tolerance, but one can smoke it regularly and still get high; (4) it causes no alcohol-type hangover. (Some users may feel a bit slow the following morning, but this same result is mild compared with the after-effects of an alcohol binge.)

Coursing through the Body

The cannabinols are carried to most organs; a tiny amount that accumulates and resides for an extended period in the liver's fatty tissues, while the rest is soon excreted. Cannabinols appear only briefly in the brain, going mainly to the frontal and parietal regions, where it used to be thought that they stimulated increased alpha-wave production. (Now, it is thought there's no uniform significant change in brainwaves—see Marihuana Reconsidered, pp. 56-57.) Some increases occur in the pulse rate, as the heart compensates for a slight lowering in blood pressure. Marijuana dries both the mouth and the eyes. If you peel an onion right after smoking pot, you probably won't cry. Contrary to popular opinion, pupil size is not enlarged, so the two most noticeable physical consequences are: (1) dryness in the mouth and (2) redness in the eyes.

Medical Safety

Beginning in the late 1960s, a handful of doctors managed to produce a few isolated reports suggesting there might be adverse health effects from prolonged use of Cannabis. They revived the charge that it's an "assassin of youth." Such reports have been instantly and sensationally reported by much of the media. All claims about health drawbacks associated with the use of pot—including from the effects of its being smoked—have been either refuted by other investigators or compromised when their results couldn't be replicated. Some of these reports have been received by their authors' colleagues as irrelevant, highly suspect or worse. Since professional embarrassment has not deterred marijuana's critics, their alarming and widely-promulgated allegations should be confronted head-on.

What are these charges against marijuana? Deleterious health effects attributed to marijuana include:

- disruption of basic cellular functions
- hormonal imbalance (resulting in large breasts in males)
- interference with the body's defenses against infection
Marijuana and Hashish

impairment of sperm and egg production
cannabis... brain damage
impotence and frigidity
THC concentrations in the brain and testes
brain damage
cancer
cancer
addiction
and coalescence
to other drugs

It might be best to respond to such charges by citing the conclusions from the most recent marijuana study, undertaken by the National Academy of Sciences and sponsored by the National Institute of Health. The report took over fifteen months to compile. Dr. Arnold Relman, chairman of the study committee and editor of the New England Journal of Medicine, has called it "the broadest, most comprehensive, least biased assessment" yet made of marijuana's effects on human health. It was issued February 26, 1982, well after the listed charges against marijuana had been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects." The study called attention to positive effects, noting that marijuana's effects on human health have "been thoroughly aired. This report found "no conclusive evidence that marijuana causes permanent, long-term health damage in humans, is addictive, leads to use of 'harder' drugs, affects the brain structure or causes birth defects."
Marijuana and Hashish

Marijuana dosages did not suppress testosterone levels. Finally, a longitudinal study of the grades of 1,380 UCLA undergraduates revealed no evidence of brain damage or lack of motivation due to marijuana use. As the researchers reported, "the dire consequences that were predicted have not materialized." Such cross-cultural findings that marijuana presents no threat to health should have ended concern about the alleged hazards. Since then, additional investigations of marijuana users in Greece, Guatamala and Egypt (the last, called "The Egyptian Study of Chronic Cannabis Consumption," was issued in 1980 by the Cairo-based National Center for Social and Criminology Research) have replicated the Jamaican findings. However, opponents to marijuana continue to press their claims unsupported. Norman Zinberg in 1978 commented: It is important to remember that the Jamaica study is one of the finest pieces of research ever done. Subjects who had smoked very strong marijuana for between 12 and 30 years were studied physiologically, psychologically, socially and anthropologically. They were compared to a control group. They were studied in both hospital and natural settings. While at work they had devices strapped to their backs that could measure their lung input and output. This study found that there was no way to differentiate marijuana smokers from the control group. There was no evidence of greater lung pathology in the group that smoked marijuana than in the control group. To illustrate the persistence of the critics, there were then alarming charges of chromosome damage: these people jumped on the research observation that THC, like many vitamins, is absorbed by fatty tissues in the body and released slowly—unlike alcohol, which is metabolized quickly and excreted within a few hours. Since the brain, ovaries and testicles are composed of much fat, they leapt immediately to the conclusion that THC must accumulate steadily in these vital organs as a result of regular pot smoking (The original researcher objected strongly to any such interpretations of his findings.)

After extensive study of the charge that excessive chromosome damage is caused by marijuana, the National Academy of Sciences and relevant researchers have concluded that it is not supported by the evidence and dismissed the charge. Concern about THC possibly lodging in the brain or reproductive organs has largely been quelled because finding conclusive evidence one way or the other is so difficult. Recently, reassuring conclusions have been reached on the basis of high-dose THC animal experimentation: "Kinetics of Cannabinoid Distribution and Storage with Special Reference to Brain and Testis," in the August-September 1981 Journal of Clinical Pharmacology, reports on the "oil solubility" charge. This research was sponsored largely by the National Council on Marijuana, an anti-drug organization. It has long been known that the body seems capable of metabolizing and disposing of "lipophilic" vitamins by trapping them in fatty acids in the digestive system, somewhere prohibiting their access to the gonadal and brain systems, where they might exert toxic effects. Dr. Gabriel Nahas, associated with the College of Physicians and Surgeons at Columbia University and an anti-marijuana advocate for more than a score of years, asserted that THC escaped this natural defense because it wasn't a vitamin. The study mentioned above tested this hypothesis.

Nahas and Dr. Collete Leger of the Hospital Fernand Widal in Paris injected rats intramuscularly on a regular basis with large doses of radioactively labeled THC. They then killed those animals to examine the testes and ovaries at various intervals after administration. Examinations determined that THC concentrations in testes and ovaries were extremely low, barely rising to a single billionth of a gram per gram of body tissue, and that these "concentrations" were almost entirely eliminated within twenty-four hours of a single dose. THC concentrations in the brain were found to be slightly higher but were eliminated faster. Most THC turned out to be trapped and neutralized in the digestive system—exactly the same pattern as with vitamins.

This graph shows the concentrations of THC in various parts of rats after injection of the human equivalent of 140 joints of marijuana, given daily for fourteen days (equivalent to five months in a human). The associated report concluded: "These data illustrate the efficiency of the blood-brain barrier and the blood-testicular barrier in limiting the access and accumulation of this highly lipophilic substance into brain and testes."
Similar results appeared when the rains were regularly given massive doses. Nister and Lager concluded, "Concentrations of cannabinoids in brain and were remained lower than in the blood and did not reflect any significant accumulation of the drug in those tissues."

In December 1976, Psychology Today published "The War Over Marijuana," a review by Dr. Norman Zinberg of the preceding seven years of marijuana research. At a conference in San Francisco in late 1976, Zinberg, associated with the earliest "scientific" investigation of marijuana and from the Harvard Medical School, described further developments regarding "Cannabis and Health" (a transcript of his remarks appears in the Journal of Psychosocial Drugs, January-June 1979).

In that article I covered a number of salient theories—stepings tone to heroin, a motivational syndrome, brain damage, chromosome damage (i.e., birth defects), immune responses, psychosis, incitement to crime, general health hazard and sex impairment. None of this research proved that use of marijuana caused problems.

I showed that the idea of marijuana use as a steppingstone to use of harder drugs like heroin has been disproved by any number of informed commissions, yet the idea persists. Incidentally, there is now a study which indicates that most heroin users do not even like marijuana. The notion of the uncontrolled syndrome, a term created by Dr. Louis J. West in 1972, shows up again and again although there have been a number of studies, including a very large one at UCLA (Dr. West's school), which show that users of marijuana maintain their motivation as well as or sometimes better than nonusers. The Jamaica study (Coles is director by Lomitas and Batten which was funded by the National Institute of Health) shows that the users of marijuana used as a motivator. It is of particular importance to remember that marijuana users in any study have performed better in school than nonusers. The Jamaica study, which show that users of marijuana used as a motivator. It is of particular importance to remember that marijuana users in any study have performed better in school than nonusers. I think that has more to do with the personality characteristics of users, who are more likely to be more adventurous than otherwise, but it is still an important finding.

The only article on the subject, penned in the Lancet, claimed that marijuana use caused brain damage. It was a terrible piece of work which did not even indicate all the different drugs and conditions of depopulation studied. Since publication of that work, there have been a number of studies, particularly in the last few years, with soft bone X-rays that indicate definitely that marijuana use does not cause brain damage, but the original Campbell study survives.

The same problem occurs for theories about chromosome damage, reduc-

One of the most widely publicized studies was of the effect of marijuana use on immune bodies. The work turned out to be fallacious but that has not pre-

marijuana use causes aggression, amenity, and is responsible for serious mental illness. Now, after more than 15 years and over 51 million users, we know that these studies have not been significant. As the Armen the new hypothesis is whether marijuana smoking may cause more of the same respiratory problems as cigarette smoking. One article by Lomitas and Batten which was funded by the National Institute of Health) shows that the users of marijuana used as a motivator. It is of particular importance to remember that marijuana users in any study have performed better in school than nonusers. I think that has more to do with the personality characteristics of users, who are more likely to be more adventurous than otherwise, but it is still an important finding.

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Marijuana and Hashish

n alleged health risks from smoking pot, et al. in the March 1982 issue of
account of the scientific evidence
see Dean Larimer’s “Marijuana Medical Myth
High Times.

Medical Use
Throughout history, Cannabis has been appreciated as a healing herb.
By the time of Christ it was used in India and China for the relief of pain, re-
duction of fever, surgery, stimulation of appetite and treatment of diarrhea,
dysentery, bronchitis, migraines, insomnia and a variety of neurological dis-
cases. Between 1840 and 1900, more than a hundred contributions were
made to the Western medical literature that recommended Cannabis for one
ailment or another.

In 1923, two French doctors grouped the diseases for which they con-
sidered it helpful:
1. Troubles of psychic origin: melancholia, depression, hysteria, painful facial
via with delusions and nightmares, neurasthenia.
2. Certain gastrointestinal troubles: gastritis, peptic ulcer, dyspepsia, diarrhea.
3. Troubles of the respiratory system: in the form of cigarettes, vapour, and
inhaled against chronic catarrh, emphysema, asthma, whooping cough.
5. Certain skin diseases: eruptions, herpes, chronic itching.

Although some of these recommended treatments are yet of a question-
able value, we are beginning to hear new, more specific claims of its medical
benefits. Cannabis is now said to be most effective in quelling glaucoma —
not only does it dry up the eyes, but it diminishes intraocular pressure as well.

What this means in human terms was dramatized during the summer
of 1976. Robert Randall, who taught speech part-time in a community college
near Washington, D.C., fought for and won the right to be the first person
in the U.S. to be “exempted from Federal drug laws in order to use marijuana
as medicine.” His story was told by Daniel St. Albin Greene in
The National Observer in July 1976:

Bob Randall does smoke pot — for a reason. He has glaucoma. He’s going
sight... Randall says... he made four to six joints a day to control his intraocular pressure, which, unchecked, can cause irreparable damage to the optic nerves.

Randall’s story was reported in The National Observer in July 1976.

Laboratory of Tuden & Co.,
New Lebanon, NY 12125
4 Jobs Street, Knitt Tory Cut.

1858.

Cannabis Indica.
India hemp, Friedrich

The true Cannabis, Indian or hemp herb. It is cultivated half
in parts of India and China. It is called half

Medical Properites.
Pharmacological. Microscopic and botanical. India hemp. A herb. does not contain any of the properties, except a stimulating effect. It is
with nicotine in the tree, and contains the same medicinal constituents. India hemp. "Half the India hemp.

Randall trial... 1 to 2 (milli.

Randall's Unluck.

Tinctures of Cannabis Indica.

A mid-nineteenth century description of some medical uses for Cannabis.

This failure of medical intervention for glaucoma... Randall’s blindness... surgical intervention... surgical intervention... surgeons are not always successful, may
damage remaining...

Randall’s condition can no longer be adequately controlled on conventional medications.

Healing Abilities

Randall’s...
“Since 1968,” he explains, “I had noticed that marijuana smoking relieved the eye problems, but I thought this was just a side benefit of being relaxed. Whenever I would get the symptoms, I would smoke a joint, and they would disappear within a half-hour. Whenever I’d run out or couldn’t make a connection, I’d get intense symptoms again.

Last winter Randall underwent 10 days of testing at UCLA. His IOP was measured after doses of every conventional glaucoma medication and after he had smoked government-grown marijuana.

In February, UCLA’s Dr. Robert S. Hepler said in an affidavit: “We found his IOP rose soon after awakening, remained above normal for the greater part of each day, and became particularly elevated in late evening. Marijuana’s pressure-lowering effect, in combination with prescription medications, usually brought his IOP levels toward the normal range... I would seem that he has benefited from the use of marijuana in the past and the future. Marijuana, in combination with conventional medications, provides him with control of intraocular pressure unobtainable utilizing other medications alone.”

Randall’s request leaves the government nettlesome alternatives. Stick to the law at the risk of his going blind for want of a drug that millions use illegally, or exempt him and, while perhaps saving his sight, risk setting a precedent that might evoke a torrent of similar applications by people suffering from other diseases...
Roger Roffman, author of Marijuana as Medicine, conducted the first research study on GI marijuana use in Vietnam and has been the administrator of the Washington State Research Program on the Medical Uses of Marijuana.

Physician in the late nineteenth century put it, "as a beaten drum was carried farther and farther out of the range of hearing." This effect is evident when marijuana is used during the contractions of childbirth, as is the tradition in many places, and when fretful babies are calmed by blowing pot smoke over them. Still, psychological anesthetic action is clearly only part of the story. (Cannabis preparations may also have antibacterial action. Check out both Marijuana Medical Papers and the report in Drake's Cultivator's Handbook on THC's ability to knock out Staphylococcus strains, including some that have become resistant to penicillin and other antibiotics.)

MENTAL EFFECTS

The subtlety of this drug is one of its important qualities. Of all the substances considered here, marijuana is the most subtle. Some question whether it is a psychedelic at all, and beginners frequently fail to notice much effect. The inability to experience the drug unprompted was a major finding in the first scientific study of marijuana (by Weil, Zinberg and Nelson in Boston, 1968). On identical amounts of the substance, regular users discovered they got quite high, while non-users noticed no changes. Researchers wonder whether this difference results from having learned to appreciate the effects or from physiological changes that occur after one or more experiences with the drug.

"You will hear people say that one never gets stoned the first time," wrote Bill Burroughs, Jr., describing what happened after he "dipped into a Mason jar of homemade majoon" and also tried some "tasty little hashish candy" when he first went to visit his father in Tangiers at age fourteen: ... but I was too green that I couldn't even remember the scent. Only one of the entire course of human history, from the agemaran at Montana to the herbalist on through the chemist's undisguised and adding into the abyss of technology. After two million years, I mutterled me gently and said that he'd like to go back ...

"Strength of Cannabis Preparations"

In India, three different strengths of Cannabis are usually distinguished — bhang, ganja and charas. These correspond to leaves, flowering tops and leaves, and the best of the resin from flowers. Most marijuana smoked in America belongs to the first, bottom grade; all the rest costs a great deal. The p shooz-type Cannabis here is about a tenth as strong as charas, which also is p known as hashish.

What happens at lower concentrations is interesting but shouldn't be confused with more full-blown "psychadelic" effects provoked by "hash" or "hash oil," which can be up to 40 percent THC. The effect of cooked pot ** seems to be minimal up until consumption of about 2 grams (about 2 table-spoonfuls) of commercial varieties — containing, say, 2 percent THC. The "I experience is then stronger and longer lasting (usually for four to eight hours, compared to half an hour to one or two hours when smoking).

Because THC acid and much of the delta-9-thc isomer is converted by heat or combustion into the delta-1 form, the effects of smoking and eating are quite different. (Absorption from the lungs is said to be about three times more effective than when marijuana passes through the stomach.)

One unexplained characteristic — probably having to do with the differences in cannabinoids in a leaf — is that when people use different batches of marijuana, they develop less tolerance than if they use the same grass regularly. Deterioration in the strength of THC over time results from exposure to light (mainly), heat and air.

"The Tart Study"

"Probably the most relevant study to date about what might be considered "typical" pot experience was made by Dr. Charles Tart and reported in his book On Being Stoned. Tart conducted his research by having questionnaire-takers at various locations near where he was working, requiring that they be filled out anonymously and returned. His book is an evaluation of the first 150 completed questionnaires that passed the test for validity (a consistency on
Patterns, meaning in ambiguous material Visual imagery more vivid Greater spatial separation between sound sources Understand the words of songs better Hear more subtle changes in sound New qualities to taste Enjoy eating and eat very much More in the here-and-now Time passes more slowly Distance in walking changed Sexual orgasm has new, pleasurable qualities New qualities to touch Movements exceptionally smooth Get physically relaxed, don't want to move

Rare
Flat quality to world Colors get duller Sounds blurry Precognition Visual world looks flat Feel possessed by a hostile force Sense chakra centers Perform magical operations Feel possessed by good force Feel energy in spine Vomit Feel nauseated, diery

Characteristic Experiences
Touch more exciting Forget started of conversation Insights into others More subtle humor Ordinary social games hard to play Less sexy than when drunk Often forget to finish some task Easily adderacked Spontaneous insights into self Harder to read Appreciate more subtle humor Accept contradictions more readily Almost invariably feel good when stoned Less need to feel in control of things More childlike, open to experience, filled with wonder Easy to go to sleep at bedtime

Characteristic versus Rare Experience

Dr. Tart’s data should lay to rest one of the nastiest myths the Anslinger brigade fostered about marijuana, i.e., that it leads to sexual and other violence. “Loss of control to the point of antisocial actions” is reported to be the rarest of all marijuana effects recorded in the Tart study (p. 192). This is consistent with what’s been found elsewhere in several NIMH (National Institute of Mental Health) studies. One of the most meticulous of these, The Blumer Report, determined that use of the plant’s leaves reduced violence in juvenile delinquents in Oakland.

As to sexual effects, in her report on the intimate lives of marijuana users (The Sexual Power of Marijuana), Barbara Lewis asks, “Is sexual power a wild plant?” Her findings are prefaced with the following summary:

Whatever scientific research does exist on marijuana and sex supports what I learned in my interviews. In a study of twenty-one men and eleven women who had used pot more than twenty times and were asked why they continued to do so 79% said they smoked to “increase sexual satisfaction” — The study, ‘The Marijuana Problem: An Overview,” was published in The Journal of Psychiatry in 1968. It was coauthored by Dr. William H. McGlothlin, a research psychologist at the University of California in Los Angeles, and Dr. Lomington West, now chairman of the department of psychiatry at the same institution.

These books, other than that by Barbara Lewis (which was an opinion-shaper), were never very popular and didn’t influence many people. At least thirty such pulp volumes have appeared.
Dr. West was among the thirty-five psychiatrists, psychologists, physicians, sociologists, and pharmacological researchers with whom I talked. He had had contact with hundreds of marijuana smokers over the years. He expressed concern over some effects of the drug on some of its users. But he conceded that the continuing controversy over the question of whether pot is, technically, an "aphrodisiac" was irrelevant to most users.

"In real life and among real people," he said, "the fact is, the word is, the belief is, the expectation is, and the result is, that marijuana enhances sexual activity."

I also received considerable assistance from Dr. Erich Goode, assistant professor of sociology at the State University of New York in Stony Brook, Long Island, whose survey of 200 pot users was supported by the National Institute of Mental Health. In 1967 he submitted a twelve-page questionnaire to 200 middle-class New York marijuana users. The questions dealt with every aspect of marijuana experience, including sexual response. The respondents' mean age was twenty-three.

A very substantial majority (68%) of these users reported that marijuana distinctly enhanced their sexuality. Even more interesting, 50% of the women and 39% of the men revealed that it actually excited their initial interest, sharpened their sexual desire—again, only when smoked with a desirable sexual partner. If smoked with someone deemed distasteful, they said, marijuana accentuates the feeling of distaste. Sex actually became repugnant. "It's not like alcohol, which often numbs a person to the unpleasant aspects of his partner," Dr. Goode commented.

Inspiration

The core of the matter is that most users of Cannabis find it inspiring in many ways. They claim not only that it can heighten sexual feelings but that it inspires religious feelings, enhances creativity, helps them solve problems, helps to get them in touch with themselves and expand the scope of their minds. Rarely given a shot of THC have been known to be capable of learning how to run mazes faster than when they're left unstoned (see E.A. Curtiss and C. Kramer, "Effects of Cannabis Salvia (Marihuana) on Maze Performance of the Rat," Psychopharmacologia, 1963, p. 171).

When people talk about marijuana adding a third dimension to pictures or new depth to colors or creating "synesthesia" (when music can, say, become visual), they are discussing changes in normal external perception. Distortions in the sense of time and space are fascinating. The effects that come under headings of "insight" or "inspiration" are also common occurrences with marijuana use and these effects may prove beneficial to society at large. To drive this point home, read one more listing from the Tart materials, not characteristic of rare experiences but common experience:

<table>
<thead>
<tr>
<th>Common Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skip intermediate steps in problem solving</td>
</tr>
<tr>
<td>Intuitive, empathic understanding of people's social interactions</td>
</tr>
<tr>
<td>Improved ability to sense others</td>
</tr>
<tr>
<td>Thoughts more intuitive</td>
</tr>
<tr>
<td>Ideas more original</td>
</tr>
<tr>
<td>Cures original even though things forgotten</td>
</tr>
<tr>
<td>Learns a lot about what makes people tick</td>
</tr>
<tr>
<td>Say more profound, appropriate things</td>
</tr>
</tbody>
</table>

Dangers of Not Smoking

Some time ago someone showed me a hand-set booklet on "the dangers of not smoking marijuana."

On a social level these dangers included such things as war, while on the personal level, it was claimed, not smoking made you forget you're a freak, made you think the President knows what he's doing, made you decide that nobody will love you unless you're someone other than yourself. . . .

Ken Kesey, who feels reluctant to recommend any other mental drugs because they have so often been impaired, provides the ultimate pot commercial:

But good old grass I can recommend. To be just without being mad . . . to be peaceful without being stupid, to be interested without being compulsive, to be happy without being hysterical . . . smoke grass.
Before leaving the topic of marijuana's mental effects, a word should be added about its ability to give access to long-buried memories, to facilitate rapport and to aid psychotherapeutic "transference." Let me cite the experience of Dr. Harry Harman, who first became interested in this herb as a means to help his patients expedite their psychotherapy. A patient he had been treating without much success for some time came in one day, and the information Dr. Harman had been seeking in vain to elicit for so long suddenly began to flow freely. Harman was astonished. He asked what was different this time. His patient informed him that he had come in stoned. "Stoned?" said Dr. Harman. "What is this 'stoned'"? And thus Dr. Harman came to realize how effectively this weed could unblock a person's mind, an insight which launched him into an entirely new phase of his therapy and life.

Negative psychological effects occasionally yet appear among some users, mainly having to do with panicking, objections on the part of some people to seeing the past or present in a "new light," or overdoing marijuana smoking. A decade and a half ago, users generally considered smoking pot or hashish something to be prepared for and used it ritualistically. Since then the strength of much marijuana has increased and some people—mainly dealers and others with lots of time to kill—have perhaps overindulged. "Marijuana is a drug of low abuse potential," comments Dr. David E. Smith, who has treated all kinds of drug complications for more than a decade and a half at the Haight-Ashbury Free Medical Clinic. He and others treating people with drug problems point to the main symptom of pot "abuse" as a psychological compulsion to use it to the point of "loss of control" over other aspects of one's life, to where it seriously impairs one. "A little warms the heart," declares a Sacred Seeds package of high-potency skunk weed, "too much burns the soul."

**FORMS AND PREPARATIONS**

Distinguishing among Marijuana Samples

Marijuana appears as a mixture of leaves, twigs and possibly seeds, flowers and "buds" (clumps of leaves and flowers) of a Cannabis plant. The particular plant a batch of marijuana came from may have been an unseeded female, a female with seeds, a male or even hermaphroditic—an order which roughly indicates declining levels of THC content. It may have grown from C. saliva or indica seeds or have been a hybrid, resulting maturity in equatorial or temperate regions, or under lights of varying intensity and spectra, or hydroponically, with or without added nutrients, and close to other plants or apart from them. These factors, along with the time of year it was planted, whether it was transplanted, whether it was farmed with a knowledge of the effects of periods of light on it and the time of day it was picked, are some of the major variables affecting THC and CBD levels in Cannabis.

Variations in levels of THC and CBD

Cannabis will grow almost anywhere given adequate drainage, but vary can vary by a factor of about twenty in various manifestations of the fresh, natural product. This is then affected by how it is harvested, "dried and its age before use. This basic material can also be transformed into various grades of hashish, hash oil, isomerized forms or Cannabis butters for ingesting with food. Marijuana has also been used in the making of tinctures and liqueurs. In some places, such as Amsterdam and in parts of the Near and Far East, fairly standardized types of Cannabis can be bought over the counter enjoyed at "smoking clubs" without the complications that arise from its illegality here. Otherwise, the situation is more complicated and the novice relatively inexperienced might appreciate a few pointers.

Jack Margolis and Richard Clorfene opened the section on "Buying" in their _A Child's Garden of Grass_ (1969) with some sensible advice:

In buying grass, there are four things to remember: First, you don't want to get caught; second, you don't want to get bad grass; third, you don't want to overpay; and we can't remember the fourth. The first rule to remember in buying grass is "Know Your Connection." If you know and trust the person from whom you're buying the grass, you don't want to get caught, second, you don't want to get bad grass; third, you don't want to overpay, and we can't remember the fourth.

The last rule to remember in buying grass is "Know Your Grower." If you know and trust the person from whom you're buying the grass, you shouldn't have any difficulty. He won't be crooked or incompetent, and, if the grass turns out to be a real burn (less than the correct quantity or bad quality), he'll probably make good.
The second rule to remember is, "Don't Trust Nobody." This applies even to people whom you know and trust. Undercover agents look and sound exactly like you do, and many informers are not actually agents; they're just people who have been put into the position of turning in other people because they themselves have been caught, and they've made a deal with the police. Buying grass is usually relatively safe, because police usually bust people who sell it, rather than people who buy it from them. If you know your connection, there should be no problem, but if you don't then you should sample the grass first. Usually a seller will "puff his wares," which means claiming that it's better than it is. Cases have held that puffing is legal, so if the grass turns out not to be as good as he said it was, you have no recourse in the courts. The smart thing is to bring some papers with you and sample it. (A seller of bad grass will usually say he is out of papers.) In The Marijuana Catalogue (1978), Paul Dennis and Carolyn Barry described a test that applies for marijuana said to be "very good," "excellent," "bomber" or by other adjectives with implications of greatness:

Sitting loose and relaxed, inhale the smoke slowly to your lungs' full capacity and hold it as long as you comfortably can. Take six of these total lungfuls. If after ten minutes, fifteen at the most, you aren't feeling higher than the North Star on Christmas Eve, the grass in question is not superduper. If you feel fairly good, it's OK grass. If you feel just a little something, you think, you're going to have to burn your throat out to get high on it. After you are very sensitive to the various qualities of smoke in the only infallible test—your own subjective reaction. If you are serious about testing the precise quality of a Cannabis sample, they also suggest that you don't take any more than two-thirds of a full joint—or at least until you've made up your mind about its quality and the price you're willing to pay. Quite commonly a dealer will share an entire joint with you. Since the dealer may be doing a lot of smoking in the course of a day, he or she may actually not have much of the joint. So, without noticing it, you've ended up smoking most of the thing. So the rule is, always sample some of the very bag you're buying; and if you don't know the dealer, watch that bag like the proverbial pea in the shell, just to be friendly. Then later, when you try your stuff before buying, you realize you can't sell the purchased high from the gift one. If offered some smoke when you come in, say, "No, thanks. I'm OK." When the dealer hands you the bag you're considering buying, just say, "Mind if I try a little of this?" If the dealer claims the joint in his hand is the same stuff, just say you'd like to try the bag you're buying. Any honest dealer will say, "Sure." It's basic practice in reliable dealing.

A Two-Tier Market. Before the 1970s, most marijuana available in the U.S. had relatively low concentrations of THC by today's standards, and more intense Cannabis experiences were mainly propelled by various forms of...
hashish. Over the last decade, the marijuana market has split into two types of grass that are widely available—the result of genetic work on seeds, greater knowledge of how to cultivate resinous plants and particularly the growth of interest in *sinsemilla*. Now what is offered is poor to fair grass, and connoisseur grass and hash. Potency is divided in this way because of the economics of farming. Michael Starks in his *Marijuana Potency* enunciates the general principle after describing cultivation patterns and their results:

"The consequences of these observations for the marijuana farmer are dear. You have two basic choices: high potency and low yield or lower potency and high yield."

Kayo cites a DEA study in his *The Sinsemilla Technique* on the THC content in various forms of marijuana. It reflects this division:

THC levels in "normal" cannabis—that which grows wild or is imported from other countries—ranges from 0% to 2.5%. Domestic cannabis—that which is cultivated in the arid environments of the United States—ranges from 2.89% to 7.69%.

Many people prefer strains without too much THC content. Others prefer to smoke small lots of stronger *Cannabis* or to share half a joint with a friend (which is the better crop is sufficient for both). While the first tier is sold to the consumer in ounces or maybe quarter or half pounds, the second tier most often goes by the gram or possibly an ounce.

The ultimate test of a marijuana sample is smoking it. But much can also be learned by paying attention to some of the qualities evident in the leaves, twigs and whatever else is being presented:

*Seeds.* Their presence indicates that this isn't the most potentially resinous of plants, but rather a seeded female—which still can be very strong. There are various estimates indicating that about 40 to 50 percent of the "vital energy" in the female will go into seed production rather than resin production if fertilized. The weight one gets to smoke, of course, doesn't include the weight of seeds.

An examination of the seeds also enables one to determine something of the maturity of the plant when it was harvested. If they are round and dark, then they were probably harvested when resin and THC were roughly at their peak. If there are a lot of seeds that are smaller and yellowish, then it was probably cut down early. Seeds from different locales can vary in size by a factor of two, with *C. sativa* varieties generally larger. *C. indica* seeds are distinguished from those of *C. sativa* by Michael Starks like this:

* C. indica tends to have small, almost spherical seeds . . . .
* C. sativa seeds are often highly compressed longitudinally so that when pressure is applied to the peripheral ridges, they easily fall apart, in contrast to those of *C. indica*.

They are the largest of the three species, often exceeding 5 mm in length.

*Shake* or *Hash.* If the marijuana is all loose leaves, or "shake," it can be male or female and of greatly varying THC and CBD content. This is not the case if there are many flowers and leaf clusters, or buds, there are, the more likely that there are higher concentrations of THC. Many would consider *sinsemilla* shake stronger than much that is considered of commercial but not excellent quality. Young leaves can be fairly potent, as can male leaves. In his *Marijuana Potency*, Michael Starks discusses the complex nature of the cannabidiol (CBD) interaction with THC, gives values for specific varieties and writes that "it seems reasonable to assume that as CBD content approaches that of THC, the high will be diminished in intensity, but prolonged."

Leaf color can be predominantly brown, yellow, green, purple, black or various combinations of these and red streamings. Color becomes richer and more complex as the plant matures, but this is not much of a guide to the high that is experienced.

Resin itself, however, glints in the sun as tiny, brilliant points. Sometimes the resin becomes so thick that it actually crystallizes. The high doesn't actual accord with resin always, being a mix of the THC and CBD interaction, but generally speaking this is so.

*Smell.* Many novelists and other writers have described the smell of marijuana as that of burning rope, perhaps getting off on the fact that it comes from the hemp plant. The actual smell is unlike any other herb, but is fairly pronounced and pervasive when marijuana is burned. As the plant matures the sharp, earthy smell of the leaves coming from chlorophyll streamlines the more honey- and flower-like colors produced by resin and flowers increasingly dominate. Most users like the "bake" of all marijuana smoke,
but prefer the more "benzoin" smells produced at the end of the plant’s life. The difference is much like that exhibited in a bouquet of a wine as it ages and loses the astringent flavor produced by tannins. Veteran smokers can usually tell if a sample of marijuana is bunk, ordinary or special by crushing a bud in one’s fingers. When it breaks open, there should be a pungent smell. If its quite good, the fingers should also be somewhat sticky. Some strains have a strong pine, mint or skunk odor. Veteran imports of Mexican, Colombian and Jamaican generally have only small buds about 1-1/2 long, which may constitute possibly a fifth to a tenth of the total. These are sufficient in most instances to get people quite high, as are just leaves alone. Fortunately, it takes only ten or fifteen minutes at most to know from direct experience whether the sample offered has effects predominantly up, strong, stony, psychedelic or whatever.

How should one check out a preferred “Thai” stick? These have been found only as an example so far of a special kind of Cannabis associated with exceptional packaging—small buds tied along a short skewer stick. (See back issues of High Times and Cannabis calendars for illustrative specimens.) Anyone interested in this should roll fingers along a small part of the sample and see how sticky it is, smell it checking out how “benzoin” and C. complex the smells, and smoke a bit, giving it the ultimate test. Unroll about half an inch of the six inch skewer it is tied to and smoke that. If the results are not soon impressive, the sample is likely bogus.

Harvesting, Pressing and Aging. The best grass comes as “colas” or long “buds” which have been individually picked and often are hung upside down for at least three days to dry. They are hung upside down not to add THC to the leaves from other pans of the plant—as psychedelic myth long had held—because THC doesn’t translocate. Hanging upside down gives “e buds a tighter shape.

The bud is then manicured, or trimmed, of its loose leaves and vacuum-sealed in bottles or heat sealed into plastic containers. YIELD, it will lose only about 5% of its content per year.

Most foreign shipments are compressed before shipment into “bricks” weighing about a kilogram. Sometimes there are foreign objects inside, but very rare. More important is that the crushing breaks up some of the resin shielding that keeps THC from turning into an inactive form by oxidation. The normal state to which grass is dried is not brittle, but 5 to 6% ages it becomes more powdery and less powerful. This is why most Thai using quality grass, or often any kind, break open only a small amount at a time. Crushed and exposed for any length of time to air, the THC in marijuana is sure to lose a significant amount of psychoactivity.

Gras to hashish or charas as beer and wine are to hard liquor. As in the case of distilled spirits, some care is needed in the preparation of this refined Cannabis product.
A Himalayan hash press surrounded by harhiit in various stages of completion. In the foreground an broken bit: in the middle left an "finger clusters" next to a plastic bag filled with chips -warming in the sun; to the right of the press are well-pressed slabs in their plastic wrappings; and in the center are a dozen hand-pressed balls of Royal temple balls.

Collecting Hash

Traditionally, hash was collected by workers passing bareskinned through Cannabis fields, embracing the plants and then having the adhering resin scraped off their bodies. Nowadays, the practice generally is to clothe a worker in leather and then scrape the resin off the leather, or to simply rub the plant's buds with one's hands and then scrape the oily residue off one's hands. W.D. Drake's *The International Cultivator's Handbook* and Lawrence Cherniak's *The Great Books of Hashish* provide fairly full discussions of other methods of hash production, including one in which workers go into sealed beating or threshing rooms clothed in loincloths and masks, seeking to extract the finest powder. Cherniak's book illustrates the processes and the products of Morocco, Lebanon, Afghanistan and the Himalayas in 168 superb color photographs.

Hashish was served at the Turkish Booth at the Centennial Exposition of 1876 in Chicago.
Hash Oil and THC Pills

The resin that has been collected gets pressed with animal fat, honey or a similar amalgam. Generally speaking, the quality of hash often corresponds to color—the darker it is, the more potent it usually turns out to be. But there are important exceptions. Good-quality Moroccan, for instance is frequently very potent, even though it looks rather white. Hashish deteriorates faster than marijuana because it is broken up finely when manufacturing begins. When it is well pressed, however, the interior will maintain its potency for about two or three years.

In the early 1970s, we first began to see fairly large amounts of “hash oil,” a product distilled from marijuana leaves. Processes are detailed in Starks’ Marijuana Potency from DEA papers. Here the rules of color are reversed: the darker the color, the less refined, the more harsh and the less potent the oil is.

The usual methods for smoking hash oil are: in a special glass pipe (an example can be found on page 331), on the end of a cigarette or rolled with tobacco or grass. Perhaps the most efficient way is to smear a drop or two on a cigarette paper and then roll that into a joint. Really fine-quality hash oil is powerful enough that only a trace is needed. Dipping a container in hot water thins it, so that just a bit can be picked up by inserting a needle or paperclip and then smearing this on paper.

THC and Analogues

Delta-9 THC, because it has been around so long, is not patentable. For THC analogues, however, this is not the case. As a result, quite a few pharmaceutical houses have spent money trying to come up with something that would mimic THC’s medical properties without THC’s psychoactivity. Several candidates for this role were produced, with Lilly’s “Nabilone” being considered for a while as the most promising. After a year of testing, however, dogs showed dramatic drops in blood pressure, and soon Lilly withdrew Nabilone from FDA consideration.

The U.S. government supplied marijuana until recently for a small number of medical use. In August 1982, Surgeon General Julius Richmond announced that the government had decided to make THC pills available to cancer patients instead. Robert Randall and others concerned with medical use of marijuana attacked the decision. “I think it is unfortunate that the government decided to release what is known to be a medically inferior substance to marijuana and a substance which has a far higher potential for adverse side effects,” Randall said. “In effect, the government is trying to flood the market with a phony synthetic and at the same time trying to retard research on the natural material.” Roger Roffman’s studies showed the natural substance to be more easily tolerated than the synthetic. Stephen Sallan of the Harvard Medical School said that smoking marijuana was more effective in reducing chemotherapy side-effects because it speeded up absorption of the active ingredient into the bloodstream.
William Drake's view of the inefficiency of pot smoking. Unfortunately, eating is even less efficient because of incomplete absorption from the intestine. Using average marijuana containing 1 percent THC, smoking roughly one gram provides a minimal high, a condition also obtainable by eating about three grams. Michael Starks estimates that when pure, THC is roughly three times more potent when smoked than when eaten. "Smoking about 6 mg, or eating about 15 mg, of THC will feel like a minimal high to most people; whereas smoking 30 mg or eating 75 mg will tend to produce very intense effects, comparable to those from LSD."

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Two quick, efficient recipes: (1) To a brownie or corn bread mix weighing about 1/4 pounds, add 1 cup of cleaned commercial grass that’s been broken up by a blender and saute’d in butter or margarine for about fifteen minutes. Cut into nine or ten portions after baking as usual; take one or two at a time. (2) Melt half a cube (1/2 pound) butter in a pan and in this sauce a third to a half ounce of moderately potent grass for about five to ten minutes over low heat (not near any flames). Without allowing this to splatter, pour in eight ounces of vodka or rum rather swiftly and boil at a low temperature for another one to five minutes (depending upon how much alcohol you wish to evaporate). Strain the result, removing as much as possible of the juices into cups. Sweeten to taste with honey if desired; use.

Marijuana and Hashish

A FRIEND WITH WEED IS A FRIEND INDEED!
The usual way to ingest marijuana is by smoking it. In this way THC is "decarboxylated" into THC and together with already-present THC passes into the lungs where it enters the bloodstream and is carried across the blood-brain barrier. This occurs quite rapidly, so that most veterans have some idea of the quality of a sample within a minute or two, although others might need to take longer.

Our present-day pipe appears to have been developed by the Indians of the Ohio Valley sometime around the second century B.C., if we are to believe the evidence of excavations of burial mounds. The notion of creating a joint—rolling a smoking mixture into a cigarette—seems to have developed originally among the Indians of Mexico prior to the time of Montezuma. By the time of The Thousand and One Nights, toward the end of the first millennium A.D., the hookah (or "bubbly bubbly") was well known. Since then there have been some innovations in smoking: the bong, the carburetor, hash and opium pipes. High Times displays many refinements, including "The Tilt," which is said to heat marijuana only to the proper temperature for extraction of the THCs so that other oils are left in the residue. For those with sensitive throats, use of hot water in a bong reduces the amount of water-soluble, non-psychoactive components in Cannabis smoke and thus increase the amount of THC ingested per toke, while reducing the harshness on the lungs. "Passing the smoke through cold water tends to condense some of the desirable components," comments High Times in one of its advice columns, adding that since the majority of cannabinoids (including THC) dissolve in alcohol, "the use of alcoholic beverages in a water pipe will give a less potent smoke." Many users prefer the taste when it is passed through cold water.

Eating Marijuana

In India and other areas with long marijuana experience, Cannabis is often made into something like a milkshake (bhang) or a kind of candy (most commonly known as majoun). These methods give effects, but experience has shown that if marijuana is to be ingested, its potency can be increased considerably by cooking it first in oil at low temperatures for about fifteen minutes. Because cannabinoids are not soluble in water, the general practice is to "cook them in fat or butter (which when strained, produces the famous Indian product called ghee) or alcohol (in which they are soluble, although in this case all heating should be done at low temperatures and in the absence of an open flame since alcohol is highly combustible). A number of pamphlets on Cannabis cookery have been published, but many simply contain rewrites of familiar recipes to which grass has been added. Some, such as that by "Panama Rose," recommend that grass be boiled in water to make a tea—which is an effective way to lose most of the active principles if the grass itself is then simply thrown out like old coffee grounds. I recommend W.D. Drake Jr.'s book Marijuana Food (Simon & Schuster) or Adam Chaitoff's booklet The Science of Cannabis Cookery (Level Press), which discusses culinary factors that should be taken into account with marijuana and provide all the basic recipes one might need.

Another point that should be remembered is that if the stomach is relatively empty, marijuana products are digested much faster. Thus, there are good grounds for not simply adding grass to a dish like spaghetti. The basic recipe for marijuana butter paste given by Roger Roffman for his patients requires 1 to 1 1/2 ounces cleaned marijuana, 1 quart of water and 1 1/2 pounds butter or margarine. In saucepan, combine marijuana, water, and butter or margarine. Simmer for approximately 45 minutes. Mixture will become green or mustard-colored as active ingredients of marijuana are dissolved in oil of butter or margarine. Roffman recommends to cool it, after cooling, butter or margarine has congealed, reheat mixture just enough to return it to liquid form. Stretch cheesecloth over bowl and pour mixture through it to remove leaves and...
CHAPTER FOUR

Psilocybian Mushrooms

"Will you help me learn the secrets of the divine mushroom?"
—R. Gordon Wasson

HISTORY

The fourth major category of psychedelics includes well over two dozen mushroom species at present. The number has risen recently and is expected to expand substantially in the near future as more mushroom species are analyzed.

Psilocybin and psilocin molecules are the primary psychedelic agents in the psychoactive mushrooms known so far, but four related molecules may in some way contribute to the mental effects. The term "psilocybian mushrooms" has been proposed to include all of the dozens of species containing psilocybin; it will be used in that sense here.

Although the histories of psilocybian and of Amanita mushrooms are entwined, the categories are quite different chemically, pharmacologically and in associated shamanic practices. The Amanita species will therefore be discussed in Chapter Nine of this book.

Of well over a half million plant species classified so far, about a fifth fall into the rather mysterious grouping of fungi. Many botanists consider these to be outside the usual concepts of "plant" or "animal." That some of these mushrooms are capable of causing impressive and often enlightening mental effects in humans is not, however, in doubt.

Fungi are distinguished from ordinary plants in two important ways. First, they lack—with a few exceptions—the green pigment chlorophyll that enables plants to make use of light in the production of organic substances. Second, they employ microscopic spores rather than seeds for reproduction. This chapter is concerned only with the rapidly growing, fleshy Basidiomycetes, the fungi popularly known as mushrooms or toadstools. The gilled "fruiting bodies" or carpophores of a mushroom are the sexual, "flowering" aspect; the larger part of the plant usually lives underground.

Scores of psilocybian mushrooms are of special interest nowadays, thanks mainly to the investigations of one couple: R. Gordon Wasson and Valentina Pavlovna Wasson. These two individuals were essential to the discovery that the largest natural production of psychedelics occurs in mushrooms. This revelation—quite as serendipitous as Hofmann's discovery of
Psychedelic Mushroom

LSD—came about in 1955. Their discovery (more accurately "rediscovery") is worth recounting because it greatly influenced subsequent developments.

From Antiquity until June 29, 1955

For millennia, psychedelic mushrooms were used by native Americans, living mainly in Central America but also as far south as Chile. These original mushroom users left few records, but they did establish a tradition of psychedelic mushroom use.

What we know of the Indian rites came from "gringos," and most of these verbal accounts, drawn from Catholicized artists entitled "teonanacatl"—meaning "wondrous," "awesome" or "divine" mushroom—also survive from the sixteenth century. One portrays a bird-like "devil" (a Spanish interpretation) dancing on top of a mushroom. Another depicts "the devil" encouraging an Indian to eat mushrooms.

A Na'huatl Indian dictionary prepared in 1571 distinguished a "mushroom of divine inspiration" from other "teonanacatl," and another published in 1885 included the names for several inebriating mushrooms. In a translation of the latter, Teonanacatl is described as a "species of little mushrooms of bad taste, intoxicating, hallucinogenic.

Teonanacatl, a sixteenth century drawing by a Franciscan from Sahagun's Florentine Codex.

Teonanacatl, a sixteenth century Indian drawing from the Magliabechiano Codex.

Aside from these and other Spanish references, no effort seems to have been expended trying to identify teonanacatl until the twentieth century. A revival of interest, strangely enough, began as a scholar's squabble shortly after an authoritative misidentification in 1915.

After a search for teonanacatl in specimens of Mexican mushrooms, a prestigious American botanist, Dr. William E. Safford, concluded that there simply were none. He felt that the Spanish chroniclers must have confused them with dried peyote. In a talk entitled "Identification of teonanacatl of the Aztecs with the narcotic cactus Lophophora williamsii" and an account of its ceremonial use in ancient and modern times," Safford—\(\text{he was known for lengthy titles}\)—declared that the dried mescal button resembled "a dried mushroom so remarkably that, at first glance, it will even deceive a mycologist!" He hypothesized that the Indians may have deliberately misled the Spanish in order to protect their use of peyote.

The few scholars who heard Safford or later read his handsomely-published report were mainly hearing about psychoactive mushrooms for the first time, only to be told that the mushrooms never existed. But there was one important dissenter—Dr. Plasius Paul (bias Pablo) Reko, an Austrian physician who had engaged in extensive botanical collecting as a hobby while living in Mexico. Reko had become convinced that teonanacatl referred to mushrooms, not Safford's hypothesized peyote. In 1919, Reko published a book entitled El Mexico Antigua (The Old Mexico) in which he proclaimed his belief that people were still using mushrooms in Mexico for "effectos narconcos." He wrote in 1923 to Dr. J.N. Rose of the Smithsonian Institution:

I use in your description of Lophophora that Dr. Safford believes this plant to be the teonanacatl of Sahagun, which is wrongly named. It is actually, as Sahagun states, a fungus which grows on dung-heaps and which is still used under the same old name by the Indians of the Sierra Huasteca in Ocune in their religious feast.

Five years later, the journalist/novelist Victor A. Reko, a cousin of Bias Pablo Reko, wrote the first published objection to Safford's thesis. In an imaginative, popular book written in 1926—Magicische Getreine: Rausch- und Betäubungsmittel der Neuen Welt (Magical Poisons: Intoxicants and Narcotics of the New World)—he declared that Safford's identification "must be contradicted!"

The nanacates are poisonous mushrooms which have nothing to do with peyote. It is known from olden times that their use induces intoxication, states of ecstacy and mental aberrations, but, notwithstanding the dangers attendant upon their use, people everywhere they grow have taken advantage of their intoxicating properties up to the present time. Victor Reko gave the names "amanita mexicana" and "A. muscaria variante mexicana" for the mushrooms described in his book. This embellishment of his cousin's views was significant in again attracting attention to a mushroom as teonanacatl.
Although Dr. Reko was considered by many to be "only an amateur," and indeed one given to fantastic ideas, he continued steadfastly to argue that there were Mexican tribes still using mushrooms for their shamanic ceremonies. In 1936, more than two decades after Safford "closed the case," Dr. Reko heard from Robert J. Weitlaner, an Austrian-born engineer who had given up that profession to study Indian ways. He told Reko that the Otomi Indians of Puebla (just northeast of Oaxaca) and of nearby regions were using mushrooms as inebriants and gave samples to Dr. Reko of what he said were the psychotomimetic mushrooms.

Dr. Reko, in turn, forwarded these samples to Dr. Carl Gustaf Santesson in Stockholm for chemical analysis and to the Farlow Herbarium at Harvard University for botanical examination. Reko's mailing arrived at Harvard in such rotted condition that the mushrooms were identified only as to genus (*Panaeolus*)—and perhaps incorrectly so.

The Harvard recipient was the young ethnobotanist Richard Evans Schultes, who had been a medical student until he happened upon Heinrich Kluver's first monograph on "mescal visions." As Schultes later wrote to Kluver, reading that essay altered his life's course. Schultes changed his doctoral thesis to peyote use on the Kiowa reservation in Oklahoma and thereby began on a lifelong "interest in mind-changing plants of the New World."

The appearance of Dr. Reko's mushrooms "out of the blue" encouraged Schultes to suggest that these—or something similar—may have been the mushrooms referred to in the Spanish chronicles as *teonanacatl*. "Soon he and a Yale anthropology student, Weston La Barre, began summarizing the available evidence against Safford's arguments. In the Harvard Botanical Museum Leaflets of April and November 1937, Schultes disputed Safford's conclusion and urged that attention be redirected to identification of the mushrooms."

The next year Schultes began studies with Dr. Reko in northeastern Oaxaca among the Mazatec Indians. Soon the two heard reports about the existence of mushroom rites in and near the Oaxacan town of Huautla de Jiménez. They collected specimens of *Panaeolus sphinctrinus*, which was alleged to be the mushroom chiefly used in the rites. They also collected specimens of *Stropharia* (or *Psilocybe*) *cubensis*, a mushroom of lesser importance according to the native Mazatecs. These specimens remained in the herbarium at Harvard.

Soon after, Robert Weitlaner's daughter Irmgard and her husband J.B. Johnson, along with others, attended a midnight mushroom ceremony—or *velada*—in which the shaman alone was said to have ingested *teonanacatl*. This ceremony was written up by Johnson for a Swedish journal, and soon forgotten.

All of these investigations ended with World War II. Dr. Reko went on to other pursuits, and Schultes was sent off to the Amazon to search out rubber sources. Santesson died shortly after completing his chemical analysis, and Johnson was killed in a minefield in North Africa.

We turn to the Wassons, whose contributions were prompted by an unrelated minor incident in the fall of 1927.

R. Gordon Wasson is the American son of an Episcopalian minister who had written *Religion and Drink*, a book that examined biblical references to me drinking of alcohol by religious figures. He took the tact of a fundamentalist, which he was not, and implied that it would be quite unchristian to be critical of alcohol. The royalties of this book enabled the younger Wasson to study in Spain. He worked as an English teacher and then for a decade as a financial reporter for the *Herald-Tribune*. In 1926, he married a Muscovite pediatrician, Valentina Pavlovna. A year later, the two were walking in the Catskill Mountains when Valentina Pavlovna dashed off the path to gather wild mushrooms. R. Gordon's initial reaction was one of disgust and fear that she might poison herself. He wouldn't even touch these "delicacies." Each of them was surprised to discover that the other had such intense, opposite feelings on the subject. The incident triggered a lifelong search of cultures manifesting either a great loathing of mushrooms or else a proclivity to treasure them. Soon they were dividing peoples into "mycophiles" ("mushroom lovers") and "mycophobes" ("mushroom fearers"). Their devotion to this eventually fed them on a worldwide search for references and practices involving mushrooms—in museums, proverbs, myths, legends, folk tales, epics, history, poetry, novels, records made by explorers, and so on.
Psilocybian Mushrooms

The Wason's Search for "Sacred Mushrooms"

R. Gordon Wason, who—while Vice President of the J.P. Morgan bank—was the first to reveal popularly the Indian use of "sacred mushrooms."

Twenty-five years later the poet Robert Graves and simultaneously an Italian printer of fine books, Giovanni Mardersteig of Verona, wrote to the Wason's about the search. They called attention to the Spanish chroniclers who had touched on teonanacatl and referred the Wason's to the "mushroom stones" then being discovered in quantity in the Guatemalan highlands, in El Salvador and in southeastern Mexico. Mardersteig even sent along a sketch that he made at the Rietberg Museum in Zurich. A few months later, Eunice V. Pike, a Protestant missionary to the Mazatecs, informed the Wason's that the local word for mushrooms meant "the dear little ones that leap forth"

This correspondence led the Wason's to the leaflets by Schultes, written some fifteen years earlier. R. Gordon Wason is not sure whether he or his wife was the first to put into words a hypothesis they came to agree on sometime in the 1940s—that as far back as 6,000 years ago, there were cultures that worshipped mushrooms. The discovery of the twenty or so mushroom stones seemed to be confirming evidence that the mushroom was the symbol of a religion, like the cross promulgated by Christians, the crescent moon by Moslems and the Star of David by Jews. Although anthropologists and other experts referred to these artifacts as "mushroom stones," they seem to have thought of the term as merely descriptive, regarding these stone carvings as mainly phallic. Schultes' papers, which pinpointed the town of Huautla de Jimenez in Oaxaca, gave the Wason's their most important clue about where to look for remaining mushroom cults. They contacted Schultes, who told them about Weitlaner, the Rekos and the mushroom rolado witnessed by Weitlaner's daughter. He even arranged for a guide who had lived with the Indians of Oaxaca.

Thus began the Wason's eight expeditions into the mountains of central Mexico. In their fifties, they undertook these trips in the spirit of pilgrimage. Over three summer vacations, the Wason's searched the Oaxacan highlands for someone who could tell them about the sacred mushrooms. The problem was that while they did find psychedelic mushrooms (none of which were tried), they found no one who would perform the ceremony or talk about the use of mushrooms. There was no way to tell if they were psychoactive unless tried, and who were they to trust?

In the tiny village of Huautla de Jimenez, where he had traveled ahead of his wife, Wasson came upon the answer when he spoke briefly to Cayetano...
Garcia Mendoza, a thirty-five-year-old official presiding at the town hall. The date was the 29th of June 1955. Failing to get the chance to talk for very long, Wasson asked rather quickly, almost as if in an aside, "Will you help me learn the secrets of the divine mushroom?" Uttering the proper glottal stop at the beginning, Wasson used the term 'nti sibto for the object of his search. The first syllable shows reverence and endearment, the second expresses "that which springs forth." To his utter surprise the answer this time was: "Nothing could be easier." Mendoza was as good as his word. Later that afternoon he took Wasson to his house where they gathered some of the mushrooms. By evening Mendoza had spoken to the famous curandera Maria Sabina, telling her without further explanation that she should serve Wasson, who then went with New York fashion photographer friend Allan Richardson to a mushroom ceremony.

Richardson had promised his wife that if such an eventuality arose, he 'wouldn’t try any mushrooms. At about 10:30 that evening both he and n were offered a dozen each of the large, acid species known as Psilocybe caerulescens (or "Landslide" mushrooms). Over the next hour they consumed them. "Allan and I were determined to resist any effects they might have," Wasson wrote later, "to observe better the events of the night." However, a soon began to notice harmonious colors and then geometric patterns that dim the dark. Then came "visions" of palaces and gardens. He later related his experience to what the Greeks meant when they created the Aekstasis—"a flight of the soul from the body." The experience continued until the very early morning. Wasson and Richardson thus became the first biens in recorded history to partake of the Mexican divine mushrooms. Wasson described this velada, or night ceremony, most fully in The Wondrous Mushroom: Mycolatry in Mesoamerica.

Three days after he ingested the sacred mushrooms, Wasson tried the experience a second time. A few days later, Valentia and their thirteen-year-old daughter Masha tried it. Six months later, back in New York, Wasson ingested dried specimens and found the effects even more fantastic.

Meanwhile, the CIA had initiated a search for the so-called "stupid i bush" and other botanicals that might derange the human mind. The CIA became especially interested in a shrub called piule whose seeds, they were told, had long been used as inebriants in Mexican religious ceremonies. In early 1953, a scientist from Project ARTICHOKE went to Mexico in search of this plant. Before he left Mexico with bags of plant material, including ten 1 pounds of piule, he heard wondrous stories about special mushrooms used in connection with religious festivals. His collected samples went immediately to chemical labs. CIA scientists I were excited by his findings and soon came upon the Spanish records relating 1 to teonanacatl. Morse Allen, head of the ARTICHOKE program, was I particularly fascinated by indications that mushrooms could be used "to pro-" "duce confessions or to locate stolen objects or to predict the future." Putting I high priority on finding the mushrooms, Allen even traveled to the best I mushroom-growing area of Pennsylvania to secure potential growers if they should be found.

Shortly after Maria Sabina’s 1955 velada, a botanist informant for the QA in Mexico City sent along a description of R. Gordon Wasson’s discovery. The report was brief, mainly indicating that the banker had envisioned "a multitude of architectural forms" after he had ingested the mushrooms. That was enough for the CIA to be interested in the Wassons.

The Wassons’ next expedition took place during the summer of 1956, timed for the rainy season in Oaxaca so they could gather mushrooms. They
Psilocybian Mushrooms were accompanied this time by the French mycologist Roger Heim, Director of the National Museum of Natural History in Paris and an acclaimed expert on tropical mushroom species. His role was to supervise the collecting of these fungi and to determine their taxonomy. Another Frenchman, a botanist colleague from the Sorbonne, also traveled to Oaxaca. Finally, to round out this interdisciplinary team, there was Dr. James Moore, ostensibly a chemist from the University of Delaware.

Moore was much more than a mere organic chemist at a university. He has recently been identified as an expert at synthesizing psychoactive and chemical weapons for the CIA on short notice; he was known as the CIA’s "short-order cook." During the winter of 1955-56, he offered himself along with the Wassons indicated their intention to return to Mexico. As an enticement, he offered a $2,000 grant from one of the Agency’s cover organizations, the Geschickter Foundation. The CIA man did not enjoy the journey or the mushroom ceremony:

I had a terrible cold, we damned near starved to death, and I itched all over. There was all this chanting in the dialect. Then they passed the mushrooms around, and we chewed them up. I did feel the hallucinogenic effect, although "disoriented" would be a better word to describe my reaction.

After the collecting of specimens was completed, Moore returned to Delaware with a bag of the sacred mushrooms for analysis, hoping to isolate and then synthesize the active principle in large quantities for the Agency. Gottlieb wrote soon after that if Moore were successful, it was "quite possible" that the potentiating molecules "might remain an Agency secret" (not published in the scientific literature, unlike most academic discoveries).

While Moore worked on the problems of extraction and synthesis, Heim and his Parisian colleagues succeeded in the difficult task of cultivating the species from specimens and spore prints collected in Mexico. Heim wrote to Sandoz asking if its research team would assist in analyzing the mushrooms that had been grown. His colleagues had been unable to extract the active ingredients. Heim thought Sandoz, successful with LSD-25, might be in the best position to undertake such work. Albert Hofmann accepted Heim’s offer with enthusiasm, having already read about the Wassons’ discovery in a newspaper article.

Heim sent Sandoz 100 grams of dried \textit{Psilocybe mexicana} that he had grown in cultures. The research team there first tested this on dogs, trying to establish what would be a reliable dose. The results were uncertain and almost depleted the mushroom supply. Hofmann ingested 2.4 grams himself to see if cultivation had ruined its psychoactivity.

While the dosage was moderate by Indian standards, the effects led Hofmann to conclude that humans provide a more sensitive testing of mind-affecting substances than animals. Using about a third of Hofmann’s dose, his team members then made many tests of various fractionated extracts and soon isolated 4-OPC-DMT and 4-OPD-DMT as psychoactive constituents.

Albert Hofmann, as it turned out, was probably the scientist best equipped to analyze the psychoactive agents, in that there is considerable chemical similarity between these substances and LSD (both contain the same kind of nucleus with a substitution at the fourth position in the indole ring). "Probably in no other laboratory in the world," wrote Hofmann later, "would there have been 4-hydroxy indole for comparison purposes." He and his colleagues...
found by extracting the alkaloids in the mushroom material and degrading them what the psychoactive principle looked like chemically; then they were able to use a route for synthesis somewhat like that for making LSD. Before long, they had published their methods for extraction and for synthesis in a Swiss chemical journal, where Hofmann gave the generic name for the two activating molecules as "psilocybin" and "psilodin" (derived from the Psilocybe genus to which Ps. mexicana belongs).

The rapid achievement of Hofmann's team was to end the QA's dream of having its own clandestine reserve. Though Moore had the mushrooms first, he failed largely because he would not ingest the mushrooms back in the U.S. He had no way of telling whether his mushrooms were still active; even if he extracted the constituents in several solutions, he had no way of telling which solvent contained the active ingredients. There was no reason for him to test for indole tryptamines. Before long, Moore gave up his efforts and wrote Sandoz requesting a supply.

The first extensive accounts of the Wassons' discovery appeared in May 1957. They published a monumental two-volume work on their investigations, Mushrooms, Russia and History, and a shorter, more accessible report of seventeen pages in Life magazine. Only 512 copies of their magnum opus were issued (going for $15 then, and now selling at more than $2, XX) a copy, but the Life article was seen by millions.

The first in a "Great Adventures" series, their article was titled "Seeking the Magic Mushrooms: a New York banker goes to Mexico's mountains to participate in the age-old ritual of Indians who chew strange growths for visions." The term "magic mushrooms" was invented by a Life editor; Wasson did not like it and still has reservations. John Marks characterized the tone of the presentation as giving these newly-revealed mushrooms "glowing but dignified respect." Coming soon after Huxley's writings about the tone of the presentation as giving these newly-revealed mushrooms "glowing but dignified respect." Coming soon after Huxley's writings about psilocybin and psilodin, Hofmann and his co-workers synthesized a series of analogues, or related compounds. These were essentially the same molecules (except that (1) the phenoxyl or hydroxy group at the top of the indole ring was moved around to other ring positions, and (2) different numbers of methyl groups (CH3) and other carbon chains were added to the side chains and to the nitrogen on the indole ring to see how these changes would affect psychoactivity. These new compounds were tested on animals. The question of safety was significant in this case because these synthetic substances, unlike the mushrooms, were being tried for the first time.

Sandoz Synthetics: Analogues and Distibution Psycholyx for Researchers

The patents on psilocybin and psilodin belonged to Sandoz Pharmaceuticals. After extraction, identification and synthesis of these naturally occurring molecules, Hofmann and his co-workers synthesized a series of analogues, or related compounds. These were essentially the same molecules (except that: (1) the phenoxyl or hydroxy group at the top of the indole ring was moved around to other ring positions, and (2) different numbers of methyl groups (CH3) and other carbon chains were added to the side chains and to the nitrogen on the indole ring to see how these changes would affect psychoactivity. These new compounds were tested on animals. The question of safety was significant in this case because these synthetic substances, unlike the mushrooms, were being tried for the first time.

For all that, the Wassons were still the primary investigators of psilo- cybin mushrooms. They mobilized an impressive array of interested parties and resources for further study, involving institutions from the Bellagio Foundation to the Bank of Mexico. They recruited linguists, chemists, botanists and other specialists in Mexico, the U.S., Japan and the U.K.—anywhere they found evidence of mushrooms being used as "eminentes."

By the time of Valentina Pavlovna's death from cancer at the end of 1958, most of the unconventional story had been uncovered. Commenting later on their search, Wasson said that even if they had been on the wrong track, there "must have been a singular false hypothesis to have produced the results that it has."

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Only two of these synthetic compounds were tested in controlled trials in humans, and they were eventually used in "psychoactive therapy" in several clinics: Europe: CY-19 (4-phosphoryl-N, N-diethyltryptamine) and CZ-74 (4-hydroxy-N, N-diethyltryptamine) are the diethyl analogues of psilocybin and psilocin; they produce experiences similar to their counterparts but are slightly less active by weight, and their effects last only about three and a half hours—compared with about twice that for psilocybin and three times that for LSD. They are considered particularly appropriate for psychotherapy using psychedelics as an adjunct, because they are less tiring, more manageable for the experience and therapist and easier to schedule. Psilocybin, meanwhile, was sent to interested researchers at cost, becoming another psychedelic agent backed by a pharmaceutical house—after Cannabis first, then mescaline, then harmaline and harmine, then LSD-25. Results from psilocybin studies began appearing in 1958, when the conclusions from six research projects were published. By 1962, Wasson was listing 362 items of relevant literature in a bibliography about psilocybin and the mushrooms containing this compound. The excitement in experimental psychiatry was intense. It was long before this psychedelic became available to any but a few at the small businesses experimenting with it.

On the 1962 expedition organized by R. Gordon Wasson to see Maria Sabina, Hofmann came along and brought a bottle of psilocybin pills. Sandoz was marketing them under the brand name "Indocybin"—"indo" for both.
“Indian” and “indole” (the nucleus of their chemical structures) and “cybe” for the main molecular constituent, “psilocybin.” (“Psilo” in Greek means “bald,” “cybe” means “head.”) Hofmann gave his synthesized teonanacatl to the curandera who divulged the Indians’ secret. “Of course,” Wasson recalls of the encounter, “Albert Hofmann is so conservative he always gives too little a dose, and it didn’t have any effect.” Hofmann had a different interpretation: activation of “the pills, which must dissolve in the stomach before they can be absorbed, takes place only after 30 to 45 minutes, in contrast to the mushrooms which, when chewed, work faster because part of the drug is absorbed immediately by the mucosa in the mouth.”

In order to settle her doubts about the pills, more were distributed, bringing the total for Maria Sabina, her daughter, and the shaman Don Aurelio up to 30 mg., a modestly high dose by current standards but not perhaps by the Indians’. At dawn, their Mazatec interpreter reported that Maria Sabina felt there was little difference between the pills and the mushrooms. She thanked Hofmann for the bottle of pills, “saying that she would now be able to serve people even when no mushrooms were available.”

The Harvard Psilocybin Mushroom Project

Surprisingly little of the psilocybin experimentation involved human use. The best known investigations in this area were conducted by Dr. Timothy Leary and his associates at Harvard University—in the same building used by William James when he studied religious mysticism, “laughing gas” (N2O), and the nature of altered consciousness.

Leary, who was Irish and Catholic in extraction and whose father was Eisenhower’s dentist, had been rebellious and was expelled from West Point, but later he was well received as a psychologist, speaker and author of two works, widely recognized among psychologists, a textbook and a psychological examination still employed for categorizing personality types. In 1960, while Leary was working as research director at the Kaiser Hospital in Oakland, he was offered a lectureship at Harvard for the fall.

In the summer of 1960, while on vacation in Cuernavaca near Mexico City, he ate seven small mushrooms beside the pool of his rental villa. Leary soon felt himself being swept over the edge of a sensory Niagara into a maelstrom of transcendent visions and hallucinations. The next five hours could be described in many extravagant metaphors, but it was, above all and without question, the deepest religious experience of my life.

Leary vowed “to dedicate the rest of my life as a psychologist to the systematic exploration of this new instrument.” That fall he returned to Harvard and interested many graduate students and others in researching psilocybin.
During the winter term of 1961, another Harvard faculty member, Richard Alpert, became an important companion. Leary and Alpert were co-directors in a course on "game theory" called Existential Transactional Behavior Change. Alpert was asked by the chairman of the social relations department (McClelland) to keep an eye on Leary and this "mushroom project."

During early March 1961, however, Alpert himself took synthesized psilocybin—which Leary and others made a point of referring to as "the mushrooms" or "the mushroom pills." Within a few hours, he had an experience that was to turn his life around. He began by closing his eyes and relaxing. Here's a description of that first trip beginning his transformation that appeared in a New Age magazine of the mid-1970s:

... in the living room of Leary's house in suburban Boston, Alpert saw a figure in academic robes standing a few feet away and recognized himself in his role as Harvard professor. "The figure kept changing to other aspects of his identity—musician, pilot, lover, but it was nothing that had somehow dissociated themselves from his body. And then to his horror he watched his body itself disappear as he looked down on it—first his legs, then all his limbs, then his torso—and he knew for the first time that there was "a place where I existed independent of social and physical identity... beyond Life and Death..."

About five in the morning he walked the few blocks to his parents' house in a driving snowstorm and began shoveling the driveway, laughing aloud with joy.

Three psilocybin projects were set up in line with Leary and Alpert's specialty, the psychology of "game-playing." In early 1961, after initial psilocybin investigations, the Leary group began working in nearby Concord with convicts in the Massachusetts Correctional Institution, a maximum-security prison for young offenders. It was hoped that psilocybin could help prisoners "see through" the self-defeating "cops-and-robbers game" and become less destructive citizens. Leary got along well with the Irish warden, and soon six prisoners volunteered for the study.

The six volunteers grew in number to thirty-five over the next two years. Each underwent two psilocybin experiences during six weeks of bi-weekly meetings. Although the subjects were not very well educated, they were able to detach themselves from their everyday roles and "confront themselves," recognizing constructive alternatives to their formerly violent and self-destructive behavior patterns. The question was what would happen to these prisoners upon release. Would the insights gained from two fairly heavy doses of psilocybin help them to lead useful and rewarding lives? Or would they soon be headed back to prison? Dr. Stanley Krippner, who also was given psilocybin at Harvard and who has since worked in the fields of "dream studies" and parapsychology, summed up the results:

Records at Concord State Prison suggested that 64 percent of the 32 subjects would return to prison within five months after parole. However, after six months, 25 percent of those on parole had returned, six for technical parole violations, and six for new crimes. Seven were still there.
violations and troo for new odines. These results are all the more striking when the correctional literature is examined. Few short-term projects with prisoners have been effective to even a minor degree. In addition, the personal-ity test scores indicated a measurable positive change when psilocybin and post-psilocybin results were computed.

Although this psilocybin experiment included a lot of "tender, loving care" and no control subjects, it established a sound basis for hope. The results warrant at least one controlled study.

In a second area of experimentation, Leary and his associates gave the "mushroom pills" to about 400 graduate students, psychologists, religious figures, mathematicians, chemists, writers, artists, musicians and other creative individuals to study their reactions. Extensive records were kept but to date only a few of these accounts have been published. One recording of a Huxley trip mentions only that he was given 10 mg. of psilocybin and that he "sat in contemplative calm throughout; occasionally produced relevant epigrams; reported his experience as an edifying philo-soptic experience." Alan Watts description of the psilocybin experience as "profoundly healing and illuminating" for him appears as chapter nine in Ralph Metzner's The Ecstatic Adventure. Stanley Krippner's account is in Bernard Aaronson and Humphry Osmond's Psychodelics. In Creattunity and Psychological Health, Frank Barron devotes a chapter to excerpts from the records made by artists and musicians given psilocybin.

The December 1963 issue of the Journal of Nervous and Mental Disease summarized the findings on the first 129 men and 48 women tested: 70 percent considered the experience either pleasant or ecstatic, 88 percent felt they had learned something from it or had some important insights, 62 percent believed the experience to have changed their life for the better, and 90 percent expressed a desire to try the drug again. In a Boston University chapel on Good Friday 1962, twenty Christian theology students took part in Pahnke's experiment after having been exhaustively tested and screened. Ten were given 30 mg. of psilocybin. The others (as nearly as possible, a similar group) received 100 mg. of nicotin.
acid and a small amount of benzodiazepine to stimulate the initial physical sensations of a psychedelic. Neither the subjects nor their guides knew at first which drugs had been given to whom. The experiment soon came to be known as “The Miracle of Marsh Chapel.” In the following six months, extensive data were collected. These included tape recordings, group discussions, follow-up interviews and a 147-item questionnaire used to quantify these characteristics of mystical phenomena included in the religious experience: 1) An experience of unity 2) An experience of timelessness and spacelessness, 3) A sense of having encountered a divine or ineffable power, 4) A feeling of transformed space and peace, 5) A sense of the holy, 6) An experience of paradoxicality, 7) A sense of ineffability, 8) Tranquility, and 9) Persisting positive changes in attitude and/or behavior.

The reaction level in each of Dr. Stace’s nine categories was found to be significantly higher for the psilocybin group than for the controls. In addition, after four hours of follow-up interviews with each subject, the experimenter was left with the impression that the experience had made a profound impact (especially in terms of religious feeling and thinking) on the lives of eight out of ten of the subjects who had been given psilocybin. The decision of change was toward more integrated, self-actualized attitudes and behavior in life. Subsequent requests by Pahnke for psilocybin and government approval to repeat his study were denied.

An experience of timelessness and spacelessness, in attitude and/or behavior 4) A sense of having encountered a divine or ineffable power, 5) A sense of the holy, 6) An experience of paradoxicality, 7) A sense of ineffability, 8) Tranquility, and 9) Persisting positive changes in attitude and/or behavior.

After an admittedly short follow-up period of only six months, life-enhancing and life-enriching effects, similar to some of those claimed by mystics, were shown by the higher scores of the experimental subjects when compared to the controls. In addition, after four hours of follow-up interviews with each subject, the experiment was left with the impression that the experience had made a profound impact (especially in terms of religious feeling and thinking) on the lives of eight out of ten of the subjects who had been given psilocybin. The decision of change was toward more integrated, self-actualized attitudes and behavior in life.

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Use of Psilocybin Mushrooms Increases

Expensive and complicated to make, synthetic psilocybin was available to only a small number of those in the “drug subculture” and some with academic connections during the 1960s. As for the organic product, it was widely believed that several mushrooms grew only in Mexico. Most who experimented with mushrooms traveled to Huitzil de Jimenez. The Turn-On Book described methods for growing Psilocybe cubensis on agar or grains, but these techniques were not very effective, did not produce many mushrooms, and went largely untended.

Additional species of mushrooms containing psilocybin and psilocin e discovered, and pharmacochemical studies utilizing Psilocybe cubensis were initiated in many university laboratories. Still, only a few people having access to the mycological literature knew that Psilocybe semilanceata, which is not Hofmann’s psilocybinus species, grows only in the eastern United States, and that its active principle was called psilocybin. Hofmann had analyzed as being quite potent, grew externally only in the moist tidal estuaries of the Pacific Northwest. Mycologists as a group were used in publicizing psychotropics. The main class was appeared in France, in Heim and Wasseuth’s Le Champignonpsilocybus du Mexique (1959) and Nouvelles Investigations sur les Champignons Hallucinogenes.

After the climate of anti-LSD propaganda in the late 1960s, interest in “natural” psychedelics greatly increased. The appeal was fueled by Leary’s High Priest, which devoted attention to mushroom and psilocybin, by the books of Carlos Castaneda. The first of these, The Teachings of A. E. Merck, a Tongue of Knowledge, caught the popular imagination as a mask of nature became fascinated with Don Juan’s “smoking mixture” (alleged combination of mushrooms, Datura and other substances sealed in a pipe for more than a year).

In order to meet the new demand for “magic mushrooms,” many street dealers oversold their LSD, PCP or other compounds, some even renaming their “psilocybin” had been cut with “organic rose hips,” in order to make it sound even more “natural.” By the early 1970s, many dealers were adulterating Agaricus bisporus—the common, commercially available mushroom, which is now called A. brunnescens—with 3 or PCP or both. This practice continued for several years. PharmChem, a analyzing hundreds of suspect mushroom samples, repeated that it had only two genuine specimens over a three year period. Bruce Rackoff of PharmChem dubbed the others Pseudopsilocybe bisporus.

A new era in hunting mushrooms opened after publication of Leonard Shwartz’s Key to the American Psilocybin Mushroom (1970). This small book described fifteen species in sixty pages, providing a water-color picture of each. Enos had had personal experience with only two of the species that Shwartz treated, and thus his renderings of the mushrooms’ appearances were crude and sometimes fanciful. (In two cases, species known by two n binomials were drawn to look like different kinds of mushrooms.) He o provided a section on cultivation, which was overcomplicated and which i seems to have used. Nonetheless, Enos’ book stimulated much jacaranda fieldwork that resulted in several reliable guides by the end of the decade. It started in 1974, a group of twelve people in the San Francisco Bay Area began experimenting with various techniques for growing psilocybin •Psilocyben mushrooms, hoping to find a simple procedure for cultivation that would suit the needs themselves. They had already grown several Psilocybus species and the San Pedro cactus in a search for a natural psychedelic that

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offered a high yield and could be grown indoors. They concluded that
mushrooms presented the best opportunity.

In 1976, writing under the names O.T. Oss and O.N. Oeric, this group
published the results of their mushroom experimentation in Psilocybin:
Magic Mushroom Grower’s Guide. This book described in clear English
accompanied by photographs a fairly simple and effective technique for
home cultivation of the potent *Stropharia (Psilocybe) cubensis* species that
required no controlled materials. Simultaneously, spore prints became avail-
able through counterculture magazines, notably *High Times*.

The important differences in the Oss and Oeric method had to do with
instructions for maintaining sterile conditions and with "casing." In 1977
J.P. San Antonio published a new laboratory procedure for producing *Agaricus
brunnescens* in small amounts for scientific study: he showed that covering
the mycelium, or vegetative stage, of this common mushroom with about
half an inch of slightly alkaline soil could greatly increase the yield by causing
it to "fruit" repeatedly (as "flushes" appearing periodically). Although it is
unclear who deserves the credit for this breakthrough, the San Antonio tech-
nique was modified so that it worked with *Stropharia cubensis* grown on rye
and other grains.

Oss and Oeric hoped that users cultivating these mushrooms in their
homes would be independent of the illicit market, which at the time was pro-
ducing and selling many spurious products. Further, they hoped that this

treatment would become a permanent part of the subculture, immune from
Surveillance and anti-drug crusades. To a certain extent, these ends have
been met. However, the authors did not realize that there would be as
many growers as have emerged.

Their technique was still so complicated that only a small percentage
of users have even tried it. A large pressure-cooker is needed, and many
photographs illustrating the main steps involved in psilocybin
mushroom cultivation: (1) equipment needed for aseptic isolation of
sterile mycelium of *Stropharia cubensis*; (2) step-by-step growth from spores
(10 spores) to small mushrooms; (3) inoculations of Mason jars filled with rye and water; (4) mycelial growth after five, ten and fifteen days; (5) fresh mushrooms and dried.
becoming steadily simpler with time and practice. psilocybin, but so far has been a poor "fruiter"). Also, procedures are species such as of developments, we are seeing a fair amount of cultivation of other psilocybian people doing much additional experimentation. Among other current parties have become knowledgeable about mushroom growing, with a few offering high-priced compost for sale-Over this period, many interested kits have been presented to the public. There have even been "dung dealers" have issued procedures for psilocybian cultivation. Many mushroom-growing procedures for psilocybian cultivation. Many mushroom-growing kits have been presented to the public. There have even been "dung dealers" offering high-priced compost for sale-Over this period, many interested kits have been presented to the public. There have even been "dung dealers" have issued procedures for psilocybian cultivation. Many mushroom-growing This cottage industry has disappointed some in the Oss and Oeric group procedure as enables one to produce large volumes, some people have taken on the pro- couldn't get the hang of the spore-growing and sterilization requirements terms of their unique qualities- First, some comments relevant to them all:

Field Identification, Bluing Reaction, Spore Prints and Preparation
When the Wassons asked their Indian guide about the source of mush- rooms, he replied, "The little mushroom comes of itself, no one knows whence, like the wind that comes we know not whence nor why." Actually, psilocybian mushrooms begin as microscopic spores that grow on the top of cells near the mushrooms gills, called basidia. After maturing, they are dispersed by the wind.

Out of perhaps a million such spores, only a few grow after reaching an appropriate habitat. They develop threadlike into hyphae, thin cells that mass together and spread underground to become the mycelium, which corresponds to the leaves and roots of a green plant. When this structure "flushes," the sexual part of the organism spores develop inside a mushroom.

As the mushroom expands through the absorption of water by osmotic action, a protective veil develops under the gills. Eventually the cap breaks through an evaporation process caused by the sun, and the veil and i are covered with spots, usually a dark purple-brown. Millions of spores rain down and then are carried by the rain and wind to where they Wellness germinate and again produce mycelia, thus completing another cycle. Anyone interested in collecting or growing psilocybian mushrooms should, of course, acquire a field guide by a competent author, such as Paul Stamets' Psilocybe Mushrooms & Their Allies. Additional valuable literature, photographs and descriptions can be found in Ott and Bigwood's Contribution to Psilocybe. Gary Martin's Hallucinogenic and Psilocybe in Field Guide, and Richard and Karen Harms' Psilocybe & Other Hallucinogenic Mushrooms.

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The species that are presently considered most important will be dis- cussed in terms of their unique qualities- First, some comments relevant to them all:

Field Identification, Bluing Reaction, Spore Prints and Preparation
When the Wassons asked their Indian guide about the source of mush-rooms, he replied, "The little mushroom comes of itself, no one knows whence, like the wind that comes we know not whence nor why." Actually, psilocybian mushrooms begin as microscopic spores that grow on the top of cells near the mushrooms gills, called basidia. After maturing, they are dispersed by the wind.

Out of perhaps a million such spores, only a few grow after reaching an appropriate habitat. They develop threadlike into hyphae, thin cells that mass together and spread underground to become the mycelium, which corresponds to the leaves and roots of a green plant. When this structure "flushes," the sexual part of the organism spores develop inside a mushroom.

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Mushrooms containing psilocybin and/or psilocin belong to a broad botanical order, the Agaricales (gill-bearing fungi), and are found mainly in the Psilocybe, Stropharia, and Panaeolus genera. Well over two dozen species of psilocybian mushrooms are now known, each exhibiting distinct ranges in size, shape, habitat and potency. Potency goes from virtually nothing to approximately 15 mg./gm. of the dry weight. The average is perhaps 3.0 mg./dry gm., amounting to about 0.03 percent of the fresh weight. Mushrooms are generally 90 percent water.

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Harvested psilocybian mushrooms can be eaten fresh, or they can be dried, sealed and stored. The best procedure is to dry the mushrooms in a freeze-drier without heat. For most users, this is impossible, so a lamp or oven can do, as long as there is ventilation and the temperature does not exceed 90° F. in a dry atmosphere. (If you use an oven, leave the door cracked open.) A space heater can also be used. Whatever the means, the drying takes at least twenty to twenty-four hours and leaves the mushrooms in a brittle state.

The mushrooms should then be weighed, placed in a scalable container and frozen. No mushrooms should be frozen fresh, because they will disintegrate when thawed. To produce a homogeneous mixture from which known doses can be accurately weighed, grind the mushrooms in a blender or coffee mill. The resulting powder should be stored frozen at the lowest temperature possible in an airtight container filled to the top. The touch doesn't look like mushrooms and probably cannot be identified by species even by a mycologist. It is quite easy to measure out doses for ingestion.

Freezing is most critical for those mushrooms known to contain psilocin, such as *P. cyanescens* or *S. cubensis*, because they have a short shelf life at room temperatures. For ingestion, such powders can be capped, blended into a "smoothie," or drunk with chocolate. A chocolate drink prepared with honey, spices and water (there was no milk in pre-Conquest America aside from corn whey) has long been associated with mushroom rituals and is quite pleasant served before a *velada*.

**Stropharia (Psilocybe) cubensis (San Jónde)**

This mushroom was originally collected in Cuba in 1904. It is the easiest of all mushrooms to grow—even easier than the commercial ones. Currently, it is probably the best psilocybian mushroom for most users and is certainly the most readily available. Its psychoactivity varies, however, and deteriorates over time, especially when there is delay in moving the product from the grower to user. Some dealers have been known to open up bags of these mushrooms so they will gain more weight from ambient humidity, which breaks down the psilocybin and psilocin even further.

This species was collected by Schultes during his 1939 trip to Oaxaca and deposited at the Farlow Herbarium at Harvard University. After the Second World War, the mycologist Rolf Singer worked there identifying mushrooms; in an attempt to reorganize the taxonomy of the genus *Stropharia*, he came upon Schultes’ specimens. In 1951, he placed *Stropharia cubensis* Earle in the *Psilocybe* genus, basing this identification on microscopic characteristics, particularly of the spores. He neglected to tell Schultes and didn’t follow this up, but the mushroom is now often referred to as *Psilocybe cubensis* (Earle) Singer.

Stropharia (Psilocybe) cubensis, the most popular psilocybian mushroom, contains up to 14 mg/gm of psilocybin dry weight. The potency of this mushroom varies greatly, however, and deteriorates fairly rapidly over time.
Psilocybe Semilanceata (Liberty Caps)

This is now the second most important psilocybian mushroom world-wide. Its popular name comes from its looking like caps worn during the French Revolution. Found in the northern temperate zone, it grows inland up to a thousand miles from the ocean—a rule covering its known habitat to date. It fruits in tall grasses and on cow fields mainly in the fall, only occasionally in the spring. (Unlike Ps. cubensis, it does not grow on dung itself.) This species is fairly small, about 10 cm. (4”) tall at most.

Reports of the psychoactivity of Liberty Caps predate the Wessons’ journeys to Mexico. In C. Milbrath’s One Thousand American Fungi (1908), this species is described as a mushroom with strange effects that don’t last long and are not toxic. The psychoactive ingredient, according to this classic text, can be removed by boiling the mushrooms in water and then throwing away the water. In 1910, a professor at Yale and his wife took it a few times and had marvelous experiences and hilarity for a short while. At about this same time, reports circulated of its use in Norway, Maine by the artist community there. Psilocybe semilanceata was first detected in Ps. semilanceata by Heim and Hofmann in the early 1960s, but it was not used in Europe until at least a dozen years later. In the Pacific Northwest, use apparently began as early as 1965. The Royal Canadian Mounted Police confiscated some of the Vancouver campus of UBC at that time. Experiments with this mushroom were only sporadic, however, until publication of Enos’ 1970 book because very few people were

Some mycologists have disputed Singer’s identification, arguing that the macroscopic features place this mushroom in the genus Stropharia. At the time of this writing, both designations are found in the literature—Stropharia in ethnopharmacological and some European mycological sources Psilocybe mainly in the American, Mexican and botanical sources. This mushroom is tropical and subtropical and appears in cowfields during rainy seasons or other times of high humidity. In the U.S., it is distributed mainly along the southeastern seacoast, but it can be found inland as far north as Tennessee.

It grows naturally in connection with cattle—particularly hot-weather-loving Brahmas—and especially in dung a few days old. It may be because of this that the Indians consider it inferior, only using it as a last resort. More likely, it has lower status because it wasn’t indigenous to Mexico—it arrived with Spanish importation of Brahmas cattle from the Philippine Islands—and thus doesn’t have ancient associations in their shamanistic rites. In Mexico, the Mexicans call this species “no-te-lo-la-ta-maya” (sacred mushroom of cow dung), but its other names are Spanish (such as “San Isidro Labrador,” St. Isidore the Plowman). The anthropologist Peter Forest has promoted the notion that it may have grown in drier dung, but attempts to grow it in that medium has-cin succeeded. In culturing it, dung isn’t essential; it fruits very potently on rice and other grains. Rice-cultivated specimens appear less robust than those in the field or those grown on compost, but it terms of psychoactivity they are about a third stronger on the average.

In the fields, this mushroom tends to come up singly or in small groups. Growth is rapid. In pastures, it often grows from the base of a pinhead to a full mushroom in little more than a day. It becomes rather large, generally attaining a height of 15-30 cm. (6-12”). It often appears whiter overall, sometimes with a streaking of “comicstrip blue.” The mushroom families without any apparent bruising, perhaps because of intense heat. When it opens, the cap usually gets lighter on the outside while the centre gets darker—but not necessarily so. It can be light brown or light reddish-gold, and often the prominent annulus, or collar, is covered with spores.

Early studies made of this species estimated the concentrations of psilocybin and psilocin in mushroom samples from the 1850s, 1860s and 1870s. Recent analysis of samples from the 1980s indicates the levels are fairly high amount of psilocin. But the analytical tools then in use necessitated heating and are now considered obsolete. Current state-of-the-art equipment can determine psilocybin at about 0.2 percent (2.0 mg./gm.) of the dry weight, along with a large amount of psilocin in concentrations of 1.0 mg./gm.

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Recently, Bigwood and Beug detected psilocybin in concentrations as high as 13.3 mg./gm. (1.3 percent) and psilocin in concentrations of 1.0 mg./gm. in a sample of dried Stropharia cubensis mushrooms. In the same strain, however, they also found psilocybin as low as 3.2 mg./g at 1.8 mg./gm.
Psilocybe semilanceata (Liberty Caps), a favorite in coastal temperate zones, are potent in psilocybin—averaging around 11 mg./gm. dry weight—which is stable.

Psilocybe pelliculosa, another psilocybian species that many people confuse with Liberty Caps, contains psilocybin and the same analogues but has only half the potency of Liberty Caps. This one can be vastly languished by habitat. Rather than in cow fields, it grows on sawdust or wood chip piles in forested areas where lumberjacks have been working. It doesn’t display the indrawn edge to its cap that is evident Liberty Caps, and often its stem and cap edge darker with age. Aware of the existence of psychedelic mushrooms in that area, nowadays, thousands of people in the northwestern U.S., Scandinavia (especially Norway), the British Isles and most of western Europe collect this mushroom. P. semilanceata is quite potent by weight, containing as much as 12.8 mg. psilocybin/gm. and averaging around 11 mg./gm. in dried specimens.
Unlike *Ps. cubensis*, which is highly variable in strength, this one is much more uniform with psychoactivity differing in samples by not much more than a factor of two. Three or four of these tiny mushrooms are often enough to energize the body and affect color perception and visual acuity. About twenty to thirty mushrooms constitute a strong dose. Some people have observed that mushrooms containing both psilocybin and psilocin tend to lose their psychoactivity fairly rapidly, whereas those lacking psilocybin tend to have a long shelf life. Liberty Caps have no psilocin, but they do contain psilocybin analogues. Some mushrooms recently collected were quite similar in appearance to *Ps. semilanceata* and inhabit the same cow pastures. These may be variants or other new species; of those that look like Liberty Caps and grow on pastures, none is poisonous. Some mushrooms recently collected are quite similar in appearance to *Ps. semilanceata* and in habit the same cow pastures. These may be variants or other new species; of those that look like Liberty Caps and grow on pastures, none is poisonous.

*Panaeolus subbalteatus* (benanosis)

This is the most prevalent of these psilocybian mushrooms, growing throughout the U.S. and found in various climates in many parts of the world. It grows singly or in clusters to a height of about 8 cm. (just over 3”), most commonly on composted dung, in both spring and fall. The tan cap develops a striking cinnamon-brown band around the bottom and flattens as it ages, with the central portion fading over time to a pale, warm buff color. Eventually it resembles a large floppy hat draped over a fairly thick, whitish stem that sometimes blues at its bottom. The spore print has a blackish-purple color.

Andy Weil claims that *Panaeolus subbalteatus* doesn’t produce as good a psychedelic trip as most other psilocybian mushrooms and that it can bring on a side effect of stomach aches. These assertions have not been confirmed by most other users and many people like it—especially in the spring, when few Liberty Caps are available. It springs up on compost, straw and manure piles and often can be seen clustered in one- or two-foot rings along roads, on lawns and in open areas. It can be cultivated but only on compost, and spores from it can be bought from *High Times*’ advertisers through the mail.

*Panaeolus subbalteatus* has a long shelf life and contains no psilocin; the psychoactivity comes only from psilocybin and its analogues. The amounts are low to moderate for psilocybin, varying from a little over 1.5 mg./gm. up to 6.0 mg./gm. dry weight.

*Psilocybe cyanescens* (Wavy Caps, Blue Halos)

This species is the most potent psilocybian mushroom known. Although not as big as *Ps. cubensis*, it is probably the second largest growing in the U.S., generally reaching 6-8 cm. in height (about 3”). This mushroom, like *Ps. polychromus* and the few others that follow, doesn’t grow on dung but rather on hardwoods and wood chips. *Ps. cyanescens* likes to inhabit landscaped yards containing ground bark and often dwells under Douglas fir or cedar and in mulched rhododendron beds. The large cap, which starts out chestnut brown and becomes more caramel-colored with age, is wavy, so they’ve been called Wavy Caps. Because of the blue line around the edge of the cap, they are also known as Blue Halos. Generally this species grows in clusters, although sometimes it comes up singly. When it fruits, it is prolific. It is not unusual to hear of mushroom hunters gathering six to seven ounces dry weight at a time.

*Psilocybe cyanescens* contains psilocybin, psilocin and at least four analogues. It blues markedly when bruised and is less stable than Liberty Caps. It isn’t
Psilocybe cyanescens. A large species with an undulating, ground-cover cap, it is the most potent psilocybin mushroom detected anywhere. It fruits profusely from fall through winter in the Pacific Northwest, cultivated very easily, but is potent. In Bigwood and Beug samples, “Psilocybin levels were found to range up to 16.8 mg./gm. dry weight, with the total

Psilocybe baecystis

This is another strongly-bluing Pacific Northwest species. It can be found growing on ground bark, wood chips, peat moss and occasionally lawns and is common on campuses. This popular mushroom appears from fall through midsummer; as many as fifty are often clumped together. Generally it contains rather low levels of psilocybin and psilocin. Its potency, however, is highly variable.

Bigwood and Beug assess it as averaging about 2.8 psilocybin/gm. and 1.4 mg. psilocin/gm. dry weight. But one collection they examined was found to contain 8.5 mg. psilocybin/gm. and 5.9 mg. psilocin/gm.—rivaling concentrations in the strongest psilocybin species. This variability makes it riskier to use than most others. “One could eat a lot of weak ones to get an experience,” comments Jeremy Bigwood, “and then go to another patch and get maybe 200 mg. of psilocybin plus.” Extra caution in dosage is strongly recommended.

The edge of the cap of this species generally undulates, resembling a bottle cap or lawn umbrella, and the stem is often characterized by twisting bends. An important identifying characteristic is a brown spot that appears in the center of the cap after it is dried. Psilocybe baecystis is bound to become more familiar because of increasingly widespread use of its host materials in industrial parks, around homes, etc.
Another psilocybin mushroom that also blues and has characteristics similar to Ps. baeocystis and Ps. cyanescens is Pr. cyanea. It was originally collected between patches of the first two. This one has somewhat wavy caps like Ps. cyanescens, although they don't open up nearly so much, and the same chemical components as the others. It's normally weaker than Ps. baeocystis, often containing about 13 mg. of both psilocybin and psilocin/gm. dry weight.

**Psilocybe stuntzii**

This is another psilocybian mushroom that readily springs up on commercially prepared wood chips. It is a fairly small, stout mushroom, which in many people's opinion should be included in the *Stropharia* genus since it has a prominent annulus. It can be found on grasses, bark mulch and mulched lawns in the fall and summer; under the grasses there is always a layer of wood bits. The cap is sticky and has stripes on the edges that become flat, scalloped edges when the mushroom is mature. This is very likely the weakest psilocybian mushroom in the Pacific Northwest. The Bigwood and Beug studies show that its potency ranges from nothing to a high of 36 mg. psilocybin/gm. dry weight.

**IMPORTANT NOTE:** this species can easily be confused by the novice with the deadly species *Galerina autumnalis* with which it sometimes clusters. The most potent psilocybian mushrooms grow on wood chips, and so anyone hunting for them should know how to identify the poisonous *Galerina*. The two species in question can definitely be separated from one another by spore color, that of the *Galerina* species is rust-brown in contrast to that of the *Psilocybe* species, which is gray to lilac. Furthermore, their coloration is different, their "collar" look quite different, and the *Galerina* species presents lines radiating from the center of the cap. Only the psilocybian mushroom turns blue upon bruising. If there is any doubt as to identification, a mushroom that does not blue should be discarded as *Galerina*. (The toxic ingredient in *Galerina autumnalis* also appears in the common edible mushroom but in very small amounts.)
Psilocybian Mushrooms

In December 1981 on Whidby Island in Washington State some teenagers searching for psilocybian mushrooms made a mistake in identification. Two young men and a woman who ingested the mushrooms got sick the next day but were afraid to report their illness for fear of arrest by the authorities. They apparently waited yet another day before the symptoms got extremely bad, and then all three went to a hospital. The two young men survived, but the young woman died on Christmas Day. Another fatality attributed to the search for psilocybian mushrooms occurred in 1960, when two adults and four children ate a large number of what they assumed were Psilocybe baecystis. A six-year-old boy in this group died. Some of the mushrooms from this patch, photographed for an article, were clearly not Ps. baecystis but Ps. cyanescens. Because these two species sometimes grow together with Gonioune aeruginosa, it’s not unlikely that the six people ingested all three. Their symptoms were similar to those of the woman on Whidby Island.

This short description of the main North American species illustrates how varied psilocybian mushrooms are. People intending to gather or cultivate them should consult experts, particularly when identification of any mushroom is in question. Even clear photographs may be only somewhat helpful. It should be kept in mind that mushrooms change appearance as they age and often have different coloration in different regions.

CHEMISTRY

The psychoactive compounds in psilocybian mushrooms are psilocybin, psilocin and their N-de and N-di-demethylated analogues. Workers at Sandoz Pharmaceuticals and elsewhere have synthesized many related compounds. But only two have been tested in humans (these were lab-coded “CZ-74” and “CY-19”). They also contain “ethylamine” side chains of various lengths. Taken together, the indole and side chain constitute “tryptamines.” Nearly all psychedelic tryptamines exhibit a rare substitution at the position marked by an asterisk in the drawing above. The psilocybin and psilocin molecular groupings bear a close resemblance to chemicals appearing in the brain. One of the psilocybian analogues is, in fact, one of the closest known compounds to the neurotransmitter serotonin, differing only with respect to the rare substitution just mentioned: it is 4- rather than 5-hydroxytryptamine. Psilocin, interestingly, is the nearest relative to bufotenine, once thought a psychoactive compound.

Psilocybin (at top left) is the main psychoactive compound in psilocybian mushrooms. Most of it is transformed upon ingestion by the enzyme alkaline phosphatase into psilocybin (top right), the second important psychedelic in these mushrooms. Close cousins to psilocin are bufotenine (middle right), a substance in plants and animals that was once thought psychoactive, and the human neurotransmitter serotonin (middle left).

Two synthetics in this clustering that have been tested in people with good results are CY-19 and CZ-74, represented in the bottom drawings. Other related compounds present in some psilocybian mushrooms are 4-OPO-DMT (Psilocybin) and 4-OH-DMT (Psilocin) and 4-OPO-DET (CZ-74) (4-hydroxy-N-N-dimethyltryptamine) and 4-OH-DET (CY-19) (4-hydroxy-N-N-diethyltryptamine).
Psilocybin and Psilocin

The major psychedelic agent in psilocybian mushrooms is psilocybin—the first indole derivative discovered to contain phosphorus. When ingested, the phosphorus radical is immediately "dephosphorylated" by an intestinal enzyme, alkaline phosphatase, into psilocin and phosphoric acid. Animal experiments suggest that psilocybin and psilocin appear at similar chemical concentrations at about the same time in various organs. Thus, the phosphorus radical is generally considered "dead weight" in terms of psychoactivity.

An important difference between psilocybin and psilocin is their relative stability—psilocin is easily oxidized, deteriorating soon afterwards. Hence Sandoz chose to develop psilocybin, which doesn't require freezing to retain potency, rather than the easier-to-synthesize psilocin. Unfortunately, mushrooms containing just psilocybin and its analogues—Ps. lemilanceata, Ps. pellicutosa and Ps. mexicana—are all tiny. By weight, psilocin is about 1.4 times as strong as psilocybin—a ratio corresponding to their molecular weights. (Compared by weight, LSD is about 200 times as powerful as psilocybin.)

Related Psychoactive Derivatives

Many users feel that psilocybin and psilocin in synthetic form produce a more lucid mental state than the mushrooms; they also seem to provide more physical energy. Mushrooms generally have longer effects and are more sedating. These differences are probably caused by the presence of the psilocybin and psilocin analogues, which appear in small amounts but may act as sedatives. These analogues have so far been tested only on animals.

Physiological Reactions

The amount of time required to produce somatic sensations from psilocybin, psilocin or psilocybian mushrooms varies with the mode of intake. A high dose of mushrooms is chewed well and kept for some time in the mouth, effects may be perceived within seven to eight minutes. If psilocybin or psilocin placed under the tongue—or moderate amounts of the mushrooms retained for a while in the mouth—produces initial sensations within about fifteen to twenty minutes. If the mushrooms are immediately swallowed, however, only about half of the potentiating chemicals are absorbed by the stomach wall, and it then takes thirty to forty-five minutes before they cross the blood-brain barrier to prompt psychoactivity. When psilocybin and psilocin are injected intramuscularly, the effects are felt within five to six minutes.

Generally, the first signs that the effects are starting are involuntary yawning (usually without sleepiness) and a non-specific sense of restlessness or malaise. Some people experience nausea with mushrooms, most often after they use the bitter Ps. caerulescens, Ps. Aztecorum or similar acrid species. A few users feel a chill as the effects come on, weakness in the legs or slight stomach discomfort. Others feel drowsy and may want to curl up and go to sleep.

In most instances, yawning and a slight sensation of physical discomfort or dizziness are the characteristic experiences during the short cake-off stage, which usually lasts half an hour and is followed by feelings of lightness and physical harmony. A few users find that boldly discomfort persists much longer.

High-dose studies of rats suggest that psilocin taken orally is distributed throughout the body. Concentrations in tissues appear highest about half an hour after ingestion, decreasing rapidly over the next three to four hours. The adrenal glands of the test animals show the highest concentrations after the first hour; until then, the kidneys have more. The small intestine, skin, bone marrow, lungs, stomach and salivary glands also have significant concentrations—greater, in fact, than those in the brain.

As with LSD, psilocybin and psilocin prompt few obvious physiological reactions in most people: mainly, dilated pupils and, in some users, a sensation of "dry mouth." A few studies have noted a slight rise in blood pressure, heart rate and temperature, but these reactions appear to result from apprehensions about the experience or from environmental factors.

Psilocin's primary physiological effect upon the brain seems to be inhibition of the neurotransmitter serotonin, an effect resembling that brought about by LSD. This finding, together with a notable cross-tolerance exhibited between psilocin and LSD, suggests that both compounds act upon similar mechanisms—or possibly, as Hofmann puts it, on "mechanisms acting through a common final pathway."
On the twenty-second day, the subject showed hardly any reaction to 15 basis for twenty-one days, starting with 1.5 mg. and increasing it to 27 mg. In less extreme instances, psilocin tolerance tends to be less pronounced than is the case with LSD. Furthermore, cross-tolerance between these two compounds, when ingested alternately, is not as complete as tolerance developed after repeated ingestion of just one alone.

In the high-dose study of rats, all but 6 percent of the psilocybin was excreted within twenty-four hours. In humans, only 80 to 85 percent of psilocybin and its metabolites is excreted within eight hours, in the urine (about 65 percent), bile and feces (13 to 20 percent). Some 15 to 20 percent lingers on, stored in fatty tissues; significant quantities appear in urine up to a week later. A full 25 percent of the originally administered dose enters urine as psilocin.

Psilocybin, psilocin and psilocybian mushrooms show low toxicity. Doses up to 200 mg. of psilocybin/kg. of body weight have been given to mice intravenously without lethal effects. When dosage was increased to 250 mg/kg. of body weight, a few of the mice died. In terms of average human weight, this corresponds to about 17 or 18 gm. of psilocybin—more than 2,000 times the dosage recommended by Sandoz when it originally marketed this drug. Extrapolation from animal studies to human use gives only a rough estimate of toxicity. It does seem safe to say that one would have to consume well over a kilogram of the most potent fresh 

Stropharia cubensis

Psilocybian Mushrooms, psilocybin and psilocin can produce profound, awesome effects upon the mind. In research reported over the first two decades of study, subjects given psilocybin and other drugs in blind experiments were generally unable to distinguish this substance from LSD or muscimol of comparable dosage until several hours had passed. Recognizing psilocybin at that point was possible because of the shorter duration of its psychedelic effects.

In terms of timing, psilocybian experience is characterized by the user's going “up” rapidly, nearly always achieving an enlargement in the scope of perception that persists for about two hours. Then a gradual decline is experienced over the next three to four hours, resulting in the restoration of ordinary consciousness. The quality of thoughts and feelings evoked during these two phases varies greatly, according to the user's mental set, surroundings and the dosage ingested.

Substantial tolerance can be built up by repeated doses taken in close-sequence. In 1961, Dr. Leo Hollister gave psilocybin to a subject on a daily basis for twenty-one days, starting with 1.5 mg. and increasing it to 27 mg. The subject showed hardly any reaction to 15 mg. After a rest of several weeks, however, the same dose produced the normal degree of psychoactivity.

In their observation of psilocybin experiences, Hollister and his associates paid almost no attention to such factors as the menial set of individual subjects (despite their background in psychology) or setting, except to say that "the visual beauty of the colored images, especially when augmented by the stroboscopic light during the electroencephalogram, seemed to be a mystical experience to some." The account of mental effects, unfortunately, consists of about 130 words, collected below (from Chemical Psychoses, 1968):

MENTAL EFFECTS

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16 Hollister's Observations

In 1961, Leo Hollister and his associates at the Palo Alto Veterans Hospital reported on blind experiments in which they gave psilocybin orally and by injection to a group of "psychologically sophisticated volunteers (graduate students, etc.)." They found that the threshold oral dose was about 50 mcg/kg. of body weight—about 4 gm. for an average-sized person—"from which minimal but definite changes were produced." (An appropriate measure for drugs like amphetamines or barbiturates is perhaps body weight; in contrast, drugs stimulating the central nervous system, such as psilocybin and other psychedelics, probably vary in effect more directly in terms of brain weight.)

In their observation of psilocybin experiences, Hollister and his associates paid almost no attention to such factors as the mental set of individual subjects (despite their background in psychology) or setting, except to say that "the visual beauty of the colored images, especially when augmented by the stroboscopic light during the electroencephalogram, seemed to be a mystical experience to some." The account of mental effects, unfortunately, consists of about 130 words, collected below (from Chemical Psychoses, 1968):

Some alterations in mood, either euphoria or dysphoria

Concentration and attention are disturbed

Psychological functioning is impaired

Illusory visions, brighter colors, longer afterimages, sharp definition of objects, visual patterns (eyes closed), heightened acuity of hearing, dreamy state, loss of appetite and concentraion, slow thinking, lethargy

Changes in the body image, the extremities appearing larger than normal

Experiencing, superimposed hallucination, delusion and formal thought processes, Colored patterns and shades, generally pleasant, sometimes frightening

Most often with eyes closed, occasionally superimposed upon objects in field of vision.

Unilateral or vibratory motion of viewed surfaces

Exhilaration or yawning motion of viewed surfaces

Sweat passage of time: Transient sexual feelings and synesthesias. A few auditory hallucinations

Changes in the body image, the extremities appearing larger than normal

An unusual ability to perceive the feelings and motivations of people in the

Reports of great empathy
When Abram Hoffer and Humphry Osmond took up the matter of mental effects in their book *The Hallucinogens*, they remarked that "the major difference between the mushroom effect and pure psilocybin seems to be the dryness of the scientific accounts and the richness of the accounts of self-experimentation." Probably no finer example of "richness" exists than in the descriptions of R. Gordon Wasson.

In his *The Wondrous Mushroom*, Wasson wrote about four psilocybin experiences, highlighting the contributions of mental set and setting. All four experiences involved the same mushroom—*Psilocybe caerulescens*—taken in roughly the same dosage.

(Trip I) As to mental set, his expectations had been building for some years. While his father was interested in Religion and Drink, Wasson became steadily more interested in religion and mushrooms, studying their significance in various cultures for a quarter of a century before he accepted a sample of *Psilocybe mexicana*. Another two years passed before he actually tasted it, as he waited to find someone who could perform the mushroom ceremony.

On the verge of a much anticipated but unfamiliar experience, Wasson derived an important sense of reassurance from his setting. He was in the company of Indians who were experienced users and who were taking the drug with him. The ride was conducted by a "jilote"—a one-who-knows." Wasson had a close friend along for a comparison.

The ceremony consisted of chanting that continued all night long, except for brief intermissions every forty minutes or so. The Senora Maria Sabina danced for two hours in the dark. The ritual aspect, in the context of feeling both adventurous and safe, seems to have influenced the quality (or tone) of Wasson's experience.

Early on, he saw architectural visions like the biblical descriptions of the heavenly city:

> Early on, he saw architectural visions like the biblical descriptions of the heavenly city:

> The vision came in endless succession, each growing out of the preceding one. We had the sensation that the walls of our humble house had vanished; that our untrammelled souls were floating in the empyrean, possessed of a divine mobility that would transport us anywhere on the wings of a thought.

(Trip 2) That first experience was impressive—even "gala." Wasson and his associate Allan Richardson had many questions to clarify. Three days later, they asked if Maria Sabina would perform a second velada.

This time Richardson didn't ingest any mushrooms because he intended to take photographs. Wasson accepted five pairs of the "landslide" (demmbc) mushrooms, rather than the six pairs he had previously taken. He says the effects were just as strong. (He felt nauseous the first time and twice had to leave the room; on this occasion, he didn't have that problem.) The setting was the same, but his mental set was quite different. Here is how Wasson described it:

> As I stood at the window and watched the gale tossing the trees and the waves of the East River, with the rain driven in squalls before the wind, the whole scene was far too quickened to life by the abnormal intensity of the colors that I saw. I had always thought that El Greco's apocalyptic skies over Toledo were a figure of the painter's imagination. But on this night I saw El Greco's skies, nothing dimmed, whirling over New York.

Four experiences, catalyzed by the same mushroom, yielded four Consistently different results. Two years later, Wasson imaged these into his generalized description of the effects of psilocybin consumption:

> The mushrooms take effect differently with different persons. For example, some seem to experience only a divine euphoria, which may translate itself into unrecallable laughter. In no case I experienced hallucinations. What I was seeing was more clearly seen than anything I had seen before. At last I was seeing with the eyes of the soul, not through the coarse lenses of my natural eyes. Moreover, what I was seeing was interregnated with vaguely
Psilocybe caerulestar---large and hitter tatting---was the sacred mushroom tried by R. Gordon Wasson. The mushrooms pictured here were found on a roadside near Rio Hando in Oaxaca, Mexico.

Meaning: I was awe-struck. My visions, which never repeated themselves, were of nothing seen in this world: no motor cars, no cities with skyscrapers, no jet engines. All my visions possessed a pristine quality: when I saw choir stalls in a Renaissance cathedral, I saw not black with age and incense, but as though they had just come, fresh carved, from the hand of the Master. The palaces, gardens, landscapes, and mountains that I saw had that aspect of noveness, of fresh beauty, that occasionally comes to all of us in a flash. I saw few persons, and then usually at a great distance, but once I saw a human figure at hand, a woman larger than normal, staring out over a twilight sea from her cabin on the shore. It is a curious sensation, with the speed of thought you are transliterated wherever you desire to be, and you are there, a disembodied eye, poised in space, seeing, not seeing invisible, incorporeal.

Considerations
Along with mental set and setting, dosage is a major consideration in the quality of a psilocybian experience.

Albert Hofmann's view has been that the "medium oral dose" for Psilocybe is 44 mg., which "induces the same symptoms as the consumption of about 2 g of dried Psilocybe mexicana fungus." When Sandoz first distributed psilocybin, the pills contained 2 gm. each; it recommended four to five of these in conjunction with "psycholytic" psychotherapy.

After the "mushroom pills" arrived at Harvard, Leary's group quickly discovered that larger amounts produced more impressive results. Leary and another person took 20 mg., and a third person consumed 22 mg. In the first session of the Concord prison project, Leary took 14 mg., while the three volunteers convicts took 20 mg. each. By the time Michael Hollingshead arrived with his bottle of LSD, the Harvard group was using as many as three 20-mg. pills for each trip. Hollingshead therefore took three: "There it was a certain amount of intensification of colors, but nothing compared to LSD. So then I took 100. And then, though it was a shorter time, it was very impressive."

On the subject of appropriate dosage, there is clearly some distance between Hollingshead and Hofmann.

Regarding native use of psilocybian mushrooms, R. Gordon Wasson reports that usually each adult Indian is given four, five, six or thirteen pairs. Thirteen pairs is common because thirteen is considered a lucky number. With the wide variations in both mushroom size and potency, such rough guidelines undoubtedly result in enormous differences in the amounts of psilocybin and psilocin consumed.

Questions as to the proper dose for a first trip are difficult to answer, and no answer will be attempted here. With individual variations in mental set and setting taken into account, any general recommendation is bound to be too high or too low in a significant number of cases. It is up to the initiate to decide whether he or she should seek a more than recreational experience the first time out.
For experienced users, Rolf von Eckartsberg illustrates a point about regulating the quality of the experience through dosage in "To Be Able to Say: Then, Really to Love" (reprinted in The Ecstatic Adventures of Von Eckartsberg and his wife had taken three low-dose psilocybin pills. Soon he became aware that while he "was floating through space, giggling, squirming, flitting like a butterfly," he felt incapable of any emotional reactions. "I found myself standing still," he reported, "removed by worlds, only half real, half empty and half dead." He pulled himself out of this "peculiar lack of emotional underpinning" by taking "two more pills, one after the other, at about forty-minute intervals."

This additional propulsion soon resulted in "a wonderful openness, I am held in the grasp of a comprehensive clarity, lucidity, like very clear, warm, transparent glass." By the end of his report, von Eckartsberg declared "For the first time I feel like a complete human being, centered in myself, yet quite convinced that I had awakened from a long ontological sleep." When the doctor supervising the experiment bent over to check my blood pressure, he was transformed into an Aztec priest and I would not have been astonished if he had drawn an obsidian knife. In spite of the seriousness of the situation it amazed me to see how the ceramic face of my colleague had acquired a purely Indian expression. As the pressure increased I could see little black dots surrounding the vision of Christ and he helped Christ carry his cross towards Calvary. Then he said that after the vision stopped, "I looked out of the window and all my life came before my eyes, and I said: 'What a waste!'"

Walter Houston Clark gives another example of how psilocybin can profoundly influence behavior, speaking about the Eikon prison project: The convicts Leary had were some of the toughest convicts in the Massachusetts prisons in 1961 and 1962. They were armed robbers. They ruled the other convicts when the guards were out of sight. They had no compunctions about breaking somebody's arm, if that was necessary to realize their ideas. They volunteered for this and thought they were going to get control of the experiment. Instead, these tough convicts all had profound religious experiences. One of the toughest of them told me about when he took psilocybin. He had a vision of Christ and he helped Christ carry his cross towards Calvary. Then he said that after the vision stopped, "I looked out of the window and all my life came before my eyes, and I said: 'What a waste!'" Well, that was the turning point in this person's experience. He and other tough guys started an organization within the walls to continue with their own rehabilitation and the rehabilitation of others.

LSD and mescaline are generally thought to have more impact than psilocybin because of their longer duration; they are also perceived by many people as more coercive than psilocybin. The psilocybin experience seems to be warmer, not as forceful and less isolating. It tends to build connections instead of being more coercive than psilocybin. The psilocybin experience seems to evoke impressive responses, as Timothy Leary first learned when eating seven small mushrooms beside a pool: "the discovery of the Mexican source produced mushrooms that were still active;ingestion of LSD, these trips came on overwhelmingly. The first occurs as "an experiment with psilocybin" in the g of 1962 in his autobiography (pp. 162-168). Hofmann seems to be one of those people "exquisitely sensitive" to psychedelic effects; as with his LSD, Hofmann involved a medium dose by native standards (2.4 gm). Thirty minutes after taking the mushrooms the exterior world began to undergo a strange transformation. Everything assumed a Mexican character. As I was patently well aware that my knowledge of the Mexican origins of the mushrooms would lead me to imagine only Mexican scenery, I was deliberately not to look at my environment as I have it normally. But all voluntary efforts to look at things in their customary forms and colors proved ineffective. The landscape, the furniture, the people, the hand of the man who was speaking were all transformed into elements of their Mexican origin. When the doctor supervising the experiment bent over to check my blood pressure, he was transformed into an Aztec priest and I would not have been astonished if he had drawn an obsidian knife. In spite of the seriousness of the situation it amazed me to see how the ceramic face of my colleague had acquired a purely Indian expression. As the pressure increased I could see little black dots surrounding the vision of Christ and he helped Christ carry his cross towards Calvary. Then he said that after the vision stopped, "I looked out of the window and all my life came before my eyes, and I said: 'What a waste!'"

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had no idea how long this condition had lasted. I felt my return to everyday reality to be a happy return from a strange, fantastic binge really experienced

In Hofmann’s 1962 psilocybin experiment, undertaken with the novelist Ernst Junger, the pharmacist Heiworth Konzett and the Islamic scholar Rudolf Gelpke, each took 20 mg. of psilocybin. Hofmann summarized the experience as having “carried all four of us off, next into liminal heights rather into deeper regions” and concluded: “It seems that the psilocybin intoxication is more deeply colored in the majority of cases than the intoxication produced by LSD.”

At Harvard, in contrast, there were no bad trips on psilocybin. Michael Kalin, a psychologist who observed both the Harvard and Millbrook psilocybin sessions, gave an account of how the advent of LSD changed the setting, resulting in greater emphasis on solitary experience.

There were no “bad trips” in those days. We didn’t know what a “bad trip” was. Hundreds of people took the trip - I never saw one. I didn’t even have a word “bad trip” in my vocabulary. These were hiccups, like changing, growth experiences, because Tim’s presence was so involving . . . We were on a love trip. Timothy had had on a love trip and it was fantastic.

We just formed this incredible community. We saw each other every day, and we hung around together, and we planned sessions together, and we played together, and we exchanged lovers, and it was just fantastic . . . .

Then Michael came and introduced the LSD and some stuff happened that I really didn’t like—I guess I should say I really didn’t understand. Not so much to Timothy as to us. LSD is a very different drug, and we began going on solo trips which we hadn’t been doing so much. People would take these wild doses of LSD and disappear, and you wouldn’t see them again for two days—usually they would stay. You know, you get together with the gang and do psilocybin, and somebody would give you 400 kosher tablets and you’d never see anybody again till two days later.

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At Harvard, in contrast, there were no bad trips on psilocybin. Michael Kalin, a psychologist who observed both the Harvard and Millbrook psilocybin sessions, gave an account of how the advent of LSD changed the setting, resulting in greater emphasis on solitary experience.

There were no “bad trips” in those days. We didn’t know what a “bad trip” was. Hundreds of people took the trip - I never saw one. I didn’t even have a word “bad trip” in my vocabulary. These were hiccups, like changing, growth experiences, because Tim’s presence was so involving . . . We were on a love trip. Timothy had had on a love trip and it was fantastic.

We just formed this incredible community. We saw each other every day, and we hung around together, and we planned sessions together, and we played together, and we exchanged lovers, and it was just fantastic . . . .

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Indian users have traditionally employed the visualization and vocalization of divine notices, revelations of the future, and augury of things to come. Visions and hearing voices: "therefore they took these hallucinations as out later to be true.

Later that evening, she reported that his son wasn't in Cambridge but about, he asked about his son in Cambridge. She had never heard of the Maria Sabina asked him what question he wanted answered. After fumbling one, whether he is married and has children.

Andrew Weil’s Observations

In The Marriage of the Sun and Moon, Andy Weil declares that he's a "mycophile" and describes three trips he took using the San Isidro mushroom (Stropharia cubensis). These three experiences with the same mushroom stimulated greatly varying responses. They may serve as a conclusion for this discussion, because they emphasize again the significant influence of mental set and setting.

Weil had special reason to be interested: during the first ceremony, Stan Krippner, one of the subjects of the Harvard Psilocybin Project, gives another example:

-- I found myself gazing at a statue of Lincoln. The statue was entirely black, and the head was bowed. Then one murmured, "He was shot." A wisp of smoke seeped from the barrel and curled into the air. The setting was still Washington, D.C. The gun was still at the base of the statue and some-... I found my self gazing at a statue of Lincoln. The statue was entirely black, and the head was bowed. Then one murmured, "He was shot." A wisp of smoke seeped from the barrel and curled into the air. The setting was still Washington, D.C. The gun was still at the base of the statue and some-

Of this, he wrote later:

In 1962, when I had my first psilocybin experience, I gave the visualization of Kennedy relatively little thought, as so many other impressions came my way. However, it was the only one of my visualizations that brought tears to my eyes, so I described it fully in the report I sent to Harvard. Nineteen months later, on November 23, 1963, the visualization came back to me as I mourned Kennedy’s assassination.
Psilocybian Mushrooms

(Trip 2) When Weil returned, the healer told him that some mushrooms were left over and that he might as well finish them that night. "I really did not want to," writes Weil, "since I had just had a perfect mushroom experience, but instead of telling her that, I agreed." They repeated the service with incense and prayers beneath a picture of the patron saint Isidro, who was being showered with "psychedelic rays ... from some other dimension." This time, the experience took a different direction:

A heavy bank of fog and clouds closed in, the temperature dropped, and suddenly nearly everyone in the house was sick. There was much crying and coughing from the bedroom, and I began feeling unwell, too. A great sense of depression and isolation came over me. I could not get to sleep. It was already midnight, and the mushrooms seemed to be working against me, not with me, and I felt far away from where I was supposed to be.

Toward dawn, Weil was still awake and concluding that mushrooms, like other psychedelics, "must be used in a proper context." He comments on this lesson:

To take them just because they are available, when the time is not right, is a mistake. The negative experience of this second night did not in any way detract from the goodness of the first night. If anything, it made me more aware of the value of that experience and more eager to retain it and use it in my life. I hoped that I would be able to be with mushrooms again, but I resolved to be

(Trip 3) A short while later, outside Cali in Colombia, Weil ate Stropharia cubensis again. The mushroom seemed to be growing all over the place, although its use was not traditional there. Whites and others "have recently introduced Colombian Indians to the drug, the reverse of the usual order of things." The setting this time was "an idyllically beautiful field with clumps of woods, a clear river and enormous, gray, horn-humped Brahna cows lying peacefully in the bright green grass." The resulting trip led him to inquire further into setting:

We sat in the grass, about ten of us, and the mushrooms transported us to a realm of calm good feeling in which we drank in the beauty of the setting. There were color visions, as I had experienced before with San Isidro in Mexico. In Mexico I had eaten the mushrooms late at night, in darkness and secrecy, in the very shadow of menacing police authority. Now it was broad daylight, in open country, with no one around but friendly fellow travelers. In Mexico I had felt like an early Christian pursuing the sacrament in a catacomb, wary of the approach of Roman legions; here everything was aboveground and open. The Indians of the Sierra Mazateca say the mushroom should not be eaten in the daytime, that they must be eaten at night. Yet here we were in full daylight having a wonderful time. In general, I prefer to take psychedelic substances in the daytime, when their stimulating energies are more in harmony with the rhythms of my body. I feel that way about mushrooms, too. Is it possible, I wondered, that the Indian habit of eating mushrooms at night is

not so traditional as it seems but dates back only to the arrival of the Spanish and persecutions of native rites by the church?

Weil has since experimented with other psilocybian mushrooms, but of that "the most interesting properties of mushrooms may not come to attention if people use them casually and without thought."

US AND PREPARATIONS

Illustrations of the psilocybian mushrooms in this book have so far in the fresh state. When offered for sale, however, they generally have to be already dried. Here is an example of Stropharia (Psilocybe) cubensis as it is ordinarily presented:

I Hoped I Would Be Able to be Bemushroomed Again" 279
Introduction to the MDA "Cluster"

Previous chapters describe the four groups of psychedelic substances that have had the greatest influence on humans to date (for speculations regarding the history and possible influence of Fly Agaric, see Chapter Nine). Of the five remaining groups of substances generally regarded as psychedelic, the one attracting the most interest in the U.S. currently appears to be the MDA cluster. MDA-like compounds almost always come from the volatile oils found in a small number of plants: nutmeg, mace, saffron, calamus, parsley, dill and sassafras. More than a thousand synthesized compounds fall into this group. Only a few have been tried by humans. MDA-like compounds—such as the TMAs, DOB, DOET, DOM, i, MMDA, PBR, DMPA, DMPA, DMA and MDEA—have molecular structures that resemble mescaline, dopamine and amphetamine. Moreover, the effects are often experienced as being like an interplay between mescaline and amphetamine—one or the other tendency predominating according to the structure of the particular compound. Thus this cluster often has been referred to as "psychedelic amphetamines." A chemist would probably designate them as "alpha-methyl phenethylamines," "indolealkylamines" or "one-ring substituted amphetamines."

An important feature common to members of the MDA cluster is that substitutions on the molecular ring can be made fairly readily; the process is expensive and requires sophisticated chemistry. Still, the chemistry is much simpler than for the four psychedelic groups already discussed, which is one reason why a tremendous number of these MDA-like substances have been synthesized. Many people feel that the number and variety of MDA analogues will enable researchers to make systematic comparisons of mental characteristics and chemical structures, thus providing an important key for understanding more about the nature of the human mind.
Sassafras is a botanical source used in synthesizing MDA-like compounds. The superiority of the synthetics over the natural MDA-like sources is pronounced. "Aminization" (chemical conversion to amine form) of plant oils heightens and clarifies mental effects and all but eliminates physical side effects often accompanying use of the botanicals. Users of the synthetics generally report increased relaxation, empathy and mental fluency, and many prefer this experience for being without the "distractions" of the psychedelic visuals that are characteristic of LSD and mescaline.

Nutmeg and Mace

Nutmeg, which in the U.S. is mainly used as a garnish during Christmas festivities, is the dried kernel of Myristica fragrans, a tree native to the Spice Islands, near New Guinea. Now cultivated in many places, the tree grows to about fifty feet high and bears seeds for up to sixty years. Its fruit looks much like a peach and contains a brownish-purple, stoney kernel encased within a bright orange-red or red covering. The covering, or aril, is used for production of mace; the seed, dried in the sun for about two months and turned over each day, becomes nutmeg. Both the kernel and its covering contain psychoactive components within their oils.

Most of the natural substances that contain compounds similar to MDA have a history of use for their medicinal properties and their psychoactivity. The Ayurveda of ancient India refers to nutmeg and mace as "made shaunda," generally translated as "narcotic fruit." An 1863 Materia Medica from Bombay records that "the Hindus of West India take Myristica as an intoxicant." Nutmeg has been used for centuries as a snuff in rural eastern Indonesia; in India, the same practice appears, but often the ground seed is first mixed with betel and other kinds of snuff. Restrictions on hashish in Egypt have brought about periods when nutmeg was used as a substitute.

Nutmeg appears in the Hindu Pharmacopoeia as a treatment for fever, asthma and heart disease. Since the seventh century A.D., Arab physicians have used it for digestive disorders, kidney disease and lymphatic ailments. Yemeni men are said to consume nutmeg to increase and maintain their sexual vigor.

Nutmeg and mace weren't known to the Greeks or Romans. They were not introduced to the West until 1512, when the Portuguese reached the Banda, or Nutmeg, Islands. The earliest record of nutmeg's mental effects comes from 1756, in the description of a "pregnant English lady who, having taken ten or twelve nutmegs, became deliciously inebriated" (she was lucky not to have died).
In the seventeenth century, nutmeg became an important article in the spice trade, which the Dutch monopolized for a long while with their naval superiority. "So precious were nutmegs," writes the botanist William Emboden in *Narcotic Plants*, sold that carved wooden replicas were made that carved wooden replicas were made.

Nutmegs encased in silver were worn at night as an inducement to sleep, aphrodisiacal properties were ascribed to them, and they became a standard element in love potions. In London the rumour spread that a few of these nuts would act as an abortifacient.
Use of this commonly available substance as an inebriant has continued into this century. "Confirmed reports of its use by students, prisoners, sailors, alcoholics, marijuana-smokers and others deprived of their preferred drugs," write Schultes and Hofmann in The Botany and Chemistry of Hallucinogens, "are many and clear. Especially frequent is the taking of nutmeg in prisons, notwithstanding the usual denials of prison officials."

**Calamus, or "Sweet Flag"**

Another source of oils from which MDA-like compounds have been synthesized is a marsh plant growing in temperate zones of Asia, Europe and North America that's known botanically as *Acorus calamus* and popularly as sweet flag, sweet-sedge, rat root, fflag root, sweet myrtle, beewort or sweet calamus. This is an iris-like perennial growing five to six feet high that often borders streams and ponds where cat-tails are found. Its leaves have unusual crimped edges, and a horizontal creeping root may extend up to five feet long. The oils in the rhizome contain two psychoactive substances, asarone and 7-hydroxyasarone, which are the natural precursors to TMA-2, a compound that has ten times the potency of mescaline. (Asarone also appears in *Caucus carota*, a wild carrot from Central Asia.)

For at least 2,000 years, *Acorus calamus* has been used in India and China as a medicine. In Ayurvedic practice, the plant is called vacha and recommended as a remedy for bronchitis, asthma and fevers. In China, where it's known as shih-ch'ang pu, it is used to relieve constipation and swelling. According to Exodus 30:22-23, this was one of the constituents of a "holy anointing oil" that the Lord commanded Moses to make and rub on his body when he approached the Tabernacle.

This root was known to many early American settlers and to Walt Whitman, who wrote forty-five poems under the title "Calamus" in Leaves of Grass. Invoking calamus in the thirteenth poem, Whitman realizes that "he must change the strain—these are not to be pensive leaves, but leaves of joy..."

In the British Isles during the Depression of the 1930s, calamus was often chewed by people unable to buy tobacco. The root tastes much like ginger and, in small quantities of up to two inches, is stimulating and euphoric.

Calamus has also been used by many North American Indian tribes for the relief of fatigue. In larger quantities, the root causes one to "walk a foot above the ground." Even more of the root has been used and is still used in conjunction with puberty initiatory rites. In The Hallucinogens, Hofmann and Oxtrod recount the experiences of "an informant well acquainted with the habits of northern Canadian Indians." He used rat root collected in northern Alberta by the Cree.

He reported that nearly all the Indians over age 40 used rat root regularly but the younger Indians were unfamiliar with it and in use was discouraged by physicians who prescribed it. Rat root seemed to be healthier, and were not subject to alcoholism. The Indians used rat root (a) as an antitussive medicine (they chewed about 1 inch of the dried root which had a diameter equal to a pencil); (b) as an aphrodisiac for soothing humpback; (c) for nose-swellings; (d) as a salve for relief of arthritis; (e) for oral hygiene; and (f) to relieve hangovers.

One informant had over the years noted these medicinal qualities and generally confirmed them. It was particularly effective for alleviating fatigue. On one occasion, he walked 17 miles in the northern woods to fight a forest fire. He was out of condition and was exhausted at the end of the march. He chewed and swallowed 2 inches of rat root. Within 10 minutes the fatigue vanished and on the return march he seemed to be walking 1 foot above the ground and felt wonderful. The effect was very unlike amphetamine. On his return home he was very exhausted but after a night's sleep was normal.

The informant and his wife, a trained psychiatric nurse, were both eupho- rial and well-controlled subjects with hallucinogens. They had taken LSD several times in well-controlled experiments at one of our research laboratories. They had both taken 10 inches of rat root 5 times and both agreed it produced an experience very similar to LSD.

**A "Double-Conscious" Testing of MDA**

MDA, the archetype and simplest member of this cluster, was first synthesized in 1930 by G. Menadon and W. Jacobson, who described the process in a German journal. It wasn't until 1939 that animal tests were performed, when the team of Grahn, Gurd and Sachs became interested in the substance while conducting adrenaline studies. Two years later, another team—Loomis, Myerson and Myerson—thought this compound might alleviate Parkinsonism but discarded the idea when the drug produced muscular rigidity in the simple patient tested. At about this time, MDA was rejected as a possible weight-reduction agent by the Smith, Klein & French Co. because pronounced though not hallucinogenic effects interfered after a few days with the patients' ordinary routines.

Gordon Alles, the UCLA researcher who discovered amphetamine in 1927, was interested in MDA (3,4-methylenedioxyphenylethylamine) because of the structural closeness of these two molecules to ephedrine, the standard drug for testing central nervous system stimulation during the 1930s and 1940s. He decided that he would conduct what he called a "double-conscious" test of these sub- stances—meaning that he would synthesize, measure and take them himself and its cousin 3,4-methylenedioxyphenylethylamine because of the structural similarities—meaning that he would synthesize, measure and take them himself in order to compare their effects with what he knew about how ephedrine affected him. "I was quite well calibrated," he remarked later, "with 50 mg. doses of ephedrine and with some doses of amphetamine."

After tests with dogs, which indicated that these two compounds were one third to one half as active in their peripheral effects as ephedrine and amphetamine, Alles swallowed 36 mg. of MDA. During the following two hours, he noticed neither physical nor mental sensations. He then took an additional 90 mg.
Within a few minutes, he “realized that a notable subjective response was going to result.” The muscles of his neck became markedly tensed, and he was closing his jaws tightly and grinding his back teeth. His gums became white and contracted. He perceived quite a bit but noted a slowed respiration rate. His pupils were “markedly dilated … I had never seen dilatation of the pupils in animals or man to such an extent.”

About forty-five minutes after the second dose, smoke rings filled the air, moving in slow motion about him. In a closed room on the sixth floor of a university building, there “was no possible source of smoke rings.” Yet, an absence of curling smoke rings was readily observed in the environment whenever a relaxed approach to observation was used. Usually, these had complete reality; and it seemed quite unnecessary to test their properties because it was easily known and fully appreciated that the source of the visual phenomena could not be external to the body. When I concentrated my attention on the details of the curling grey forms by trying to see how they would be affected by moving a finger through their apparent field, they melted away. Then when I relaxed again, the smoke rings were there. Talking about these smoke rings later, Alles commented, “I was as certain they were really there as I am now sure that my head is on top of my body.”

Farther into the experience, he also noticed that vision at a considerable distance was remarkable in clarity and detail. I had never looked out of the window a great deal before but I found that at a distance of three and four blocks away, I could make out very minute details of things.

LATER

Alles said he was sure that the details were correct and that he wasn’t able to make them out during normal consciousness “to anywhere near as great an extent.” These visual effects only introduced what lay ahead. Looking at his “almost entirely black eyes,” he had been fearful momentarily whenever a relaxed approach in observation was used. He perspired quite a bit but noted a slowed respiration rate semed clearly transposed out of the body and to a place above and to the right rearward. I was compelled to turn my head several times and look into the room, or sometimes into the window. (I was on the sixth floor of the Medical Office Building, there as I am now sure that my head is on top of my body.)

Awareness of the body and of its functionings became subject to a detached spatial consideration, and the reality of the place of detached observation for a time seemed clearly extraneous to the body and to a place above and to the right rearwise. I was compelled to turn my head several times and look into that upper corner of the room in wonder as what part of me could be up-there and observing the subjective situation and behavior as if from that point. I observed this phenomenon from where I was seated.

There was also “remarkably clear and apparent” differentiation in the perception of sounds.

Seeing the smoke rings that weren’t there gave me the impression that perhaps I was also hearing things that weren’t there. When I heard footsteps, I looked out into the corridor and found no one there. I repeated this a number of times. Somehow I felt this was not a hallucinatory phenomenon, and that I was hearing actual walking. Then I finally realized that I was hearing footsteps...
The next MDA-like compounds to come along were the TMAs (there are six). TMA-2, the most interesting, was first synthesized in 1933, but its psychoactive effects weren't recognized until 1962. Chemist Shulgin aminized it from asarone derived from the oils present in calamus. That same year Shulgin aminized myristicin, present in the aromatic oils of mace and nutmeg, and came up with MMDA. After more than 75 mg. have been ingested, this compound produces MDA-like effects that usually last under five hours, differing from MDA's effects in that there is often dream-like imagery when the eyes are closed.

In 1964, Shulgin synthesized DOM (2,5-dimethoxy-4-methyl-amphetamine) and determined that with a dose of 5 mg. the effects lasted eighteen hours or more, with a dose above 10 mg., the results are highly hallucinogenic and could persist up to three days. Two years after his report, a "new drug" with long-lasting effects was introduced to the counterculture under the name STP. Although it wasn't clear for some time, DOM and STP turned out to be the same. Apparently STP was synthesized independently by underground chemists experimenting with MDA derivatives.

STP was said to be an acronym for "Serenity, Tranquility and Peace," although for many it proved to be a fascinating-draking experience. Among the first to try STP was Richard Alpert, who took it in an apartment building on 57th Street in Manhattan and promptly tried to walk out the window. He was so scared by his response that he said the drug should not be released under any circumstances, that it was too intense. Later, considering that the psychedelic effects of MDA.

New York City "was not perhaps the optimum" in experimental environments, he tried it again near Taos, New Mexico after fasting for five days. Alpert wanted to give STP "a fair shake." He has since described this experience as "an extraordinary, extraordinary trip. I was really impressed. I still thought it was maybe too strong an agent for most people—it might have been too fierce for their use. But it was certainly a profound psychedelic experience . . . ."

Despite such cautionary advice from the people who first tested it, in January 1967 some 5,000 tablets in 10 mg. dosage—more than three times Shulgin's recommendation for DOM—were distributed for free at the first "Human Be-in," in San Francisco's Golden Gate Park. Jeremy Bigwood recalls that by nightfall there were several thousand tripping hippies, along with a scattering of panic reactions to the intensely psychedelic STP experience. After a sleepless night there were still a couple of thousand tripping hippies—many of whom were no longer enjoying the visions. Hundreds of people experienced hallucinatory episodes lasting three days, many ending up in the emergency rooms of various Bay Area hospitals wondering if they would ever come down.

STP continued to be available in some locales for another two years, even though the producers later agreed that their tablets presented much too strong a dosage. Questions were also almost immediately raised about the purity and actual content of these pills. Hospitals treating overwhelmed users reported that Thorazine (chlorpromazine) seemed to intensify and prolong STP's effects. Studies carried out the next year showed that Thorazine had a slight dampening influence on the DOM experience. Thus, some people felt that the STP pills must have contained other substances, which somehow were activated by Thorazine.

Another sticky situation arose in the early 1970s when it became clear that there is one physically dangerous member of this cluster: PMA (4-methoxyamphetamine). This compound, distributed mainly between 1972 and 1973, was often passed off as MDA. An effective dose of PMA can cause a dangerous rise in blood pressure. Use of this substance resulted in several deaths—although for some time it wasn't clear which drug had been ingested. Some people felt that MDA was involved, but it seems now that PMA was responsible. PMA is a dangerous MDA-like compound that appears to have been totally withdrawn from circulation.

Bigwood, writing in Field magazine (December 1977), pointed out that the alphabet-soup designations of the MDA cluster are a significant source of confusion. With so many compounds in this cluster, initials for a specific substance may be correctly passed from manufacturer to distributor, but are often jumbled after the compound has passed through several hands. The delay in identifying PMA as dangerous demonstrates the seriousness of this problem.
In 1974, Shulgin synthesized DOB, which is very much like DOM except that it’s milder and much more manageable. Then followed his synthesis of DOET, another drug possessing moderated STP-like effects. These compounds have been tried out by a few people but are generally not as available as MDA.

In the 1980s, several related compounds have been distributed. They appear to have been used so far without problems.

**CHEMISTRY**

The oils from nutmeg, dill, parsley seed, calamus, saffron, vanilla beans, sassafras and other plants contain generous amounts of the precursors to the semi-synthetic MDA-like compounds. Recently dried nutmeg is about 15 percent extractable oil.

Most users feel mental effects from ground nutmeg with a 20gm. dose, which has been assayed at 210 mg. myristicin (potential MMDA), 70 mg. elemicin (potential TMA), 39 mg. safrole (potential MDA), plus smaller amounts of other aromatic ethers and a number of terpene hydrocarbons (biological irritants).

Conversion of the non-ajnine oils in the presence of ammonia into the amine forms (TMA, MDA, etc.) has been demonstrated in the laboratory, giving rise to speculation that a similar process occurs in the body to create mental effects. Although the addition of ammonia has been shown to occur in vitro with tissue homogenates,” Shulgin has commented, “there is as yet no evidence that any of these centrally active bases can be formed in vivo.”

The chemistry of related synthetics is extensive, because atoms and radicals on the ring and side chain are susceptible to replacement with relatively little laboratory manipulation. The best review of the effects of the synthetics known to have psychoactivity appears in Vol. 11 (Stimulants) of the Handbook of Psychopharmacology (Plenum Press, 1978), in which Shulgin discusses the chemistry and corresponding effects of forty-nine MDA-like compounds, dividing them into the following categories: eleven that are methoxylated phenylisopropylamines, with varying positions for and varying numbers of methoxyl groups; eleven that are methylenedioxy phenylisopropylamines, with or without methoxyl groups in addition; five that are phenylisopropylamines with alkoxy substituents in addition to, or instead of, methoxyl groups in addition; and ten that are phenylisopropylamines with a halo group or a sulfur on the aromatic ring, with or without methoxyl groups in addition, and ten that are phenylisopropylamines with a halo group or a sulfur on the aromatic ring, with methoxyl groups in addition.

Most readers will find two other summaries more accessible: Shulgin’s article on “The Phenethylamines Related to Mescaline” in the January-June 1979 issue of The Journal of Psychic Drugs and a more generalized treatment in Vol. III, Chapter Sixty of Burger’s Medicinal Chemistry (4th ed, John Wiley & Sons, 1981). Characteristics of some psychoactive phenylisopropylamines as listed in Burger’s Medicinal Chemistry. Substitution of various molecules and molecular groups at various positions in the skeleton nucleus has been extensively tested and results in wide variations in potency (DOB is the strongest, exhibiting some 400 times the strength of mescaline). Those in the middle are the most popular in this series, but the recently-synthesized Aleph compounds, which contain sulfur and emphasize introspection, have also been well received.
Shulgin's interest in the relationship between structure and activity is also held by Roger Brimblecombe (of the research laboratories of Smith, Kline & French) and his colleague Roger Finder (Australian Drug Information Services). As early as the mid-1970s, Brinblecombe and Finder saw that substituted phenylethylamines would eventually reduce the status of mescaline, once the most potent psychedelic known but pre-eminent only because of its early isolation and identification. In their *Hallucinogenic Agents* (1975) they wrote that mescaline “can now be regarded as a naturally occurring example with relatively low potential of a much wider group of hallucinogens.”

The writings of Shulgin, the Brimblecombe-Finder team and many others are filled with speculations about how an alpha-methyl group adds to potency, how a tryptamine ring and amphetamine tail perhaps allows passage through the blood-brain barrier, how various chemical alterations keep monoamine oxidase from cutting the molecule’s tail, thus increasing activity and duration. There’s material here for fascinating rumination—what with the extreme variations in strength, in timing and in the experiential tendencies manifested by each compound.

One complication not often mentioned is that many of these compounds appear as optical isomers and in different forms as freebases or salts. The MDA molecule, for instance, presents itself in two mirror images that rotate plane-polarized light in opposite directions. Although they rotate light to the same degree, they have different strengths. The doses required to produce the same effect upon the central nervous system from the levorotatory isomer, the dextrorotatory isomer and the racemate (an optically neutral mixture of the two isomers) are estimated by Shulgin at 70, 225 and 125 mg, respectively. Of these three forms, the levorotatory has the greatest effect in humans. The same is true of DOI, where the levo-isomer is roughly twice as strong as its mirror image.

In the discussions of mental effects below, most attention will be given to MDA and MMDA. Here are sketches of these two:

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CH₂-CH-CH₃ NH₂
MMDA
(3-methoxy-4,5-methylene-diaxyamphetamine)
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**PHYSICAL EFFECTS**

Nutmeg

In a *High Times* debate concerning synthetic versus organic psychedelics, Bruce Eisner argued that for most users synthetic mescaline sulfate is preferable to peyote and LSD is preferable to morning glories or ergot, because the “plant forms contain many other alkaloids besides the psychoactive ones, some of which make a person sick, and in the case of ergot, can lead to death.” The same argument applies to the differences between nutmeg and MDA.

A number of accounts of nutmeg inebriation appear in The Ethnopharmacologic Search for Psychoactive Drugs, and particularly full discussions are given by an ex-convict in *Religious and The Ethnopharmacopoeia* and by another ex-convict in *Medical Botany* by Walter Lewis and Memory P.F. Ellis-Lewis. Nearly all such accounts agree that inebriation with nutmeg is accompanied by unpleasant somatic side-effects. The Church of the Tree of Life’s *First Book of Sacraments* summarizes the physical effects:

The usual prison dose is a matchbook of ground nutmeg—about 20 grams. This amount can cause some very severe psychological and physiological effects. These effects may vary somewhat with the individual, the dose and the potency of the material. Some people enjoy it, but most see it as a rather grueling experience. More bad is difficult to resolve the required dose. Some suffer nausea during the first 45 minutes. After that oily feelings and giggling often occur. This is soon followed by dizziness of the mouth and throat, flushing
of the skin and dilating eyes. Occasionally a person will feel agitation and hyperactivity, but more often they will feel heavy, invocated and unable to do anything but lie down. Minor functions may be confused and speech incoherent. He may become overly conscious of his heart beat and become concerned about the seeming gaps between beats. Later he may enter a stuporous mentation where he experiences profound peace of mind and dreamy visions. If he is able to move about he will usually feel like everything is in slow motion.

A person under the spell of munding is likely to find himself unable actually to move, or to move so staggeringly if being really mobile. Stupor soon replaces the initial excitement of munding rapture. This condition may last for 12 hours followed by 24 hours of disinclination during which he may sleep a lot. The after-effects are usually quite unpleasant. Acting of the bones and muscles, senses and setting of the eyes, running nose, tiredness, depression and possible headaches. One of the best things that can be said about munding intoxication is that it is not addictive in any way.

The MDA-like and STP-like Substances

MDA, MMDA and the other semi-synethetics are prepared by amination of various natural oils, which seems to eliminate nearly all the unpleasant physical effects of the experience for most people. Almost all users exhibit dilated pupils. Perhaps 10 percent of users feel transitory nausea, jaw-tightening, sweating or jitteriness, and most register some rise in blood pressure. Claudio Naranjo suggests that "Since individual incompatibility is consistent and bound to dose level," it is possible to identify those susceptible to physical problems through progressively increased test doses (e.g., 10 mg., 20 mg., 40 mg., 100 mg., etc.). This should be done without exception throughout the time preceding any first therapeutic MDA session. Typical toxic symptoms are skin reactions, pruritus occurring, and confusion. Rarely observed are in about 10 per cent of the subjects at dosages of 150-200 mg.

Another outstanding quality about this drug complex, says Jeremy Bigwood, is its contrast to everything else psychedelic in its "rush" effect. Things with 2,5-dimethoxy-4-methylamphetamine (DOM STP) were often identified in illicit samples of drugs, and was claimed by its users to produce effects lasting greater than 72 hours with tolerance by the usual hallucinogen antagonistic like chlorpromazine. Subsequent scientific evaluation (Steiner, Fullilove, and Hollinger, 1967; Holloway, Mac Nicol, and Gilbert, 1969) showed those claims to be false, the effects of DOM lasting less than 24 hours and being dominated by chlorpromazine. The drug is a potent hallucinogen, however, doses of 5-5 mg producing mental changes with marked hallucinations 1 hour after oral administration, peaking after 4-5 hours, and lasting for 7-8 hours. Only mild euphoria was noted the morning after, and it is the small proportion of subjects. The typical halluciogenic trial of symptomology was evident: physiological effects like nausea, sweating, paresthesia, tremors, and increased systolic blood-pressure; sensory changes such as blurred vision, multiple imagery, vibration of objects, distorted shapes, visual hallucinations, enhancement of detail, slowed passage of time, and increased consciousness; and psychic phenomena like loss of thought control, elation, difficulty in expression of self, floods of thought, blankness of mind, and loss of direction. MDA was noted to slow the pulse, reduce blood pressure, and wash out the usual hallucinogenic effects.

Mental Effects

Although it’s a psychedelic of last resort, plenty of people have tried munding. Malcolm X recalled his prison experiences that it "had the kick of three or four hours", and about 100 other reports range from great exultation to delirium.

MDA seems to be especially hard on women and will activate any latent infections or problems on the female genito-urinary tract. Women should take lower doses than men (less than 100 milligrams), and should avoid the drug altogether if their pelvic organs are ailing. Stash comments that so far there haven’t been any studies of possible birth defects and counsels that "It is wise for a woman to avoid all drug use if she suspects she is pregnant.

Most of the MDA-like compounds are fairly short-acting, but a few have long duration and thus form a significant subcluster, comprising DOI, DOB and the more volatile DOM, a compound that produces considerably different effects at different dosages. Brien Clemence and Frankt describe DOM STP’s physical symptomology:

The highly active, 2,5-dimethoxy-4-methylamphetamine (DOM STP) was often identified in illicit samples of drugs, and was claimed by its users to produce effects lasting greater than 72 hours with tolerance by the usual hallucinogen antagonistic like chlorpromazine. Subsequent scientific evaluation (Steiner, Fullilove, and Hollinger, 1967, Holloway, Mac Nicol, and Gilbert, 1969) showed those claims to be false, the effects of DOM lasting less than 24 hours and being dominated by chlorpromazine. The drug is a potent hallucinogen, however, doses of 5-5 mg producing mental changes with marked hallucinations 1 hour after oral administration, peaking after 4-5 hours, and lasting for 7-8 hours. Only mild euphoria was noted the morning after, and it is the small proportion of subjects. The typical halluciogenic trial of symptomology was evident: physiological effects like nausea, sweating, paresthesia, tremors, and increased systolic blood-pressure; sensory changes such as blurred vision, multiple imagery, vibration of objects, distorted shapes, visual hallucinations, enhancement of detail, slowed passage of time, and increased consciousness; and psychic phenomena like loss of thought control, elation, difficulty in expression of self, floods of thought, blankness of mind, and loss of direction. MDA was noted to slow the pulse, reduce blood pressure, and wash out the usual hallucinogenic effects.
The third syndrome is quite typical, as in this anonymous nutmeg account from Drugs From A to Z: 

"...A kind of drunkenness, I suppose, in a way you would call it a form of no-experience, but mostly it’s just being thrown out of your head, sort of. It’s usually not a specially pleasant high. There are certainly some distortions of perception and the brain functions, sort of its quirks and quarks... And you will still think as high, more or less simultaneously. And you will not feel right the next day either. It is not exactly a hangover, but you will not feel quite right. Maybe we took too much (about a teaspoon) when we took it. But it is pretty violent. Sort of disrupting mental processes..."

In a few cases, the individual experience with nutmeg has proved significant. For example, Richard Meltzer took what many might consider an overly large dosage while at Yale. At the high point in the resulting experience, he sat in a coffee-shop listening to the juke box and perceived the music as all sounding identical. Meltzer dropped out of Yale, used his tuition money to buy a good stereo and records, and eventually went on to become a vanguard influence in rock music.

**STP**

Although it is a rare commodity nowadays, STP had a major impact on the psychedelic movement in 1967. Ralph Metzner presents an STP experience in The Ecstatic Adventure, that of Ken Green. Metzner described it as a trip "when a young American yogi shoves himself out of the body with STP, hurtles through incarnations, is attacked by a malevolent spirit and rescued by the power of mantra and guru." At the height of the furor with STP, hurtles through incarnations, is attacked by a malevolent spirit..."

In the psychedelic movement in 1967. Ralph Metzner presents an STP experience in The Ecstatic Adventure, that of Ken Green. Metzner described it as a trip "when a young American yogi shoves himself out of the body with STP, hurtles through incarnations, is attacked by a malevolent spirit and rescued by the power of mantra and guru." At the height of the furor with STP, hurtles through incarnations, is attacked by a malevolent spirit..."

The relentless rush of energy is often a frightening experience. "Acid is like a kind of drunkenness, I suppose, in a way you would call it a form of no-experience, but mostly it’s just being thrown out of your head, sort of. It’s usually not a specially pleasant high. There are certainly some distortions of perception and the brain functions, sort of its quirks and quarks... And you will still think as high, more or less simultaneously. And you will not feel right the next day either. It is not exactly a hangover, but you will not feel quite right. Maybe we took too much (about a teaspoon) when we took it. But it is pretty violent. Sort of disrupting mental processes..."

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**STP Characteristics**

When you’re straight it’s like being on the other side of a glass wall. There also seems to be less identity confusion than under LSD. "You know who you are," she said. Many have found that they could easily function—make telephone calls, find jobs—shortly after the peak of the STP experience. These things can be difficult to do after an intense LSD experience.

"MDA is a fantastic drug," Alpert calls it "a totally NOW orientation." Past and future seem to dissolve in an electric present. At time was lost, Alpert noticed, "I felt that I had lost sense."

But the most amazing, and clearly the most disturbing, aspect of STP is that, unlike LSD, it seems to have a cumulative effect. It is a long trip to begin with. The direct effects last about 14 hours, and a stoned aftermath may continue until the next morning. Many STP initiated have discovered that they still felt high, or at least "different." It is a mild feeling, but a persistent one. Generally rated a "good" feeling, it seems to last...

Zinberg’s Evaluation of MDA

Few studies have been published about MDA’s effects. I. S. Turek, R. A. Soskin and Albert Kurland report an one in Vol. 6, No. 1 of the Journal of Psychoactive Drugs, in which they describe the subjective effects of 70 mg. of the MDA isomer taken orally by ten subjects, nine of whom had experience, issued LSD in a similarly controlled setting. Their findings concur with other available reports; they emphasize that, compared to LSD, this compound produces fewer "sensory experiences involving a sense of ego-loss" and "less transcendence of time or space" but more verbal communication.

Changes in perception of the external environment and changes in body awareness—especially "loss of control"—were "either minimal or nonexistent." The team found only a moderate alteration in time perception. Using the Linton-Langs Questionnaire (Modified), they concluded that "seeing new or changed meanings" was a major MDA effect. They said that at least half of their subjects felt that...
effects. Like Albert Hofmann, Alexs was apparently one of those very sensitive to psychoactivity. Had he not been, a vastly different history may have resulted for this compound cluster.

Alex made an extensive report based almost solely on his first MDA trip, justifying its relevance as a “double-conscious” study. He didn’t believe that a large population of users had to be observed to achieve valid results. Norman Zinberg claimed that he made an end-run around this problem as well, after he studied MDA’s effects upon experienced trippers (two to fifteen sessions for each of his subjects). All had used marijuana and all drank—“but expressed the classic preference of marijuana users for beer or wine, only one moderate, the rest light imbibers.” Zinberg’s MDA observations, which appeared in the January–March 1976 issue of the Journal of Psychoactive Drugs, present perhaps the finest description yet of the subjective states induced by the archetype of the MDA cluster.

Associated with the Harvard Medical School, Zinberg was interested in “the phenomenology of consciousness change.” He chose MDA for use in his study for three reasons: (1) this compound’s effects were reportedly not extreme as those of LSD, (2) it could be obtained in pure form and distributed in known quantities, and (3) users remained capable of expressing their feelings about their relationships while the experience was going on. “That suited me well,” Zinberg said about this last factor, “because my greatest area of understanding is just there, and not in color/form/perception possibly affected by the drug. This effect also made it likely that users would be interested in talking while tripping.”

Zinberg noted that the participants joked in all the sessions that they might have been given a placebo. After the first half-hour to an hour, when MDA’s effects became perceptible, one person after another would say, “OK,” and in answer to my questions would describe seeing the sudden clarity of the sky and a feeling of ease and benevolence. Along with this initial “east tranquilizer” effect came some nausea. These effects included briefly and several described some muscle tightening, especially around the jaw, which also passed after a few minutes. None of my subjects had ever had a bad trip. During my observations, there were no periods of panic or hallucination in my terms. Several subjects said that when they closed their eyes or stared at a particular object, delightful visual phenomena occurred which they called hallucinations. These were always reported as pleasant and, seemed to me, to be an exploitation of the subject’s capacity to fix on an image and play tricks with their unswerving concentration rather than a hallucination.

For Zinberg, the ability of the users to concentrate their attention in specific areas was a striking quality of the experience:

Ordinarily people apparently attend to a large volume of stimuli and devote effort at integration shifts focus when the person concentrates on one or another stimulus. A steady concentration always occurs within an awareness of the whole. The drug allows one to focus on a reduced field of attention so that a particular item stands out. Rather what happens is de-automatization of repetitive, usual modes of responding. Subjects reported on color, sound and form, when asked, with complete accuracy, invariably, however, pointing out details that seemed more pertinent now than before. This seemed especially true for color and the blinding and missing of colors. At times, when they were asked to focus on them, forms and shapes received the same total attention and sense of discovery as did color. In contrast to the importance with which the subjects waited the hour for the drug to take effect, they now fell almost unaware of time’s passage. It was hard to get an answer to the question, “How long have we been here?” When they did answer, they usually thought it to be fifteen minutes. The seeming of time continued through the eight to twelve hours of the drug’s effects.

The capacity to focus on specific items seems to explain much of what the subject experiences. They could concentrate on inner processes as well as outer perceptions. It was not that particular fantasies were any different, i.e., more primitive, or connected to basic motivation, but that one fantasy or idea was noticed in great detail. It could be thoroughly explored so that the connected affects and ideation which would ordinarily be swept past in the rush of stimuli could receive attention. The introspection thus achieved seemed fresh. Subjects could recall things unremembered before, they could, cold or even the voice of a companion, but no one reported angry or aggressive feelings during the drugged period. However, there was considerable internal interest in previous aggressions and movements that appeared fantastic or irrelevant about person.

Zinberg noted that “people did speak openly of having erotic desires,” and he had the impression that the experience provided an occasion and an opportunity to say things usually barred from conversation. Despite much talk about origins and memories, no early memories were reported that seemed to have been especially unossed at this time. One person told me how he felt when he met his present girlfriend and how, out of a mixture of anxiety, amazement and liking, he had picked out the traits and responses that he now loved. A young woman talked about the last time she had seen her mother and how, out of a mixture of anxiety, amazement and liking, she had picked out the traits and responses that she now loved. She even recognized that she did the same thing with her boyfriend. She pointed out how his mouth tightened and his eyebrows came together in an unusual way when she believed she was, but he never said she was sort of bored. He responded by saying that he knew she had been thinking of him. And that he really knew she loved him and wished he could break through his withdrawal at times like that and tell her what he had been feeling. This sort of dialogue was typical. The insights did not seem so earth-shaking, although they were spelled out in convincing detail. It was the reported insistence on empathic awareness of what the other was thinking that most fascinated me.
Zinberg tried to check out these empathic sensations by speaking separately to individuals having such experiences:

Not only was such a subject able to describe what others felt, e.g., "A is thinking of sex with B," or "I think C is lost in childhood memories or relationship illusions with D," but they were also able to say something about the case that led to these conclusions—the way someone's body was now drooping with sad, the way the lines formed around a person's mouth, or the way somebody looked over there and then looked away. These cases were ones that I had not noticed until they pointed them out to me. However, the intermediate steps of how the case led to the final, empathic awareness could not be articulated. I would then drift over to the person we had been talking about and asked what she had been thinking. 80% of the time my original respondent was correct down to quite fine details. It was remarkable, and it gave me some sense of why some psychics and users of my acquaintance had become so sensitive to ESP. I asked particularly if this empathy was based on unusual ability to read minds or to articulate. I would then drift over to the person we had been talking about and asked what s/he had been thinking. 

Shulgin then characterized the closely-allied MMDA:

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**MDA and MMDA Compared**

In the October-December 1976 issue of the Journal of Psychedelic Drugs, Andrew Weil and Alexander Shulgin described first MDA and then MMDA. Together their reports provide a perspective on the differences between these two closely related compounds. After more than five years' experience with MDA, Weil had fascinating things to say about this "Love Drug":

... effects become apparent in 20 to 60 minutes and persist for about twelve hours—some experience initial nausea. Some feel a warm glow spreading through their bodies. Most people become aware of a sense of physical and mental well-being that intensifies gradually and steadily... effects on human beings are much more interesting than simple stimulation. Unlike most stimulants, MDA does not increase motor activity. In fact, if suppression is considered in a remarkable way, so that people can remain calm and content in one position for long periods. This effect is most dramatic in persons who are barely depressed on cocaine and amphetamines. The combined effects of relaxation and contentment greatly facilitate certain kinds of physical activities such as yoga, martial arts, and any disciplines requiring balance and maintenance of posture. For example, I can maintain a handstand longer when I take MDA than when I take other psychedelics. Sometimes a subject can perform yoga poses that they could not do before. I have heard that this effect can persist for several days after taking MDA and again find that my body works in a more coordinated, smoother fashion and that I can do things with it that I usually cannot... It may become possible to walk barefoot over sharp stones, for instance, and experience no discomfort or injury.

Participants may feel very loving toward one another, but the feelings are not explicitly sexual because MDA tends to decrease the desire for sex. For many people the experience of rejecting physical contact and feeling loved with others is the absence of specific hunger for sex is unique and welcome.

Habitual users of tobacco feel no need to smoke. Chain smokers of mari-juanists do not need their weed. Nail-bites leave their fingers alone. Compulsive sailors become quieter. Competitive eaters do not think about food... There are no hallucinations, illusions, or distortions, simply a great sense of peace and calm and well-being.

Out of hundreds of experiences with that I have observed have some only two anxiety reactions. The medical potential of the drug is great and quite unexplored. I have noted especially that persons under the influence of MDA, when feeling high, centered, and free of desire, are in a state of complete anergy—that is, they manifest no allergic reactions, even to life-long allergens. Asthma disappears; hay-fever disappears; cat allergies go away; there are even no responses to mosquitoes bites. This effect is temporary and appears to be the physical analog in the body of the mental experience of complete relaxation and lack of anxiety. It might be reproducible without the drug if we could learn to operate more time in that state. 

Shulgin then characterized the closely-allied MMDA:

The threshold dosage of MDM in humans is 75 mg (as the hydrochloride salt) and the average effective dose is 150 mg. One of the first physical symp- toms (mydriasis, minor dizziness, flushing sensation) are apparent at 30-60 minutes. The psychological effects are first noted after 17 hours following ingestion and are of relatively short duration with peaking in another hour.
these are largely dissipated in yet another two hours. During this period of intoxication, there is a minimum of sensory distortion, but rather a pervasive mood-intensification. In the absence of external stimulation, an accumulation of feelings (both anxiety and euphoria), the spontaneous visualization of images (with eyes closed), a generalized drowsiness and relaxation, and a consistent overestimation of elapsed time are experienced. The imagery is dreamlike in that the subject matter cannot be chosen and it can be voluntarily dispelled by opening the eyes. Eyes-open phenomena, such as color enhancement and distortion of faces and objects, are extremely rare.

The metabolic fate and the kinetics of blood and tissue levels of MMDA, in either experimental animals or in humans, are as yet unstudied. In comparison to most psychedelic drugs, MMDA must be considered to be very mild and produces a state which can be easily manipulated by either the subject or the observer. The duration of action is short, and is followed by physical relaxation which usually leads to an easy and restful sleep.

**Naranjo's Psychiatric Distinctions**

Differences between MDA and MMDA were further amplified in Claudio Naranjo’s *The Healing Journey*, a description of what he observed as one of the earliest to gain access to these semi-synhetics. After using both MDA and MMDA in his practice of psychotherapy, Naranjo concluded that the two operate quite distinctly. He came to consider MDA an “analytical drug,” useful primarily for going back into a patient’s past. MMDA, on the other hand, was more effective in evoking the feeling of “the eternal now.”

Here is a quick summation of Naranjo’s findings in regard to MDA:

In a first study designed to describe its effects in normal individuals, not one of eight subjects reported hallucinations, visual distortions, color enhancement, or mental imagery, while all of them evidenced other pronounced reactions: enhancement of feelings, increased communication, and heightened reflectiveness, which led to a concern with their own problems or those of society or mankind. Further experiments with MDA in neurotic patients in the context of psychotherapy have confirmed such effects, but here physical symptoms were of frequent occurrence, and visual phenomena were described by most individuals at some point of their experience. Yet the most characteristic feature of the experience of these subjects was one which we will here call age.

In the MDA-elicted state the patient simultaneously regresses and retains awareness of the present self. Yet... the patient more than conceptually remembers past, as he may vividly recapture visual or other sensory impressions inaccessible to him in the normal state, and he usually reacts with feelings that are in proportion to the event. This is the same process termed “returning” in Dianetics, and which can range all the way from hypermnesia to repetition of a past experience in which not only the old feelings are again distinctly felt, but physical pain or pleasure and other sensations, as the case may be.

This may occasionally be brought about under the effect of other hallucinogens or without any drug, particularly when sought after through therapeutic maneuvers. Dianetics, in particular, tends itself well to an exploration of events in a patient’s life history for the richness of feeling with which these can be evoked. Yet with MDA regression occurs so frequently and spontaneously that this can be considered a typical effect of this substance, and a primal source of its therapeutic value... In this, the healing process defined from what is observed in most instances of harmaline, MMDA, or even ibogaine therapy.
Moving on to MMDA, here is how Naranjo distinguished this substance:

MMDA stands with MDA in memory distinct from that of DOI-25 and is of hortensia and fragile. In contrast to the transpersonal and unfamiliar domain of experience characterizing the action of these two groups of drugs, those feeling-enhancing feelings lead into a domain that is both personal and familiar, differing only in its intensity from that of every day.

In the peak experience that MMDA may elicit, it is possible to speak of both individuality and dissolution, but these are blended into a new totality.

Dissolution is here expressed in the openness to experience, a willingness to hold no preference; individuality, on the other hand, is implied in the absence of depersonalization phenomena, and in the fact that the subject is concerned with the everyday world of persons, objects, and relationships.

The MMDA peak experience is typically one in which the moment that is being lived becomes intensely gratifying in all its circumstantial reality, yet the dominant feeling is not one of euphoria but of calm and serenity. It could be described as a youthful indifference, or, as one subject has put it, "an impersonal sort of compassion"; for love is embedded, as it were, in calm.

The perception of things and people is not altered or even enhanced, but negative reactions that permeate our everyday lives beyond our conscious knowledge are held in abeyance and replaced by unconditional acceptance.

An unusually large MDA crystal grown in ethanol.

FORMS AND PREPARATIONS

Over the last decade and a half, there has been much misrepresentation in the black market regarding MDA-like compounds. Recently, providers of these substances seem to have been doing their chemistry homework; the products nowadays aren't bogus very often.

Generally these compounds are distributed as a powder, as clear whitish crystals, or in tablet form. Often the powder or crystals are swallowed in a clear gelatin capsule. The color of the powders varies from white to a brownish hue, the latter color frequently indicating by-products of incomplete synthesis. "Little is known of the effects of ingesting such impurities," comments Jeremy Bigwood. Recalling the dangers posed by PMA, Bigwood suggests sending a sample of any MDA-like compound in question to PharmChem, following the procedure described at the end of Chapter One.
CHAPTER SIX
DMT, DET, DPT
and Other
Short-Acting Tryptamines

It is unfortunate that such a unique and desirable drug as DMT is not freely available and widely used.... Not only are the effects enjoyable, but most users are astonished to learn that a drug can so rapidly produce such profound effects which have such short duration.

Jeremy Bigwood and Jonathan...
Snuff and its psycedelic properties were known to many South American tribes. The Guahibo of the Orinoco basin, commenting that it was used by all the tribes made detailed observations of the preparation and use of snuff’s psychoactivity. Due to the freshly calcinated lime, these effects are eventually powdered. Humboldt noted, “it is not to be believed that the... communication with the mainland for their source of supply.”

A 1950 report said that Indians along the Rio Guainave in Colombia were accustomed to taking “Yupa... a sand or pow of a tree” together with tobacco, becoming “tawwy” while the devil, in their dreams, shows them all the vanities and corruptions he wishes to see and which they take to be true revelations in which they believe, even if said they will die. This habit of taking Yupa and Tobacco is general in the New Kingdom. Another chronicle wrote in 1999 about Indians chewing “Yupa or Coca and Junj and Tobacco,” a combination which prompted their “going out of their minds, and then the devil speaks to them.” This account described the Ayu as “a tree with small pods like those of vetches, and the seeds inside are similar but smaller.” In 1971, a Jesuit wrote about cohoba use by the Obonie of the Orinoco region between Colombia and Venezuela: “They have another observable habit of intoxicating themselves through the nostrils with certain odorous powders which they call Yupa which quite takes away their reason, and they will forcibly take up arms.” Describing details of the snuff’s preparation, including addition of lime from snail shells, this priest reported that “before a battle, they would throw themselves into a frenzy with Yupa, wound themselves and, full of blood and rage, go forth to battle like rabid jaguars.”

In 1801, the German explorer and naturalist Baron Alexander von Humboldt (after whom the Pacific current is named), identified the pili tree botanically. While collecting flora near the Orinoco River, he observed the Mayapue Indians prepare cohoba snuff by breaking the pods, moistening them and allowing them to ferment. When the pods turned black, they were kneaded with cassava meal and lime from snail shells into small cakes, which were eventually powdered. Humboldt noted, “it is not to be believed that the... cohoba obviously has a strongly stimulating effect, for immediately the witch doctor begins singing and yelling wildly, all the while pinching the upper part of his body backwards and forwards.”

Identification of Botanical and Other Sources

In 1951, William Safford determined that the psychoactive principles of cohoba snuff did not come from especially powerful tobacco, as was generally thought at the time, but from the beans of datura/phyllodora persica (a member of the pea family, formerly placed in the genus Pyrilocaria, then Monotes and dtcera). In 1938 and 1939, the Brazilian botanist Ducke identified a second kind of psychoactive snuff as coming from another species. He reported that Indians of the upper Rio Negro employed leaves of Fishe fission and Fishe capusin in making a powder they called paren. Ducke was wrong about the leaves; the Indians used sap from the inner bark. However, by preparing a species other than the leguminous tree from which cohoba is derived, Ducke prompted further investigations into plant psychoactivity where no native had previously thought to look. The brownish snuff described by Ducke was known sarocho among the Taino, as zoro among the Carib, and as oyce among the Waika tribes. A detailed account, published in 1954, described its botany, preparation and shamanistic use by a number of the tribes of the upper Orinoco. In 1909, the German anthropologist Theodor Koch-Grunberg described another psychoactive snuff, prepared from a tree bark and inhaled during ritualistic cures by the Yekwanas at the headwaters of the Orinoco: This is a magical snuff, exclusively used by witch doctors and prepared from the bark of a tree (which, when pounded up, is held in a small earthenware pot, until all the water has evaporated and a sediment remains at the bottom of the pot. This sediment is toasted in the pot over a slight fire and is then finely powdered with the blade of a knife. Then the sorcerer blows a little of the powder through a reed... into the air. Now, he sniffs, while, with the same hand, he absorbs the powder into each nostril successively. The Yato yato has a strongly stimulating effect, for immediately the witch doctor begins singing and yelling wildly, all the while pinching the upper part of his body backwards and forwards.

Traveler's Notes and Identification

He collected in 1851 for chemical studies weren't analyzed, however, until 1977. In 1971, the German anthropologist Theodor Koch-Grunberg described another psychoactive snuff, prepared from a tree bark and inhaled during ritualistic cures by the Yekwanas at the headwaters of the Orinoco: This is a magical snuff, exclusively used by witch doctors and prepared from the bark of a tree (which, when pounded up, is held in a small earthenware pot, until all the water has evaporated and a sediment remains at the bottom of the pot. This sediment is toasted in the pot over a slight fire and is then finely powdered with the blade of a knife. Then the sorcerer blows a little of the powder through a reed... into the air. Now, he sniffs, while, with the same hand, he absorbs the powder into each nostril successively. The Yato yato has a strongly stimulating effect, for immediately the witch doctor begins singing and yelling wildly, all the while pinching the upper part of his body backwards and forwards.

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In 1951, William Safford determined that the psychoactive principles of cohoba snuff did not come from especially powerful tobacco, as was generally thought at the time, but from the beans of datura/phyllodora persica (a member of the pea family, formerly placed in the genus Pyrilocaria, then Monotes and dtcera). In 1938 and 1939, the Brazilian botanist Ducke identified a second kind of psychoactive snuff as coming from another species. He reported that Indians of the upper Rio Negro employed leaves of Fishe fission and Fishe capusin in making a powder they called paren. Ducke was wrong about the leaves; the Indians used sap from the inner bark. However, by preparing a species other than the leguminous tree from which cohoba is derived, Ducke prompted further investigations into plant psychoactivity where no native had previously thought to look. The brownish snuff described by Ducke was known sarocho among the Taino, as zoro among the Carib, and as oyce among the Waika tribes. A detailed account, published in 1954, described its botany, preparation and shamanistic use by a number of the tribes of the upper Orinoco. In 1909, the German anthropologist Theodor Koch-Grunberg described another psychoactive snuff, prepared from a tree bark and inhaled during ritualistic cures by the Yekwanas at the headwaters of the Orinoco: This is a magical snuff, exclusively used by witch doctors and prepared from the bark of a tree (which, when pounded up, is held in a small earthenware pot, until all the water has evaporated and a sediment remains at the bottom of the pot. This sediment is toasted in the pot over a slight fire and is then finely powdered with the blade of a knife. Then the sorcerer blows a little of the powder through a reed... into the air. Now, he sniffs, while, with the same hand, he absorbs the powder into each nostril successively. The Yato yato has a strongly stimulating effect, for immediately the witch doctor begins singing and yelling wildly, all the while pinching the upper part of his body backwards and forwards.

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Among other tribes, especially those known collectively as the Waika, epena may be used individually as well as ceremonially by any male over the age of thirteen or fourteen. Amounts as large as two to three teaspoons are blown into the nostrils through long tubes. Ingestion of large doses is repeated regularly over a two- to three-day period during at least one annual ceremony.

There is no unequivocal archeological evidence showing ancient use of cohoba or epena snuffs. However, widespread shamanic use and the considerable mythology associated with both botanical sources of DMT suggest that such traditions go far into the past. Snuffing artifacts have been found all over South America, though these implements may have been used for tobacco.

Recently, the Mashco Indians of northern Argentina were reported to smoke and sniff a preparation from *Anadenanthera colubrina* seeds, confirming early Spanish reports of snuffs being made of this species, commonly known as viica. According to one such account from 1571, Incan medicine men made prophecies through inebriation brought about by drinking chicha reinforced with cohoba. *A. colubrina* snuff has since been assayed as having essentially the same psychoactive makeup as cohoba and epena snuffs.

In 1946, Gonçalves de Lima, a Brazilian ethnobotanist and chemist, extracted an alkaloid from roots of *Mimosa hostilis*, another member of the pea family, which has been used by natives of eastern Brazil to prepare a potent psychoactive drink he named “nigerine.” Later it was found to be identical to DMT, first synthesized in 1931 by the British chemist Richard Manske.

In 1954, Stroemberg isolated 5-methoxy-DMT® from seeds of *A. peregrina*. Later, DMT, DMT-N-oxide and 5-methoxy-DMT-N-oxide were also found in *A. peregrina*. Additional components contributing to psychoactivity have been identified; these also appear in about the same proportions in the *Vtrola* species used to make parica. However, a Waika® snuff made from *V. theiodora* resin has an unusually high alkaloid content of up to 11 percent, consisting mainly of 5-methoxy-DMT (8 percent) and substantial amounts of DMT.

### Testing and Use of Synthetics

The first experiences of pure DMT took place in 1957, when the pharmacologist Stephen Sodha, who has long been chief of the National Institute of Drug Abuse’s biomedical research branch, injected himself and a skeptical writer with him had to admit, “I ate a dream fish supper myself. I found it tasty, but strong flavored, like mackerel. I told myself not to dream. But no.”

1. Deonaur I was at a party where everybody was naked and the band played, “Yes, We Have No Parajamas.”

1. *Theodora*
friends with this compound intramuscularly. He first administered 75 mg to himself.

The onset of the experience came within three to four minutes. Szmura noted trembling, nausea, dilation of the pupils and an elevated blood pressure and pulse rate—accompanied by "fluorescently colored oriental motifs and, later, rapidly changing wonderful scenes." He became euphoric. This reaction was "so firmly bound to the visual phenomena" that he was unable to describe them until the experience passed, some forty-five to sixty minutes after its start. Szatra established by further testing that intramuscular injection of 50–100 mg of DMT brought about intense visual displays—with eyes open or closed—within five minutes. These peaked peak effects within a quarter of an hour, diminishing and then disappearing totally within half an hour (at the longest, one hour). Subjects became catatonic or lost consciousness when given doses larger than 125 mg.

Albert Hofmann synthesized a series of DMT analogues, but little attention was paid to this work until the mid-1960s. Ironically, interest began to develop after an adverse experience with DMT. William Burroughs, author of Naked Lunch and Junkie, had already figured prominently in the drug aspect of the beatnik movement. He had journeyed to Peru in search of ayahuasca, a dominant ingredient in the intoxicating drink from south American shamanism. He discovered a "more about drugs than anyone alive" and urged him to initiate a correspondence with stroboscopic machines to produce hallucinations. During the winter of 1960–1961, Allen Ginsberg told Timothy Leary that Burroughs "knew more about drugs than anyone alive" and urged him to initiate a correspondence. Burroughs' second letter to Leary was dated May 6, 1961: Dear Dr. Leary: I would like to sound a word of urgent warning with regard to the hallucinogenic drugs with special reference to D-Dimethyltryptamine. I had obtained a supply of this drug synthesized by a chemist friend in London. My first impression was that it closely resembled psilocybin in its effects.

In High Priest, Leary recalls that he and his associates studied Burroughs' letter, deciding to reserve judgment until after further experiments. "We had taken it perhaps ten times—this drug must be injected and the dose is about one grain (approximately 65 mg) but I had been assured that there was a wide margin of safety—with results sometimes unpleasant but well under control and always interesting when the horrible experience occurred which I have recorded and submitted for publication in Excerpts..."

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Jeremy Bigwood and Jonathan Ott, writing in the November 1977 issue of High magazine, noted that during his period of terror Burroughs had been "putting down some of his 'metabolic regulator' experiences as an antidote." Then they pointed out the significant results of later tests:

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DMT, DET, DPT appealed to some therapists. Many patients had “peak experiences” under DPT. Some people who administered this compound felt, however, that LSD had more memorable results, even if more tiring due to its longer duration. DPT and 5-methoxy-DMT are still legal and have been used in certain circles, although Alan Birnbaum, from the Native American Church of New York, wrote to the DEA about the legal status of several DMT-like compounds. In January 1980, Howard McClain of the Regulatory Control Division responded:

This is in response to your recent inquiry concerning the control status of the substances 4-hydroxy-N,N-diethyltryptamine, dipropylcryptamine, and methyl ethyl tryptamine. They are not currently listed in the Controlled Substances Act, however, if it becomes evident that these chemicals are abused, they will be placed on Schedule 1.

BOTANY
Anadenanthera Species and Other Members of the Pea Family

Anadenanthera peregrina, a tree that reaches sixty feet in height and approximately two feet in diameter, grows naturally in and is cultivated throughout about a tenth of South America. Its primary locale is described by Schultes and Hofmann as “the plains or grasslands of the Orinoco basin of Colombia and Venezuela, in light forests in southern British Guiana [now known as Guyana], and in the Río Branco area of the northern Amazonia of Brazil.” It also appears “in isolated savanna areas” where it has been introduced by natives, notably the Rio Madeira region. Apparently this tree was also cultivated in the West Indies until about a century ago.

Another growing area for Anadenanthera is slightly smaller and centers in northern Argentina, where the seed snuff is known as cohoba. Three species native to southern Peru and Bolivia—A. macrocarpa, A. excelsa, and A. colubrina—are the source of vile and huaca. All four Anadenanthera species seem to be used in making snuffs, usually without other plant additives.

D.V. Siva Sankar’s enormous green book LSD—4 Total Study lists eleven legumes that contain bufotenine and DMT. Of these, the second most widely used is Mimosa hostilis. Decoctions made from its root play a part in the ceremonies of the ancient Yurema cult of Brazil. The decoction is known as the “wine of yurema.” William Emboden describes this “miraculous drink” as a wondrous beverage that gives joy to the spirit world. Intended for priests, warriors, and strong young men, it is also drunk by the dead and the Thunderbird sends lightning from his head and a storm produces thunder. The Pankaruru Indians use a similar brew from the bark of Mimosa venenosa in the caatuca cult under the name caatuca. Resins of V. chilcara are smoked by some Venezuelan Indians (a few references to smoking have appeared in connection with other Virolas as well).

DMT-like compounds appear in the sap of the inner bark—not in the seeds or roots of Virolas. The making of caatuca therefore involves stripping Virola of its outer bark. An almost colorless liquid that exudes from the inner bark, quickly turning to blood red (the result of enzyme activity) and
Stripping the bark from Virola theiodora. Hardening into a shiny, gummy resin. The tryptamines and other indoles lose potency rapidly unless heated immediately. Natives scrape off the inner bark and heat it or boil it after soaking the bark for about twenty minutes in cold water. Once the psychoactive compounds are stabilized, the resin is usually made into a powder.

Several bushes, vines and mushrooms also contain DMT and its chemical relatives. Leaves from Psychotria viridis, a bush belonging to the coffee family, and Banisteriopsis caapi, an ivy-like vine, are often added to the drink called "yage" made from the Amazonian "visionary vine." The presence of this ayahuasca vine in the drink enables tryptamines in the leaves to produce mental effects even after they are swallowed. (Commercial and many psychoactive mushrooms contain DMT and other DMT-like compounds. These appear in tiny amounts, however, and wouldn't be activated when eaten unless catalyzed by something like ayahuasca.)

CHEMISTRY

Tryptamine Constituents of the Psychedelic Snuffs

In both Anadenanthera and Virola snuffs, the active principles are indole alkaloids, either "open-chained" or "closed-ring" tryptamines. The "open-chained" group will be covered in the next chapter. The "open-chained" group includes DMT and 5-methoxy-DMT as well as bufotenine (which at present appears to be non-psychoactive) DMT predominates in the species Virola calophylla, but in other species the greatest psychic contribution comes from the very short-acting 5-methoxy-DMT. Trace amounts of the "open-chained" DMT-N-oxide and 5-hydroxy-DMT-N-oxide, as well as the "closed-ring" tryptamines 2-methyl- and 1,2-dimethyl-6-methoxytetrahydro-β-carboline, are present in both Anadenanthera and Virola snuffs, adding somewhat to their effects. Virolas also contain small quantities of 6-methoxy-DMT and monoethyltryptamine.

Altering the Side-Chains

Here is a chemical family portrait of the major short-acting tryptamines:

<table>
<thead>
<tr>
<th>Compound</th>
<th>R1</th>
<th>R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMT</td>
<td>R1 = H, R2 = CH3</td>
<td>DET— R1 = H, R2 = CH3</td>
</tr>
<tr>
<td>5-MeO-DMT</td>
<td>R1 = CH, R2 = CH, R3 = H</td>
<td></td>
</tr>
</tbody>
</table>
A full discussion of this compound-cluster’s chemistry and effects appears on pp. 98-108 of Brimblecombe and Finder’s *Hallucinogenic Agents*. Many of these compounds display little psychoactivity; others of special interest are the diallyl, dibucyl and diisopropyl analogues, the last having about twelve times the potency of DMT.

DMT and DPT are longer acting and more potent than DMT as a result of altering the CH of the DMT side-chain to CHCH3 and CHCH2CH2, respectively. Periodine, a longer-acting tryptamine, differs by addition of a benzyl group through enzyme action. When it is altered into CY-19 and CZ-74 by manipulations similar to the changes of DMT into DET and DPT, the result, in contrast, is shorter action and less potency.

Analogues that are still legal can be synthesized by substituting equal molar amounts of source materials other than dimethylamine, which yields DMT, or diethylamine, which yields DET. Using dipropylamine as a starter yields DPT, methylisobutylamine yields methylethyltryptamine, methylpropylamine yields methylpropyltryptamine, etc.

Processes for synthesizing short-acting tryptamines are fairly simple and don’t require much in the way of equipment, but they involve a risk of explosion. Also, purchases of several of the source materials are watched by the DEA. One of these is lithium aluminum hydride (LiAlH4), which is dangerous if it comes in contact with water molecules, as is usually required at the end of these processes. A chemist describes an experiment:

He placed a gray chunk of it in a stainless steel pot and left it exposed to the air to see what would happen. When nothing appreciable occurred, he got a hammer and banged it—which ignited it. It then burned white hot through the stainless steel pot and continued to burn on the floor. Of course, one cannot use water to put it out because it reacts with water causing not only a more vigorous reaction but also releasing hydrogen, which will explode violently itself when it reaches a certain concentration of O2. Luckily for him, it was a small piece.

**Physical Effects**

Native Use of Enormous Amounts

Some Indian tribes, particularly those among the Waikas, use psychoactive snuffs in what Schultes and Hoffmann refer to as “breathtakingly excessive amounts.” Violca resin with a DMT content as high as 11 percent is routinely ingested in quantities as large as two or three teaspoonfuls. William Emboden has described the list of accoutrements associated with snuffing as “endless.” There are bones from plovers tied together to form tubes, “which enable friends to blow snuff into each other’s nostrils,” while “V-shaped bones permit self-indulgence in sternutation. These powerful snuffs blown into the upper nasal passages, or even into the sinuses, induce violent fits of sneezing followed by violent states of hallucination.”

Natives often practice snuffing daily. In Colombia and Venezuela, Hoffer and Osmond write that the jipij-snuffing habit was carried on by whole populations. The intoxication produced convulsive movements and distortions of face and body muscles, as a desire to dance and finally an inability to control their limbs. Then a violent madness or deep sleep overtook the user. Then they developed stupor.

The Waikas, however, are the greatest risk-takers. Emboden notes:

"Leaves of the Angel of Death" or *botek-hena* is the name for one such snuff derived from *Jacoba pectoralis* variety *spongii* of the family Acanthaceae [see plate 58 of his *Narcolith Drugs*]. This red-flowered herb enjoys a considerable popularity among the Waikas. Among these peoples, three curanderos have died from using this potent snuff which seems to contain fairly large amounts of tryptamines in the dried and powdered leaves. Often it is an admixture of snuffs made from the red bark resin of several species of Virola.
DMT was injected intramuscularly.

In most of the hospital studies, about 50 mg. of DMT was injected intramuscularly.

When DMT is injected, the onset of effects usually takes two to five minutes, time required for the tryptamine to make its way to the brain. The user becomes ecstatic for ten to fifteen minutes, declining to normal states of mind over the next quarter to half hour. Injected DMT displays a similar curve of effects but lasts about three hours. DPT has about the same duration as DMT but ends more abruptly.

More often, these tryptamines are smoked because less is needed to feel the effects, which arrive in a matter of only a few seconds. The DMT peak lasts for three to ten minutes, and it's all over in twenty to thirty minutes. DET and DPT, which have more subtle effects than DMT, may take a few minutes to register, although, as Alan Brinbaum writes in regard to DET, “some people have reported to be immediately immersed in the light on the first toke.” DET lasts about an hour when smoked, the most intense part of a DPT experience is over in about twenty minutes.

Long available from chemical supply houses, 5-methoxy-DMT is about five times as strong as DMT when smoked and the shortest-acting of all these compounds. The experience is characterized by a “rush” similar to that from any ingredient. There is little in the way of visuals, but intense thoughts and perhaps bodily sensations last for five to ten minutes. Many people don’t like it, in his Psychodelic Chemistry. Michael Valentine Smith compares its effects to having an elephant sit on one’s head.

Short-acting tryptamines are smoked in joints or pipes and often are mixed with marijuana. However, it should be emphasized that these compounds produce an intense experience and should not be taken, in the words of Bigwood and Ott, “the first toke, have often started to say they weren’t feeling anything and then suddenly become silent in mid-sentence.” The smoking should be carried out in a setting free from unpleasant intrusions by visitors, a ringing telephone, etc. Initiates, after taking a toke, have often started to say they weren’t feeling anything and then suddenly become silent in mid-sentence. Some people who have started to smoke a DMT joint while standing have suddenly needed to sit down.

The observable physical changes are pupil dilation, increased pulse rate and blood pressure and, in some instances, dizziness, nausea or tremor. Stephen Suls and his associates examined such effects closely in a series of papers (eleven of these are listed in Brinmbcomb and Finder’s bibliography at the end of their tryptamine chapter), concluding that these were minor. The suddenness and intensity with which DMT comes on can be somewhat alarming, so much so that, as Grinspoon and Bakalar remark, the “term ‘mind-blowing’ might have been invented for this drug.” Users report feeling that they were “melting into” or “fusing” with the floor, that their heart was stopping, or that their “life-force” was somehow ebbing away. When the experience is over, the user feels normal again but may worry, more than with other psychedelics, about such physical feelings, particularly if the compound was inadvisably used while alone.

By 1962, Sai-Halasz, who worked with Szara, reported that DMT was potentiated by pretreatment with serotonin antagonists like methysergide; in 1963, he announced that such titration could be diminished by pretreatment with monoamine oxidase inhibitors.
Under normal circumstances, DMT, DET and DPT are inactive when taken orally. A gram of DMT, well over thirty times the dose needed to achieve effects from smoking, has been swallowed without perceptible psychotomizes. When these substances pass into the stomach, they are attacked by the enzyme monoamine oxidase, which breaks the molecule apart. In the company of MAO-inhibitors, like the c-carbolines associated with San Pedro, these tryptamines become resistant to quick metabolism and thus remain effective when taken orally.

Walter Aitken, author of St. Cloud Mountain, is one of those who has experimented with the user of DMT in conjunction with LSD. About this synergistic combination, he wrote:

One inhalation of the concentrated snuff, and the world melts into a pattern of contrasts. A second inhalation, and the body becomes transfused with a visions so deep and so stunning that within a few days, or even hours, a tattered and serially credible indole. Plants and animals are transfigured to their sacred essence and politics sparkle like self-conscious, magical jewels. Yet the balance is delicate. The visions can dominate along with the nervous system that foster it. Such experiences, though often quite horrible, are no more than a slider's mine in the stable scheme of consciousness, for under the guidance of the LSD-DMT synergy, vast realms of perfect attunement may also occur, and the unfold brilliance of the clear-light void shines from everywhere, from everything, inside and out.

**Cerebrospinal Tryptamines**

Z. tryptophan is an essential amino acid prevalent throughout the animal world. It is the only one that is an indole and is generally considered the basic building block for the indolealkylamines, which include most of the compounds discussed in this book. Neither tryptophan nor serotonin, the basic building block for the indolealkylamines, which include most of the compounds discussed in this book. Neither tryptophan nor serotonin, the basic building block for the indolealkylamines, which include most of the compounds discussed in this book. Neither tryptophan nor serotonin, the basic building block for the indolealkylamines, which include most of the compounds discussed in this book. Neither tryptophan nor serotonin, the basic building block for the indolealkylamines, which include most of the compounds discussed in this book.

Over the last thirty years, much attention has gone into seeking a "psychogenesis," a chemical manifestation in an abnormal brain and nervous system that causes psychoses. "Most psychedelic drugs cannot possibly play this role," as Groppos and Bakalas explain, because tolerance develops quickly for a persistent effect. The main except is DMT, and it has usually bound as an endogenous compound in the brains of man and human beings. The enzyme responsible for its cyto- and the site where it is absorbed by nerve terminals have also been discovered (Christian et al. 1976; Christian et al. 1977). Both LSD and 5-MeO-DMT seem to displace DMT at those sites, which may also be serotonin receptors.
Among the Wairos, microscopically, or seeing things and people miniaturized is a characteristic of the Pororo syndrome, while for the World matsunuma is a part of the visionary experience. This is probably conditioned in part by the by the- symptomatics and in part by cultural background. Matsunuma is inescapable from the World concepts of belief, the spirit who dwells in the World one.

**DMT Effects**

DMT has been the most studied and used of the short-acting tryptamines. Almost everyone who’s had a good laugh has been astounded by the rapidity and vividness of the effects. With eyes open, there appears a “retinal circus,” where perception of the external world is overlaid with moving, fascinating, brightly colored patterns. With the eyes closed, wrote Bigwood: “And Oh, the subject becomes aware of swirling patterns, often geometric in shape. More people become ecstatic or euphoric, others become meditative and come to realize the hallucinations with eyes closed. Sometimes, especially during the initial stages of the intoxication, there can be a slight feeling of paranoia, but this is seldom more than momentary.

When Osmond was first given DMT, he remained silent for some time and then responded with: “My—word!” Another user, trying to describe the effects briefly, commented, “I took a puff—and then my arms and legs fell off. . . . the garden of God opened up.” Yet another user living in the Virgin Islands had been sent some DMT and assumed it was Cannabis; “I found myself walking down some very wide steps into what seemed like a Roman or Greek scene. Teenies lit the entrance of a stone castle. I walked down into an underground grotto, where I looked through a door into a room, inside was a kidney-shaped indoor swimming pool, and beyond that were groups of beans. Nymph-like figures were diving into the pool, which was surrounded by silver statius. I got the feeling of intense sexuality, of a Dionysian, orgiastic plane.”

“What was that?” More than a few users have had frightening, even terrifying experiences on DMT. Because the transistor into die-altered state is so rapid and so intense, some people have concluded that they were religious archetypes arise that they have been lured into a pact with the Devil. On this half-hour trip, some people have felt they might “never come back.”

Some of these episodes may be meaningful, evoking more than a sequence of kaleidoscopic images, comes from Richard Alpert, who was debating with Leary whether the word ecstasy should be used in describing LSD and psilocybin trips. Alpert thought it would “just get everybody thinking about orgies.” I.eary liked the word’s derivation from Greek: “ek” away—going out of the static.

At this time, Alpert received a huge, hand-embroidered robe brought by a lama from Tibet. Alpert, though appreciative, didn’t know what to do with the robe. He decided to wear it while under DMT, considering this question about ecstasy. Alpert went into a meditation room at the top of the big house in the Millbrook estate. The smell of incense from the robe surrounded him as he shut DMT into his slugh and lay down.

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“WHAT WAS THAT?”

Alan Watts said the DMT experience was like “being fired out of the muzzle of an atomic cannon.” He later re-evaluated DMT, calling it “amusing but relatively uninteresting” compared to I.SD, mescaline, psilocybin and hemlock. “The light wasn’t inside or out—the whole thing was luminous. A more intense light seemed to emanate from the center sky-light. There were many people in the room, gazed steadily in the center and looking upward. I counted in to see what they were looking at. Finally, I reached the center and could look up. I discovered I was looking up into absolutely clear light. I’m looking directly at the light, and it’s totally purifying me. The most ecstatic moment in this experience, I heard a laugh, I turned to look, and, at the edge of the crowd, there stood Timothy. I realized that he was telling me that I was ecstasy too. I took off the robe, went down to see Timothy, and said: ‘Ecstasy’ is a great word. Let’s use it.”

More than a few users have had frightening, even terrifying experiences on DMT. Because the transistor into die-altered state is so rapid and so intense, some people have concluded that they were religious archetypes arise that they have been lured into a pact with the Devil. On this half-hour trip, some people have felt they might “never come back.”
is smoked. Meditating users have noticed that they can lock themselves into a lotus position much more easily than before. The DET experience can be built upon by repeated inhalations, with some users reporting that they have experienced DET with religious intensity is Alan Birnbaum: "eyes turn backward, as in a state of religious ecstasy. Among those who have "vibrate" and "raise Kundalini energy." Some users find that their meditations are facilitated..."

The DET experience can be...

The most extensive report on the effects of DET was submitted by Boosmer(e) and Nagy in the Journal of Mental Sciences. They described trials in thirty normal and forty-one psychiatric subjects who were given 0.7 to 0.8 mg/kg intramuscularly. They concluded that DET was more satisfactory than LSD or mescaline in increasing communication and facilitating therapy because of its shorter duration of action. "We believe DET to be the best and last narcissistic psychotogenic agent known thus far."

Some of their subjects began to show an interest in art and renewed their interest in writing. Two began to paint. Several acknowledged the upsurge in creativity resulting from "the emergence of ancient desires and drives which forced the person to satisfy them by creating."

Here is a fairly typical comment about the effects from DET when smoked:

"DET is like grass, but you get very high and are still functional. There's a little hallucination, and a little color distortion. It's not as intense as DMT, and you can do things behind it—like go to lectures or run around the city. With DMT and acid you're often astonished, wondering what's happening, whereas with DET you know you're on it."

**DPT Effects**

DPT has not been very widely used to date, but those who have tried it seem to agree that it does produce psychedelic or "peak" experiences. Much of its application in psychotherapy has taken place in Europe, under the supervision of some specialists as Dr. Hannon Loomer, who has just published a book in German on psycholytic therapy. Initial reports in the U.S. have..."
In the October-December 1977 issue of the journal of Psychedelic Drugs, the Spring Grove team reported on a controlled study of DPT-assisted psychotherapy with eighty-six alcoholics. Some of these investigators had earlier 'quite encouraging' results using LSD as an adjunct to psychotherapy with chronic alcoholics, but they thought DPT might be a more suitable agent because of its shorter duration and its lack of negative publicity. A year later, the group given DPT "showed an advantage in positive outcome measures"—particularly in regard to Occupational Adjustment and Sobriety—when compared to the two control groups. Those given DPT "may have temporarily experienced a substantial number of peak reactions," the authors wrote, and "may have temporarily experienced a more positive mode of functioning." Later follow-ups, however, revealed few long-term differences among the three groups, a result that "would seem to indicate that the DPT group did not know how to integrate their new modes of functioning into the everyday patterns of their lives."

**FORMS AND PREPARATIONS**

The short-acting tryptamines, usually seen as crystals, are difficult to identify. However, each has a characteristic smell that is easily recalled by people who have tried them once. Over time, they turn increasingly reddish. Tryptamines may also appear as an oil put onto various herbs, such as parsley, marijuana or red raspberry leaves. Marijuana is probably the best medium, because it is less harsh on the throat and lungs than parsley and because a lot of users like the combination. Some tryptamine enthusiasts object to mixture with pot on the grounds that marijuana detracts from a tryptamine's clarity. Parsley and other herbs can be converted into more neutral carriers by steeping them in water so as to extract most of their aromatic flavoring and then drying the herbs.

Some users prefer to smoke a compound like DMT without any carrier in a small glass pipe. A small amount of the crystals or oil is placed in the bowl and then slowly heated until fumes begin to fill the pipe. As has been mentioned, it is most efficient if each user smokes the entire amount he or she wants and then passes the pipe along.

A regular pipe covered with a fine screen can also be used. As Bigwood and Ott explain, the crystals should not be plated directly on the screen because they would be aspirated before they can be vaporized. Instead an herb (preferably non-psychoactive) should be placed on the screen and the DMT added atop the herb.

When smoking DMT-soaked parsley, it is often difficult to gauge the proper dose. The only solution other than solvent extraction and isolation is to use the "bioassay technique." Basically, one should try a small amount of the mixture, increasing the dose... until the desired effects become apparent.

When smoked, fifteen to thirty milligrams of pure DMT is sufficient to produce hallucinogenic effects. This is a small amount too small to be easily estimated without some reference. We suggest, if you have some DMT to spare, that you weigh out 15 to 30 milligrams as a reference. We do not recommend measuring doses while inebriated.
HISTORY

A seventh psychedelic compound-cluster of importance includes three-ringed molecules that chemists would refer to as harmala alkaloids or β-carbolines. To date, harmaline has been the most significant of these compounds tested: its formal names are 4,9-dihydro-7-methoxy-1-methyl-3H-pyrido[3,4-b]indole and 7-methoxy-1-methyl-3,4-dihydro-β-carboline. Harmaline and other harmala alkaloids, the principle psychedelics in the “magical” beverage yage, appear throughout the plant world. These substances are also present in cigarettes and even in the human pineal gland.

Chapter Six touched on the occurrence of harmala alkaloids in cohoba and sand snuffs. Although these three-ringed compounds are widespread in the plant kingdom, their use as a psychedelic is known in only two specific, geographically separate traditions: (1) scraping of the bark of Banisteriopsis vines to make a drink in northwestern South America and (2) ingestion of the seeds of Syrian rue (Peganum harmala), wild desert shrub, in the Near East. The Amazonian practices are better documented and colorfully illustrate purgative, healing, visual, telepathic, sexual, artistic and therapeutic potentials in psychedelics.

Harmala alkaloids are little known to the psychedelic subculture in the U.S., although they are legal and are stocked by a number of chemical supply houses. These indolic compounds should be of special psychedelic interest because of the highly specific character of the experiences they produce. Unfortunately, the literature on this compound-cluster and Banisteriopsis use in the Amazonian region is somewhat confusing: it describes several barks and leaves as well as a drink, which is made with several different recipes and is activated by at least three chemical compounds. Each form has a number of names, and sometimes the same name is used for both botanicals and beverages. In what follows, ayahuasca (EY-a-wasca) refers to the psychedelic species of Banisteriopsis, yage (yah-Hey) to the drink made...
Ayahuasca, Yage* and Harmaline.

*psychedelic compound from their outer bark and harmaline to the pri
in the bark.

Records from South American Explorers

Use of ayahuasca for visionary experiences appears to be primed, to
judge from the richness of associated mythology. Pre-Columbian rock
drawings are similar to contemporary ayahuasca* paintings, which are
said to represent yage visions (see page 127 of Plants of the Gods for a fine
example of such a drawing on granite). However, the earliest known record
of the practices associated with this botanical wasn’t set down until the
middle of the nineteenth century.

The author was Richard Spruce, at one time a British schoolteacher,
who was among the early explorers to make the perilous journey into the
Amazon. Spruce almost died of dysentery and malaria but survived to
become one of botany’s greatest collectors. In 1851, while exploring the
upper Rio Negro of the Brazilian Amazon, he observed the use of yage. In
1853, he came upon it twice in Peru. In his Notes of a Botanist on the
Amazon and Andes, he described its sources, its preparation and its effects
upon himself. Unfortunately, Spruce’s experience was characterized mainly
by his getting sick.

Spruce’s Notes didn’t appear in print until 1908. (They were edited by
Alfred Russel Wallace, who simultaneously with Darwin conceived the
theory of evolution.) Spruce suspected that additives were responsible for
the psychoactivity of this beverage, although he noted that Banisteriopsis by
itself was considered mentally active. The samples he sent to England for
chemical analysis weren’t located and assayed until more than a century late
Examination in 1966, they were still psychoactive.

The first widely read description of yage practices was published in
1858 by Manuel Villavicencio, an Ecuadorian geographer. The experience
made him feel he was “flying” to most marvelous places. Describing how
natives responded, he reported that natives using this drink were able
to forecast and answer accurately in difficult cases, be it reply opportune
ly to ambassadors from other tribes in a question of war; to decipher plans of
the enemy through the medium of this magic drink and take proper steps for
attack and defense, to ascertain, when a relative is sick, what sorcerer has put
on the hex; to carry out a friendly visit to other tribes; to welcome foreign
travelers or, at least to make sure of the love of their womenfolk.

Several early explorers of northwestern South America—Martins,
Coyote, Orton, Koch-Grunberg and others—also referred to
ayahuasca, yage and caapi, all citing a forest liana but offering little detail. In the early
twentieth century, it was learned that the use of Banisteriopsis vines for
healing, initiatory and shamanic rites extends to Peru and Bolivia.

In 1923, a film of Indian yage ceremonies was shown at the annual
meeting of the American Pharmaceutical Association. Other noteworthy
publications drawing attention to the effects of this drink came from Rusby
and White, who observed yage practices in Bolivia in 1922, from the Russians
Vasileff and Janzen, who did Colombian fieldwork in 1925-1926, and
from Morton, who in 1931 published King’s southern Colombian notes
about Banisteriopsis modestissim.

Identification and Isolation

Harmaline was first isolated in 1841, from Syrian rue. Its chemical
structure was established in 1919, and it was first synthesized in 1927 by
Richard Manske.

In 1923, Fischer assayed yage isolating an alkaloid that he named tel-
epatine. The same year, Barriga-Villalba and Albarracin isolated two alka-
loids from this drink; they called these yajetine and yajemine. In 1928, Lewin
isolated harmaline. Shortly afterward, Wolfe, as well as Rumpf and Elger,
assumed that all these alkaloids were identical: they were harmaline, an indole
derivative earlier found in seeds and roots of Peganum harmala (Synaxaceae). This conclusion was in doubt for some time, until CHEN and CHEN, working with clearly identified botanicals, demonstrated that all these substances were harmaline.

Hopekin and Penades determined in 1957 that results from ingestion of yage (without other botanical additives) came mainly from interaction of these molecules—harmaline, harmine, and \( \times \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot 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AppearinK in 1961, this City Lights book recounts William Burroughs’ South American search for yage, which he hoped might be “the ultimate fix,” and similar travels by Allen Ginsberg. Andrew Weil described it as being, “distinguished by a uniformly negative tone and, according to experts on the region, considerable misinformation.”

Weil is among those who feel that “No drug plant has excited more interest than yage.” In The Marriage of the Sun and Moon, he remembers being offered this “tiger drug” (so called because it was said to inspire visions of big jungle cats) in the Haight-Ashbury in 1967. Later, he tried to find a more authentic experience in Colombia. Each time he got near it, the result was a “fully debased yage ritual.” He concluded that today, alcoholism is replacing the ceremonial use of safer drugs.” In the August 1979 High Times, Weil reports on a more recent Colombian trip when he was successful in finding a healer using ayahuasca. His “Yage: The Vine that Speaks” details with ten color photographs how it is prepared and used in treating illnesses.

Her report and other shorter accounts increased worldwide awareness of yage and indicate that some practices that have been associated with it are unlike those common to other psychedelics. For example, yage is the only mind-enhancing concoction that has been absolutely taboo on occasion for women. When a trumpet signalled the start of the puberty rites for the Yampara, female members of the tribe fled into the jungle to avoid a death penalty for their seeing the ceremony or even the drink. In other regions, it was thought that if a woman sat eyes on prepared caapi, the vine would be rendered ineffective. More generally, women were allowed to drink yage but were discouraged if they wished to become adepts, which frequently involved a year of regularly drinking ayahuasca infusions spiked with tobacco juice.

Yampara puberty rites also differed from the psychedelic rites of other cultures in that adolescents were whipped furiously at each other after drinking brown, bitter ayahuasca elixirs until their bodies were bloody with welts. A recent account of such a ceremony, which is little practiced now, can be found in Plants of the Gods (pp. 125-126). Interest in harmala compounds arose as well from reports that among the Jivaro headhunting tribes of the upper Amazon—and the Cashinahua of Peru—the “dream” contents of yage experiences were commonly regarded as constituting more important guiding principles than ordinary consciousness.

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Richard Spruce had set identification efforts off to a bad start by suggesting that yage’s peculiar qualities were from the roots of “psilotum caapi.”
This was a vine he called *Haemadictyon amazonicum*, of which no known other example exists than what he collected (it’s since been assigned to the *Prestonia* genus). Although he said that the Indians considered a *Banisteriopsis* vine an essential ingredient, his misdirection was repeated by others. The Colombian chemist Fischer, isolating the first alkaloid onage1, placed it in the *Aristolochia* genus. *Banisteriopsis caapi* first became known as a main source in 1927, after French pharmacologists Perrot and Hamet reviewed this psychoactive complex in terms of its botany and chemistry.

**Ayahuasca and Vage**

Essential to any vage concoction is bark from specific *Banisteriopsis* vines—generally *B. caapi*, often *B. inebrians* and sometimes *B. quitensis*. *B. caapi* climbs up adjacent tropical forest trees and keeps climbing until its flowers are exposed to direct sunlight. It is so greedy for sunlight that sometimes it eventually kills supporting trees. It is occasionally started in greenhouses, where it has been known to take over the roof, leaving only shadow below. Its flowers are small and pink, much like apple blossoms. At its base, the vine often has a diameter of six inches.

Schultes and Hofmann report that South American natives often have special names for diverse “kinds” of Ayahuasca, although the botanist frequently finds them all representatives of the same species. It is usually difficult to understand the aboriginal method of classification; some may be age forms; others may come from different parts of the liana; still others may be ecological forms growing under varying conditions of soil, shade, moisture, etc. The natives assert that these “kinds” have a variety of effects, and it is conceivable that they may actually have different chemical compositions. This possibility is one of the least investigated yet most significant aspects in the study of Ayahuasca.

Natives distinguish at least six different botanical sources of ayahuasca. Two that are said to be the most powerful haven’t yet been described botanically or chemically.

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Ayahuasca, Yagé and Harmaline

The Admixtures of Yagé

Ayahuasca often include at least one additive to infusions to enhance states of mind brought about by B. caapi, psychoactive and at least one other ingredient is sometimes used; they undeniably give this drink added kick but are dangerous. Often tobacco appears; other additives are listed by Schultes and Hofmann:

Mallosia caapi and a species of Psychotria; the cardenolide Tinospora cardenoloida var. cruenta or T. nigra; Calabash solanum; the amaranthus hispanicus, amaranthus lobanum and a species of tinhona; several forms including Escholzia coronaria and Escholzia sparsa; Erythroxylum espeeulare of the Myrtaceae family; the main known species of the genus Cuprea; several cacti including species of opuntia and Euphorbca, and a number of the genus Cactus of the Cactaceae family.

The main additives are Psychotria caapi, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridis, Psychotria viridi,

Syrian Rue

Harmal alkaloids (or 0-carbolines) are manufactured by plants within at least eight botanical families. Except for the Banisteriopsis vines, only a small family shrub known as Syrian rue, Ruta graveolens is thought to have been used traditionally for psychoactive effects. Known from antiquity, this species belongs to the Zygophyllaceae family rather than to the Rutaceae family to which the Banisteriopsis species belong. Preferring desert habitats, it grows some three feet high, has leaves cut into long, narrow segments and produces small, white flowers.

Although Syrian rue was native only to Central Asia and Syria, it now grows wild along the Mediterranean coasts of Europe, Africa and the Middle East. It is esteemed from Asia Minor across to India and northeast Tibet. Its bitter, brown seeds contain 0-carbolines identical to those in psychedelic Banisteriopsis vines and in about the same proportions.

Syrian rue has been employed in folk medicine as well as being used for dyes in Turkey and Persian rugs. Among Egyptians and a few other peoples, the dried seeds have long been associated with preparation of a love potion (despite the nauseating effects common to most harmala alkaloids). David Fleay has recently brought more attention to this shrub in a publicized Ph.D. dissertation entitled Illicit: He Ехсха to love, almost entirely on linguistic grounds, that P. graveolens was the "Huma" or "Soma" of ancient Persia and India (see Chapter Nine for contrasting views).

CHEMISTRY

Harmalas (0-Carbolines)

This compound cluster exhibits an extra ring attached to its basic indole chemical structure. The resulting three-ring 0-carbolinesystem has an unusually placed methoxy (CH₂O) group, in marked contrast to the orientation found in serotonin and the related tryptamines (Shulgin). By gentle oxidation, harmaline is converted into harmine, the other main psychoactive constituent in the botanicals. Upon reduction, harmaline yields 3,4,5-trimethyldiharmine, a third but minor contributor.
Ayahuasca, Yajé and Harmaline

Since these molecules have been isolated and synthesized, a number of other β-carboline alkaloids have been developed in the laboratory. Michael Valentine Smith describes the preparation of several analogues in his Psychedelic Chemistry. The 6- or 10-methoxy isomer of harmaline, sometimes known as 10-methoxy-harmalan, is about half again as potent by weight as harmaline.

Natural Harmalas in Humans

At least one harmala alkaloid is present in the pineal gland of both humans and several animals. This compound is more abundant in the pineal glands of highly advanced yogis, according to some reports, which has led to speculation that its presence may impart power to the “third eye” in mid-forehead, where the pineal gland lies.

Discussing harmaline’s effectiveness in psychotherapy, Naranjo has written:

I want to mention that this alkaloid is of special interest because of its close resemblance to substances derived from the pineal gland of mammals. In particular, 10-methoxy-harmaline, which may be obtained in vitro from the incubation of serotonin in pineal tissue, resembles harmaline in its subjective effects and is of greater activity than the latter. This suggests that harmaline (differing from 10-methoxy-harmaline only in the position of the methoxy group) may derive its activity from the mimicry of a metabolite normally involved in the control of states of consciousness.

At a 1977 conference in San Francisco, Bo Holmstedt, a pioneer in research on harmala alkaloids from the Karolinska Institutet in Sweden, reported that adrenoglucuronopine and malatonin, normally present in the pineal body, may be turned into 6-methoxy-harmaline. So far, however, no evidence has conclusively shown that this conversion actually takes place in the human brain.

Admixtures

Jeremy Bigwood found in the course of experimentation that DMT could be made orally active in doses of 100 mg when combined with a sub-threshold dose of harmaline. Many reports from natives indicate that the addition of certain leaves (almost all containing DMT-like substances) makes the yage visions “brighter.” Investigators almost unanimously agree that significant potentiation occurs when β-carbolines and short-acting tryptamines are mixed together.

Although β-carbolines are essential to the psychoactivity of yajé, the tryptamines are most important in producing the mental effects. The harmala alkaloids make DMT-like substances to become active and produce synergetic effects. Schultes and Hofmann, commenting on the expanded length and vividness of results when DMT-like compounds are included, indicate how important in terms of color the presence of monoamine oxidase inhibitors can be: “Whereas visions with the basic drink are seen usually in blue, purple, or gray, those induced when the tryptamine additives are used may be brightly colored in reds and yellows.”

PHYSICAL EFFECTS

In the preparation of yajé, appropriate Diosmocapsae vine is generally cut into 6- to 8-inch pieces. The bark is then pounded or shaved off and either soaked in cold water or boiled for hours, sometimes a full day, usually with one or more admixtures. Boiling produces a brown or reddish-brown concoction that’s bitter and salty; boiled ayahuasca is said to cause nausea to a greater degree than the cold-water infusion. The usual course is to drink a couple of cupfuls, which produce an experience lasting three or four hours. Then, if desired, users drink more yajé.

Harmaline, when taken orally by itself, takes a comparatively long time to prompt psychological effects—often about two hours. Potions containing both DMT-like and harmala alkaloids, however, take effect rapidly. Bigwood noticed responses from yajé within two minutes, an unusually quick onset from oral ingestion; others have observed initial effects taking hold within five minutes. Bigwood has contrasted the slow onset of harmaline alone against his yajé-drinking experiences and his harmaline/DMT experiences.
the latter were "almost identical as far as the time course and visual effect—
they both came. on quite rapidly."

Purgative Aspects

Andrew Weil found that yage's taste did not cause as much gagging as
peyote. However, the nausea in his case was worse:

"Vomiting is the first and the effect of yage. It is not fun, and say that as
someone who likes to vomit in uncertain circumstances. Hills do it to me and
bought up a small quantity of intensely bitter liquid with smelmgquussels.
Yage tastes much worse on the way up than the way down—so bad that it
half made me shuddering for a few seconds."

After a few minutes I had to throw up another bottle of rum. The second
phase of yage is to purge the intestine. The effect is spectacular and painful.
When I went back to Luis after that it had been "a good purge." I told him
yes. Eventually, he and Jorge also made trips to the jungle.

At first, Weil could swallow only two cups of yage, though he was
encouraged to take more. Eventually he did get another one down "Luis," he
reported, "wanted me to drink more of his brew, but I could not." This
"purging" experience has been试验区 prominafly in accounts
from other mind-explorers as well.

In some tribes, stringent dietary procedures are practiced for up to two
weeks before ingestion of ayahuasca, although many natives use it weekly.
In a recent study, patients getting yage from healers commonly abstained from salt,
leaves, and sometimes sex for a day before and a day after taking it. These
procedures help to minimize nausea, but they certainly don't eliminate it.
Weil was advised not to eat anything before noon; he hadn't eaten since
breakfast the evening he received yage from Luis.

Yage connections are often referred to as a purge, and ayahuasca has
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This element of the yage experience has been treated prominently in accounts
dates used in "curing sessions." In Ayahuasqueros, victims are often treated to a
"good purge." I told him yes. Eventually, he and Jorge also made trips to the jungle.

At first, Weil could swallow only two cups of yage, though he was
encouraged to take more. Eventually he did get another one down "Luis," he
reported, "wanted me to drink more of his brew, but I could not." This
"purging" experience has been试验区 prominafly in accounts
from other mind-explorers as well.

In some tribes, stringent dietary procedures are practiced for up to two
weeks before ingestion of ayahuasca, although many natives use it weekly.
In a recent study, patients getting yage from healers commonly abstained from salt,
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medically when he returned to city life, seven years after his capture. ‘My cures,’ he comments, ‘for human ailments such as diabetes, hepatitis, leukemia, cancer, paralysis, rheumatism, epilepsy, suicidal depression and the dysfunctions of various internal organs have been called miraculous by some people.

MENTAL EFFECTS

Ayahuasca, yage
drugs and harmala alkaloids prompt a wide range of experiences, which reflect dosage to a considerable degree and the influence of psychosomatic additives. Descriptions vary from no psychoactive effects to effects rivaling those of LSD or psilocybin.

Dosage Considerations

Four or five half-foot pieces of bark from a medium-sized vine (an inch or two inches of thickness) are often provided per person in a typical brew. Estimates of dosages presented here are rough, being generally based on experiences in the field rather than in the laboratory. Villalba reported in 1925 that the native uses about 20 cm. of the stem, which Hofier and Osmond estimated as containing about 0.5 gm. of 3-carboline alkaloids. "Under its influence," they wrote, "they jumped, screamed, and ran about wildly but continued to take it for days to maintain the state of excitement." They add that Villalba tried the concentrated liquid and had no reaction, whereas he concluded that other white people who had seen visions of the future, of things lost, and visions of distances and illusions, were exaggerating the effect. It is not unusual for people who have not seen anything to be skeptical of the claims of others who have.

Michael Valentine Smith suggests in Psychodelic Chemistry that harmaline and harmine are both active at about 200 mg. oral dosage. Jeremy Bigwood disputes this, saying that to get effective potentiation from the 3-carboline salts an adult should swallow at least 300 mg. harmaline or 500 mg. harmine. Shulgin puts the "effective dose range" of harmaline at 70 to 100 mg, intravenously or 300 to 400 mg orally. The pamphlet Legal Highs, published by High Times and Level Press, lists chemical sources that supply harmala alkaloids and states as its rough estimate that the equivalent of 100 mg. harmine is "50 mg harmaline, 35 mg tetrahydrourharnine, 25 mg harmol or harmol, and 4 mg methoxyharmalan."

Yage* Visions and Their Stages

Shulgin comments that the same must consistently affect by harmaline the visual field: "These can be vivid images generated, other in the form of meaningful dreamlike sequences, and frequently containing subject matter such as wild animals and jungle scenes." Sometimes effects emerge as geometric patterns without much meaning; at other times visions with eyes closed have the character of mundane cartoonery.

A few Americans who have experienced yage in the Amazon concur with these views. One young woman, for example, said she ‘get only plants’ until her fourth session. ‘Amazonian TV,’ as it is sometimes described, is usually described as beautiful; even the lower-level phantasmagoria is regarded as basically enjoyable. However, more significant experiences are possible. Hitzig Kusel was told that the "aesthetic climax of the spectacle" was a vision of ‘the goddess with concealed eyes (la diosa con los ojos vendados), who dwell inside the twining tropical vine.’ The first two times he tried ayahuasca, Kusel was disappointed. The third time he wasn’t.

The color scheme became a harmony of dark browns and greens. Naked dancers appeared turning slowly in spiral movements. Spots of brass lights played on their bodies which gave them the texture of polished scones. Their crouching appearance in the center of the vision coincided with the rhythm of Naborí’s song, and they advanced forward and to the sides, turning slowly. I longed to see their faces. At last the whole field of vision was taken up by a single dancer with incised face covered by a round arm. As my door to see the face became unbearable, it appeared suddenly in full close-up with closed eyes. I knew then that the extraordinary face spread them, I experienced a sensation of a kind I had never known.

Specificity of Yage* Visions

The harmala alkaloids, with and without accompanying DMT-like compounds, have fascinated psychologists and others because of the unusually wide incidence of particular images. Outstanding in this regard are visions of tigers, snakes and naked women (often Negro); the color blue seems to predominate when ayahuasca is taken without additives. Although this imagery is not universal, it is common—sometimes frightening—and is closely aligned to the archetypal symbolism that so fascinated Carl Jung. When Naranjo gave harmaline and harmine in psycho-therapeutic situations to city dwellers (people who had never been in the jungle), he observed that
much of the imagery that was aroused had to do with snakes, panthers, jaguars and other large felines. The recurrence of such images led him to speculate about the action of harmaline on "the collective unconscious."

The anthropologist Michael Harner is one of those claiming to have seen what the Indians are talking about, after having doubted throughout his year of study among the Jivaros of the Ecuadorian Amazon. Four years later, in 1961, he returned and was "turned on" by another tribe. Marlene Dobkin de Rivero recounts his experience:

For several hours after drinking the brew, Harner found himself, although awake, in a world literally beyond his wildest dreams. He met bird-headed people as well as dragon-like creatures who explained that they were the true gods of the world. He enlisted the services of other spirit helpers in attempting to fly through the far reaches of the Galaxy. He found himself transported into a trance where the supernatural seemed natural and realized that anthropologists, including himself, had profoundly underestimated the importance of the drug in affecting native ideology.

Michael Harner and Claudio Naranjo made much of the "constancy" of both yage and harmaline visions in separate essays in Hallucinogens and Shamanism. An essentially similar case has been put forth in Furst's Flesh of the Gods, where Gerardo Reichel-Dolmatoff writes of the Tukano Indians of the western Amazon region of Colombia. These were the aboriginals Spruce first observed using yage. Koch-Griinberg described their yage practices again half a century later:

According to what the Indians tell me, everything appears to be larger and more beautiful than it is in reality. The house appears immense and splendid. A host of people is seen, especially women. The erotic appears to play a major role in this intoxication. Huge multicolored snakes wind themselves around the house posts. All colors are very brilliant.

The Tukanos still live in relative isolation. What caught the eye of Reichel-Dolmatoff was their use of representational paintings on house fronts, rattles and bark loincloths. The natives claimed that these designs were observed during yage intoxication. During 1966-1967 a number of adult males who frequently partook of this brew were offered sheets of paper and a choice of twelve colored pencils. The men showed great interest in and concentration on this task and spent from one to two hours finishing each drawing.

The colors they selected spontaneously "were exclusively red, yellow, and blue, with very few occasions adding a shade of hazel brown." Certain design elements were regularly repeated. Here's Reichel-Dolmatoff's listing of the Top Twenty:

1. Male organ 5. Drops of semen
2. Female organ 6. Anaconda-canoe
3. Fertilized uterus 7. Phratry
4. Uterus as passage 8. Group of phratries
11. Fertilized uterus 12. Group of phratries
15. Line of descent 16. Sun
17. Incest 18. Vegetal growth
20. Box of ornaments 20. Cigar holder

"Garden of Eden" and other imagery is more specific to yage than any image pattern is to LSD, mescaline or psilocybin. The near-universality of many yage images suggests that the β-carbolines are a good deal closer than other psychedelics to being a "pure element" in a Periodical Table of Consciousness. These β-carbolines, however, cannot be entirely "pure," as they are accompanied by many negative side-effects.

Auditory Component

Ingestion of yage often results in an enhancement of auditory acuity. To minimize distractions, urban users generally gather in the jungle at night, from about 8:00 p.m. to 2:00 a.m., rather than in someone's home. Manuel Calcariza-Rios described his frequent auditory sensations but also stressed the improvement in his sense of hearing, which enlarged his understanding of jungle ways.

As with peyote, Banisteriopsis vines are known for announcing themselves. Kusel writes:
Once a Campa Indian in my boat, when we were drifting far from shore, was "called" by ayahuasca, followed the "call," and later emerged from the forest with a sampling of the lefty vine that today is cultivated by the ayahuasca-quero in secret spots. I myself certainly did not hear the call. More typically, I—call it telepathic visions and policymaking mescalines—seem to inspire chants and singing. Here are comments from Victor and Luis about the two times he took yage with Luis:

"Time and time again, I would pick up a harmonica and turn into a new band. He would dance out the door and we would off into the jungle. . . ."

"Victor and Luis sang and danced all night, periodically going out into the jungle to sing under the trees, then returning to the candlelit house. Victor congratulated Luis on having made a really strong batch."

Writing of Banisteriopsis caapi practices observed among the Cashinaus of Peru, the anthropologist Kenneth Keesing reported that "Informants have described hallucinations about places far removed, both geographically and from their own experience." Several, who have never been to or seen pictures of Pucallpa, the large town at the Ucayali River terminus of the Central Highway, have described their visits under the influence of ayahuasca to the town with sufficient detail for me to be able to recognize specific shops and sights.

Citing an even more convincing instance, Keesing adds: "On the day following one ayahuasca party six of nine men informed me of seeing the death of my chat, 'my mother's father.' This occurred two days before I was informed by radio of his death. A similar experience was reported by Manuel Cervelo-Rios. After the most intense effects he had ever had, he learned that she had died as he had "seen" it at just that time."

**Sexual Component**

The previous edition of this book mentioned (a) the recurring motif of naked women 'yag£' visions, (b) flagellation in rites-of-passage ceremonies, (c) increased sexual activity in mice given harmala alkaloids and (d) Near Eastern use of Syrian rue as an aphrodisiac. Jeremy Bigwood took exception:

> "I suggest that you try active doses of these alkaloids and attempt sex before writing this section. Or make it from harmine, harmaline, ayahuasca, DMTP-harmine, etc."

The sexual component is thus an ambiguous question at present. Schultes and Hofmann, while disputing claims of extrasensory perception, discuss erotic usage of both yage and Syrian rue in their many writings. Naranjo was impressed by the archtypal sexual imagery evoked by harmaline.

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> In addition to acting upon the central nervous system, harmine and the related harmaline and harmicoline have produced sexual responses in rats under laboratory conditions. Free indoles of harmine alone produce measurable
Ayahuasca, Yage1 and Harmaline

sexual activity. This is another one of the reasons why ayahuasca is used in coming of age ceremonies which sometimes involve flagellation and may be known in sexual contexts. Marlene [Dobkin] Rios, who has worked among the Peruvian Amazon tribes, mentioned in her extensive writings, on the various uses of ayahuasca that one of the reasons for using the drug is “the pleasurable or aphrodisiacal effects.” This was observed also by Wiffen in 1915 and Reinburg in 1921. Such phenomena, if not completely ignored, are usually considered minor by modern health care professionals. The psychotherapeutic effects of ayahuasca are well worth more careful documentation and evaluation.

Psychotherapeutic Potential

In Chapter Nine of Visionary Vine, Marlene Dobkin de Rios says that many of the patients at jungle ayahuasca sessions go (in the language of Western medicine) “for psychiatric help.” She calls “drug leading in the Peruvian jungle…a very old and honored tradition of dealing with psychological problems that predates Freudian analysis by centuries.” Much of the treatment she enumerates is nonverbal. In some places, natives refer to the ayahuasca experience in perspective: as “the vine of death”—meaning that it causes one to “die,” and then be “born anew.”

Some seven years after William Burroughs went out looking for yagé (on his first buy he got twenty pounds of it), Allen Ginsberg followed his experience in perspective:

He might lose his mind. An epilogue, written by Ginsberg in 1963, puts the patient’s feelings succinctly:

Around me, I think the strongest and worst I’ve ever had,” He had fears that he might lose his mind. An epilogue, written by Ginsberg in 1963, puts the experience in perspective: “It would be hard to offer a simple explanation for the instances of improvement brought about by the harmaline experience. Such improvement usually occurred spontaneously, without necessarily eliciting insight into the particularities of the patient’s life and conflicts. As in all cases of successful deep therapy, it did involve greater acceptance by the patient of his feelings and impulses and a sense of proximity to his self. Statements like these, however, are not very explicit, and only clear histories can adequately illustrate.

The more successful experiences with harmaline have a characteristic spontaneity, and these now little problem to the therapist. In contrast to experiences of self-exploration at the interpersonal level, it is probably in the nature of an archetypal experience to develop naturally from within, so that the most a person can do is stand by watchfully. Yet such experiences of easy and spontaneous unfoldment of images and psychological events occur only in about every other person, so that it is the business of the psychotherapist to induce them when they will not naturally occur….

Naranjo brought up the issue of intervention because he says this as a permanent dilemma in the guidance of harmaline sessions: the balance between stimulation and non-interference. He explains:

Little intervention may well leave a patient to his own inertia and result in an unproductive session; on the other hand, uncalled for intervention may disrupt the organic development which is characteristic of the most successful harmaline experiences. As a consequence, more tact is needed in conducting these sessions than any other. ….

Apart from Naranjo’s The Healing Journey, little has been published about the psychiatric use of harmala alkaloids. Lewis tried harmaline clinically on mental patients in the late 1920s; he wrote a monograph about Banisteriopsis caapi as he lay dying. There was no further study until 1957, when Penes and Block gave harmala to hospitalized subjects, mostly schizophrenic. Their results presented in the American Journal of Psychiatry indicated that harmaline acted like LSD or mescaline, though the mental effects seemed more clouded. (Kolmier and Osmond describe and criticize this work on pages 476-477 of The Hallucinogenics.)

While profiling harmaline and other psychedelic drugs, Shulgin made an interesting remark in psychotherapeutic studies, he wrote, “It has often been used in conjunction with other psychedelic drugs (e.g., MDA, LSD, and mescaline) in which the effects of the latter appear greatly prolonged, and qualitatively modified.” He did not elaborate.
FORMS AND PREPARATIONS

Once Banisteriopsis caapi and B. inebriam take root, they are quite hardy and can attain great heights. Frequently cultivated in South America, they have been grown only rarely in U.S. greenhouses. After the vine has been cut into half-foot to eight-inch pieces, it is pounded to break open the bark, or the bark is scraped-off. The bark is then put in water to soak or it is simmered for up to twenty-four hours. When it is boiled, the bark has a light chocolate or reddish color with a slight greenish tinge. Villalba noted in 1925 that standing yage changed "to a topaz color with a bluish green fluorescence." After six or seven experiences of the cold water infusion, as prepared in the Colombian Amazon, Schultes judged the effects as differing little from those from the boiled concoction used in the Purumayo. The intoxication is longer in setting in, and much more of the drink must be taken, but the symptoms of the intoxication and their intensity seem to me to be very similar.

These vines have now become relatively rare in their native jungle growing areas, so genuine yagé is rarely seen. (Several people who have searched for it report that a decent ayahuasquero is hard to find these days; many have given in to "alcohol abuse.") Harmaline and harmine are both crystalline, the first appearing as yellow and the second as green hydrochloride salts. According to Hoffer and Osmond, both form these salts with one equivalent of acid. Harmine crystallizes in needles, melting point 256-257° C.; harmaline in platelets, melting point 238° C. Harmine is slightly soluble in water, alcohol, chloroform, and ether. Its hydrochloride salt is freely soluble in hot water. Harmaline is slightly soluble in hot alcohol and dilute acids, and forms blue fluorescent solutions.

Still legal in the U.S., both are currently available at a few chemical supply houses at about $5-$10 per dose. If orders are large, however, it is likely that the Drug Enforcement Agency will take an interest.
CHAPTER EIGHT

Iboga and Ibogaine

Figures and faces materialized from the depths, moving effortlessly on unseen currents. Each was unique, each appeared at a different point in my visual sphere, moved toward me, and attained a peak of aesthetic perfection just as it confronted me from the tiniest distance away. Then it dissolved into light as another, equally beautiful, came into being elsewhere. They were a people suspended in time, adrift in a mind-warp through which I could not reach but clearly saw, for when I stared into the forest, the visionary faces were superimposed on whatever I looked at, and when I withdrew within by closing my eyes, my brain-space became a theater of many dimensions in which my phantom tribe appeared, preserved, and passed in wondrous procession.

—Walter Amrman

HISTORY

Ibogaine, the most studied of the alkaloids present in the roots of Tabernanthe iboga, is representative of another cluster of indolic molecules that have been included among psychedelics. Ibogaine is a naturally occurring compound of special interest because it comes from an entirely different botanical family than anything discussed above—a contribution to the mystery of psychedelics from equatorial Africa.

Early Reports and Synthesis of Ibogaine

Some commentators credit wild boars with inspiring the practice of ingesting bark from the roots of the “iboga,” “etoga,” “boga,” “Hbuga,” “bocca,” “e”bogeY’ “kfboga” or “letuga,” After digging up and eating roots of the shrub, boars go into a frenzy and jump around wildly, according to natives. Similar reports have been made about porcupines and gorillas.

The earliest known record of T. iboga dates from 1864, when Griffon du Bellay brought specimens to Europe. He stated that when the yellowish root of this plant is eaten, it is not toxic except in high doses in the fresh state. In small quantities, it is an aphrodisiac and a stimulant of the nervous system; warriors and hunters use it constantly to keep themselves awake during night watches.
By the 1880s, use of shavings from the root of iboga was known to be quite widespread in Gabon and adjacent parts of the Congo. Natives used it during long hunts to remain awake and alert for up to two days while waiting for the cats to cross their path. According to some residents of Gabon, colonial German permitted and possibly encouraged use of iboga to suppress fatigue among workers on such projects as the Douala- Yaounde railroad. In 1889, the fetish has entered him. When heard by the initiated ones, have 3 prophetic meaning and prove that madness seizes him, during which, unconscious, he mouths words, which when heard by the initiated ones, have 3 prophetic meaning and prove that

Recent Usage
In 1966, Betch, Coffin, Koscis, Sonjiet and Ziegler published a "total synthesis of iboga alkaloids" (Journal of the American Chemical Society, 88: 3099-3109). In 1969, Harrison Poppy summarized the findings in scores of studies on Tabernanthe iboga (pp. 174-184 in the April-June Economic Botany). The plant yields a sweet pulp—which doesn't contain ibogaine but has sometimes been used as a medicine "for barrenness in women." 3

In 1969, Harrison Poppy summarized the findings in scores of studies on Tabernanthe iboga (pp. 174-184 in the April-June Economic Botany). The plant yields a sweet pulp—which doesn't contain ibogaine but has sometimes been used as a medicine for barrenness in women. The stems, which are said to have a vile odor, contain small amounts of ibogaine and related alkaloids along with large amounts of latex. Roots similar to those of Rauwolfia vomitoria form a bulbous mass, which can grow to about four inches across. Individual roots branch off from this mass in all directions and may extend as far as 32 inches. The bark from the roots, especially the smaller ones, is preferred by the natives. It is yellowish-brown in its fresh state and turns gray when dried. Alkaloids constitute up to 2.5 percent of the roots and may constitute more than 6 percent of the root bark.

CHEMISTRY
Ibogaine was isolated in 1961 from Tabernanthe iboga roots by Dybowski and Landrin and by Staller and Hickel. The most abundant alkaloid in the shrub's root bark, ibogaine exhibits (in its indole nucleus structure common to most psychedelics. Its stereochemistry (the dotted lines are at angles to the rest of the molecule) was established in the late 1960s:

Narayan also discusses ten sessions with a different group of people using iboga extracts in conjunction with amphetamine, plus fifty treatments "which I have either witnessed or known indirectly."
Starting in 1942, a number of chemical studies were made of other dya alkaloids, mainly by the French. At least twelve such alkaloids are known; they appear to show the same properties in both T. iboga and T. monogovii. They are all similar in structure to ibogaine. The most important are tabernanthenine, harmaline, harmamine, norharmaline, norharmine, and cyclogerine: Their structures are described in The Hallucinogens (p. 47).

The only study so far on the effects of ibogaine homologs in humans was done by P.J. Schmidt, who in 1967 reported on doses of 0.1 to 1.2 mg/kg of ibogaine hydrochloride administered orally to twelve subjects. It produced states of induced sleep and mild sedation with minor psychic changes. The dosage used by Schmidt may have been insufficient. Chemical references, mainly in French, are listed at the end of Pope's paper in Economic Botany (April-June 1969).

**PHYSICAL EFFECTS**

Moderate doses of ibogaine or dya root bark are stimulating (much like amphetamine) and act as a choline-esterase inhibitor, causing some hyperactivity and stimulation of digestion and appetite. As with harmala (like amphetamine) and act as a choline-esterase inhibitor, causing some hyperactivity and stimulation of digestion and appetite. As with harmala alkaloids, there is no pupil dilation. In larger amounts, these compounds in-duce nausea and vomiting and put users into a trance where little physical activity is possible. In excessive amounts, ibogaine ingestion has led to convul-sions, paralysis and even death brought on by arrest of respiration.

On a number of occasions, healers of the Bwiti cult have been brought before courts on charges of murder. An instance occurred in November 1950 when it was alleged that they had administered large amounts of T. iboga in a young boy for purposes of acquiring a cadaver (there also being the question of panther whiskers mixed in). James Fernandez reports in Flesh of the Gods (pp. 469-470).

In 1905, a Dr. Huchard used doses of 10 to 30 mg. of ibogaine in treat-ing influenza, neurasthenia and depression, and some cardiac troubles. He found that the results were improved appetites, muscle tone and generally improved states of recovery—along with mild euphoria.

**MENTAL EFFECTS**

**Native Accounts**

James Fernandez, writing about dya in Furst's Flesh of the Gods, drew on accounts from some sixty users, most of whom spoke of the experi-ence as a journey. As Bwiti initiates, they communed with ancestors, who mostly appeared in their color identified by natives with the dead. A feeling of levitation is common; rainbow-like halos are taken as a sign that one is beginning to approach the land of one's ancestors and gods.

Fernandez noted similarities in visionary elements: typically, one first saw a crowd of black men who have not eaten dya and were unable to pass to the beyond; then one was met by a relative who is white and guides the user over rivers and other obstacles, traveling on "a journey down a long road that eventually leads to great powers." Often the user meets other ancestors in order of descent, going further and further back in lineage. Sometimes the journey ends in the middle of a rainbow. Time perception was often length-ened, so initiates felt that they had been traveling in the spirit world for several days.

Here is the report from Ndong Asseko, age twenty-two, unmarried and a member of the Essabam clan:

"When I ate dya I found myself taken by it up a long road to a deep forest until I came to a barrier of black iron. At that barrier, unable to pass, I saw a crowd of black persons also unable to pass. In the distance beyond the barrier it was very bright. I could see many colors in the air but the crowd of black people could not pass. Suddenly my father descended from above in the form of a bird. He gave to me then my name, Onwan Misengue, and enabled me to see Bwiti, a vision which can only be attained by eating sufficient quantities of dya. The practice has been to start early in the morning, with the root bark being eaten throughout the day "to break open the head" and establish communication with Bwiti and ancestors. The visionary state is usually achieved in the evening, when all members of the Bwiti cult join in a ritual dance. Some candidates almost pass out during the many hours of visions.

Some sleep for several days once the effects have ended, but ordinarily users feel little in the way of after-effects.

The Bwiti cult is fairly puritanical and thus regards manifestations of aphrodisiacal effects as antithetical to the religious purpose of dya. Earlier reports emphasized this component of the experience. According to Adam Gottlieb in his Encyclopaedia of Sex Drugs and Aphrodisiacs: "It is also used as an aphrodisiac and cure for impotence..."

Animal studies with ibogaine have been extensive. When many species are given large amounts, they appear to be frightened and act as though they are hallucinating. Hoffer and Osmond have summarized much of this work in The Hallucinogens (pp. 469-470).

"It is also used as an aphrodisiac and cure for impotence..."
Iboga and Ibogaine

The State of "Otie-Heartedness"

Toward the end of her initiation and under the influence of a full dose of ibokaa (Tabernanthe iboga), an initiate starez intently out of the chapel, waiting for her ancestors to "arrive." Because while is the color of the ancestors, she has been painted all over with kaolin. Behind her sits the nyia-eboka, her 'mother of eboka,' who K'tes plumage. We came then to a river the color of blood in the midst of which was a great snake of three colors—blue, black, and red. It closed its gaping mouth so that we were able to pass over it. On the other side there was a crowd of people all in white. We passed through them and they shouted at us words of recognition until we arrived at another river—all white. This we crossed by means of a giant chain of gold. On the other side there were no trees but only a grassy upland. On the top of the hill was a round house made entirely of glass and built upon one post only. Within I saw a man, the hair on his head piled up in the form of a Bishop's hat. He had a star on his breast but on coming closer I saw that it was his heart in his chest beating. We moved around him and on the back of his neck there was a red cross tattooed. He had a long beard. Just then I looked up and saw a woman in the moon—a bayonet was piercing her heart from which a bright white fire was pouring forth. Then I felt a pain on my shoulder. My father told me to return to earth. I had gone far enough. If I went further I would not return.

The aim of the experience is for members to achieve a state of "one-heartedness" in the early hours of the morning, when the spirits of the initiates and ancestors have mingled. Afterwards, there is a large communal meal.

Modern American Experiences

Only a few people in the U.S. drug subculture have tried ibogaine. But as Walter Anirman, author of Sky Cloud Mountain, indicates in his first description of two such trips—the other appears in a chapter entitled "The Lady Iboga"—the results are similar to accounts from Africa:

I expected to do very little moving later, since I knew from experience that Iboga would thoroughly discoordinate my body, and, indeed, the first effects of the drug were nausea and dizziness. By the time these were intense, I was... breathing rapidly, and trying to sit up on the mat, but my legs and head became unbearably heavy and my stomach sagged with pain. Behind the discoordination of my body, however, I was getting the first of Iboga's coherent hallucinations. My perceptual space melted to a crystalline liquid through which I moved and tried to see images from another dimension. I became a continuum of experience in a galactic swirl whose energy first nullified the pain in my body, then penetrated deeper and dissolved my body as well. Consciousness awoke to its electromagnetic matrix and bedazzled me with lights. My head prined with colors that resolved themselves into eidetic, enchanted scenes of long forgotten times. I was ten years old again and running down the railroad tracks near home, off with my boyhood companions into another day of adventures. The tracks became silver cords weaving a Turk's head knot around me, then straightened and became the impalable bars of a crib where I—a diapered baby—howled to be free. The colors turned red, crimson, scarlet, purple; became bright liquids flowing as blood in my sentient tubeways, pulsing with a million aspects of life.

Occasionally, the visionary onslaught would ease for a moment, and I would awaken to my body crumpled on a blanket in a magically unrecallable forest. I managed to sit up several times, hoping to channel the energy more directly along my spine, but somehow hold it, and still feel earth—my body was then larger than I was off once more, tingling through lines of pure life, wanting to burst free. Nothing could be stopped; nothing held for the inquiring mind to examine. Like a volcano, I erupted and bubbled over with marvels, but nowhere could the lava be slowed...
bodies were exquisitely formed; their features highly refined. Dark eyes and black hair accentuated burnished skins, and they were strangely alive, though they appeared to be neither awake nor asleep. Figures and forms materialized from the depths, moving effortlessly on unseen currents. Each was unique, each appeared at a different point in my visual sphere, moving toward me, and attained a peak of aesthetic perfection just as it confronted me from the farthest distance away. Then it dissolved into light as another, equally beautiful, figure materialized from the depths, moving effortlessly on unseen currents. Each was unique, each appeared at a different point in my visual sphere, moved toward me, and attained a peak of aesthetic perfection just as it confronted me from the farthest distance away. Then it dissolved into light as another, equally beautiful, came into being elsewhere. They were a people suspended in time, adrift in a mind-warp through which I could not reach but clearly saw, for when I stared into the forest, the visionary faces were superimposed on whatever I looked at, and when I withdrew within by closing my eyes, my brain-space became a mural of many dimensions in which my phantom tribe appeared, passed, and passed in wondrous procession.

Naranjo’s Psychotherapeutic Findings

In The Healing Journey, Claude Naranjo describes his use of ibogaine in conjunction with psychotherapy. Although he doesn’t specify dosages, he claims that archetypes are prominent in the visions and that actions in dreamlike sequences often involve destruction or sexuality. Ibogaine, he adds, affects “less purely visual-symbolic experience” than harmaline. He adds; With no drug have I witnessed such frequent explosions of rage as with this particular one . . . . With ibogaine, anger is not directed (I would say transferred, in the psychoanalytic sense) to the present situation, but, rather, to persons or situations in the patient’s past, toward whom and by which it was originally aroused. This is in accord with the general tendency for the person under ibogaine to become concerned with childhood reminiscences and fantasies. The salience of animals, primitives, sexual themes, and aggression in ibogaine and harmaline experiences would point toward regarding them as drills that bring out the instinctual side of the psyche. This evening of man-chi-animal contrasts with the effects of the airy or ethereal “psychedelics” . . . .

Aside from differences in the quality of the ibogaine experience, these are differences in content: a less purely archetypal content, more childhood imagery, and certain themes that appear to be specific to the mental states evoked by the alkaloid—snaky fantasies of fantastic, infernal creatures . . . .

There is a great difference between the domain of past experience to which MDA facilitates the access and that which is exposed by means of ibogaine. Whereas with the former it is a matter of events being remembered, and perhaps reactions or feelings in the face of such events, with ibogaine it is a world of fantasies that the person meets. Parental images evoked by means of ibogaine probably correspond to the child’s conception of his parents, which still lies in the subconscious of the adult—but these do not necessarily match the parent’s reality. The therapeutic process with ibogaine may be depicted as that of seeing such constructions for what they are and being freed through confrontation with facts . . . .

FORMS AND PREPARATIONS

Tabernanthe iboga is grown mainly in Gabon and the Congo, although it can be cultivated in most tropical and semi-tropical areas. Little has been raised in the U.S. It has been propagated successfully in a few greenhouses, as in Berkeley, California.

Natives generally rasp off the root bark and then eat it as a dried powder. Sometimes the powder is mixed with water and drunk as a beverage. Iboga is said to be stronger in its fresh state. In a few places, it is taken with other plants, especially with Echium forbesii (shocked consider an aphrodisiac, or marihuana.

A small amount of ibogaine has been synthesized for the psychedelic subculture, but this is rare. It is proscribed in Schedule I of the 1970 drug legislation. Its illegal status and the difficult manufacturing process have led most psychedelic chemists to conclude, as Michael Valentine Smith suggests in Psychedelic Chemistry, that it isn’t worth the trouble.

Tabernanthe iboga and a dozen related alkaloids are found throughout the roots of Tabernanthe iboga, but the greatest concentration is in the root’s bark, (up to 6 percents)
The Fly Agaric mushroom (Amanita muscaria) was the earliest fungi species recognized as having psychoactive potential. It was used by shamans in Siberia and in an area along the eastern part of the U.S.-Canadian border and may have inspired the world’s earliest religious text, the *Rig-Veda*, written by Aryans who swept down into India from the North. The first of their four Vedas, it dates back to at least the second millennium B.C. and has been described as “the foundation of modern Hinduism.” One hundred and twenty of its verses are devoted to praise of a plant called “Soma,” which is characterized as being “rootless,” “leafless,” “blossomless” and “from the mountains.”

R. Gordon Wasson first became acquainted with the *Rig-Veda* in 1962. He puzzled over the identification of “Soma,” which had evaded scholars even though more than a hundred candidates had been proposed. (Most of the suggestions were ruled out by the passages describing it as “rootless,” “leafless,” etc.) Soon Wasson had a candidate.

“As I entered into the extraordinary world of the *Rig-Veda*, a suspicion gradually came over me, a suspicion that grew into a conviction. I recognized the plant that had enchanted the poets. . . . As I went on to the end, as I immersed myself ever deeper in the world of Vedic mythology, further evidence seemed to support my idea kept accumulating. By Jove, I said, this is familiar territory!”

“Soma” Identified as the Fly Agaric Mushroom

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Fly Agaric, Panther Caps and "Somtum" among up to live people: drink the users' urine.

psychedelic.

Ancient Ceremonial Usage

With our Mexican experiences [with psilocybin mushrooms] fresh in mind, we recalled what Jochelson and Bogoras had written about the Korjaks and the Chukchees, people who are situated at the eastern end of the Trans-Siberian Amurita (Amanita muscaria) in Siberia and the divine mushroom in Middle America. In Mexico the mushroom "speaks" to the one who eats it. In Siberia "the spirits of the mushroom" speak. Just as in Mexico Jochelson says that among the Korjaks "the agaric would tell every man, even if he were not a shaman, what ailed him when he was sick, or explain a dream to him, or show him the upper world or the underground world or foretell what would happen to him." Just as in Mexico the following day those who have taken the mushrooms compare their experiences, so in Siberia, according to Jochelson, the Korjaks, "when the intoxication has passed, told whether the fly-agaric mushroom had taken them and what they had seen." In Bogoras we discover a link between the lightning bolt and the mushroom. According to a Chukchee myth, lightning is a One-Sided Man who drags his sister along by her foot. As she bumps along the floor of heaven, the noise of her bumping makes the thunder. Her urine is the rain, and she is possessed by the spirits of the fly-agaric.
Use of Fly-agaric in Siberia

The earliest report found by the Wisconsinites about Siberian mushroom practices came from a Polish prisoner of war, who wrote in 1658 about the “Ob-Ugrian Ostyak of the Irtysh region” in western Siberia. Published in 1784, it says: “They eat certain fungi in the shape of fly-agarics, and thus they get drunk worse than on vodka, and for them that’s the very best banquet.” Thus they get drunk worse than on vodka, and for them that’s the very best banquet.

The first published account of Fly-agaric appeared in 1730, the work of a Swedish colonel who spent twelve years as a prisoner in Siberia. He indicated that the Koryak tribe would buy a mushroom “called, in the Russian Tongue, Mushrooms” from Russians in exchange for “Squirils, Fox, Hermine, Sable, and other Furs.”

Numbers of the Siberians have a way of intoxicating themselves by the use of mushrooms, especially the Ostyaks who dwell about Narym. To that end they either eat one of these mushrooms quite fresh, or perhaps drink the decoration of three of them. The effect shows itself immediately by sudden of joy and humour, which by steps degrees arises to such an extraordinary height of gaiety, that they begin to sing, dance, jump about, and vociferate: they compound assorted sonnets, heroic verses, and hunting songs. This drunkenness has the peculiar quality of making them unconsciously strong, but as soon as it is over then they remember nothing that has passed. After twelve or sixteen hours of this enjoyment they fall asleep, and, on waking, find themselves very low-spirited from the extraordinary tension of the nerves; however, they feel much less bad than after the method of intoxication than is produced by spirits of vinegar; nor is the use of it followed by any disagreeable consequences.

The earliest report from someone who had actually eaten a Fly-agaric mushroom appeared in 1837, in Polish. In 1796 or 1797, ill and running a fever, Joseph Kopec was given a mushroom by an evangelist, who first told him: “Before I give you the medicine I must tell you something important. You have had two years in Lower Kamchatka but you have known nothing of the treasures of this land. Mushrooms are mushrooms. I can say, mushrooms. They grow only on a single high mountain close to the volcano and they are the most precious creation of nature.” Kopec wished “to recover my health and above all to steep,” overcame his fears and ate half a mushroom. Almost immediately he went into a deep sleep, which was a couple of hours longer than usual not...

As a result, Kopec “desired to have confidence” in the Arrow’s mushroom’s “supernatural qualities” (as my evangelist had taught me to do). He took a second helping:

Having eaten this stronger dose, I fell soundly asleep in a few minutes. For several hours new visions carried me to another world, and it seemed to me that I was ordered to return to earth so that a priest could take my confession. This impression, although in sleep, was so strong that I roused and asked for my evangelist. It was precisely at the hour of midnight and the priest, over eager to render spiritual services, at once took his side and heard my confession with a joy that he did not hide from me. About an hour after the confession I fell asleep again and I did not wake up for twenty-four hours. It is difficult, almost impossible, to describe the visions I had in such a long story; and besides there are other reasons that make me reluctant to do so. What I noticed in these visions and what I passed through are things that I would never imagine even in my thoughts, last only mention that from the period when I was first aware of the notions of life, all that I had seen in front of me from my youth up to the present time was only a shadow compared with the visions of the other, day after day, year after year, in one word the pictures of my whole past became present in my sight. Concerning the future, different pictures followed each other which will not occupy a special place here since they are dreams. I should add only that as if inspired by magnetism I came across some blunders of my evangelist and I warned him to improve in these matters, and I noticed that he took these warnings almost as the voice of Revelation.

Kopec’s reports by explorers, travelers and anthropologists on mushroom use in Siberia. Only two of these are from people who tried mushrooms, Kopec’s and the other, day after day, year after year, in one word the pictures of my whole past became present in my sight. Concerning the future, different pictures followed each other which will not occupy a special place here since they are dreams. I should add only that as if inspired by magnetism I came across some blunders of my evangelist and I warned him to improve in these matters, and I noticed that he took these warnings almost as the voice of Revelation.

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Among the numerous persons whom I myself have seen intoxicated in this way, I cannot remember a single one who was roaring or wild. Outwardly the effect was always thoroughly calming—I might almost say, comforting. For the most part the people of smiling and friendly, manifestly quiet to themselves, and all their movements are slow and cautious.

The two firsthand accounts and a few secondhand ones are about the only information on the effects of Amanita muscaria on Siberian natives, even though it grew plentifully in Koryak territory. During the off-season a reindeer would often be exchanged for just one of these mushrooms. When questioned, natives who had used Amanita muscaria said repeatedly and emphatically that they liked it better than alcohol. Alcohol seems to have supplanted use of this mushroom at present, or its use has gone underground.

**BOTANY Poisonous Amanitas**

It should first be emphasized that the Amanita muscaria and the Amanita pantherina (or Panther Cap, a species containing the same psychoactive ingredients, usually in greater concentrations) belong to a genus that is estimated to cause 95 percent of all deaths resulting from mushroom poisoning.
Amanita verna, another extremely poisonous species, especially A. phalloides (Death Cap)—contains lethal substances. People usually do not feel these toxins until about two days after they have eaten the mushrooms, by which time pumping the stomach and other medical measures seldom prove effective. The toxins affect the liver and kidneys. Only lately has there been any success in countering the virulent poisons by use of dialysis machines and blood transfusions.

Because *Amanita muscaria* and *Amanita pantherina* are similar in appearance to their lethal relatives, it is recommended that one never eat any *Amanita* that is all white.

**Fly Agaric and Panther Caps**

Fly Agaric and Panther Caps will grow only in "mycorrhizal" relationship with just a few trees—the birch, larch, fir, pine and oak. A symbiotic association between the root cells of these trees living or dead and the fungus' mass of underground filaments is necessary if the mushroom is to sprout. "Where these trees are not," Wasson writes, "neither does fly-agaric grow."

This particularity about conditions under which it will grow helped Wasson explain why the "Soma" of the Rig-Veda got "lost."

Migrating to India, which for the most part lacks forests of birch, larch, fir, pine and oak, the Aryans were able, Wasson thinks, to find this mushroom growing only in the Himalayas. As they lost their immediate contact with the mushroom, it's not at all surprising, he feels, that the later parts of the Rig-Veda speak of "Soma substitutes." The fact that *A. muscaria* grows only in a mycorrhizal relationship may also explain, according to Wasson, why the birch is held in such high regard in many northern lands.

Above Big Sur, California, the Fly Agaric appears in the bright red coloration familiar from countless children's books. In other parts of North America, its color varies considerably—from pink and even white to bright canary yellow. Similar variations occur in Europe and Asia.

After Wasson stirred interest in Fly Agaric, it didn't take long for people to notice that its close relative, the Panther Cap, also has psychoactive effects. The cap for this species comes in yellowish to grayish brown. Like the Fly Agaric, it is usually covered by prominent white "warts" (remains of the "veil" that envelopes it when young). The stem of *A. pantherina* bears a large, lacy ring, or collar. Appearing at its base is this species' most important distinguishing feature—two or three layers or hoops of tissue attached to the stem (other remnants of the veil, left over from when the stem expands). The Panther Cap, like the Fly Agaric, can be found throughout woodlands—under trees or near stumps. The spores of both are white, so a "spore print" should be taken on dark paper.

*Amanita muscaria*, the red, spotted Fly Agaric mushroom familiar from fairy tales, grows near birch, larch, fir, pine and oak trees.
CHEMISTRY
When Amanita muscaria was first examined to determine its psychoactive components in 1869, a compound called muscarine was isolated. From then until nearly a century later, this compound was believed to be the cause of Fly Agaric’s mental effects. More recent studies have shown that muscarine alone raises quite different responses than the mushroom. In fact, this molecule is present in only trace amounts: 0.0002-0.0003 percent of the fresh plant.

Since this mushroom’s mental effects are undeniably strong, other processes were made, notably atropine and lysergic acid. Such ideas have now been discarded. Modern research into this question began in 1967 with the work in Zurich of the chemist CH. Eugster and the pharmacologist P.G. Wasser. They discovered that the main psychoactive is thietic acid, muscazone, and muscarine, added possibly by a few other constituents. Thietic acid, stored somewhat toxic, amounts to about 0.03-0.1 percent of the fresh Fly Agaric mushroom. The noticeable differences in the impact of fresh and dried Fly Agaric mushrooms probably results from the transformation of thietic acid during the drying process into the more potent and quite stable muscimol.

Taken orally, muscimol displays activity at 10-15 mg.; ibotenic acid is active above 90 mg. The other psychic contributor, muscazone, seems to have considerably less effect. The psychoactive principles in A. muscaria pass through the human organism in such a way that they are still psychoactive when they emerge in urine. The resulting sequential transformation of ibotenic acid during the drying process into the more potent and quite stable muscimol.

The poorer sort, who love mushrooms to distraction as well as the rich, but cannot afford it at first hand, post themselves on these occasions around the huts of the rich and watch the ladies and gentlemen as they come down to pass the poisonous mushrooms. After this a good-hearted enthusiast may develop with a light-footed feeling and perhaps an urge to dance. At this time a person often becomes incapable of greater than normal limits of strength. Nervous hallucinations may occur. Objects may appear larger than they are. Sometimes dreams may feel so strong that they reveal colored figures. The post-dream stage may last three or five hours.

Wasson makes several interesting assertions about the toxicity of Amanita muscaria. Its ancient name—Fly Agaric—is said to come from the belief that flies can be killed by means of this mushroom. When Wasson tried the experiment, the flies became temporarily stupified but recovered. Although half of the references pronounce this species “deadly,” Wasson claims that there isn’t a single firsthand account of lethal poisoning. In fact, he asserts that “most trustworthy observers” testify that, “properly dried, it has no bad effects.” After witnessing a considerable number of Fly Agaric and Panther Cap mushroom experiences, Jonathan Ott agrees, but he urges potential users to start with no more than 1/4 cup of chopped or sauteed material. Here are other warnings from Ott:

*Caution should also be exercised with regard to dosage. These mushrooms are powerful. The effective dose range may be wide. If it is exceeded, even by a small amount, a dissociative experience may result in a comatose state or an inability to function. Of course, there are many who desire this type of effect; no doubt it would be alarming to others. There are many unanswered questions concerning the toxicity of these mushrooms. It has been suggested, and there is some evidence to support this, that the toxicity may vary according to location and season.*

MENTAL EFFECTS
The Importance of Drying
Impressed by reports about Siberian use of Fly Agaric and feeding this mushroom was the "Soma" of the Fly. Wasson tried self-experience—
In 1965 and again in 1966 we tried out the fly-agarics repeatedly on ourselves. The results were disappointing. Weate them raw, on empty stomachs. We drank the juice, on empty stomachs. We mixed the juice with milk, and drank the mixture, always on empty stomachs. We felt nauseated and some of us threw up. We felt disposed to sleep, and fell into a deep slumber from which we were unable to rouse ourselves. When in this state once had vivid dreams, but nothing like what happened when I took the Psilocybe mushrooms in Mexico, where I did not sleep at all. In our experiments at Sagamihara there was one occasion that differed from the others, one that could be called successful. Rokuya Imazeki took his mushrooms with Ayahuaska, the delectable soup that the Japanese usually serve with breakfast, and he toasted his mushrooms caps on a fork before an open fire. He had one large and two small sun-dried mushrooms, often with reindeer milk or mizosubiru, the delectable soup that the Japanese usually serve with breakfast, and he toasted his mushrooms caps on a fork before an open fire. He was in a festive mood. The purport of his remarks was that this was nothing like the alcoholic state; it was infinitely better, beyond all comparison. We did not know at the time why, on this single occasion, our friend Imazeki was affected this way.

Soon after, Wasson noticed with great interest that the Koryaks at the end of the nineteenth century had told Nikolai Sljunin, who wrote a two-volume "Natural History" published in St. Petersburg in 1900, that they thought Fresh Fly Agaric was poisonous and they refrained from eating the mushrooms until they were dried, either by the sun or over a fire. Wasson was also impressed with a comment in an heroic hymn of the Vogul people. The hero, the "two-belted one," addressing his wife, says: "Woman, bring mushrooms until they were dried, either by the sun or over a fire. Wasson emphasized how impressively different the results from simple drying can be. Wasson realized that the drying process affects the strength and nature of the mushroom experience. "Decarboxylation" of ibotenic acid into Amanita muscaria. Those that are fresh may be dangerous or not satisfactorily "bemushroomed." Wasson emphasized how impressively different the results from simple drying can be.

I did not realize this when I went to Japan in the fall of 1965 and 1966, and with Japanese friends tried the fresh fly-agarics. The Big Vision had not prepared me for the drying. I had learned of course of the practice, but some plants were mixed with water before being pounded with the pressing stones, but I had never heard of the reduction in potency resulting from drying. The author of the Big Vision, who had had some experience in kickboxing, told his pupils to drink the juice of the fly-agarics that were dried, as a ten-minute infusion. The results were disappointing. Weate them raw, on empty stomachs. We mixed the juice with milk, and drank the mixture, always on empty stomachs. We felt nauseated and some of us threw up. Wasson emphasized how impressively different the results from simple drying can be.
Drugs interested in tracking down instances of Amanita pantherina ingestion. He pursued some cases reported by Jonathan Ott in the Journal of Psychedelic Drugs 6 (1976), among others.

Well soon found "that they were of two kinds." Some people, he says, ate the mushroom by accident. They were foraging for edible species and made a mistake. Thinking the panther was some innocuous edible, they took it home, cooked it and ate it. This mushroom produces an intoxication of rapid onset. Within 15 to 30 minutes, it made all of those people feel very peculiar ...

When they began to feel peculiar, all of them decided they had eaten a poisonous species and were about to die. One woman first called her lawyer to change an item in her will, then summoned an ambulance. All of them got sick. All lost consciousness for varying periods of time, from a few minutes to a half hour. All went taken to emergency wards of hospitals, where they uniformly received incorrect medical treatment: large doses of atropine that charged in 36 to 48 hours, since it is the nature of the intoxication to subside quickly, usually within 12 hours. Most of these victims said they would never eat mushrooms again. One man said he could not look at mushrooms in the store for months afterward. When told some people are the mushroom for fun, they shook their heads in disbelief.

Weil found the second kind of Amanita pantherina use among people who had already had extensive experience with psychedelics and "believed that nature provides us with all sorts of natural highs just waiting to be picked in the woods":

When these people felt the rapid effects of Amanita pantherina, they welcomed them as signs that the mushroom was really working. None of them got sick. (A few mentioned transient nausea but did not regard it as important.) None of them felt it necessary to summon help. All of them liked the experience and most said they intended to repeat it. Some had already eaten the panther a number of times.

Weil presented this information to groups of physicians; he says they found it hard to come up with some simple, materialistic explanation for the response-difference in the two cases:

A question they always ask is "Might these have been a dose difference?" The answer to this, he says, is not a dose difference, but people who deliberately ate more of it than the people who ate it accidentally.

Role in Religious History

The Question of "Soma"

R. Gordon Wasson, right in many of his anthropological conjectures about mushrooms, has applied the question of Fly Agaric and other mushrooms to the origins of religious feeling:

I suggest to you that, as our most primitive ancestors foraged for their food, they must have come upon our psychotropic mushrooms, or perhaps other plants possessing the same property, and ate them, and knew the excitement of awe in the presence of God. This discovery must have been made on many occasions, over a long time and space. It must have been a mighty springboard for primitive man's imagination.

In the Vedic hymns, wrote Aldous Huxley, we are told that the drummers of soma were blessed in many ways. Their bodies were strengthened, their hearts were filled with courage, joy and enthusiasm, their minds were enlightened in an immediate experience of eternal life they received the assurance of their immortality.

The hymns of this first book of the Vedas undeniably venerate with ecstasy; users are exhorted, "we have drunk the soma," they say at their height, "we are become Immortal." In Book IX, the god Indra drinks soma— and it inspires him to create the universe!

Was "Soma," as Wasson repeatedly asserts, the Amanita muscaria mushroom?

There is no definitive answer possible, but no candidate more suitable than Wasson's has yet appeared. A recent Ph.D. thesis at the University of California, Berkeley, entitled "Hymns" raises this query, suggesting on the basis of linguistic factors that the plant contained a harmaline compound (which in botanical terms does not fit with Soma's identification).

Although usage isn't widespread, many people report disappointment with Amanita muscaria, saying that it's not all that nice, perhaps not even psychedelic. One experimenter noted that after his fourth trip on Fly Agaric he had to re-evaluate Wasson's hypothesis. His feeling was that ingestion of Amanita muscaria was not better than Cannabis, opium, Datura or herbal, all of which were already known in India by the time of the Rig-Veda.

Soma's effects are variable, because results for individual users are variable. Some may get the exhilaration described in a few of the above accounts, like those from Joseph Kopecky, Rokuya Imazeki and Johann Georg. Others have experienced little more than sedative or dissociative effects.

The variable action of this early "psychedelic" in no way diminishes its possible impact. The novelist/essayist Robert Anton Wilson, after examining the conjectures and evidence of Fly Agaric's role in sundry cultures, put the issue squarely: if, as it seems, this mushroom was "the reality behind several of the legendary drugs of early European and Asian mythology," then we might conclude that "this mushroom played a larger role in religious history than any other single factor."
CHAPTER TEN

Entrusting Profiles

The nine compound-clusters described thus far, comprising more than a hundred botanicals and synthetics, are the main psychedelics known to date. Other plants—at least 120 from the New World and twenty from the Old World—have suspected or confirmed psychoactivity (Schultes and Hofmann inventory ninety-one, each representing a separate genus, in their 1979 Plants of the Gods), and substances isolated from these plants have prompted chemists to synthesize and test new compounds. This chemical work has been outlined in Psychotropic Substances and Related Compounds, edited by the late Daniel Efron, who was affiliated with Sandoz, Gla, Hofmann-La Roche and NIMH. In the first edition (1968), Efron showed 590 molecules and referenced their literature. In 1972, Efron enlarged this book to cover 1,555 compounds (including barbiturates and tranquilizers).

Nonetheless, few plants or compounds other than those in the nine compound-clusters seem eligible for classification as authentic psychedelics. The five to be profiled here—three from plants and two synthetics—have sometimes been proposed as major facilitators of psychedelic experiences.

Belladonna-like Substances

The family Solanaceae, made up of more than 2,400 species, is especially noteworthy. Many of its members contain the alkaloids atropine (dl-hyoscyamine) and scopolamine (hyoscine). Atropine shows up in mandrake root, henbane and thorn apple; it constitutes just over 4.5 percent of the asthmatic preparation called Asthmador. Schultes and Hofmann claim that there are no reports on the effects of atropine alone "which could explain the addition of belladonna as an ingredient of magic brews in medieval Europe."

But Hoffer and Osmond recall several historical incidents that attest to its psychoactivity. One story involved a family of five who in 1963 ate tomato plants that had been grafted onto jimson weed, producing 6.36 mg. of atropine per tomato: "All five developed delirious reactions of varying intensity and some had to be treated in the hospital several days. This seems to be the first known instance of hallucinogenic tomatoes."

The names atropine and belladonna both relate to this drug complex’s effects. The former is derived from Atropos—one of the three fates in Greek mythology—as a result of its being used as a poison during the Middle Ages. The latter refers to its ability to dilate the eyes of "beautiful ladies." Both are used nowadays in medicine as an antispasmodic, especially for parkinsonism, with an average dose of atropine being 0.5 mg. Users have survived dosages of more than a 1000 mg in cases of 10 mg or more.
Datura meteloides, a ceremonial deliriant of the ancient Mesoamerican Zunis and California Indians (two-thirds natural size).
Probably the more important chemical in most belladonna alkaloids is scopolamine. It appears not only in the already-mentioned sources but also in several tree barks used by natives that are known as Datura. Appreciated early on in both hemispheres, it has been used in the Near East to compound the effects of cannabinols and in the Andes to add to mescaline-like effects from the cactus *Trichocereus pachanoi*. In asthADOR, scopolamine constitutes 50.4 percent of the mixture. Tim Leary has been quoted as saying he never heard of a good belladonna trip; my own experience has been an exception.

Yohimbe

This “psychedelic stimulant” is derived primarily from the bark of a West African tree called *Pausinystalia* or *Corynanthembe*, although it is also present in other species of *Corynanthe* and in *Aquilaria malaccensis* and *Mitronea stipulosa*. When this alkaloid is brewed as a tea and then drunk, its effects come on within forty-five minutes to an hour. The action is reportedly swifter if taken with 500 mg. vitamin C.

There is an increase in vasodilation and peripheral blood flow, along with stimulation of the spinal ganglia which control erectile tissue, followed by slight “hallucinogenic effects,” that last for about two hours. Users may then go off to sleep quite easily.

J.H. of Vancouver, B.C. has written *High Times* to point out that yohimbe is a MAO-inhibitor, altering adrenal and other metabolic functions, and thus should be used with caution.

Anyone with diabetes, kidney or heart disease should not experiment with yohimbe. Moreover, yohimbe should not be used with reserpine, LSD, MDA, or amphetamines. Avoid chocolate, cheese, honey, bananas, pineapples, sauerkraut and other foods containing tryptophan for 12 hours before and after use. The combination may trigger a dangerous rise in blood pressure combined with shortness of breath.

In case of adverse reaction, see medical help. Yohimbe is legal, so it’s no bust to see a doctor. Sodium azide is the best antidote for yohimbe poisoning, but let a physician do it. Self-administration of barbs during a panic is mighty dangerous. Most people overdose it.

This bark is generally prepared by boiling so that psychoactive elements are leached out and starting material can be thrown away. Mental effects are fairly mild. Adam Gottlieb comments on yohimbe’s propensity for producing sexual effects such as erections in males.

Other pleasurable effects are warm spinal shivers which are especially enjoyable during sexual acts and orgasm (like being made into one another), psychic stimulation, rapid perceptual changes without hallucinations, and heightening of emotional and sexual feeling ...

Kava-Kava

*Kava-kava* comes from the root pulp and tower stems of a tall perennial shrub native to the South Pacific Islands. It was mentioned by a Swedish botanist who accompanied Captain James Cook on his first voyage to the Sandwich (Hawaiian) Islands in 1768-1771. In 1886, Louis Lewin examined *kava-kava* in detail.

The plant (*Piper methysticum*) grows best near sea level in areas like the Solomon and Fiji Islands, Samoa, Tahiti and New Guinea. With sufficient sunlight, it can reach twenty feet. The psychic components reside within the root—which after three or four years attains a thickness of three to five inches. The roots in older plants become heavy and knotted, accumulating strength and flavor. After six years, such roots may weigh twenty pounds; after twenty years they may be as heavy as a hundred pounds.
When harvested, these roots are scraped and then cut into pieces, which are then either chewed (the Tonga method) or crushed between rocks (the Fiji method). In Norman Taylor’s Narcotics, there appears a charming account of these preparations—which result in a grayish brown or whitish liquid that most find to be soapy, spicy and numbing to the mouth. In Hawaii, according to Hoffer and Osmond, the nobles used it socially for pleasure, the priests ceremoniously and the working class for relaxation. It was given to mediums and seers to enhance their psychic powers. It was used to increase inspiration and to assist contemplation. It seems to have been employed in the way some investigators have tried to use LSD and psilocybin.

Interestingly, many people in the South Pacific have given up drinking alcohol after being introduced to kava-kava. All agree that it leaves no hangover and that it produces a carefree and happy state with no mental or physical excitation. According to Lewin, this is “a real euphoriant which in the beginning made speech more fluent and lively and increased sensitivity to subtle sounds. The subjects were never angry, aggressive or noisy.” Kava-
Kava taken in large amounts regularly has caused drinkers’ legs to “become tired and weak, their muscles were controlled poorly; their gait unsteady, and they appeared to be drunk.” But the mental changes are usually of a pleasant kind and, many feel, quite magical. A surprising large number of visitors to the Islands are said to have considered kava-kava superior to champagne. If larger quantities are consumed, vision is disturbed, pupils are dilated and walking is difficult. There’s a sort of scaling of the skin that develops if kava-kava is used frequently and in large amounts.

Kava-kava isn’t illegal. It is available in many herb shops and through the mails, notably from advertisers in High Times. The fresher it is, the more potent.

Kava-kava’s mental action is caused by at least six nonenolic alpha pyrones: kawain, dihydrokawain, methysticin, dihydromethysticin, yangonin and dihydroyangonin, none of which is water soluble. As a result, they must be emulsified into water or coconut milk, says Adam Gottlieb, by prechewing the root as is done in the islands or by adding a little salad oil and a little of water and mixing it up in a blender. To do this mix one ounce of powdered kava-kava, ten ounces of water, two tablespoons of coconut or olive oil and one tablespoon of lecithin granules (available at health food stores) in a blender until it attains a milky appearance. This amount serves two to four persons.

Ketamine

Ketamine, a compound featured in Hitchcock’s Family Plot, is a nonbarbiturate anesthetic that’s notable for its lack of harmful side-effects. It’s also called Ketalar (ketamine hydrochloride) and has been used for the most part as a child’s anesthetic, with intramuscular doses in the range of 9-13 mg./kg. of body weight producing surgical anesthesia within three to four minutes and usually lasting twelve to twenty-five minutes. An intravenous dose of 2 mg./kg. of body weight generally brings about anesthesia within thirty seconds, with the effect lasting five to ten minutes.

When it was given to older people experimentally, some patients gave accounts that sounded like psychedelic experiences of some sort. Soon experimentation revealed that in dosages reduced to about a tenth of the usual amounts, Ketamine produced a “trip” lasting forty-five minutes to an hour. Many users have since testified that being down quickly while under this drug can lead to a spiritual experience.

The manufacturer Parke-Davis notes that approximately 12 percent of more than 10,000 patients given this drug in 105 separate studies have had unpleasant “emergence reactions”:

**THE PSYCHOLOGICAL MANIFESTATIONS VARY IN SEVERITY BETWEEN PLEASANT DREAM-LIKE STATES, VOID IMAGES, HALLUCINATIONS, AND EMERGENCE DELIRIUM IN SOME CASES. THESE STATES HAVE BEEN ACCOMPANIED BY CONFUSION, EXCITEMENT, AND IRRATIONAL BEHAVIOR WHICH A FEW PATIENTS RECALL AS AN UNPLEASANT EXPERIENCE. THE DURATION ORDINARILY LASTS NO MORE THAN A FEW HOURS; IN A FEW CASES, HOWEVR, RECURRENCES HAVE TAKEN PLACE UP TO 24 HOURS POST-OPERATIVELY. NO REMARKABLE PSYCHOLOGICAL EFFECTS ARE KNOWN TO HAVE RESULTED FROM USE OF KETALAR. THOSE EMERGENCE REACTIONS MAY BE REDUCED IF VERBAL, TACTILE, AND VISUAL STIMULATION OF THE PATIENT IS MINIMIZED DURING THE RECOVERY PERIOD . . . .**

People trying low dosages report feeling disconnected from normal, everyday realities. Blood pressure and pulse are often elevated; hypotension and bradycardia have been observed. “Ketamine has a wide margin of safety,” observes Parke-Davis’ brochure: “several instances of unintentional administration of overdoses of Ketalar (up to ten times that usually required) have been followed by prolonged but complete recovery.”

Reactions to low doses are illustrated here by the comments of a friend:

On the way up, there was this music experience. Since I am a musician, he chose the music knowing that I was—and that part of it was incredible. It was OK to keep my eyes open or closed, since it didn’t matter. To close my eyes felt better. My perceptions were getting disoriented, and when I dosed my eyes a bit of information started to happen. Colors, patterns, in my sensory perception. Sounds and inner visions got confused.

**Net**
I got deeper and deeper into this state, until at one point the world disappeared. I was no longer in my body. I didn’t have a body. I reached a point at which I knew I was going to die. There was no question about it. It was like, “Yes! That’s it!” That was the long-lasting effect—finally get rid of that heartbreak feeling that we carry from childhood. Finally, that’s what really lasts and gets supported by similar experiences—not necessarily on any drug at all. That floats, and stays. In 1978, Marcia Moore and Howard Alltounian published a book about Ketamine, Journeys into the Bright Universe, recognizing-your-godhead—all those words I later used to explore what I had experienced. The feeling was that I was home. I didn’t want to go anywhere, and I didn’t need to go anywhere. It was like this time of a kind I never experienced before. I hung on their words, and then I came back. I didn’t want to come back. The deep state was no longer than half an hour.

When I talked about it to my guide, and shared some words about the experience, he said, “Yeah, what happened and happens to others is that you finally get out of that heartbreak feeling that we carry from childhood. Finally, that’s exploded somewhere.” That was the feeling I was feeling. I had no words to describe it.

Deep state was no longer than half an hour.

Unfortunately, I found myself better able to remember the details of the experience than those I’ve had with LSD and mushrooms. It was almost as if I had been in the movies. There was a memory concept. It is easier to remain than insight. With LSD and mushrooms I have always been able to talk eye, no writing hand, no world in which such an act could take place.

Ketamine is the only drug that made me viscerally feel I was going to die. I threw up for ten minutes on coming out of it and immediately knew that I would never do it again. Of course, I will.

My experience indicates that it is the most hallucinogenic of the drugs I have taken. It feels like it is giving me access to something more personal and significantly less meaningful than the Ground of Being.

The Ketamine molecule is very similar to that of PCP, an anesthetic usually employed in veterinary medicine. PCP is known chemically as phencyclidine or benactazine and has been marketed by Parke-Davis as Sernylan. It has been represented as THC under the name “High,” “green” and “the Peace Pill.” In smoking mixtures, it is often called “Angel Dust.”

Some users have been highly enthusiastic; a few have been disappointed. In regard to my Ketamine experience, I’m not sure—indeed I doubt that anyone could be sure—how to describe it. It has much the same flavor as those described by Ally Lilly in his autobiographical novel, The Scientist, i.e., contact with Beings who seem to be running things here on earth. But had not read John’s book when I took Ketamine and went into that experience with-out any expectations of the kind of experience it turned out to be. If anything, I anticipated something similar to the effect of other psychoactive substances. I found myself in a state of profound experience, so profound that it turned out to be the most profound experience I’ve had since I took Ketamine. It was total, total collapse of my ego. The Ketamine molecule is very similar to that of PCP, an analgesic usually employed in veterinary medicine. PCP is known chemically as phencyclidine or benactazine and has been marketed by Parke-Davis as Sernylan. It has been represented as THC under the name “High,” “green” and “the Peace Pill.” In smoking mixtures, it is often called “Angel Dust.”

Another positive account appears in John Lilly’s novel, The Scientist, edited by Ronald Linder. The January-June 1978 issue of the Journal of Psychiatric Drugs which is entirely devoted to PCP, presents a dozen views.

Nitrous Oxide

This unattached molecules (NO) was produced for the first time two centuries ago—in 1775—by the chemist and political refugee Joseph Priestley. He was also the first person to isolate oxygen. As Priestly tried to determine whether carbon dioxide would dissolve in an acid, he proposed a gas that he named “Diphlogisticated Nitrous Air.” He experimented with this gas, which seemed to be an nitrous oxide, and never isolated it.

In 1779, another chemist and social reformer, Thomas Beddoes, opened a Pneumate Institute in Bristol, England. He hired Humphry Davy (who was later knighted) as his assistant and encouraged him to pursue experiments with NO. Davy exposed nitrous compounds (NO) to iron, thereby removing three of the four oxygen atoms. The results appeared in Davy’s 600-page book, Researches Chemical and Philosophical, chiefly concerning Nitrous Oxide and its Respiration. In this, Davy described effects: there seems to be a quick and strong alteration in the degree of illumination of all surrounding objects; and I felt as if composed of finely vibrating strings...immediately afterward I have often caught myself walking in hurried step and busy in self-reflections... Davy, who experimented extensively upon himself with NO, introduced it to Samuel Taylor Coleridge, Robert Southey, James Watt (inventor of the steamboat), Peter Mark Roger (author of the famous Thesaurus), the poet Joseph Wedgwood (also later knighted) and other luminaries. Before long, patients were flocking to the Pneumate Institute to be treated with

The Scientist,
Contrasting Profiles

this "gas of paradise." Public feeling about all this ran high as rumors of "strange sexual laboratory procedures and chlorinated Africans pervaded the bustling English seaport." After Davy turned his attention to other things, the Institute deteriorated and soon it closed. Use was confined to "exuberant medical students."

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*Je EVENING,
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-DENTIST'S. &c, &c.

A self-portrait of William J. was from the 1846.

In 1799, having noticed that pain vanished under the influence of this gas, Davy suggested that it be used in surgical operations. This lead was not pursued for another forty-five years. In the 1840s, "laughing gas" appeared in the United States as a form of entertainment. A young dentist named Horace Wells attended a demonstration in Hartford, Connecticut in late 1844. The 25¢ admission bought a dose of N₂O, and during the proceedings, one of the nitrous oxide snuffers tripped and fell, gashing his leg in the process. To the victim's astonishment, he felt no pain.

Upon questioning the man, Wells was so impressed that he had one of his teeth extracted the next day while under the influence of the gas. He exclaimed: "A new era in tooth-pulling!" Wells was later urged by friends to patent his discovery, but he refused—"No! Let it be as free as the air we breathe!"

Soon the gas was used as an anesthetic in tooth extractions, in childbirth and to some extent in surgery. But it wasn't until the late 1860s that N₂O caught on as a painkiller and use for this purpose spread widely.

At the beginning of this century, attention of a more philosophical nature was directed to this simple compound when William James undertook examination of its properties at Harvard University. Commenting on this nitrous oxide experimentation, James concluded in a much-quoted
passage that normal, waking consciousness is but one special kind of con-
csciousness—"parted from it by the thinnest of screens, there lie potential
forms of consciousness entirely different." James announced it as his
"unshakeable conviction" that with application of "the requisite stimulus,
other forms of consciousness are there in all their completeness.... At any
rate, they forbid a premature closing of our accounts with reality."6

Even today, no one knows how this molecule of only three atoms
causes its anesthetic effect, its hilarity or other more profound effects. For
many users, there's no doubt it facilitates access to the "unconscious." Some
feel that it also gives access to a state of recognition described by Andre1
Breton in Manifestoes of Surrealism:

There is a certain point of the mind from which life and death, the real and the
imaginary, the past and the future, the communicable and incommunicable,
the high and low, cease being perceived as contradictions.

Users can adjust nitrous oxide dosage easily to whatever level is
desired. After stopping sniffing, the effects dissipate rapidly; the gas is
removed from the system within five to ten minutes. In contrast to psyche-
delics described earlier, the effects resist later description. Users retain an
impression of the experience rather than a sharp memory.

Danger occurs—as dental experience has established—when users are
foolish enough not to breathe oxygen when inhaling nitrous oxide. Earlier
in this century, dentists often gave their patients straight N2O, trying to
bring them under it until skin color turned what was known as "Philadelphia
blue." The brain, deprived of oxygen too long, can become vegetable. It is a
good idea to remember to breathe oxygen regularly. Probably the best prac-
tice is to alternate breaths from a nitrous oxide balloon with air.

Users should also avoid inhaling directly from a nitrous oxide aerosol
can. Some users have died as a consequence of freezing the throat area because
the heat is absorbed as the gas expands. Freon, a similar molecule used as an
aerosol propellant, does not have nitrous oxide effects.

The tree flower pictured above was described in the mid-sixteenth
century by Bernardino de Sahagun as an inebriating substance taken at
night with chocolate. It represents the continuing search for psychedelic,
having recently been brought from Guatemala by Jeremy Bigwood for
chemical investigations.
Notes on Purity Tests and Precursors

The easiest way for most people to check a psychedelic compound's purity is at a testing station, such as Street Pharmacologist (Box 610233, Miami, FL 33161, 305/446-5585), or PharmChem. PharmChem's analysis is based on thin-layer and gas chroma tography and involves comparison with 300 possible psychoactive substances and some 250 possible impurities.

Qualitative findings are available from PharmChem two or three days after a compound is received and identified. PhatmQiem's analysis is based on thin-layer and gas chromatography and involves comparison with 300 possible psychoactive substances and some 250 possible impurities. Quantitative results are given only to those with DEA licenses.

Chemical test kits advertised by mail order for checking out alleged psychedelics generally rely on the Keller and van Urk-Smith color-change tests. In these, the sample to be examined is poured into a reagent with the resulting color then compared with standards. Albert Hofmann has described these processes as they relate to LSD:

All these test kits are mainly useful in determining whether the substance in question is an indole or not. Melting point apparatus is also a rather crude indicator, although valuable as well in finding negative results. More sophisticated determinations can be made with thin-layer chromatography, a process that is still quite inexpensive. In this technique, the substance to be tested is placed at the bottom of a coated plate and then creeps up through a solvent for ten to fifteen minutes. Various psychoactive components then locate themselves in specific positions and exhibit coloration depending upon the solvent used, and thus can be identified as specific compounds. LSD-25, for example, travels about halfway up the gel, where it takes on a bright yellow appearance. The position of iso-Lysergic acid diethylamide, by way of contrast, lies right below. Use of different solvents, while assaying the same substance, can be almost as specific as the results derived from equipment costing $40,000-550,000.

Experience in making thin-layer discriminations is needed, however, since the eventual reading depends upon color distinctions and accurate measurements of resting locations. Gunk from a floor, bits of an eraser, various dyes and even milk have or occasion been thought to have tested out positively by someone who has tried.

Appendixes
A few readers of the earlier edition of this book felt that a revision should
contain examples of thin-layer chromatography for most psychedelics. This,
ever, would require many precise color plates, and is already available in several
versions at many university libraries. Here are examples, in black and white, illus-
trating typical chromatograms:

Chromatograms of the alkaloid extracts of 25 mg.: of Turbina (Rivea) corymbosa
111, and 25 mg. Ipomoea violacea (II).

E.G. Clark's Isolation and Identification of Drugs (The Pharmaceutical
Press, London) specifies a method for making "microtests" of a "pellet drop" or
"microdrop." The sulfuric acid-formaldehyde testing of DMT, to illustrate, yields
dull orange with a sensitivity of 1.0 mg. sensitivity, while the ammonium
molybdate test yields blue going to green and then yellow with a sensitivity of 0.1
mg. When asked about other relevant literature on spot color tests, Carmen
Helstien, formerly of PharmChem, recommended the following articles:
J. Fore. Sci., Vol. 19, 1974, p. 163 ff.; Kaitha, K.K., "Drug Abuse Screening Programs,

When asked about other relevant literature on spot color tests, Carmen
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J. Fore. Sci., Vol. 19, 1974, p. 163 ff.; Kaitha, K.K., "Drug Abuse Screening Programs,

High-Performance Liquid Chromatography doesn't involve a heating pro-
cess, which can alter the original substance. Accessible to this machine and others
even more specific is rare, however.

These matters are raised here to indicate how difficult it is to establish the
purity of a psychedelic substance with certainty. Bruce Eisner has discussed issues
arising from this situation in "LSD Purity: Cleanliness is Next to (iod headlines*"
(High Times, January 1977). He has since remarked that

The basic nature of the experiences that people were having with LSD had
changed from the early- and middle-'60s to the middle-'70s, with a tendency for
which tended to remain at the level of simple sensory changes. . . . It became clear

More precise testing is made by column, gas or high performance chromo-
tography equipment, or by use of magnetic resonance or an electron microscope.
These methods are all quite expensive and necessary equipment rarely available
outside of industry, universities and crime labs.

In gas chromatography, a sample is introduced into an inert stream of gas
flowing through a tube. Through heating, it is broken down into its constituents
which are then carried by the gas depending upon how heavy they are. Results are
evaluated electronically in terms of nuclear weights and compared with an
appropriate standard.
Thoughts on Increasing Intelligence

BY FRANCIS JEFFREY

Timothy Leary has proposed that we think of consciousness and intelligence in terms of an outline of eight dimensions (called "levels," or "circuits") of relationships in the immediate physical/behavioral environment of the human body. The other four dimensions concern access to internal structure and processes. Leary conjectures that the function of LSD and other psychedelics is to shift our awareness over the continuum of scale and structure represented by these eight levels or circuits. In other words, the brain can be thought of and refined as a "lens" for focusing on various scales of nature, represented by structures in our CNS—from the largest (physical/behavioral space) down to the smallest (sub-atomic space).

The central idea is that all levels of energy/structure/scale are potentially accessible.

"Circuits of the brain"—as defined by Leary—and "levels of nature,"—as defined by science in general—are inseparable, as, for example, a "level" can be defined by a kind of stability which a structure at that level of scale and organization seems to possess. As an example, an individual cell can act as a stable structure in a particular circuit, but if the cell is smashed, it will disintegrate into smaller organized units—the next level down on the "scale of nature." The essence of this observation is that at certain discrete levels, a relatively stable sense of organization tends to be maintained.

One of these "islands of stability" in the flux of natural processes is referred to as an Eigen-state. The German prefix, Eigen, means "characteristic of, or proper to, itself." The Eigen-state formulation is applied in all branches of science, ranging from sub-atomic physics (Schrödinger) to behavior/perception theory (von Foerster and Piaget). Existence of an Eigen-state implies a "stabilizing mechanism" or a "stabilizing process"—which accounts for the stability by acting to oppose or correct deviations (and perturbations). An Eigen-state defines a core of organization where most of the action is concentrated, and such existences are relatively isolated from others. This accounts for the "relative and fuzzy" definition of levels.

There is isolation between levels, while there is also coupling between levels. Effects of psychedelic drugs are explained in terms of a shift in relative isolation—coupling.

The cerebral cortex of the brain is an approximately continuous, homogeneous neural medium, which is modulated (or "faulted") into preferred trails of neural transmission by imprinting and by repeated activity (i.e., behavioral learning). Within this system, there exists a relatively discrete series of dimensions ("levels") within which recurrent circular operations stabilize existing patterns: (1) the sensory-motor loop, representing interaction with the physical/behavioral space outside, and (2) an internal behavior loop, which operates even in isolation from the outside world.
other levels with which each of them is normally coupled. For example, increased access to the principles of one's construction and operation. "The idea of "intelligence" implies capacity to see this access in order to suspend fluidity and conformity to new situations and the occurrence of events at the level may be translated into the other level. (This assumes that circular operations are an extension and elucidation of the usual operations of the CNS without them. When circular operations are translated into the other level, this assumes that circular operations at one level are not too severely disrupted. For example, in certain conditions called "imprisoned vulnerability," the brain copies the external environment. These present the operation of the CNS with psychedelic substances as an extension and dissolution of the usual operations of the CNS without them. It is hoped it will contribute to a rational understanding and use of these potentials, as well as serve as precaution against also-frequent abuse, based on ignorance, in both "natural" and non-natural conditions.

**Other Literature**

The volumes that have been referred to in this book are listed in the index, along with publisher and publishing date. Here, assembled in six groupings, are highlights from other fascinating material that also may be of interest or value to the reader. Publisher’s addresses for the most part can be found in The Literary Market Place (LMP), an annual directory carried by most libraries. Books in Print, available at bookstores, keeps this entry up-to-date.

Writings published before the 1980s are generally accessible only in libraries, used bookstores and private collections. Most universities and colleges have at least a hundred books about psychoactivity in their libraries, and often have much more. Most universities and colleges have at least a hundred books about psychoactivity in their libraries, and often have much more.

**Intelligence agents** disrupt the cognitive homogeneity of the several levels of circular operations. This affords access to different possible circular states, and to unstable regions intervening in information space. Circular closures (i.e., isolation) is thus diminished, and coupling is increased between certain levels. When the occurrence selectively between any two levels, it may result in increased coupling within these levels, and between each of these levels and other levels with which each of them is normally coupled. For example, increased access to the principles of one’s construction and operation. "The idea of "intelligence" implies capacity to see this access in order to suspend fluidity and conformity to new situations and the occurrence of events at the level may be translated into the other level. (This assumes that circular operations at one level are not too severely disrupted. For example, in certain conditions called "imprisoned vulnerability," the brain copies the external environment. These present the operation of the CNS with psychedelic substances as an extension and dissolution of the usual operations of the CNS without them. It is hoped it will contribute to a rational understanding and use of these potentials, as well as serve as precaution against also-frequent abuse, based on ignorance, in both "natural" and non-natural conditions.

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Rave Reviews of *Psychedelics Encyclopedia*

"Peter Stafford has an elephant's memory for what happened to Public Consciousness."
- Allen Ginsberg

"A delightful Rabelaisian social history of psychedelics in America."
- Whole Earth Review

"I look at the history, pharmacology, and effects of these drugs, based upon ... literature, folklore, and the author's personal experiences."
- Library Journal

"Fascinating ... consumer-oriented exposition details history, botany, synthesis, and use of LSD, pot, cactus, mushrooms, street, and ceremonial drugs popular in the 60s."
- American Library Association, Booklist

"A wealth of information on each of these mind-altering substances. Even those who disagree will find it an important resource."
- Drug Survival News

"There's no end to the great new things we'll learn about dope in *Psychedelics Encyclopedia* ... authoritative"
- High Times Magazine

"Stafford's *Psychedelics Encyclopedia*, clear and straightforward, describes the substances which have done much to alter consciousness and so introduce vast numbers of youth, along with a few of their elders, to the mystical depths of their psyches."
- The New Review of Books and Religion

"Psychedelics are the royal road to the unconscious, and I would advise anyone interested in these matters to read Peter Stafford's *Psychedelics Encyclopedia* - which will have to do until better brains come along."*" - Timothy Leary, co-author of *The Psychedelic Experience*

"Stafford evaluates the psychedelic potential of a number of common and not so common drugs. The book is very well researched and the information is not tinged with moral admonitions or phony health scare tactics. You will be better informed if you read this book."
- Harvest Magazine

---

**Key to Cover Photos:**

1. cross-section of yage vine; 2. psilocybin mushrooms; 3. morning glory; 4. sinsemilla marijuana flower tops; 5. peyote cactus blossom; 6. Tabernanth iboga roots; 7. Amanita muscaria mushroom
Rave Reviews of Psychedelic Encyclopedia

"A wealth of information about one of the most controversial issues of modern times. It is written with clarity that will be appreciated by the general public, and so rich in content that even professionals in the field will find it a valuable source of data."

Dr. Stanislav Grof, author of LSD Psychotherapy

"I strongly recommend this book to everyone with an interest in the human mind and its potential, as well as ... culture, politics and the arts."

Robert Masters, author of The Varieties of Psychedelic Experience

"The book has very pretty pictures of plants in it and contains some fascinating ethnographic and anthropological data."

Los Angeles Times

"If you were alive in the 60's, you may be wondering why you are now ... Within the pages of this outrageously researched book, you may find some of the answers."

William Burroughs, Jr., author of Speed

"I think it will become a landmark in the field."

John Beroff, psychedelic pioneer

"Stafford has performed an immense service to the adept and novice alike ... No other single volume packs as much drug information."

The Advocate

"If you were ever interested in the history of psychedelic drugs, this is your real chance to become an overnight scholar in this selected field."

SSC Booknews

"Very well organized and fascinating to read all the way through."

Paul Williams, author of Das Energy

"Stafford writes with authority and charm, an unbeatable blend."

Chester Anderson, author of The Butterfly Kid

"Psychedelics Encyclopedia by Peter Stafford offers the most thorough history to date of the modern-day use of psychedelic drugs, LSD, mescaline, psilocybin, cannabis, and a host of lesser-known and exotic psychotropic agents are discussed in this entertaining survey."

New Age Journal

"One of the most instructive, comprehensive surveys ... a sane, reasoned reference work in a controversial area where politics and criminal penalties have kept research and public knowledge at a minimum."

PSYCHEDELICS ENCYCLOPEDIA

Third Expanded Edition

by Peter Stafford

Technical editor Jeremy Bigwood

Ronin Publishing, Inc. Box 1035 Berkeley CA 94701
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Portions of the material prepared by Dan Joy for this book were adapted from articles by him originally appearing in High Times Magazine.
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Foreword
by Andrew Weil, M.D.

When Peter Stafford's Psychedelic Encyclopedia first appeared in 1977, it was a major addition to the literature on an important group of drugs affecting the mind. It provided detailed and straightforward accounts of LSD, mescaline, marijuana, and a host of other chemicals and plants. Stafford's information was accurate, balanced and uncontaminated by polemic. Clearly, he was sympathetic to intelligent experimentation with these agents, and, clearly, he was experienced with them personally, but his purpose was to present a logical selection of facts rather than to push his agenda. Clearly, he was sympathetic to intelligent experimentation with these agents, and, clearly, he was experienced with them personally, but his purpose was to present a logical selection of facts rather than to push his agenda.

This new edition of the book, with its many revisions, additions and refinements, is a welcome appearance. Psychedelic Encyclopedia should be in the collection of everyone interested in psychoactive drugs, in the experiences they can release, and in the controversies they have stirred in science, the media, government and the public at large. This is a fine reference book, always engaging and easy to read.

Stafford discusses a number of substances I do not consider psychedelics. In my view, the true psychedelics are the indoles (LSD, psilocybin, the tryptamines, harmaline, etc.) and the phenethylamines (mescaline, MDA, DOM, etc.). These drugs and the plants they come from constitute a distinct pharmacological group, all of which stimulate the central and sympathetic nervous systems and all of which affect serotonin or dopamine pathways (or both) in the brain. These drugs are also distinguished by great medical safety, particularly the indoles. They do not kill, injure or produce any serious physical toxicity even in large overdoses or chronic use over lifetimes. Despite much adverse and active activity on the part of some scientists, reporters and governmental agencies to come up with damning evidence of harm, the true psychedelics still look like the safest drugs known to medicine.

I refer to medical safety only. There are dangers of psychedelic plants and chemicals having to do with acute psychological toxicity—that is, bad trips. These reactions are more the products of set and setting than of pharmacology. Their probability of occurrence can be reduced to a minimum by careful attention to the purity of the substances, dosage, time and place of use, and availability of experienced guides. Employed intelligently, they are not only safe but sometimes highly beneficial, since they have the potential to produce dramatic cures of both mental and physical problems as well as to provide experiences of great personal value to some persons. Finally, the abuse potential of the true psychedelics is quite low. They are almost never associated with dependence, and very few people use them in destructive ways. Stafford explains them fully and gives a good description of their positive potential.

The other drugs he includes are generally more toxic, less useful to most people, and more easily abused. Marijuana is somewhat more irritating than LSD or mescaline, capable of causing respiratory problems in those who smoke it excessively. I have yet to see good evidence of other ill effects on the body, but I have seen no end of cases of marijuana dependence. Compared to the true psychedelics, pot is insidious in lending itself to regular and frequent use, a pattern that easily turns into an unproductive and stubborn habit, providing few of the interesting effects that novice smokers experience.

The belladonna alkaloids are much more toxic than the indoles and phenethylamines. Furthermore, they are just plain dangerous, and the experiences they give are, at best, difficult to integrate with ordinary consciousness. Kava-kava seems to me more like alcohol than like the psychedelics, as does nitrous oxide, a general anesthetic with similar depressant qualities. PCP and ketamine are pharmacological curiosities, not related to other recreational drugs. Many seem like the "dissociative" states they provide, but few find them truly psychedelic. Their toxicity and abuse potential are significant.

Yet all of these drugs can be mind-manifesting for some individuals. That is the literal meaning of "psychedelic," and I suppose Peter Stafford has included them for that reason. Certainly, marijuana deserves a place here, both because it is commonly mind-expanding for those who first try it or are new to it or who use it only infrequently, and also because it moves in the same circles as the true psychedelics.

I know that Stafford is most interested in the indoles and phenethylamines. He devotes much more space and attention to them than to the others and rightly makes them the focus of his encyclopedia. Like me, he finds them totally fascinating from many different perspectives, including those of botany, chemistry, psychology, anthropology, sociology, religion, politics and the law. More than most substances in our world, psychedelics touch on many vital areas of human life and so can teach us much about ourselves, whether we use them or not, promote them or crusade against them, study them or just like to read about them.

I am pleased to have a chance to write the foreword to this new edition of Psychedelic Encyclopedia. It is a good book. I have no hesitation in recommending it as a source of interesting and reliable information.

Andrew Weil, M.D. Big Sur, California
Peter Stafford has delved into the literature on psychedelic substances and produced an account of the properties attributed to them, how they are prepared and used, and the shifting social attitudes that have been displayed towards them over the past half-century. He has drawn as well on his personal experiences with the agents he discusses and the experiences of people he has encountered由此及彼。The result of this twin-pronged attack on the most perplexing intellectual problem and the most pervasive moral problem of the day—intellectual because of the difficulty in framing an adequate theory of the effect of psychedelic substances, moral because of their widespread use in contravention of the law—is a book which stands in a class by itself.

Psychedelics Encyclopedia does not solve any intellectual or moral problem, but it does something else. It goes a long way to towards establishing what I think will be a dominant mode of looking at the effect of drugs like LSD and marijuana. It does so by virtue of the equal importance it attaches to the oral and the literary sources of information and the equal stress it puts on observation and experience. On this account I think it will become a landmark in the field.

The literature on these substances occupies a peculiar and seldom-examined place in the record of humanity’s search for knowledge. To begin with, it is not clear exactly what it is about. To say it is about the effect of a class of drugs called “psychedelic” implies that what LSD and marijuana, for example, have in common has been defined, which is not true. Humphry Osmond coined “psychelic” as a better way of saying what “hallucinogenic” and “psychotomimetic” had been used to say before. Unfortunately, the term “mind-manifesting” is at least as confusing as “hallucination” and “psychosis” are, to say nothing of a state which supposedly mimics psychosis. Calling something “psychelic” merely suggests a similarity perceived by people who experience the effect of first one psychedelic drug and then another. That is a rather loose unifying principle. Then there is the literature’s unusual scope. It embraces parts of neurochemistry, psychology, religion, clinical medicine, botany, and a variety of other topics which it has trouble housing under one roof.

The language it is written in can be inspiring or debased. Just who an expert is hard to tell. Some of the most aberrant thinking has been
expanded in academic journals of the highest quality, and some of the
smallest and most lucid in the underground street rags of the 60s. In fact, the
scientific credentials of an author tend to assume that a large proportion of
what he or she writes will consist of nonsense—a factor contributing to the
tale of disrepute which fell over science in the 60s. Again, the literature is
ominous for the contraband it contains. Hardly anything has been
stated in it which has not been somewhere flatly contradicted. So it is no
wonder that the literature and with it the psychedelic substances them-
selves have earned an unruly reputation in academic circles and that by
large academic research with them has got nowhere, while startling
findings are described by off-beat and fringe investigators. It is unnecessary
to elaborate on the anomalous state of the literature. I have dwelt on it at
some length in case Peter’s book is criticized for being unscientific. Actu-
ally, the current state of the literature, it is as much as a scientific as a book
on psychodelic compounds can at the present time.

This brings up a second difficulty. With few exceptions—Jean
Houston is an outstanding one—the best research and the best writing in
the field have been done by people who have more than once exposed
themselves to the effect of the agents they are dealing with. This introduces
a novel principle into pharmacology, i.e., that understanding the effect of the
psychedelic class of drugs is conditional on personal experience with them.
Naturally, it has been vigorously contested. A doctor does not need to
experience the effect of insulin to understand and treat diabetes. A judge
does not need to have been a plaintiff or a defendant to hand down a good
judgement. But a special case is made out for psychadelics.

The argument goes approximately as follows. One way of explaining
the effect of LSD or psilocybin is that the person who experiences it gains
access to a range of information not normally available to him. The smash
of new knowledge or enhances his state of consciousness that his perception
of people and objects in the world is no longer the same. The further
outcome is a shift in his worldview, so that even after the normal conscious
state has been restored the frame of reference he used to regard things in no
longer seems comfortable or right. A new frame of reference has been
constructed. The same principle of obtaining LSD was simple. When stock ran low, Chuck phoned
his assistant stop by in the afternoon to pick it up. Sheila, Chuck’s wife,
was Dr. Bick with a request for an additional vial of 10 milligrams, and could
method of obtaining LSD was simple. When stock ran low, Chuck phoned
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who would hang around Village bars on weekends and empty pocketfuls of psilocybin tablets on the counter with a charity, “Here, try these?” Eric Loeb ran a store with an interesting window display on East 9th Street where four days a week he sold—speedily—psychedelic drugs shipped in from Arizona, Hofmann-La Roche mescaline and Light & Co. harmaline and ibogaine. No one heard of Eric’s customers getting into trouble either. Tony Cox, still a painter and not yet married to Yoko Ono, pioneered in the use of mescaline for drug-evasion. 400 milligrams taken before his own preinduction physical prompted an angry outburst as an orderly took a stab at his arm to draw blood. Tony roared, “What the fuck do you think you are doing?” and was led into the presence of a psychiatrist with whom he engaged in a protracted discussion of the merits of the New York school of abstract expressionist painting, all the while naked. Tony got his 4F classification, presumably on grounds of schizophrenia, and went on to counsel others liable to military service, using the same approach.

When I met Peter, he did not know these people, but we discovered that we knew people who knew each other, and a circle of friendships was formed with links continuing down to the present day. Considering how disturbing the whole question of LSD was to become, I find it instructive to recall how tranquil it was then. The expected attitude was casual and vaguely positive. LSD was looked on as a benign substance with a number of not-so-well-explored potential applications. The polemics which succeeded the Harvard fiasco at 1963 and 1964 were definitely absent.

1963 was the turning point. By mid-1963, Timothy Leary had emerged from obscurity and was about to turn the philanthropic illusions of the time into a scandalous debacle. Tim had a lot of good ideas—he was incapable of turning off the stream—which he was impatient to use. There were prison projects, divinity student projects, projects for radicalizing the Psychology Department, for starting a journal, for flooding the world with propaedeutics extolling the power of the love pill. Balancing Tim’s fierce determination was his belief in his ability to create a political force which would overhaul the composition of the government of the United States. He would have accomplished this aim when enough people had experienced the effect of LSD and undergone the change of conscious state which would permanently affect their outlook for the better—prejudice giving way to brotherly concern, destructive ego trips to coexistence. Tim’s urgent priority was therefore to arrange for as many people to take LSD as possible. His sensibility was basically religious, though the direction he moved in was political. Tim was out to change the State, his strategy being confrontation and his weapon chemical substance which he called a sacrament. He vowed that in ten years a million Americans would wear “internal freckles” (the Fifth Freedom, freedom to control one’s central nervous system).

But the chemical insurrection he so boldly planned produced an unavoidable reaction. Each escalation organized by Tim and the thousands, even millions, who eventually sympathized with him was faced with an equal and opposite response by the conservative forces in the country who watched what he was doing with mounting alarm. The more Tim praised LSD, the more they denounced it. Tim said it saved souls. They said it promoted suicide and murder.

A succession of LSD-inspired confrontations and counter-confrontations is delineable in the history of the 50s and early 60s. Jack Kennedy was on the Board of Regents of Harvard University when Dick Alpert got kicked out and Tim followed. If the game plan had been different, Jack might have been the first American President to take LSD, for his brother Robert is known to have been taking either LSD or psilocybin in the spring of 1963 and entertaining foreign dignitaries with it in his apartment in New York and probably thus to have been saying good things about the drug to Jack. But with the confrontation tactics coming out of Harvard, Jack had good reason to hesitate. And five years later, now with well over a million Americans thoroughly frightened and put off, President Johnson was singling LSD out for denunciation in his State of the Union message to Congress. Johnson’s vow was to rid the nation of the menace he saw LSD to be. Consecutively, Johnson’s announcement in his policy over Vietnam was motivated by his fear or hatred of the voice of people who were vaunting LSD and psychedelic drugs in general.

At any rate, at a party in the East Village three weeks before Johnson addressed Congress a new inspiration of the process of confrontation was shaping up. The celebration was for the New Year, 1968. The guests, who later went to claim a good deal of attention as the “Chicago Seven,” were examining the possibility of doing something to stop the violence in Vietnam. The punch they drank contained not alcohol but LSD. The thoughts they entertained in consequence were far-reaching and ultra-practical. The manifesto coming out of that evening’s work was the “Yippie Manifesto,” and it set in motion the long train of events which exploded in the violence in Chicago, when Johnson lost the nomination and his Presidency.

But that was not the end. Under Nixon, Johnson’s campaign to stamp out LSD was carried on to extreme lengths. There was talk of introducing the death penalty for persons convicted of possession. The climax of the U.S. Government’s war on LSD was staged in Vienna with the signing of the International Convention abolishing its use. At home, a case can be made for the idea that Nixon’s excesses were contrived primarily against those with links to the pre-drug, anti-war movement—for these were two faces of the same desire. As length, some sort of naturally occurring homoeostasis seems to have restored a balance. Nixon and LSD both disappeared, each one having cancelled out the other.
I wanted to go into this not to make a point that Tim’s obstinacy led to Nixon’s downfall, which is true, nor to raise the question whether the use of LSD as a political instrument was justifiable, which is debatable, but to suggest that the price paid for the insurrection Tim devised was the interruption of supplies of LSD and in due course the flooding of the market with a variety of toxic substances labelled “acid.” Which brings me back to Peter Stafford and my belief that the point of view he represents is the right one for now.

The time for confrontation is past, if it was ever present. Peter is made of softer, more ductile stuff than Tim. He poses no threat to anyone and is not about to get under anybody’s skin. Time has had his day and history will honor him for the heroic man he is. Peter epitomizes the unhistrionic plotter with no particular qualifications, and we feel more comfortable with him. In fact, there is something alien in confrontation to the whole ethos of LSD and its sister-substances. Non-confrontation is a cardinal feature of a well-run LSD session.

Confrontation is precisely what should be avoided when a person who has taken LSD shows signs of agitation or depression or in some other way is manifesting resistance to the natural flow of experience. What the person helping him can do then is search for or suggest an image or idea which complements the image or idea which acted as the springboard of resistance. Negative emotions are thereby not provoked but rather calmed. The resistance is undone and the normal flow of the session can proceed. The story told by Leary about BU1 McGlothlin and repeated in this book is an example of the use of this sort of suggestion.

Last, there is a mythic element in the emergence of LSD and other psychedelic drugs which Peter’s book exemplifies. Eileen Garrett told me a story which I have not found recorded in her writing and which I do not now recall the details of precisely. The gist of it is that she fell down in the bathroom of her apartment and imagined she was dying. In a trance she had a vision in which old Dr. Sandoz, patriarch of the firm in Basel, appeared and told her that a chemical substance with a power to bring great benefit to the world had been discovered in his laboratory. When Mrs. Garrett recovered from her trance, she recalled that Dr. Sandoz had been dead for seven years. I do not know the date of his death, but it could serve to pinpoint the date of his appearance in the vision. As I remember her words, Mrs. Garrett did not then know what LSD was and it was only later, when she heard reports of LSD and the fact played in its synthesis by Dr. Hofmann, that she understood the words heard in her trance. Be that as it may, the good, in some people’s eyes, that LSD and members of the psychedelic family of drugs can help bring about is the revelation of the hidden depths of human consciousness. An instrument is now at hand which tells us things about ourselves which we may misguidedly think we do not want to know and would prefer to leave in the depth where for all
Psychedelic Renaissance

by Don / 

The 1990s have brought several indications of a worldwide resurgence of interest in psychedelic drugs:

• The original British "rave" or "acid house" scene began spreading to the United States, as well as to such far-flung locations as Ibiza, Spain and Goa, India. In 1991 and 1992 the phenomenon hit the West Coast of the United States with the force of a major earthquake. Raves are huge, ethnically mixed all-night or weekend long dance parties fueled by MDMA, LSD, intense psychedelic light shows, mind-tech toys such as virtual reality machines, and the trance inducing propulsive rhythms of "acid house" music. Raves became a prominent and ongoing feature of the cultural landscape in San Francisco and Los Angeles, attracting the attention of major media. Sometimes taking place in aboveground nightclubs, but often held on beaches or in empty warehouses, these events were perceived by their enthusiasts as far more than mere parties. One writer in San Francisco Weekly stated that "the people throwing these parties believe that they are the vanguard of a new society" and quoted a prominent figure in the local rave scene as saying, "In the next decade there is going to be a total revolution of the mind."

• A reporter from Brazil phoned the United States to collect reactions to the burgeoning use of LSD in Sao Paulo among middle-aged, upper-middle-class professionals—doctors, lawyers, psychologists, psychiatrists, particularly academics and clergymen.

• In Czechoslovakia, a new underground magazine began reprinting some of Timothy Leary’s recent writings, marking their author’s first appearance in the Czechoslovakian language.

The reunification of Germany was followed by reports of the use of MDMA into areas formerly belonging to East Berlin, and a magazine about psychedelia called Connections commenced publication in Spain a new magazine titled Mas Alia (roughly translated as) appeared, featuring coverage of the emerging Spanish psyche-scene as well as new writings by Timothy Leary.
Researchers interest in LSD

• Reports of LSD use and “rave”-type MDMA parties began to trickle in from Tokyo. In private correspondence, a young independent Japanese entrepreneur described in nearly cataclysmic terms the emergence of a new Japanese consciousness, rooted at least in part in the disaffection of psychics: "Tokyo is in the midst of an evolutionary leap... and immense changes are taking place. The speed and the scale of this coming wave are beyond anyone’s expectations." Only a few years before, Japanese visitors to the offices of the magazine Mondo 2000 had professed the belief that the use of psychedelics in Japanese culture was "impossible."

• The Oakland Tribune reported the confiscation by police of a large quantity of a new psychedelic called "bromo"—of which local legal forces had been previously unaware—from an underground lab in Oakland.

• American Health magazine ran an article titled "The Acid Quest" that quoted the prediction of UCLA professor of Psychiatry and Pharmacology Daniel X. Freeman, M.D., that LSD will be sanctioned for human therapy within ten years.

• The author asserted that "every man and woman of my generation with the slightest interest in his or her own mind had taken LSD or some other psychedelic." The article speculated about the continuing impact of this fact on the lives of these individuals as well as society at large.

• American Health magazine printed an article titled "Psychedelics in Japanese culture was "impossible.""

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• The BBC aired a documentary on LSD titled "The Beyond Within The Rise and Fall of LSD" which featured British LSD researcher Ronald Sandison, M.D.

• Details magazine printed a piece called "The New Seekers: Inside the Psychedelic Underground" that quoted Terence McKenna as saying that "consciousness is what we're in great need of to avoid running off the cliff into Armageddon. If the claim that these drugs expand consciousness, promote empathy, and allow deeper insights into our problems has any validity at all, it should be explored very carefully and very thoroughly."

• A magazine called Arete published an article titled "Under the Influence" that focused on drugs and creativity and featured six pages about LSD.

• The French magazine Actuel featured a six-page article on MDMA.

• Newsweek magazine reported in its February 3, 1992 issue that "sang is staging a serious comeback in the 90s, especially among affluent suburban teenagers." The rise in popularity is partially attributed to weaker drugs, which result in fewer "bad trips" and are more likely to be taken at parties. Surveys conducted by the National Institute on Drug Abuse and the University of Michigan showed that in 1991 LSD had overtaken cocaine in popularity among high school seniors for the first time since 1976.

• Perhaps the most disturbing news came from three articles which appeared in The Washington Post. These reported the arrest of a six-person drug ring whose members were supplying LSD to the northern Virginia high school from which they had recently graduated, it was claimed that one sixteen-year-old student had shot and wounded a Fairfax County police officer while supposedly under the influence of the unusually powerful doses being provided.

• The second article discussed a resurgence of LSD use among high achieving, upper-middle-class high school students in suburban Maryland. Anonymous accounts of "LSD parties" indicated a total lack of experienced guidance, a paucity of accurate knowledge, an atmosphere filled by misinformation about the drug and its effects, little attention to appropriate dosage, set, and setting, and unskilled and unsympathetic handling by peers of psychically difficult episodes, exacerbated by a competitive, sports-style approach to the use of LSD.

• These reports could be taken as validation of concerns about the abuse of misinformation in the national anti-drug campaign. As UC Irvine Medical School professor and MDMA researcher Charles Grob has put it, "I am astounded and horrified as to the degree of misinformation that exists among young people today. I believe that this misinformation often leads to very tragic results."

• Taken as whole, these developments yield a picture of widespread interest in psychedelics, and a concomitant increase in usage. The axiom that "those who do not know history are doomed to repeat it" seems poignantly relevant. (As many believe, the phenomenon constitutes the beginnings of a trend that will continue through the coming decade, it becomes of paramount importance to prevent broad-scale recaptulation of the brouhaha, misinformation, and real tragedy that characterized the late 60s and early 70s. If this task can be accomplished, the way may yet be cleared for some of the promise shown by early experimentation with psychedelic drugs.)

John Lilly: "Each psychedelic drug is quite literally a different access code to a certain circuit of the human biocomputer."

• The pull-quote employed the terminology of John Lilly: "Each psychedelic drug is quite literally a different access code to a certain circuit of the human biocomputer."
Psychedelic Renaissance

Peter Stafford surveys these and related developments in the new information on MDMA, writes for this edition. This introduction also

In February 1991, many prominent contributors to the movement convened at Stanford University to discuss the results of recent research, possible future directions, and other aspects of psychedelic history and culture at an event called the Bridge Conference, the most noteworthy gathering of its kind in recent times. A brief report of the Bridge Conference is included in this Introduction and serves as a springboard for discussing prevalent trends and themes in psychedelics.
Albert Hofmann

In the decades following his invention of LSD, Sandoz Pharmaceuticals chemist Albert Hofmann, Ph.D., continued to synthesize many compounds of significance in medicine. Several of these (notably hydergine, used in the treatment of Alzheimer’s disease and depression) have been derivatives of ergot, the same rye mold that provided the precursors for LSD. Hofmann has summarized his life and work in LSD: My Problem Child.

Well into his eighties and now retired, Hofmann nonetheless continues to be a major global spokesman for the use of LSD as “a material aid to meditation aimed at the mystical experience of a deeper, more comprehensive reality.” Many credit his influence with positively affecting Switzerland’s recent decision to legalize the use of certain psychedelics in psychotherapy under specific conditions.

Robert Masters and Jean Houston

In the mid-’60s, the husband-and-wife research team of Robert Masters, Ph.D., and Jean Houston, Ph.D., had a vast impact on the understanding of psychedelics through the publication of a popular book titled The Varieties of Psychedelic Experience. This volume summarized the years of research they had conducted; these began with Masters’ experiments with psilocybin in 1954, and eventually evolved into a systematic protocol of LSD psychotherapy. In the years since, the insights into human consciousness that Masters and Houston gained during their period of psychedelic investigation have borne fruit in several major contributions to the theory and practice of psychophysical healing.

Influenced by the work of Alexander, Feldenkrais, and Erikson, Robert Masters has developed a technique of neural and sensory re-education known as the Masters Psychophysical Method, of which there are now approximately 350 certified practitioners. His major innovation has been the integration of trance states with body work. Masters has discovered that trances of up to seven or eight hours in duration can generate responses in the body and mind approximating those catalyzed by high doses of LSD. He feels that the heightened plasticity of the body and its receptivity to various therapeutic modalities under psychedelics makes the combination of bodywork and psychedelics a promising direction for possible future research.

Along with Masters, Jean Houston now heads the Foundation for Mind Research in New York State. She also guides two “mystery schools” of psychospiritual training and the more scientifically oriented Human Capacities Training program. Houston has become a major interlocutor of applied archetypal psychology in group contexts, a capacity in which she conducts seminars and consults with major corporations. She has also served as a consultant to human and cultural development to the governments of 35 different nations, a function in which she travels up to a quarter of a million miles annually.

The theory and practice of archetypal psychology developed by Houston have been expressed in over a dozen books. A selection of the most recent includes The Possible Human, The Search for the Beloved, Godseed, and The Hero and the Goddess: The Odyssey of Mystery and Initiation.

Alexander Shulgin

Leading-edge psychopharmacologist Alexander T. Shulgin, Ph.D., who receives more than a dozen mentions in the main text of this book, was coauthor of the first scientific paper published on MDMA in humans. As well, Shulgin has been the originator of 2CB and perhaps some hundred or more other psychoactive compounds. He currently continues private research in northern California.
Leading-edge psychopharmacologist Alexander T. Shulgin, Ph.D.

Shulgin has recently published The Controlled Substances Act, a thorough and accessible explication of contemporary Federal drug laws. In 1991 he issued the long-awaited PiHKAL: A Chemical Love Story through his own publishing company, Transform Press. Shulgin and his wife Ann devoted more than two years to the preparation of this scientific (and presumably autobiographical) magnum opus of nearly 1,000 pages. A milestone of psychopharmacological and psychedelic literature, PiHKAL (an acronym for Phenethylamines I Have Known And Loved) contains a novelized account of decades of pioneering research and a catalog explaining the synthesis and effects of 179 mind-changing agents.

Stanislav Grof

In the last fifteen years, former LSD researcher Stanislav Grof, M.D., and his wife Christina, have developed a powerful and increasingly popular method of inducing psychedelic-like alternative states of consciousness. Known as Holotropic Breathwork, this technique does not involve the use of drugs, and is regarded by thousands of practitioners worldwide as an extraordinarily fast and effective psychotherapeutic modality. The Grof research has also given rise to a new map of the psyche and a re-classification of certain mental states, previously diagnosed as “psychotic,” as “spiritual emergencies,” or junctures of crisis in the psychospiritual healing process. In the early ’80s Christina Grof founded the Spiritual Emergence Network in order to provide various services to those undergoing such disruptive but potentially very integrative psychic episodes. The Grofs’ new paradigm of mental health and its practical application are expressed in their book The Stormy Search for the Self.

Timothy Leary

Once the person most closely linked with psychedelics in the public mind, today Timothy Leary, Ph.D., is a popular writer and lecturer who focuses on the humanistically motivated development of educational technology. In the last decade he has authored or participated in the development of eight pieces of educational computer software, including the commercially successful MindMirror, a tool for psychological self-analysis based on his classic ’50s textbook The Interpersonal Diagnosis of Personality. Now 71, Leary maintains an ardent globe-spanning lecture circuit schedule, and recently has spent a great deal of time in Japan, the world’s electronic frontier, where he is celebrated as a technological visionary.
The year 1983 saw the publication of Leary's epic autobiography *Flashbacks*, now available in a second, expanded edition featuring an introduction by noted literary innovator William Burroughs. A work of socio-cultural significance and literary excellence, *Flashbacks*, the most up-to-date and comprehensive of Leary's many autobiographical efforts, was received with nearly unanimous praise even by critics of a culturally and politically conservative bent. In the same year a wide-ranging annotated anthology of his most significant scientific and theoretical writings appeared under the title *Changing My Mind: Among Others*. In 1988 Archon Books issued *An Annotated Bibliography of Timothy Leary* compiled by Michael Horowitz, Karen Walls, and Billy Smith. This volume features a Foreword by Allen Ginsberg, a Preface by Leary, and an Introduction by Frank Barton. In 1990, Leary's classic late-'60s collection, *The Politics of Ecstasy*, returned to print. Many of the issues and viewpoints aired in the essays, talks, and interviews in this last volume are surprisingly fresh and relevant a quarter of a century after its original publication.

Richard Alpert

Leary's Harvard research partner Richard Alpert, Ph.D., continues as a major figure in the alternative spirituality movement in the United States and abroad. His "karma yoga" now focuses on providing spiritual service to the dying, particularly AIDS patients, and to the bereaved. He is a founding member of the Seva Foundation, which takes its name from the Sanskrit word for "service." This organization implements a wide variety of social-service programs worldwide. In collaboration with Paul Gorman, Alpert has published a book on the subject of spiritually based service titled *How Can I Help?* After adopting the Sanskrit title "Ram Dass" (or "Servant of God") in the early 70s—and then for several years being viewed as something akin to a spiritual guru by many Western seekers— Alpert now modestly asserts that he is "a holy man only half the time." Humorously calling himself a "Hit-Jew," he seeks to integrate his Jewish spiritual and cultural heritage with the Eastern forms of mysticism that he absorbed in his studies and travels after his early psychedelic experiences. Alpert still publicly acknowledges the role that psychedelics have played—and continue to play—in his spiritual development.

Robert Anton Wilson

Timothy Leary claims that Robert Anton Wilson, Ph.D., his occasional literary and theoretical collaborator, "has interpreted my rantings and ravings and droolings better than anyone else." Wilson's books *Cosmic Trigger* and *Prometheus Rising* are particularly noteworthy for their accessible treatments of Leary's eight-circuit model of the nervous system.

Oscar Janiger

In 1954, Santa Monica, California psychiatrist Oscar Janiger, M.D., purified DMT with Perry Bivens, and the pair became the first to observe the effects of this compound in humans through self-administration. Janiger is also remembered for his eight-year naturalistic study on the clinical effects of LSD and his classic investigations in the 70s and early 80s on the role of LSD in therapeutic process. This latter program is noted for having involved many of the era's most celebrated talents as volunteer experimental sub-
Psychiatrist Oscar Janiger researched LSD and creativity

Today Janiger channels much of his time and energy into his role as co-founder of the Albert Hofmann Foundation, a nonprofit organization that has recently opened an international library for the study of consciousness. Semi-retired from private practice, Janiger is also currently a professor emeritus at UC Irvine Medical School, and devotes himself to various projects including a soon to be published book titled Private Practice: The Changing Role of Physicians in Contemporary Society.

John Lilly

In the 40s and 50s, John Lilly, M.D., blazed a meteoric trail in his career as a medical researcher, performing important studies of the human organism’s ability to withstand conditions of extreme stress, such as high altitudes and acceleration. As well, he applied the ham-radio experience of his youth to several significant electronic inventions used in monitoring brain function and other physiological processes.

Lilly’s interest in the outer limits of human experience led him in the late 50s to invent the isolation tank, a coffin-like box in which one floats in warm water in a condition of silence, total darkness, and zero gravity. The aim of this invention was to provide a near-ideal environment for studying the human mind itself, removed from all outside influences. For a time his research in this area fell under the auspices of the National Institute of Mental Health in Bethesda, Maryland. Later his experiments with isolation loosely formed the basis for the popular book and movie Altered States.

Lilly's studies of the human brain sparked his interest in the brains of other intelligent mammals, dolphins in particular. Lilly performed two long stretches of experiments in dolphin intelligence and human-dolphin communication, one series in the 60s and a second in the early 80s. These efforts bore fruit in ideas that were published in several books, notably Man and Dolphin, and that many believe to have influenced favorably the passage of the landmark Marine Mammal Protection Act.

Psycologist Oscar janiger researched LSD and creativity

Psychedelic Renaissance

Lilly’s studies of the human brain sparked his interest in the brains of other intelligent mammals, dolphins in particular. Lilly performed important research into this psychedelic as part of a team including Dr. Sandy Unger and Stanislav Grof at Spring Grove Mental Hospital in Maryland. Eventually he took his experiments with this mind-changer to the isolation tank, leading to influential theoretical elaborations contained in Programming and Metaprogramming in the Human Biocomputer. In the 70s and 80s, Lilly logged in several years of daring research with ketamine, which formed the climax of his "novel autobiography," The Scientist.

John Lilly’s

The Scientist

A Metaphysical Autobiography

Dr. Lilly was exposed to LSD in the early 60s and performed important research into this psychedelic as part of a team including Dr. Sandy Unger and Stanislav Grof at Spring Grove Mental Hospital in Maryland. Eventually he took his experiments with this mind-changer to the isolation tank, leading to influential theoretical elaborations contained in Programming and Metaprogramming in the Human Biocomputer. In the 70s and 80s, Lilly logged in several years of daring research with ketamine, which formed the climax of his "novel autobiography," The Scientist.
All of this activity has led to a wealth of ideas and seminal literature about alternative states of consciousness, the brain, the mind, and the relationships among them. Now in his seventies, Lilly continues his research privately at his Malibu, California, ranch. An integrated and accessible summary of his life and work, coauthored with Francis Jeffrey, is available in the book *John Lilly, So Far.*

**Stephen Gaskin**

Amidst the fertile and volatile subculture that blossomed in the Haight-Ashbury district of San Francisco in the late '60s, a former California State University at San Francisco English teacher named Stephen Gaskin began facilitating a weekly—and often psychedelically fueled—social, political, and spiritual discussion group known as “The Monday Night Class.” Driven by various factors, including the decline of the Haight-Ashbury experiment and inspiration derived from Gaskin’s cultural and spiritual vision, many of those who had gathered around The Monday Night Class assembled in a convoy of schoolbuses and began a meandering, cross-country trek in search of land on which to found a community whose purpose was to put into practice some of the new social models then emerging within the counterculture.

The result was “The Farm” in Tennessee, a uniquely successful and long-lived communitarian endeavor founded on principles derived in part from psychedelic experiences. Unlike most of the other communes that dotted the American landscape in the late '60s and early '70s, The Farm, whose residents once numbered one thousand, thrives to this day with a residency of two or three hundred people who channel much of their efforts toward various forms of social service in the United States and abroad.

Today, Stephen Gaskin is rapidly becoming an elder statesman of psychedelic culture, in which capacity he is sought after as a lecturer and public speaker. His classic personal account of the psychedelic legacy of the late '60s that later gave rise to The Farm has been recently reissued under the title *Haight-Ashbury Flashbacks.*

**Ed Rosenthal**

Ed Rosenthal has been called “the Ann Landers of Pot” and the “Guru of Ganja” in recognition of his hugely popular monthly column “Ask Ed” in *High Times Magazine.* Ed is a leading researcher and writer on the subject of marijuana. He is a leading personality in the marijuana legalization movement and a frequent expert witness in support of the defense of marijuana cases.

Ed Rosenthal is the founder and principal author of Quick Trading Company, a small press in Oakland, California. He is best known for his books *Deluxe Marijuana Growers Guide* (co-authored with Mel Frank), *Marijuana Growers Handbook,* *Ask Ed* (adapted from his *High Times* column), and the recent bestseller *Closet Cultivator.*
Terence McKenna

Unquestionably foremost among the new generation of public exponents of the potentialities of psychedelics is ethnobotanist Terence McKenna. With an academic background in art history and shamanism and several globe-spanning ethnobotanical expeditions now under his belt, McKenna is an extraordinarily eloquent and erudite writer, a bardic speaker with a rapidly growing audience. He focuses particularly on the experiences generated by psilocybin mushrooms and ayahuasca within a shamanic context. “My testimonial,” McKenna tells his audience, “is that magic is alive in hyperspace.”

McKenna has recently authored two major books, a collection of talks, interviews, and essays titled The Archaic Revival, and Food of the Gods: The Search for the Original Tree of Knowledge, a landmark examination of the role of plants in human history. His classic theoretical exploration The Invisible Landscape, written in collaboration with psychopharmacologist-turned-ethnobotanist Dennis McKenna, Ph.D., is soon to be returned to print. Recent years have seen the growth of Botanical Dimensions, an organization devoted to the preservation and propagation of endangered plant species of ethnobotanical interest, of which McKenna and his wife Katherine are founding members.

Rick Doblin

In the last decade, several younger investigators have made major contributions to the body of psychedelic knowledge through research into the empathogens, most notably MDMA. Perhaps foremost among this group is Rick Doblin, who made intensive efforts in the mid-'80s to preserve the legality of MDMA as an adjuvant to psychotherapy.

More recently, Doblin has founded the Multidisciplinary Association for Psychedelic Studies, or MAPS, which promotes and sponsors scientific research into psychedelics. As well, he has recently authored a follow-up study to Leary, Alpert, and Metzner's Good Friday Experiment, an early investigation into the relationship between psychedelic and religious experience.

Bruce Eisner

Another important contributor to our understanding of empathogens is the Santa Cruz-based writer-researcher Bruce Eisner, who over the last twenty years has published many articles about psychedelics. His landmark book Ecstasy: The MDMA Story is the only thorough book-length survey of the history, chemistry, and usage of this prototypical empathogen. MDMA is a thoughtful and balanced overview, its depth reflecting both Eisner’s extensive personal experience and his academic background in psychology.
PHARMACOLOGY

New Compounds

Just as many new personalities have come to play significant roles in the psychedelic arena in the last few decades, so have a plethora of new psychochemicals, in spite of the legal restrictions placed on their work, chemists and pharmacologists both underground and above-ground continue to synthesize and test new psychedelic compounds at the rate of perhaps dozens a year.

An entire encyclopedia equal in length to this volume could easily be devoted to full reportage of these developments. Here are offered merely some outstanding characteristics of a few of the more noteworthy of these compounds. The following examples are almost all from the phenethylamine category (which includes MDMA), a promising group of psychochemicals bearing structural relationship to mescaline. The information that follows has been derived from previously published scientific papers on each of these compounds as well as some additional anecdotal material. These summaries are necessarily quite tentative. Research with these psychoactives is still in the early stages, the topology of their reported characteristics will almost certainly change significantly as further evidence accumulates.

MDE

Known as "Eve," this compound, effective in the range of 50-200 mg., is an immediate homologue of MDMA. Its enthusiasts claim that it lacks the "rush" and many of the side effects (jaw clenching, nystagmus, sweating, and post-trip fatigue) characteristic of its popular chemical sibling—suggesting that it may have lower toxicity—and that its effects are somewhat longer-lasting, but can nonetheless be achieved at significantly lower dosages. They also report a less intensely empathogenic vector, but instead enhancement of cognitive, creative, and verbal capacities.

MDE...sometimes called "Eve," is an immediate homologue of MDMA

In a poignant example of the subjectivity of pharmacological action—and of the need for more broadly based and legally approved research—some MDE studies offer conclusions diametrically contradictory to those reported above, which have been derived from groups who find the experience afforded by this substance favorable. It is also interesting to note...
that those research efforts experimenting with lower doses—in the range of 50-100 mg.—have tended to report more positive reactions, and those experimenting with higher doses—in the range of 100-200 mg.—have been largely responsible for the more negative assessments.

2CB
Known under a wide variety of “street” names including “Venus,” “Spectrum,” and “Bromo,” this compound is effective in doses of 10-25 mg. and generates an experience of usually no more than six hours in duration. Its main arenas of action are somatic and sensory rather than mental. It is known for rich visual imagery, heightened bodily awareness and tactile receptivity, and enhancement of both sexual interest and sexual pleasure without disrupting related physiological functions.

DOB
DOB is a potent compound related to DOM or “STP.” DOB is purported to move the user’s point of view to “the edge of reality.” In other words, one’s locus of identity tends to become detached and objective in a manner reminiscent of the “witness consciousness” described in various spiritual traditions. Some claim that in this condition unpleasant or “dark” aspects of one’s life and psyche can be examined especially closely, because although the pain associated with such observations may be experienced intensely, the user does not necessarily lose his or her sense of self within the ensuing emotional miasma. This quality purportedly allows users to inspect these less-savory dimensions of their existence with a diminished sense of threat.

MBDB
Effective in doses of 180-210 mg. that result in a four- to six-hour trip, this highly empathogenic substance is often reported to cause an experience almost identical to that of MDMA.

However, MBDB usually lacks MDMA’s euphoriant/stimulant properties and their attendant side effects, and is therefore suspected to have lower toxicity. Additionally, some users feel less inclined to verbalize during the trip than when on MDMA. Most reports rate the experience of MBDB as similarly favorable.
Nootropics and Other "Intelligence Enhancers"

Of recently growing interest among the community of those involved with psychedelics is the emergence of a broad group of compounds, including a chemical category known as "nootropics," which are purported to enhance certain functions of intelligence. Various claims have been made that these different substances improve such cognitive properties as memory, concentration, and perceptual acuity. To some extent these compounds therefore seem to validate the prediction of Shulgin that pharmacological action will become increasingly refined and specifically targeted over time. These developments also recall Leary's mid-'70s forecasts regarding drugs that would increase intelligence.

Hydroxyzine, piracetam, and vasopressin are among the most widely discussed substances in this field. Ward Dean, M.D., and John Morgenthaler have authored and published a book titled *Smart Drugs & Nutrients* that catalogues the effects of these and other allegedly intelligence-enhancing compounds. This volume's commercial success, along with significant mainstream press attention to this new field, attests to widespread interest.

Future Directions

One noteworthy aspect of the nootropics and some of the other "intelligence enhancers" is that several of these compounds apparently feature multiple vectors of pharmacological action. Among these chemicals we find at least two products used both in treating depression as well as age-related syndromes (specifically, Alzheimer's disease and Parkinson's disease). Different compounds falling under this rubric have also been credited with immune enhancing, life extending, and detoxifying properties. Some nootropics and other similarly employed drugs have low—if even measurable—toxicity, and a few even show "healthy side effects" such as increasing the flow of oxygen and nutrients to nervous tissue. (One official of the Food and Drug Administration recently claimed that the toxicity of piracetam is so low that this compound could in principle have no significant action—a fallacy based on a pharmacological axiom long rendered obsolete by observations of the relationship between the potency, effects, and as yet unestablished toxicity of LSD.) Such phenomena are beginning to blur the boundary between drugs—once widely understood as "poisons" of medicinal value in subtoxic doses—and nutrients.

One compound occasionally used as an intelligence booster or "psychic energizer" is Selegiline hydrochloride, an MAO inhibitor of fairly recent origin. Used in Europe for Parkinson's disease and depression, and recently approved in the United States as a treatment for the former condition, Selegiline has been shown to quite significantly extend the lives of rats as well as enhance and rejuvenate their sexual function. Another MAO inhibitor—also an antidepressant—showing signs of strong anti-viral properties in promising early research. Similarly, certain other MAO inhibitors, specifically the tri-carbinols found in *Ayahuasca* and Syrian rue, have a long history of folk usage as curatives as well as shamanic and visionary tools.

According to some cutting-edge psychopharmacologists, these developments taken as a gestalt may bear the seed of some as yet unforeseeable paradigm shift in neurobiology. A few researchers have even suggested that neurochemical states conducive to antidepressive, immune enhancing, intelligence increasing, life extending, and sexual potency functions may soon be understood as closely related or perhaps even identical. Such a possibility could eventually set the stage for the pharmacologically assisted application of psychoneuroimmunology (the new field of study examining the relationship of thoughts, moods, and emotions to health and immunity). Furthermore, the additional psychedelic properties of certain groups of compounds that have been credited with some of the properties mentioned above highlight an promising area of possible future investigation the relationship of the visionary experience to various common medical and psychological goals. And, as the data presented here suggests, the MAO inhibitors provide the agents most likely to serve as the first molecular stepping-stones toward such ends.
THEMES AND TRENDS IN PSYCHEDELIA

The Bridge Conference

"Linking the past, present, and future of psychedelics" was the agenda of the Bridge Conference, held on February 2 and 3, 1991, on the campus of Stanford University in Palo Alto, California. This gathering was serious and academic in tone, and so programming-intensive that many of the 550 attendees complained of difficulty choosing between the many simultaneously presented seminars, symposia, and panel discussions.

The guests of the Bridge Conference constituted a truly interdisciplinary cross-section, featuring representatives from such diverse fields as psychiatry, psychology, anthropology, medicine, psychopharmacology, ethnobotany, and the counterculture. Among the psychedelic luminaries present were Terence McKenna, Timothy Leary, and Robert Anton Wilson, who provided the keynote addresses. Featured also were John Lilly, Ralph Metzner, Ph.D., Stephen Gaskin, Bruce Eisner, Debby Harlow, Charles Grob, M.D., Richard Yensen, Ph.D., David Nichols, Ph.D., Jerome Beck, Ph.D., Joseph Downing, M.D., Rick Doblin, and about fifteen others.

The programming, informal discussion, and general milieu of the Bridge Conference offered a unique hologram of current trends and concerns in the field of psychedelics. These included: present and future research; the relationship between the psychedelic experience and cutting-edge science and technology; the debate between proponents of organic and synthetic psychedelics; the role of women in the history of psychedelics; and the future of psychedelic endeavors.

Research

The increasingly labyrinthine obstacle course stretching between the researcher and his or her license to use legally scheduled substances in scientific investigation was a frequent subject of discussion at the Bridge Conference. With a handful of rather limited protocols approved and underway, and a few more in development, formal scientific investigation in this area is today nearly extinct. This dearth of research emerged as the central theme of the Conference's final panel discussion on the future of psychedelics. Here Charles Grob succinctly summed up the situation: "Research was shut down in the late '60s and has been absolutely moribund since then, except for what goes on in cat retina or salamander reflex."  

Several of the panelists issued persuasive and impassioned pleas that those present at the Conference work together to change the state of affairs regarding licensed research. Purdue University Professor of Medicinal Chemistry David Nichols expressed his conviction that psychedelics constitute "a totally fascinating class of psychoactive agents. They relate to the processes of dreaming, consciousness, and spiritual revelation, and how we perceive the environment that we live in and who we are—the basic question of what is me?" These facts alone ought to stimulate someone to do research in this area." Nichols urged those in the audience interested in performing research to pursue formal education in areas such as psychology, organic and medicinal chemistry, pharmacology, and related fields.

In the course of the same discussion, veteran LSD-researcher Richard Yensen spoke of the difficulties for legitimate researchers posed by the existence of a psychedelic counterculture and the precariousness of the position of those who straddle the counterculture/establishment fence. He concluded, "We really need some kind of standard for what represents ethical use of psychedelic substances, and some summary of what's been learned from our history as to what represents real positive use."

Grob extolled the desirability of "using these substances in sanctioned, approved clinical settings." He emphasized that the development of research protocols for the use of psychedelics with individuals suffering from extremely refractory conditions—such as post-traumatic stress syndrome, terminal illness, and severe alcoholism—offers the most likely route toward eventually opening the door to more broadly based research.

Psychedelics, High Technology, and Chaos

As one observer at the Bridge Conference commented, "These days, it's hard to have a psychedelics conference that doesn't turn into a virtual reality conference." Indeed, the event was pervaded by an enthusiasm for high technology, computers, and particularly virtual reality. This atmosphere was generated in part by the presence of several prominent speakers with a strong current interest in this new form of human-computer interaction.
interface, among them Timothy Leary, Terence McKenna, Richard Yensen, and Bruce Eisner. In attendance were also several staffers from Monde 2000, a magazine epitomizing the intersection between psychedelics and electronics by regularly featuring articles discussing psychochemicals side-by-side with computer hacking, virtual reality, and so-called “brain machines”—the new smorgasbord of personal hardware devices that are purported to alter consciousness in various beneficial ways.

The alliance of high technology and psychedelics might seem odd to those who remember the psychedelic culture of the late ’60s, often characterized by an antitechnological “back to the land” philosophy and an attempt to return to tribally rooted lifestyles. The retrospective approach persists as an unmistakable thread in the increasingly varicolored tapestry of contemporary psychedelics, weaving images born of widespread fascination with shamanic practices, organic psychedelics, and goddess-oriented post-feminist spirituality. But this revivalist strand is interwoven with an enthusiastic embrace of the scintillating electron web of the emerging digital culture.

Although the affinity between psychedelics and consciousness-changing “brain machines” is fairly obvious, the factors driving so many psychedelic enthusiasts’ fascination with virtual reality may be less easily discerned. When asked to speculate why developments in virtual-reality technology so consistently rivet the attention of psychedelically oriented people, several prominent figures present at the Bridge Conference suggested a resonance between the “multiple realities” experienced in psychedelic states and the “multiple realities” that are expected to become available to the skilled pilot of virtual-reality equipment sometime in the near future.

Many psychedelic voyagers have expressed the belief that the realities revealed to psychedelically enhanced perception are to a greater or lesser degree the creation of the user’s consciousness—and by extension, so may be the realities evident to “consensus” or “everyday” awareness. Virtual-reality technology allows its pilot to bathe the sensorium in a pool of information designed according to his or her own specifications, thereby providing “a way to experience this alteration of reality in a much more organized fashion,” as Bruce Eisner put it. Momi2000/Editor-in-Chief R. U. Sirius does not view this technotropic trend in psychedelic culture as being of particularly recent origin. He explains:

There have always been two strands in psychedelic culture and counterculture. A majority strand of people felt overwhelmed by the ugliness of Western civilization and wanted to get as much distance from it as possible. But about ten percent always consisted of “sci-fi” types. For instance, Digger manifestoes of ’67 and ’68 anticipated “machines of loving grace” that would usher in a post-scarcity culture.

Virtual reality is a manifestation of the increased blurring of the distinction between “solid reality” and the stuff of dreams, thoughts, and the mind. The malleable, rapidly transmitting world into which we’re moving is one in which acidheads should have a distinct type of advantage, having already experienced the plasticity and variability of the realities of the mind.

The growing trend towards technology is an inevitable recognition on the part of intelligent people that something interesting is happening and there’s something quite irresistible about it. Electronic technology is bringing about a realization of the kinds of visions you have on psychedelics of a global brain or nervous system. This link-up is happening naturally and technology is one of the ways we’re getting there.

Terence McKenna, who’s on the green side as far as ecology is concerned—but isn’t technophobic—incorporates both sides of the equation. He says that by the year 2012 whatever your vision will actually come to be. This kind of technology is literally moving towards that. When he talks about what you see is what you get, we’d all better make damn sure that what we’re seeing is worth getting.

Eisner and Yensen have expressed more refined visions of the possibilities latent within the interaction of electronics and alternative states of consciousness. Eisner explains, “I view psychedelics and virtual
Leary explained his interest in digital-imagery technology by citing "the power of visual signals to re-imprint the brain." He continued, "The eyes are the windows of the brain. The rods and cones of the visual apparatus are made of nervous tissue; they are actually extensions of the brain itself. The brain starts with diluted pupils." He now favors the development of "personalized, handheld digital-imagery devices that will empower the individual to control her own visual imprinting process." Leary concluded, "The human brain is where the real power is. The value of electronic communication technologies is that they can link up human brains.

Aside from digital technology, another cutting-edge scientific arena that has sparked tremendous fascination within psychedelic culture is that of Chaos Dynamics. This new theory is being fearlessly applied to a vast array of natural, social, historical, and even psychological phenomena. The advent of this scientific paradigm and its computer-generated fractal images (visual expressions of the mathematical equations that constitute chaos theory) were ubiquitous at the Bridge Conference, as they have been increasingly at most gatherings of the psychedelically minded.

UC Santa Cruz professor and Bridge Conference guest Ralph Abraham, Ph.D., perhaps the foremost proponent of chaos mathematics, has publicly acknowledged LSD as a major tool and source of inspiration in his work. Perhaps it is no coincidence, then, that many experienced psychedelic voyagers attest to the fact that fractal graphics bear a uncanny resemblance to the visual imagery observed under high doses of LSD and other psychedelics.

The visual resonance between fractal and psychedelic imagery may be contributing to the psychedelic culture's embrace of the paradigm of chaos in very subtle ways. One Bridge Conference attendee offered the following suggestion:

Fractal imagery may be providing psychedelic people with an affirmation of the validity and relevance of the psychedelic experience. Fractals have been found to be accurate representations of many phenomena and processes in nature. Thus, fractals tend to confirm the intuition of many psychedelic users that they're not "hallucinating," but observing something significant and real.

Consciousness is a natural phenomenon as well. At least some of the processes occurring in consciousness may also someday be successfully modeled by fractal equations. This supports the idea that much of the psychedelic experience may be a matter of consciousness observing itself.

Leary advanced an even more intriguing prospect:

I feel that it is inevitable that in the future, the pharmacology we have learned from ingesting plants is going to be used with a better understanding of the pharmacology of experiences. As we develop virtual-reality devices of such high resolution that you can put on a piece of equipment and enter a reality as convincingly real as this one, one of the possibilities is to actually monitor neurotransmitter release at the synaptic level, and relate that to the sequences of experiences that are presented. And though that process it's possible to develop sequences of experiences that produce certain neurotransmitter release patterns across individuals. So you have an experience that produces a change in the brain the way that a drug might produce a change in the brain. You begin to develop a non-drug pharmacology.

At a recent talk in San Francisco, Timothy Leary qualified and revised his perspective on technology—particularly virtual reality, which has become a major theme in his public appearances in the last few years. Pointing out that most funding for virtual-reality research and development can be traced to the military, he argued that the goal of technological endeavors has utterly failed to approximate the responsiveness, sensitivity, subtlety, and complexity of the human brain. He summed up this perspective by referring to the phrase "artificial intelligence" as "an oxymoron."

At virtual reality, Leary noted that current "goggle-and-glove" rigs of any sophistication require centralized systems so expensive that it will be years before they are available to the common consumer, and until then such technologies cannot empower the individual to create his or her own realities. He even stated that from the point of view of his individual-
Organic and Synthetic Psychedelics

The pro and anti-technological strands of psychedelic culture generate the most evident friction around an issue known as “the organic/synthetic debate.” Certain writers, including Ralph Metzner, Andrew Wulf, and Terence McKenna, tend to encourage use of organic as opposed to synthetic psychedelics for a number of reasons. Some suggest that psychedelic plants can be used more beneficially because the wisdom derived from millennia of involvement with such species has accumulated in the form of shamanic traditions of safe and conscientious usage. They assert that these ancient modalities are invaluable paradigms for the use of psychedelics in contemporary Western culture that currently lacks established containers for such practices.

The proponents of the organic viewpoint also hold that, since laboratory extracts and synthetic analogues have greater potency than natural sources, they may also present greater risks. It is argued that the long history of usage of certain psychoactive plants, on the other hand, has convincingly established their physiological and psychic compatibility with the human organism—and possibly has even evolved into a harmonious relationship between human beings and the sentient fields of energy or “plant devas” that many believe permeate the traditional psychedelic botanicals.

Those on the other side of the fence, including Bruce Eisner, Dennis McKenna, and Alexander Shulgin, do not generally advocate the use of synthetics over organics. Rather, they usually argue that the distinction between the two is not particularly meaningful on a practical level. For instance, many well-known poisons are found in plants, and some of them appear in significant concentrations in certain traditional organic psychedelics. The resultant argument is succinctly summarized by an underground chemist in the pages of Psychedelic Informer and Experimenter: “A molecule is the same whether it is created in a plant or animal or in laboratory glassware. LSD is semi-synthetic, and strychnine is natural. Does that mean that LSD is bad and strychnine is good?”

Some suggest that any effective synthetic psychedelic probably owes its psychopharmacological activity either to the presence in the nervous system of a close analogous analogue or to a similar psychoactive compound occurring in the plant kingdom that has not yet been isolated. Two major psychopharmacologists have even put forth largely similar arguments that such “synthetics” are necessarily “natural”!

The recent notoriety of Terence McKenna suggests that the organic/synthetic debate is largely limited to academic circles; such distinctions seem rarely discussed among the underground and professional circles; such distinctions seem rarely discussed among the older and the younger generations of psychedelic enthusiasts, bases his explanation of the preference for mushrooms among younger users on this kind of distinction:

In the early 70s, we were Earth-bound, but not Earth-connected. We were shackled to the illusion of the Earth as nothing but a dirtball, and of ourselves as tiny ants crawling on its surface, jostling with each other for domination. LSD broke us out of that mode. Acid is a sky-energy psychedelic; it rips you from your conceptual moorings and allows you to float or fly and get a bird’s-eye view of the things you’ve been attached or committed to.

So in those days, LSD was just what we needed. We had to be broken free of our bondage to the illusion of the dirtball-planet and get a good look at everything around, so we could then consciously choose what we wanted to align ourselves with on the being level. And some of us saw a living, breathing, wounded Mother Earth, and chose to commit ourselves to that.

Many of the younger generations are more advanced than we were. Ecstasy has bonded them to each other, so they already have that piece of work out of the way. And because of the accelerated pace of change in the world in which they grew up, they’re not really stuck to any dogmas or ideas. They’re already cut loose and flying; they don’t need LSD to help them make that break. Instead, they need to ground themselves in something.

In some ways this new generation is awesomely wise: at an age when we were just beginning to explore, they already know what they want and what they need. It’s what we all need in order to save the planet: to bond with the Earth. So developing their Earth-connection through the medium of the mushroom—the Earth’s sacred, time-honored offering to the human brain—makes much more sense to them than sky-flying with LSD.

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Women in Psychedelics

Another manifestation of receptive, Earth-oriented, feminine-centered qualities in psychedelic culture is the growing interest in "neo-pagan," pantheistic, Wiccan, and Goddess-focused ways of life (a trend also highly visible in the post-feminist and alternative spirituality movements). Many of these belief systems place high value on the feminine, receptive, and healing qualities of the shaman who played an important role in archaic cultures now thought by many to have been largely matriarchal or "partnership"-based in social structure. (It is worth noting in this context that in many traditional societies, the shaman, though usually male, was often androgynous in appearance and sometimes participated in a ritualized kind of cross-dressing.)

Much as in other arenas of Western culture, the exploration of psychedelic consciousness has been largely dominated by men—or so it would appear from the manner in which the movement has usually been documented. In an effort to encourage the recognition of the roles of the field's many female pioneers, the Bridge Conference programming offered a panel titled "Women in Psychedelics." This event featured Botanical Dimensions founder Kat McKenna, anthropologist and author of The Visionary Vine Marlene Dobkin de Rios, Ph.D., archivist Cynthia Palmer, MDMA researcher Debby Harlow, and '60s Leary colleague Nina Grabois, whose newly published psychedelic autobiography One Foot in the Future has been warmly received by the psychedelic community.

Glimmerings of a Brighter Future

In spite of the political and social conditions of the early '90s—which at times seem almost monolithically opposed to the exploration of consciousness through the agency of chemical catalysts—the atmosphere of the Bridge Conference reflected an optimism that can be observed also among today's psychedelic community at large. The gathering clearly demonstrated that many people continue to view psychedelics as important agents of personal, psychological, cultural, and social change. Even in the face of enormous cultural tides in which they can now cause barely a ripple, these individuals steadfastly devote their energies, resources, and even their lives to the investigation and propagation of the mysterious powers of these substances.

Mainstream culture has recently provided such intrepid psychedelic optimists with at least a faint glimmering of hope that the tides may soon turn in a more favorable direction for their endeavors. The July 1991 issue of Gentleman's Quarterly featured a lengthy article on the prominent role of psychedelically fueled inspiration among Silicon Valley's tech pioneers. Perhaps the most favorable mainstream press the psychedelic issue has received in a quarter of a century, the article concluded:

Part of the recipe for [creative] abundance is chemical. How should we react to this? ...and tolerant and catalyze possible. Answer, the pioneers will continue to pioneer, assuming whatever risks they deem necessary. Judge them not by the trips they take but by the gifts they bring back.

For many of these pioneers, the right to self-administer intelligently and responsibly with psychochemical agents for a wide range of explorative and therapeutic purposes is plainly and simply a requisite freedom. It is a freedom that many people in our society desire and seek; indeed, the barriers of opposition—and the vision those minds continue to offer to those who oppose them. And so I close with an invocation offered by the author of the unique volume you now hold in your hands: "There is no synonym for freedom."
NOTES ON KETAMINE

In the last decade, further research and anecdotal evidence have accumulated to suggest that the mental effects of ketamine can be grouped into six broad categories: (1) dissociation, resulting in an almost totally dispassionate perspective, and classic dissociative phenomena such as “out-of-body,” “astral travel,” and “near-death”-type experiences; (2) entry into “information networks” in a kind of “cyberspace” specific to this compound; (3) contact with and participation in “alternative realities”; (4) communication with “extraterrestrials” or “disembodied entities”; (5) Tantric-like enhancement of sexual activity; and (6) assistance in personal and creative problem solving.

Category #1, dissociation, has been discussed in the section on ketamine in the “Contrasting Profiles” chapter of this book. Offered here are brief descriptions of the other five categories.

(2) Many users talk about entering cyberspace-like information spaces, what one aficionado calls “metaconnection networks.” In this regard John Lilly discusses his communications under the influence of ketamine with ECOO (Earth Conscience Control Office), a hierarchy of entities who manage coincidences in a fashion intended to accelerate the motion of human beings along their psychospiritual evolutionary pathways (see The Scientist).

(3) Many ketamine users report that they can actually enter and participate in the alternative realities they perceive when using this compound. After repeated experiences of this sort, some users discover that they can consciously create, construct, control, and alter these worlds. As one investigator explains, “It’s as if you’ve got a reality-synthesizer inside your head. You’re in front of a holographic TV screen with no need of a remote control, because with your thoughts alone you can design your own program, enter the screen, and participate as both actor and director.”

(4) The works of John Lilly (particularly The Scientist and John Lilly. So Far...) provide the most vivid and detailed personal accounts of contact with “extraterrestrials” or “disembodied entities.” A prominent California transpersonal psychiatrist and his wife have also privately attested to experiences of this sort which they describe as “very convincing.”

(5) The minority of ketamine users who maintain sexual interest under this compound’s influence have found the experience worthwhile.

One user reports that “the best place to take ketamine is in bed with someone you love. The mingling of energy fields is terrific. Ketamine can be a lesson in Tantra.”

(6) Many have found ketamine a useful agent for creative and personal problem solving, an application emphasized in part by the state of objective insight the compound’s dissociative effects. One user claims to have died on a sound wave, witnessed an extraterrestrial battle, and reported a battle of wills while under the effects of this psychedelic with persistent anal bleeding, the result being a two-month remission of the condition.

Interest in ketamine has recently grown within the psychedelic and alternative spirituality movements as well as in “recreational” contexts (one user claims that small intranasal doses have become “as popular in Los Angeles dance clubs as cocaine was a few years ago”). One result has been an alarming increase in reports of a pattern of compulsive consumption which Lilly describes as the “repeated use trap.” Although sudden termination of this kind of usage has not been observed to entail physiological withdrawal, ketamine has nonetheless earned a reputation as something of a “psychadelic heroin” in spite of its apparent positive potentialities. In some cases, long-term frequent use has generated a chronic state of disso- ciation characterized by schizoid qualities, including grandiose and paranoid delusions, a condition that has created consequences ranging from embarrassment to injury and even a few deaths. This state disappears rapidly once usage ceases.
Organizations and Publications

ORGANIZATIONS

The Albert Hofmann Foundation

The purpose of the Albert Hofmann Foundation is to maintain a library and world information center dedicated to the scientific study of human consciousness. Our library, art gallery and conference center house an extensive collection of books, journals, research reports, and art, and are open to scholars and the public. The inauguration of the Albert Hofmann Foundation in 1988 marked the 50th anniversary year of the first synthesis of LSD by Dr. Hofmann at Sandoz Pharmaceuticals.

The Foundation began leasing a building for the purposes described above on April 1, 1991. It publishes a newsletter; offers a catalog of books, audiocassettes, and videotapes; and has an on-line computer bulletin-board service featuring psychedelically oriented material. The bulletin board number is (310) 315-0484. Participants may enter their own contributions. Founded by Oscar Janiger, M.D., and psychotherapist Robert Zanger, the Hofmann Foundation has sponsored many noteworthy public gatherings and lecture events in the Los Angeles area.

The Albert Hofmann Foundation
1725 21st St.
Santa Monica, CA 90401

Botanical Dimensions

Botanical Dimensions is a nonprofit organization dedicated to collecting living plants and surviving plant lore from cultures practicing folk medicine in the tropics worldwide. Founded by Terence and Kat McKenna, Botanical Dimensions maintains a ten-acre sanctuary in Hawaii for endangered species of ethnobotanically and ethnomedically valuable plants. Their collection includes samples from Amazonian, Asian, Pacific, and African sites. The organization offers an irregular newsletter titled Flora.Via.

Botanical Dimensions
Box 807
Occidental, CA 95465

Island Group and MAPS

The Island Group

Founder Bruce Eisner describes the Island Group (which takes its name from Island, Aldous Huxley's novel of psychedelic utopia), as "a free association of individuals dedicated to the creation of a psychedelic culture." Inaugurated in July 1991, the Island Group's short-term goals are "the creation of discussion salons in major areas all over the country, and the creation of a nonprofit foundation that will give grants to researchers in consciousness transformation." Its long-term goal is "the establishment of a psychedelic community somewhere in the world that will provide new models for how people can relate to one another." The Island Group holds weekly meetings in Santa Cruz and has begun publishing a newsletter entitled Island Views.

Island Group
1803 Mission Street, Suite 175
Santa Cruz, CA 95060
(408) 427-1942

Multidisciplinary Association for Psychedelic Studies (MAPS)

Founded by MDMA-advocate Rick Doblin, MAPS actively funds MDMA research, serves as an information center, and seeks to assist "the gradual medicalization and legalization of psychedelics and the states of mind they engender." MAPS has sponsored two major events, a conference entitled "Psychedelics in the 1990s: Regulation or Prohibition" in Berkeley, California, in February of 1990; and an international conference in Bern, Switzerland, on pharmacologically assisted psychotherapy in November and December of the same year. MAPS publishes a newsletter and offers copies of hard-to-obtain research papers and books.

MAPS
1801 Tippah Lane
Charlotte, NC 28205
(704) Psychedelic Renaissance 358-9830
PUBLICATIONS

Mondo 2000

Originally High Frontiers, then Reality Hackers, now Mondo 2000, this magazine—having recently published its tenth issue, and achieving a circulation of more than 25,000—features an ever-broadening array of topics dealing with "the enhancement of human life: ways that people can change the nature of their relationship to existence," according to Editor-in-Chief R. U. Sirius. "Psychedelics have always been one of the favored and most interesting ways of doing that," he continues. "I think we'll always be interested in new information on psychedelics." Whereas early issues focused largely on psychedelics, recent ones have included music, fashion, art, computers, virtual reality, life extension, intelligence enhancement, nutrition, and other subjects. Mondo 2000 is hefty, unique, slick, visually stunning, and often wry and iconoclastic in tone.

Subscriptions and business:
Fun City Mega Media/Mondo 2000
Box 10171, Berkeley, CA 94709-5171

Correspondence:
Box 40271 Berkeley, CA 94704

Psychedelic Monographs and Essays (PM&E)

An outgrowth of a 200-circulation mimeographed newsletter originally published in 1983, PM&E is an annually issued trade paperback anthology with a circulation of over 10,000, now in its sixth issue. Publisher and editor Thomas Lyttle describes the content as ranging from "the extreme underground to the highly scientific and technical, from the very personal to objective journalistic reports." He elaborates, "We provide an open forum for anyone with a clear voice, laying no editorial judgement as to whether these substances are helping people or driving them crazy." With recent issues PM&E has become increasingly literate, sophisticated, and substantial, and now features contributions from many major figures in the field, as well as fairly high production values.

Psychedelic Monographs & Essays
Box 4465
Boynton Beach, FL 33424

Psychedelic Illuminations

The Summer 1990 debut issue describes this new journal as a "quarterly paper trip into visionary consciousness and the exploration of psychedelic/cyberdelic society. We seek to provide a rich and diverse sampling of ways mapped and unmapped, diverging and converging. From original shamanic traditions to cyberdelia to extropy... one of our important tasks is to explore the value of plants as teachers... We are dedicated to the pursuit of truth and the support of those who pursue truth. We neither discourage nor advocate the use of illegal drugs as this is an individual decision. Our aim is to provide a forum for ideas and information so that those who choose to alter their own body and brain states may be as well-informed as possible."

Attractively printed on a rainbow of colored paper, the first issue features the edited transcript of a previously unpublished talk by Terence McKenna titled "Understanding in the Light of Nature."

Psychedelic Illuminations
Box 3186
Fullerton, CA 95634

bOING-bOING

Now in its sixth issue, this graphically innovative and beautifully illustrated magazine focuses on psychedelics and other technologies of consciousness change, along with related psychospiritual, social, political, and cultural concerns. Ranging in content from the fairly serious to the intentionally absurd—including comic strips—the literate and original magazine is characterized by what one can only call "attitude." Probably the most cutting-edge, well-conceived, and refined in execution of the current crop of similarly oriented journals for the lay audience.

bOING-bOING
Box 12311
Boulder, CO 80303

Trajectories

This quarterly newsletter, now in its seventh issue, features a futurist orientation and covers a range of issues reflecting the concerns of publisher and co-editor Robert Anton Wilson. Regularly discussed are conspiracy theories; anomalies such as UFOs and crop circles; the debate over drug legalization and other aspects of politics and current events; and consciousness technology, as well as other leading-edge scientific subjects such as the "new physics." Trajectories regularly runs new writings by Wilson, book reviews, and poetry. Articles are generally concise, incisive, and "heretical" in viewpoint.

Trajectories
The Permanent Press
Box 700305
San Jose, CA 95170
High Times

Entering its 18th year of publication, this popular journal of the drug counterculture is once again becoming attractive to those interested in psychedelics other than marijuana. In the last two years, Times has printed lengthy articles covering ketamine hydrochloride, the Bridge Conference, and other topics falling under the rubric of the "neuro consciousness frontier." The November 1991, for instance, issue featured material on the intersection of virtual reality and psychedelia, an article on MDA inhibition by Terence McKenna, and an interview with "Captain" Al Hubbard.

High Times Magazine
235 Park Ave. South
New York, NY 10003
If 800) 435-0715
Subscriptions: $29.95/year
High Times, Box 410, Mt. Ma

Books

Of the plethora of relevant books that have been published over the last decade, two of the most noteworthy are outstanding sociocultural histories of LSD in the United States. In 1985 Grove Press published Acid Dreams: The CIA, LSD, and the Sixties Rebellion by journalists Martin A. Lee and Bruce Shlain. This volume focuses on how federally funded research in mind control during the height of the Cold War played an important role in the early dissemination of LSD. (Ken Kesey and Allen Ginsberg, for instance, were first exposed to the drug through such programs.)


The best selection of books about psychoactive drugs is available from Books-by-Phone. Many of the books mentioned in this volume may be purchased from them. They will send you a free 32-page catalog if you call or write them at:

Books by Phone
Box 522
Berkeley, CA 94701
(800) 558-2665

MDMA Update
by Peter Stafford

The major area where exciting developments have occurred since the appearance in 1983 of the second edition of Psychedelics Encyclopedia has been among the MDA family of psychedelics, especially regarding MDMA, also known as "MDMA," "M," "Adam," and "Ecstasy." In the second edition, this molecule was mentioned only three times: concerning its patenting in 1913, U.S. Army tests on its toxicology in 1953, and its effects in comparison to those of MDA. MDMA, however, was soon thereafter to ride the crest of yet another wave of psychedelic enthusiasm.

MDMA’s Historic Advance

The course of MDMA’s history has recapitulated to a considerable degree that of LSD. The “turn-on” this time began among chemists and psychiatrists after a preliminary announcement from the team of Shulgin and Nichols in 1978 in a volume titled The Psychopharmacology of Hallucinogens. There followed a chain-reaction of growth in its distribution, which, in this instance, even manifested in a Tupperware party-like pyramid scheme for sales.

In April 1985 Newsweek magazine became the first of the major media to report on the phenomenon, declaring that "This was the drug that LSD was supposed to be, coming 20 years too late to change the world." During mid-summer 1985, MDMA became a subject of fascination for the media, eliciting comments in several nationally distributed magazines and newspapers, as well as in other periodicals, television, and radio. The headlines were opened to an enormous amount of attention, with articles on the subject generally starting off with a remark from a respectably presented user to the effect that he or she was career-oriented and did not favor drug use in general, but had found MDMA to be of significant value. Reports centered on “New Age,” “Yuppie,” and student interest; dissolution of the effects of various kinds of trauma; success in couples’ counseling; and shortening of the duration of psychotherapy. But attention soon came to focus on use among the young, epitomized in the comment made by “Uncle Duke” of the syndicated comic strip Doonesbury: "Shrinks have been using it for years. But the kids, as usual, ruined it for everyone. They turned MDMA into a damn party drug.”

As had previously been the case with LSD, it was at this point of wildfire-like spread that the tide turned. The previous October, Congress had enacted a law granting the
DEA Administrator the option of a one-year curtailment of any drug on an "emergency" basis, after Alpha-methyl fentanyl ("China White," a so-called "designer drug" akin to morphine), had caused rapid onset of symptoms of Parkinson's disease in at least one user. At the end of June 1985, MDMA was banned by the Drug Enforcement Administration on an "emergency" basis, the first compound to be restricted in this manner. Acting DEA Director John Lawn placed MDMA into the most restrictive drug schedule of all. To a considerable degree it became confused in public discourse with this Parkinsonism issue, even though it has no such effects.

This proscription against its use, however, was followed by a group of psychiatric and psychological professionals who hoped to be allowed continued access to MDMA in their work. Soon thereafter, Science magazine published a report claiming that MDA injected repeatedly in large amounts—about 150 times the human dose, by weight—into rats had caused neurotoxicity. Although the study involved a different drug and massive injections given consecutively to a different species, an alleged tie-in to MDMA became an important supportive justification for the just-announced "emergency" ban.

Subsequent investigations did duplicate the new charge, in doses not that much greater than the therapeutic dose. Tremendous fear was generated. Other factors also contributed heavily to the DEA's crackdown on MDMA: indirect usage, primarily in Texas and California; and the well-meaning efforts on the part of UCLA psychologist Ron Siegel and Sarasota, Florida, student Rick Doblin.

In Dallas and Fort Worth, busing usage of MDMA had led to over-the-counter salve bars. A Texas laboratory was producing something like 200,000 tablets a month, and there were even strip-tease artists in Dallas nightclubs who had become involved with MDMA. This latter development was apparently of immense concern to the DEA, which mentioned strippers and Detroit's biggest nightclubs who had become involved with MDMA.

After a few profound experiences catalyzed by MDMA, Rick Doblin soon after proposed the good-faith strategy of "telling all"—and went to the trouble of contacting Carlton Turner, Reagan's "drug czar," and various other regulatory officials, and even the National Federation of Parents for Drug-Free Youth to inform them of what in his view were the potential positive utilities of MDMA and other psychedelics. Doblin's hope was that the authorities would recognize the possible subsequent sources of information by providing a positive first impression of the new substance. The result, however, was that DEA officials and groups became more alert to the presence of a drug of which they had largely been previously unaware. Many users afterwards reproached Doblin for his innocence and openness. Most had been doing their best to keep information about MDMA under wraps, fearing that if the truth were known this compound would be outlawed.

(A central figure in the formation of the foundation that raised funds so that psychiatrists might be heard in MDMA hearings, Doblin has since set up the Multidisciplinary Association for Psychedelic Studies, which, among other activities, has financed the examination at Stanford and Johns Hopkins of the central role of past MDMA users. Unfortunately, some of the advertising for this program, featuring the ostentatiously humorous headline "This is spinal tap!" may have unintentionally inspired greater fear.)

Ronald Siegel, Ph.D., appeared repeatedly as an "expert witness" on the subject of MDMA. In widely distributed quotations, Siegel warned of possible dangerous results of MDMA usage, comparing it to PCP ("Remember what they used to call that? The Peace Pill," and exaggerating its toxicity. In a barrage of articles, he focused on variations but minor side-effects, and insistently reminded readers of "a psychotherapist who took it, disappeared, and turned up the next week directing traffic in Chicago.""

All of these influences, along with many lesser ones, came to a head in a set of hearings held in Washington, D.C., Kansas City, Missouri, and Los Angeles. Eventually, testimony from 34 witnesses, including many psychiatric and psychological professionals, was archived in 10 volumes.

After an unusually long wait, the DEA's Administrative Law Judge Francis Young, in a 90-page opinion that presented 100 "findings," found in favor of the psychiatrists. He ruled that MDMA should be placed in Schedule III, where restrictions for continuing research were considerably less stringent than the DEA Administrator desired.

However, the decision was not binding on the Administrator, who quickly restated his earlier arguments and reinstated his original ban on MDMA.

Contested again, the DEA categorization was overruled by the First District Circuit Court of Appeals, but that reinstated a second time. These contests were expensive and time-consuming, and thus another attempt at reclassifying MDMA is not presently on the horizon. In March 1986, MDMA was permanently placed in Schedule I of the Controlled Substances Act, meaning that it was declared to be of "no medical value" and of "high abuse potential." A Schedule I rating presents significant impediments even to scientific research. The consequences of an iron-clad ban on the use of MDMA, and additional claims that it promotes neurotoxicity in humans quickly led to a falling off of usage and interest for a few years. In the underground market, it has led, as had been predicted, to an increase in more suspect products. It is still, however, produced and consumed in considerable quantities. Doblin has estimated sales at over 100,000 doses a month—both in the U.S. and more recently in Europe.

The most noted increase in enthusiasm has probably occurred in England, where a large number of clubs began to cater to what soon came
to be known as "Acid House" music. The phenomenon has been chronicled primarily by the English magazines \textit{The Face} and \textit{I.D.}, with commentary elsewhere often to the effect that "Youth is once again out having fun!" as one writer put it. A symbol taken up by this new social crowd was "the Happy Face"—a circular, yellow, button-eyed rendition of a smiling visage—along with such slogans as "A + E = MC²" (meaning "Acid" plus "Ecstasy" amounts to tremendous energy).

At the end of 1989, the National Institute on Drug Abuse (NIDA) published an investigation into the attitudes and experiences of 100 MDMA subjects. This study, authored by Jerome Beck, Deborah Harlow, et al., attempted to obtain a representative sociological cross-section that would reveal patterns of usage. "Bingers," which particularly troubled NIDA, turned out to be far less dangerously affected than had been anticipated. Given the small observed incidence of complications and the consistent benefits most users reported, the authors recommended "Re-examining the scheduling criteria for potential therapeutic adjuncts such as MDMA."

**Chemistry of MDMA**

The full name of MDMA is N-methyl-3,4-methylenedioxyphenylisopropylamine.

In the first journalistic effort at a comprehensive discussion of MDMA, \textit{Ecstasy: The MDMA Story} (Ronin Books, Berkeley, CA, $17.95), Bruce Eisner does a fine job of recapitulating the fervor of initial enthusiasms, the varieties of effects, and MDMA’s tangled, ping-pong ball history. His fifth chapter provides "A Guide for Users." Two appendices are worthy of special attention. In one, Rick Doblin discusses the issues of neurotoxicity; in the other, Alexander Shulgin annotates 258 references from the MDMA scientific literature. The latter (53 pages long) is presented in 11 sections that are virtually complete through October 1988. Readers who are curious about any aspect of these studies can pursue their interest under the categories of chemistry (8 entries), in vitro studies (10), biochemistry (9), pharmacology (29), neurochemistry (51), toxicology (18), clinical studies (10), analysis (19), reviews and commentaries (71), quotations from reviews in which MDMA has been noted (9), and legal history (25).
Like other members of the MDA family, MDMA has a much simpler skeleton structure than that of the classic psychedelics LSD, harmine, hogaine and psilocybin. It and other "phenylisopropylamines" have as their basic structure a six-sided carbon ring attached to a pentaagon formed by two oxygen atoms that come off the ring and bridge to a methylene (a carbon plus two hydrogen atoms). There is also a side-chain linked to the carbon ring, composed of carbons, hydrogens, and a nitrogen atom. There are thus three main clusters involved in the formation of members of this family: a carbon ring of six atoms, an attached five-sided structure created by the methylene and two oxygen atoms, and a side-chain of a dozen-plus atoms — along with assorted other atoms that can otherwise

MDMA has a simpler structure than that of the classic psychedelic.

In addition, the five-sided bridge can be attached to the carbon ring in three different ways. The resulting molecules come in two versions that are mirror images of each other and are referred to as "stereoisomers." One bends a polarized beam of light to the left (the levorotary form), while the other does so to the same degree but to the right (the dextrorotary isomer). These are of different psychoactive strengths, but usually come together in what is called the racemate (an optically neutral mixture of the two isomers).

In contrast to classic psychedelics, it is the right-handed isomer of MDMA that is much more active than the left-handed form. This reversal is almost unique among such agents, and is thought by some researchers to indicate that MDMA belongs to an entirely different category of psychoactives. (The compound MBDB is the other similar example recently described in the related literature.)

In its submission stating the case for placing MDMA in Schedule 1, the DEA acknowledged that the effective dose of the left-handed isomer is approximately 300 milligrams, in contrast to 80-120 milligrams for the right-handed one. "This reversal of the activity of the optical isomers of MDA and MDMA suggests that MDMA does not act by demethylation to MDA," it declared, along with indicating that the brain activity involved was likely quite different. These were important distinctions to acknowledge — but they were then ignored in the rest of the DEA’s case for scheduling.

The difference in the structures of MDA and MDMA is the attachment of a methyl group (a carbon and three hydrogen atoms) to the nitrogen atom at the tail of each molecule. This is the same structural difference as that between amphetamine and methamphetamine, and has the effect of reducing both the length of the resulting experience and the physical side-effects. Just as altering the psychoactive oils in nutmeg by aminizing them (attaching an amine ring) has the effect of removing such consequences as dryness of the mouth and aching joints and increases the lucidity of the experience, so methylating the semi-synthetic MDA at the nitrogen position brings about a far less exhausting and less lengthy trip for those sensitive to amphetamine-like compounds.

MDMA requires about a thousand times the weight of a single dose of LSD if it is to be effective. This substance is measured in milligrams, with 100-125 milligrams the usual dosage (compared to 100-125 micrograms used in the average contemporary dose of LSD). Since about a thousand times the quantity of the precursors are needed for the concoction of MDMA, its "street cost" per dose is typically five to ten times that of LSD — even though it involves a much simpler process, much like that used in making amphetamine, which does not require construction of the complex chemical skeleton that characterizes the lysergic acid amides.

Physical Effects of MDMA

In the scheduling hearings regarding MDMA, the DEA set out to establish that this substance had what it called a "high potential for abuse." The only evidence presented, however, consisted of eight admissions to emergency wards cited by DAWN (the Drug Abuse Warning Network) over a six-year period, which was followed by four more years with no admissions at all. If anything, given the enormous amount of MDMA that had been consumed by this time, these figures suggest reassurance that its abuse potential and dangers are quite low.
The DEA called Daryl Indrea, a medical director at the Haight Ashbury Free Medical Clinic in San Francisco, as an expert witness who might paint a picture of abuse by street persons who were said to be taking MDMA in alarming amounts, resulting in serious problems.

A confrontation resulted in which two doctors from the Haight Ashbury Free Clinic were questioned, one representing each side in the dispute, who eventually agreed that the incidence of abuse that they had seen was very slight — less than 1% of those coming in for help. They also stated that most who were having difficulties simply needed a supportive environment and tended to become reoriented as soon as the drug was metabolized.

Administrative Law Judge Francis Young summed up his "Conclusion" in this matter with the following remarks:

"The evidence of record does not establish that... MDMA has a "high potential for abuse." Accordingly, it cannot be placed in Schedule II. We have already seen that it cannot be placed in Schedule I, because it does have "a currently accepted medical use in treatment" and it does not "lack... accepted safety for use... under medical supervision.""

No one has argued here that the evidence establishes that MDMA "may lead to moderate or low physical dependence or high psychological dependence" or "may lead to severe psychological or physical dependence," another requirement for Schedule II placement. The evidence does not so establish. For this reason, also, MDMA cannot be placed in Schedule II.

... Drs. Grinspoon, B at al. argue that sufficient evidence of abuse potential has been shown to warrant placing of MDMA in Schedule III.

The Administrative Law Judge agrees, concluding that the evidence does establish MDMA to have "potential for abuse less than the drugs or other substances in Schedules I and II," and to establish that abuse of MDMA "may lead to moderate or low physical dependence or high psychological dependence."

The administrative law judge concludes that the evidence of record requires MDMA to be placed in Schedule III.

The main reason MDMA has little abuse potential is that it exhibits tachyphylaxis—a rapid build-up of tolerance so that repeated usage within a short space of time leads to the loss of desired effects. In contrast to its "heart-opening" and stress-reducing qualities, this substance, if taken within a few days of a prior ingestion, tends paradoxically to produce an increase in anxiety and many of the least desirable characteristics of amphetamine overdosage. Very few people are attracted to such effects, and even those who are could achieve them more cheaply via other substances.

MDMA does, however, exhibit an unusually high ratio between the amount needed to get minimum effects and that which may be dangerous due to a temporary rise in blood pressure. For most users, 50-75 milligrams is required to be effectively perceived, while 200-250 milligrams (a fifth to a quarter of a gram) is an amount verging on overdosage. Such a narrow window for the proper dosage range is uncommon with psychedelics in general, but is an important consideration in regard to the MDA family. People suffering from hypertension or heart problems, who are using MAO inhibitors, or who are epileptic or pregnant, are not considered to be good candidates for experimentation with MDMA or MDA, and most informed sources caution that no more than a quarter of a gram of either substance be taken over a short period of time. Carelessness and human nature being what they are, on occasion some individuals have ingested larger amounts and survived. In his appendix to Ecstasy: The MDMA Story, Alexander Shulgin cites several papers about such incidences for the reader who is curious.

In discussing MDA and MDMA, psychiatrist Claudio Naranjo points out that a tiny percentage of the population is intensely sensitive to one-ring substituted amphetamines. Such persons may exhibit extreme reactions including sweating and hypertension as sometimes occurs with other amphetamine-like compounds. His recommendation is that an initial experience be of a low dosage.

There also have been a few incidents of apparent allergic reactions that required medical intervention. The clearest of these was presented at an MDMA conference in 1986 in Oakland and appears to have involved only a moderate dose of pure MDMA. An abbreviated version of this report was published in the October-December 1986 Journal of Psychoactive Drugs.

The kinds of reactions reported here, while of great concern when they do occur, are nonetheless very uncommon. Psychiatrists Joseph Downing and Philip Wolfson, presenting results of a toxicity study of 21 subjects, offer typical conclusions: "Other than a brief and moderate rise in pulse and blood pressure, the researchers found no significant abnormalities... up to 24 hours after ingestion."

In healthy individuals who do not take it to excess, MDMA has a reliable record of producing its desired effects. Most probably, under 2.5% of those who have tried it have not placed a positive value on the experience. Those who find it problematic generally complain of the symptomatology associated with unusual amphetamine reactions—a vague but pervasive discomfort, chills, excessive sweating, or lack of lucidity. Even some who do enjoy the experience find that they feel somewhat languid during its initial phase, or a bit drained and tired the next day. These effects are not nearly as pronounced as with MDA, but they can be troublesome. They can be reduced considerably by taking magnesium, potassium, zinc, and tyrosine supplements either concurrently with ingestion of MDMA or before going to sleep after the "trip" has run its course.
end by quirky eye movements, jaw clenching, and may feel somewhat nervous or irritable when "coming down." These again are common symptoms-like reactions.

The "eye-wiggle," known medically as "nystagmus," usually passes quickly, and jaw tension can often be ameliorated by chewing gum or by use of the prescription drug propanolol (which has been given by a number of psychiatrists for this purpose to 5 milligram Valium). As for the harshness of the "come down" for especially sensitive individuals, some who are quite psychiatrists for this purpose) or 5 milligrams Valium. As for the harshness of the prescription drug propanolol {which has been given by a number of clients to help prevent a "come down" in individuals who are particularly sensitive to the effects of MDMA}

In spite of these occasional vicissitudes, the normal course of an MDMA trip generally provides the user with a pronounced sense of physical well-being, heightened balance and agility, and a sense of being "well-oiled" in bodily movement. Often this feeling results in the kind of free-flowing dancing observed at "Acid House" events and social gatherings at which MDMA is in use. As well, many practitioners of yoga and related disciplines have asserted that they can perform considerably better at the human dose level, and no negative behavioral or functional effects are as yet associated with MDMA.

Reports in Science magazine and The Journal of the American Medical Association have raised the greater fear that MDMA use necessarily causes neurotoxicity. As might have been expected, this possibility has been highly trumpeted in the press. Those studies, however, have been based on immense amounts of MDMA given repeatedly to laboratory animals, and have usually been accompanied by the qualification that the results may not apply to ordinary human usage. Over the last four years, more careful examinations preliminarily indicate that there is no such risk at the human dose level, and no negative behavioral or functional effects are as yet associated with MDMA. Extensive animal testing as well as examination of human spinal fluid of MDMA users has been and is currently taking place. The results are discussed by Rick Doblin in Appendix II of Ecstasy: The MDMA Story.

Mental Effects of MDMA

It is in the realm of consciousness — the psyche, the mind, and the soul — where the results so far seen from MDMA make it one of the most fascinating, mysterious molecules discovered during this century. Its actions are little understood as yet. But it is clear that it has an extraordinary and unprecedented heart-opening or empathy-generating effect, that it can reduce stress, and that insights from the experience can have lasting effect — without, as is often the case with the classic psychedelics, either frightening or "playing tricks" on the user.

A large body of literature has by now been published that shows both the richness of MDMA's effects and the difficulty in summarizing, explaining, or analyzing them. Outstanding characteristics of the substance have been observed in relation to psychotherapy, sexuality, amelioration of the effects of trauma and depression, and spiritual development.

MDMA's Power and Subtlety. Compared with previously known psychedelics, MDMA is a remarkably subtle agent. LSD and psilocybin are somewhat coercive and uncontrollable to many who have used them, often leading them into areas of experience where they were reluctant to go. This is why LSD had enormous impact in certain subcultures, but was essentially rejected by most of the American public.

MDMA, however, works in quite a different way. It is mild in its action, but somewhat quite frequently generates similarly life-changing results. For all its gentler nature, it is powerful. It has brought people to crossroads; often only later do they recognize that they have gotten onto a different path. An account from Peter Nasmyth of London expresses this quality:

Some time later I looked at my watch. Forty minutes had passed. I looked at my friend. Was she any different? Could I see into her soul as had been promised? Was I feeling great empathy and love?
No, in fact we were having an argument. Tired of the park, she wanted us to go home, while I preferred to stay there with the hilltop view of London. My heart was beating a little faster, but I put it down to anxiety.

Another twenty minutes passed. SHU nothing. Perhaps the drug was just too subtle for me. Disappointed, I gave in to her wish to go home. We started down the hill. But by the time we reached the bottom I’d forgotten how to be angry. We were having a new conversation, examining our goals in life. What had we done so far? Had we really followed those vows of adolescence? Did either of us know what it was like to be close to another human being? For the first time in years I confessed my childhood yearnings to become a Marine; she told me she’d wanted to marry Woody Allen. Defenses were dropping at a rate it normally took people months to achieve. Suddenly I knew I could trust her with my closest secrets... strange because not half an hour before I wouldn’t have cared if I never saw her again in my life. I told her this and we both laughed.

Predictability and Reliability. With the classic psychedelics, there is almost always an element of unpredictability. While the experience of MDMA is somewhat affected by circumstance, it is remarkably consistent. Bruce Eisner, in introducing his study of MDMA, had this to say about its reliability:

As a result of these differences between MDMA and its predecessors [MDA and LSD], the experiences catalyzed by MDMA are nearly always positive. The set (expectations of the user) and the setting (the environment in which the drug is taken) have much less influence on the outcome of the MDMA experience than is true for LSD. The depersonalizing, hallucinatory experience of LSD requires much more preparation and structuring than MDMA does to produce a favorable outcome. And even with the most careful planning and environment, the dramatic consciousness changes produced by LSD can be frightening or even shattering for some people.

Here are comments from three other inner-world veterans who have been concerned about this point:

(1) I have given it to... 300 or so people over the past five years, in quasi-clinical ways but also recreationally, and in rituals. And I’ve seen almost nothing but really positive experiences people have. Again, with varying long-term effects. I think there is a remarkable commonality across the experiences with this drug. I would say that you could easily do a study on it. You could get 50 people, and you would have 50 really, really similar reports about what their experience was. It’s remarkably consistent. Much more consistent than any other drug that I know of that’s a psychedelic.

(2) A lot of philosophical and theoretical systems talk about unconditional love and acceptance, and I have certainly been at times in those states myself — but they’re somewhat unpredictable about how and when you can get in them, and they’re somewhat uncontrollable. But on M, did you, the whole context of the experience is one of just total, unconditional love toward other people, toward what I would ordinarily call my “enemies,” toward any aspects of my own character that I’m not totally satisfied with or whatever. So the nickname for M — “the love drug” — has always been my experience of it.

I’ve never gotten — that I can remember — into a paranoid state on M. Uniformly, every experience is pretty much unconditional love toward pretty much everything and everyone.

(3) MDMA takes away all the silly things that we do to ourselves, and lets us act freely and love ourselves. And when we do that, we love everyone else and everything.

Another interesting thing about it — for a long time I thought you really had to take it intelligently and have a big briefing beforehand and think real hard about it, you know? Then I came into contact with a bunch of people who had just taken it with no knowledge whatsoever of any of the philosophical things. And I asked them about it, and they told me the same intellectual things about it as I would have said to them. They figured it out for themselves, which I thought was pretty interesting. I mean, they talked about easier communication.

I’ve never really seen a failure story, nor people who have felt disappointed. Well, actually, I know two guys who took it thinking that it was a hallucinogen—and so they were disappointed at first, but then after a few minutes they decided they liked it better than that anyway. I haven’t really seen anything negative.

Another thing that’s good about MDMA is that it’s not so wild—enables people to access mystical areas within themselves because it’s not so scary... as the major psychedelics like LSD. I think that’s why more people will take it — because it’s a lot more accessible than normal, and it helps people overcome their fear of exploring the mysticism within themselves...
General Comments on Psychotherapeutic Use: MDMA was originally presented in a therapeutic context, even though there had been underground usage as far back as the early ’70s. It spread to a small core of psychologists and psychiatrists who were impressed with the unprecedented opportunities it offered for their field. Their excitement was not unlike that generated in similar professional circles by the challenges presented by LSD in the ’50s. Once they had experienced how powerfully MDMA reduced the barriers between themselves and their clients, advanced the processes of diagnosis, and got to the core of the problems that had brought their patients to them, almost all of them thought of MDMA primarily as a “medicine” or “sacrament”; they were offended and troubled by any suggestion that MDMA might be used indiscriminately, without thoughtful intentionality, or even “recreationally.”

They had become privy to a tool that, in the words of Claudio Naranjo, gave their troubled clients “a brief, fleeting moment of sanity.” This seemed to be taken lightly. There was the challenge to use it responsibly. The first major early study was performed by the husband-wife team of Greer and Talbot, who wrote several papers on the subject but didn’t publish them for quite a long time out of fear that if such knowledge were to spread beyond a small group, the usage of this potent “medicine” would consequently become degraded. Thus the initial awareness of MDMA was kept to a core group of a few hundred psychotherapists, mainly in the San Francisco Bay area.

In March of 1985, 35 people who were concerned about the future of MDMA met for a week at the Esalen Institute’s grounds, just south of Big Sur, California, to exchange views about what had developed so far. On the fourth day, 13 participants took MDMA and were monitored by a physician and/or psychiatrist. The serious tone of these proceedings is indicated by George Greer’s report soon after that appeared in Advances: Journal for the Institute for the Advancement of Health:

Among the professionals present, the combined clinical experience in using MDMA during the past several years totaled over a thousand sessions.

The reports on the benefits of MDMA, although anecdotal, were uniformly positive. In the discussion of MDMA’s effects, the clinicians using it felt it possessed a unique action that enhanced communication, especially in couples in therapy. Thinning reduced defences and fear of emotional injury, thereby facilitating more direct expression of feelings...

Reports of MDMA’s facilitation of individual psychotherapy were also favorable. Many subjects experienced the classic retrieval of lost traumatic memories, followed by the relief of emotional symptoms. Victims of child abuse and sexual attack experienced the most dramatic benefits. [Philip Wolfson also reported having multiple MDMA sessions with psychotic individuals and their natal families, leading to improvements in the patient’s functioning and ego integration ...]

Another example of the seriousness that flavored the early years of MDMA investigation can be found in [Through the Gateway of the Heart, which consists of transcriptions from the recollections of 44 individuals and 10 group experiences. The importance of intentionality is emphasized heavily, as is “real work” on oneself.]

It was at this point when knowledge about MDMA went public, and the situation suddenly changed. All at once, those who had used this new adjunct to psychotherapy found themselves on the defensive. And so there began the DEA hearings before administrative-law judge Francis Young, in which professionals who had used MDMA would have to convince an anti-drug agency — which didn’t even know of their existence — that this substance both had (1) a “recognized medical use” — which is defined in law quite differently than a psychotherapeutic use — and (2) that it didn’t have a “high abuse potential” if their research with and use of MDMA were to continue.

One major problem they faced, of course, was that they not only had to couch their case in “medical” terms, but also were required to show that their work was “recognized” by their colleagues. This was difficult primarily on two grounds. In the first place, they had been “playing their cards close to the chest,” and secondly, the nature of their work with MDMA was by its very nature basically off limits to most members in their field.

Stanley Krippner discusses that second “slybet” in his foreword to [Eimer’s Ecstasy: The MDMA Story: His explanation of objections on the part of his colleagues can be summarized in seven key points:

(1) Most psychiatrists will use drugs that inhibit hallucinations, block disinhibited thought patterns, or halt repetitive verbalizations. But they find it difficult to justify using substances that can produce novel ways of conceiving reality, and unusual ways of being in the world.

(2) The ordinary problems of transference, counter-transference, and projection produce so many complications in psychotherapy that few practitioners would want to risk augmenting this predicament.

(3) The use of MDMA violates the structure of psychodynamically oriented psychotherapy which is geared toward a 50-
minute hour, not the three- or four-hour session that the proper use of MDMA demands.

Many of these psychologists who practice behavior modification are wary of MDMA not only because of the time factor but because it admits to the possibility of quick "insights" and "breakthroughs," not the step-by-step learning and relearning that characterizes most behavioral approaches.

When a psychotherapist is trained to use MDMA, part of one's apprenticeship involves taking the drug oneself.

The ecstatic effects of MDMA are looked upon as "pathological" or "dysfunctional" by many psychotherapists.

Psychotherapists who use MDMA have abandoned the medical model that permeates most of contemporary psychiatry. The goal of these divergent therapists is sometimes described as facilitating the development of "fully functioning human beings" and in going "beyond adjustment" in the enhancement of "human capacities" and the "human potential." These terms are suspect to a psychiatrist trained to look at his or her clients from the model of disease, or a psychologiast whose education has emphasized faulty learning as the cause of a client's maladaptive behavior.

The psychotherapists that testified at the DEA hearings on MDMA made an impressive case. Robert Lynch presented his belief that "MDMA is potentially the most important mind-exploring substance that had become available during the preceding 20 years," and that during an MDMA experience "the user's own higher mind acts as the therapist" and that the experience could be very motivational. Joseph Downing discussed his treatment of a 40-year-old "highly successful entrepreneur" suffering from depressive symptoms, a moderate stress syndrome, and the recurrent, obsessive thought that he "would do away with himself at age 43 as had his father, also a depressive," who wished to use MDMA as part of his therapy:

... We arranged a day-long session, which produced a flood of repressed material that emerged into consciousness; he and his sister were very badly battered and traumatized for many years by their father who was repeatedly jailed, placed in psychiatric hospitals, then returned home until he repeated his psychotic behavior. The tragic cycle ended only when the father ended his life with carbon monoxide when the boy was seven. I have rarely heard more vicious details from persons who have survived physically intact and sane. The man is still in treatment, making good progress with the prospect of having a normal emotional life in a few years. I can say, and I firmly believe, that this absolutely central historical material would never have emerged without the use of MDMA in a proper setting, with a therapist he trusted; and with the effect of MDMA, he was able to acknowledge this previously repressed history of abuse ...

Philip Wolfson reported on his treatment of a 27-year-old male whom I would describe as a "fugue/borderline individual with long bouts of psychoses beginning in his 25th year," when he was hospitalized with "symptoms of frank delusions, hallucinations, extreme paranoia, negativism, homosexuality, and a fixed persecutory set of delusions centered on an entity called the 'force'."

... The first session was profound in the change in this individual's sense of self. Connections of an affectional nature were made with his parents and myself and the opening of trust experience began. For the first time in two years, he experienced a glimpse of a positive self-image and loving feelings that did not panic him. The alleviation of this session lasted several days with intensity; but recognition of that positive self-image has lasted permanently. A second session ten days later consolidated his sense of difference, increased his ability to cope with the delusions that he continued to experience, and enabled him to view himself as potentially redeemable from the "ape" image that he carried of himself ...

Such were some of the highlights from those urging the government to allow them to continue the exploration of MDMA's potential. But support came as well from some of those the DEA had lined up, presumably in opposition. Eisner relates one such instance:

... one of the government's chief witnesses, John Docherty, former chief of the Psychosocial Treatment Branch of NIMH, told the court that he supported further MDMA research and that "MDMA is at the confluence of two great trends in psychiatry: psychotherapy and pharmacology," because it had been shown to enhance rapport between therapists and their clients. Studies have demonstrated that rapport is one of the few factors reliably significant in psychiatry.

As it turned out, Judge Young, after an unusually long evaluation of the evidence presented, agreed that MDMA had an accepted "medical
but then his finding was ignored, and MDMA was placed in Schedule I rather than his recommended Schedule III, making it vastly more difficult for even recognized professionals to conduct research or further explorations.

Rape, Childhood Abuse, and Post-War Stress Syndromes. The efficacy of MDMA in these areas has already been mentioned. What follows are several examples.

Kathy Tamm, a San Francisco marriage and family counselor, was featured in a front-page article in the Los Angeles Times. She had earlier been walking to her car following a meditation class in Menlo Park when she was abducted, taken to a wooded area, tied up, beaten and then tortured for several hours. For six months after the incident she underwent intensive therapy, but she showed little progress. She had terrible nightmares. She was terrified to leave the house. Every unexpected noise, every shadow assailed her senses and brought back visions of the attack.

Tamm, as a result, felt "suicidal, at the end of my rope." As a last resort, however, she and her psychiatrist decided to try treatment with the aid of MDMA:

"I've taken it several times, and each time I felt a little less fearful," Tamm said. "The drug helped me regain some measure of serenity and peace of mind and enabled me to begin living a normal life again.

"For the first time, I was able to face the experience, go back and piece together what had happened. By facing it, instead of always burying it, I was able to sort of slowly discharge a lot of horror."

In Through the Gateway of the Heart appears the story of a graduate student and systems designer, 37, who took 150 milligrams of MDMA with a therapist, and then a 50 milligram booster dose:

... What is the source of my arthritis? Blocked energies. I need to get in touch with what I want, and let the knowledge lubricate my joints, so no more stoppage of anger or love. Let it all flow through!

Material about a sexual molestation incident — first reported during a hypnosis session several weeks ago — has had much more meaning for me since I heard the tape of the Adam session. It all sounded like I was seven years old. The impact comes from the deep recognition of how many ways the event molded my responses to the world around me, in part because of the distrust of my parents that was focused by the incident. Reliving this incident helped to free up my energy and emotions in a number of ways; it feels like this process will be ongoing for some time to come. The understanding and resolving of this incident is not only helpful to me personally; it can be a vehicle for my reaching out to others with similar experiences. . . .

Another fragment from the same book, this time a male graduate student, 35, who took the same dosage in the company of another participant and two guides:

I went into the experience needing greater empathy for the child I once was and still am, and to know my own emotional needs well enough that I could begin clearly to distinguish my needs from those of others ...

The issues of emotional differentiation from my mother and of financial subservience/independence are very closely related. The connection was and is a major issue for me to explore.

For the first twenty minutes or so of the experience I felt considerable fear. I felt myself lowering down into a softer and more vulnerable place. I could feel the layers of fear peeling off of my torso and moving away into space. I felt immersed in fear for a time. Soon after ingesting the second capsule, I dropped below the fear and contacted a warm and supportive baseline feeling, a space of support that was totally without fear. This gave me my first sense of what it is like to not be a paranoid, to be like other people...

And finally:

I have seen only two anxiety reactions as a result of Ecstasy. Both of them were very therapeutic. Afterward, the people involved were very glad the way it happened.

One was a German pilot who was a prisoner of war in Russia for five years. On his first Ecstasy experience, he went into all of the horrors of his P.O.W. camp. After about two or three hours he came out of this, and felt as free as a newborn child, and literally danced with joy. Anytime thereafter that he took Ecstasy, he didn't experience the horrors again, as it was something that was locked in him and he needed to go through it in order to release it; and release it he did, forever.
Another anxiety reaction I saw was with a fourteen-year-old child who released all of the pain of her childhood, when her mother and father used to beat her. After sobbing and crying for several hours, she became very relaxed and very happy and, again, nevermore after that experience did she go through it again ...

Couples in Therapy. The other outstanding area in psychotherapy where MDMA has demonstrated extraordinary power is in the counseling of estranged partners. While it "is not a panacea," as those who have used it this way readily admit, this substance has worked a kind of "magic" in many instances where the prognosis before its use was dim at best.

"It is our general conclusion," wrote George Greer and Requa Tolbert, the team that has published the most about MDMA psychotherapy (in this case, in the October-December 1986 Journal of Psychoactive Drugs):

that the single best use of MDMA is to facilitate more direct communication between people involved in a significant emotional relationship.

Not only is communication enhanced during the session but afterwards as well. Once a therapeutically motivated person has experienced the lack of true risk involved in direct and open communication, it can be practiced without the assistance of MDMA. This ability can not only help resolve existing conflicts but also prevent future ones from occurring due to unexpressed fears or misunderstandings.

Regardless of the mechanism, most subjects expressed a greater ease in relating to their partners, friends, and coworkers ...

These paragraphs relate the finding that has generated probably the greatest consensus among therapists experienced with MDMA. In general, this substance seems to have an uncanny ability to separate out "the barriers people normally interpose between themselves and others," as B. Van Alstyne has put it, and thereby allows the true feelings present at the heart level to manifest themselves.

"Usually people just begin to talk," comments a therapist who has seen an extensive amount of such interactions occur, "but sometimes I have to take a more active role. With couples especially, sometimes they’ll just want to sit there hugging or rocking back and forth, and I’ll have to say, listen, folks, let’s get down to the business at hand!"

Some therapists have found better results when the drug has been given individually, rather than to the pair both at once. And in some cases, estrangement has progressed past the point where MDMA can be of any help.

Depression. The main theme running throughout almost every MDMA account has to do with acceptance — of the world and of one’s place in it. This substance somehow provides a lucid, " centered" moment for its user, in which he or she is not weighed down with feelings of guilt, with fears of the unforeseen, overwhelmed by a need to be "on guard," hardened by sensations of inadequacy, grief, illness, and soon. Chronic stress temporarily attenuates. The user typically feels the heavy of the past lifted, so that rather than dwelling on hurts and resentments, he or she can calmly accept them and focus instead on "where to go from here and now."

The brutal facts of the past are not forgotten; they may, in fact, become especially clear. Depression and other troubles do not entirely disappear; but one is allowed a kind of "breathing space" in which one may “get in touch with feelings which are not ordinarily available" or see the "purpose and potential" in their lives. Here is how Joseph Downing described this state of consciousness in his testimony about MDMA:

"During the time of acute effect, about four or six hours, one experiences a sense of clarity and focus, a sense of rightness about oneself and others, calm and objective thinking, and a sense of well-being and acceptance of one’s own actions. The dominant experience is one of calm and understanding. Depending on the material contained in the unconscious, the patient will deal with any situation, from childhood traumas, to long-latent adult insecurities, to deeply repressed emotions."

Claudio Naranjo suggests how this change in orientation might be applied:

The MDMA experience is something like artificial sanity, a temporary anesthetia of the neurotic self. I mostly use MDMA as an "opener" at some point in psychotherapy, not only for the wealth of the material gained during the session but for how it facilitates therapeutic work in the aftermath.
In cases of depression and low self-esteem, the action of MDMA is thus very different from pharmacological approaches normally used in therapy. Juan Ruedinger gave "A Pharmacist’s Perspective" on this matter in the July-September 1985 Journal of Psychoactive Drugs:

It seems that no other drug is available that has these same effects. There are drugs that are used as a supplement to guided psychotherapy (i.e., anti-depressants and tranquilizers), but none that can be used, like MDMA, as an adjunct to such therapy in order to facilitate the process of communication... As short duration of effect would seem to indicate that MDMA is both effective and efficient as a drug for the medical treatment of depression. It works in a matter of hours instead of days or weeks and is effective when administered infrequently (e.g., in weekly or monthly dosing intervals), thus reducing the potential for troublesome side effects. This compares favorably to the multiple daily dosing required for all of the currently available legal drugs that can be prescribed for treating depression... which often take several days or even weeks to produce antidepressant effects and frequently cause lasting troublesome side effects.

Robert Masters, coauthor of The Varieties of Psychedelic Experience and Psychedelic Art, is a therapist who has been impressed with MDMA’s efficacy in treating severe depression. He has discussed this in correspondence with Bruce Eisner, who summarized Masters’ position:

As he has observed it, the tendency of MDMA to eliminate negative ideations and emotions extends to even near-suicidally depressed patients. The breaking up of emotional and ideational patterns — also muscular ones — provides the "crack in the iceberg" which then allows the syndrome to disipate—sometimes altogether and even permanently after just a single session. When only temporary relief is a result, then a second or third session with the drug might be warranted. As with most other clinical applications, a good deal more evidence is needed to allow anyone to state that this approach is always without hazards. However, limited experience suggests, Masters says, that there may be no better therapy available when the depression is extreme to the point of causing great suffering or even endangering a patient's life. The breaking up of emotional and ideational patterns — also muscular ones — provides the "crack in the iceberg" which then allows the syndrome to dissipate—sometimes altogether and even permanently after just a single session. When only temporary relief is a result, then a second or third session with the drug might be warranted. As with most other clinical applications, a good deal more evidence is needed to allow anyone to state that this approach is always without hazards. However, limited experience suggests, Masters says, that there may be no better therapy available when the depression is extreme to the point of causing great suffering or even endangering a patient's life.

MDMA can, for whatever reasons, function as an efficacious "acessor code" to spiritual states. George Greer offers the following guidelines on this issue:

People may experience a recurrence of any psychological problems they have ever had in the past. Those with a history of panic attacks have had recurrences both during and after sessions. For this reason, MDMA is not recommended for people who have ever been unable to function socially or vocationally due to psychological problems unless 24-hour care by trained people is available. The person should also be fully willing to experience whatever may happen during or after sessions. This is the most important factor in screening clients. People who are not ready for anything to happen should not take MDMA. Abstinence that mental set predpt poses one to having a difficult time without benefitting one's experience.

A similar view was put forth in a four-page pamphlet ("General Information: MDMA") circulated among professionals using MDMA during the mid-'80s: It is important to say the following: Although MDMA is usually thought of as associated with alteration of perceptions, or consciousness-alteration, such as changes in the visual field, "normal" feelings, loss of coordination, among others, there are exceptions and individual variations. Negative and unexpectedly difficult experiences must be allowed for, and prepared for, even though they may be unusual. To give only one example, we know of an eventlty fruitful and rewarding experience involving a young man who underwent a classic identity crisis. It was necessary for the leader of the session to devote the two days following the experience to the working through of this crisis with the client. Unexpected insight can be acutely disturbing to a person of any age or experience, and, again, this must be allowed for.

Spiritual Development: MDMA provides access to a "Time Out" during which they can often see the possibility and direction of their lives more clearly than under ordinary circumstances. This experience has led many people to recognize their "underlying mysticism," to become more interested in spirituality than before. Accounts in Through the Gateway of the Heart illustrate this shift. Robert Lynch, in summarizing by Richard Feynman in his MDMA (St. Martin's) puts forth the following: "Sometimes, when a person is undergoing a crisis (e.g., a mid-life crisis), a classic identity crisis), a classic identity crisis, a classic identity crisis)

The therapeutic use of MDMA is not always without complications. As many of the previous examples indicate, difficulties of a somewhat traumatic nature can be encountered in the course of an MDMA session. What is at issue here is not whether a session is "good" or "bad," but the way in which it is managed.
roundup on MDMA, made this point clearly: “A Benedictine monk from Big Sur, Brother David Steindl-Rast, says ‘a monk spends his whole life cultivating the same awakened attitude it gives you.’”

Here are some comments from one subject who discovered that MDMA can operate in this way:

The first MDMA trip I ever had — when I felt I was in the presence of God, even though I was an atheist — was pretty amazing. I was an atheist at the time. I was a college teacher of philosophy, and ... the first college course I ever designed and taught myself was called "Atheism - The Case Against God." So I was pretty dogmatic about it, to say the least.

And yet this overwhelming energy came upon me that I would in retrospect call the "soul spirit," to use Christian terminology: At the time it was coming on, I was sitting next to my wife and I looked at her and I said, "If I didn't know better, I would say I was in the presence of God!" It was such an obvious way to describe it. So in some ways that was the most clear experience of the presence of God I've ever had ... .

Ralph Metzner adds that many MDMA users have found that this substance constitutes a fine adjunct to a wide variety of spiritual disciplines, often leading the user to see what the practice was all about — and often for the first time.

Sensuality and Sexuality. MDMA, often called a "hug drug," has a deserved reputation in this arena. It increases intimacy, but in most instances tends to reduce genital sexuality. The standard finding about this substance was expressed by John Buffum and Charles Moser in the October 1985 journal of Psychoactive Drugs when they reported on the first survey of MDMA’s effects on human sexuality. “It appears that MDMA does not increase sexual excitation or sexual desire in a majority of individuals,” they wrote,

... even though it increases feelings of emotional closeness and sensuality... Almost half of the males and a third of the females indicated that they felt more receptive to being sexual while under the influence of MDMA, but this effect was not paralleled by an increased interest in initiating sexual activity in either the men or the women.

These findings do not conform to society’s usual notions regarding aphrodisiacs. “It is curious” concluded this team of investigators, “that a drug, which can increase emotional closeness, enhance receptivity to being sexual and that would be chosen as a sexual enhancer, does not increase the desire to initiate sex.” The question of the difficulty of maintaining male erection has been answered differently by different people. One man offers a statement that differs from the majority finding:

I have been told that 9 out of 10 men don’t have intercourse on MDMA. That’s perhaps their psychology; we [my partner and I] always have intercourse. I find males can maintain erection for the full trip if they wish — but neither sex has orgasms (the male doesn’t ejaculate), so the male can continue. Skin tactile sense is 3 to 4 times more sensitive and wonderful — and after several trips one learns to recreate that enhanced tactile sense at will, without tripping.

Forms, Sources and Preparations

MDMA generally appears as a white crystal, but it is sometimes pressed into a small pill. Usually, about half of such a tablet is actually MDMA, and the rest is filler. MDMA crystals are fairly small, about 1/8” in length. Pure MDMA is whitish, a more brownish tint indicates that synthesis may have been incomplete. Failure to wash this product completely, and exposure to light, air, or water, all increase brownish coloration. The early testing by PharmChem found that about half of samples submitted were MDMA, while the rest either featured only some percentage or consisted of other substances entirely. When MDMA is packaged in tablet form, it sometimes includes vitamins, aminoacids, and minerals that are designed to attenuate side effects for sensitive users. One of the first such products was called “Sassyfras,” which was packaged with 100 doses to a bottle.
Sometimes MDMA is taken along with other psychedelic substances, such as LSD and 2-CB. The process for manufacturing this compound is relatively easy, but the chemicals needed for its concoction are “watched” by the DEA — one of the reasons the product is fairly expensive.

In its statement of the case for placing MDMA in Schedule I, the DEA in March 1984 noted some of the production routes:

The first reported synthesis of MDMA was from saffrole by converting it to its bromo derivative followed by reaction with methylamine (Biniecki et al., 1960). Bailey et al. describe the synthesis of MDMA from 3,4-methylenedioxyphenylacetone using a Leuckart reaction with N-methylformamide and hydrolysis of the N-formyl derivative (Bailey et al., 1975). A third synthesis for MDMA described in the literature starts with peperonal which is reacted with nitroethane, ammonium acetate, and acetic acid to form a nitrostyrene derivative that is reduced to the ketone and then reacted with methylamine to form MDMA (Kabjohns, 1963). Using the method of Borch et al., MDMA can be synthesized by the reductive amination of the appropriate ketone in the presence of sodium cyanoborohydride (Borch et al., 1971). The MDMA syntheses used in clandestine laboratories are analogous . . . .

Psychedelic Obituaries

The following psychedelic pioneers are recently deceased:

* Sidney Cohen, one of the first to receive LSD in the Los Angeles area, who, according to Oscar Janiger, was instrumental in introducing the social use of LSD. Cohen produced an important early work on LSD, The Beyond Within, along with another that was quite influential, LSD, in which he and Richard Alpert addressed some 40 central questions raised by psychedelics.

* Al Hubbard, who purchased 6,000 bottles of Sandoz LSD, and then distributed them along the west coast of the U.S. and across Canada. It was largely due to Hubbard’s influence that large-dosage psychedelic therapy was initiated. “If you don’t believe LSD works,” he liked to say, “just try it.”

* Michael Hollingshead, one of the stand-out figures of the peak decade of LSD use — he sent personally into the systems of ten thousand people, Paul McKenna, Keith Richard, Paul McCartney, Frank Zappa, Hunter Smith, Paul Lee, Richard Katz, Poo La Rocca, Terlingue, Nordberg, Timothy Leary, Richard Alpert, Ralph Metzner, Alan Watts, Juan Houston and perhaps a thousand others. “There is some possibility,” he once commented, “that my friends and I have illuminated more people than anyone else in history.”

* Ron Stark, a figure of importance in psychedelic history with an even more mysterious and even more notorious background than that of Al Hubbard. Stark was responsible for bringing in 17 million doses of Orange Sunshine acid to the United States. (His story along with that of Hubbard, is most fully covered in Marty Lee and Bruce Shlain’s Add Dreams.)

* Abbie Hoffman, one of those turned on to LSD by the CIA, who became the archetypal of the Yippies. Hoffman was the brains behind the idea of the “Liberation of the Pentagon,” and one of the “Chicago Seven” tried in connection with the police riot at the Democratic Convention of 1968.

* John Allegro, a leading Dead Sea Scroll scholar and author of The Sacred Mushroom and the Cross, a daring volume of speculation about the origins of religion.

* Leo Zeff, a Berkeley psychiatrist who perhaps acquainted more people with the therapeutic use of MDMA than any other single individual.

* Timothy Plowman, heir-designate of Richard Evans Schultes, who was one of the great Amazonian plant collectors and an expert on Coca and the Brunfelsia and Bomfelsia families.

* R. D. Laing, a cultural hero specializing in controversial theories about schizophrenia and family life which were put into practice at Kingsley Hall in England, who wrote The Politics of Experience, The Divided Self, and Knots.

* R. Gordon Wasson, the father of ethnopharmacology who revealed the presence of psilocybin to the late 20th century. His story is touched on ahead (229 f f.), and is described as well in The Magic Mushroom Seeker, Dioscorides Press, in which we get an intimate portrait of this banker-scholar from his daughter, Isabel, and colleagues.

* Maria Sabina, the curandera who demons (ted to the Wassons how much to use of the psychoactive mushrooms they had collected over the previous couple of years, as well as how they were used ritually. R. Gordon Wasson claimed his greatest achievement was transcription of one of her visions.
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— Robert Anton Wilson, author of The Illuminati

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