

3. The possible improvement from the trimipramine could well have taken place in the period following its administration.

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HALLUCINOGENS vs. PSYCHOTHERAPY

DEAR SIR,

There are many old reports by Spanish and Mexican historians concerning the widespread use of hallucinogenic mushrooms by Aztecs and other natives in Mexico. Bernardino de Sahagun (9), a Spanish historian who lived in Mexico from 1529 to 1590, describes "certain little black mushrooms which inebriate and cause hallucinations and excite lust". Orozco y Berra (17) in 1870, discussing the work of Motolinia, explained that these "divine mushrooms" or *teonanacatl*, produced a state of intoxication with frightening hallucinations that confused the mind.

Interest was renewed when in 1936 R. J. Weitlaner (22) discovered these mushrooms being used among the Mazatecs in Huautla de Jimenez, Oaxaca, Mexico. Again, in 1957, Wasson and Wasson (23) reported some tribal groups in Southern Mexico still practising the ingestion of hallucinogenic mushrooms in their religious ceremonies. Following this, Hein (11) cultivated and identified these mushrooms as belonging to genera *Psilocybe* and *Stropharia*; and Hofmann (13) isolated the crystalline substance psilocybin responsible for the hallucinogenic and psychotropic effects, and elucidated its structure (14).

Numerous studies have been done on the psychological effects and possible therapeutic value of psilocybin. Delay *et al.* (2, 3, 4, 5, 6, 7, 8), after many trials with patients and normal subjects, have defined psilocybin as a "psychodysleptic" substance which causes hallucinations, dream-like states, recall of effective memory, and changes of mood. It seems to produce excitement alternating with apathy, to stimulate memory of traumatic experiences and to remove inhibitions evoking cathartic recall. Delay also reported a successful treatment of one case suffering compulsive psychoneurosis, "bringing back an unrestrained and extremely violent abundance of memories . . ." (7). Rummels (19) compared psilocybin with known tranquillizing drugs and found that it produced a pleasant relaxation state. Stevenin and Benoit (21) found it very useful in one case of "lack of emotion and imagination", in which each of the interviews under psilocybin had a particular emo-

tional nuance influencing the patient's attitude. Douche (10) published a report on the successful treatment of one case of long-standing hysteria; he used two i.m. administrations of psilocybin, bringing on a strong affective crisis, and the hysterical disorders of gait disappeared completely during the next few days. Heimann (12) also reported the usefulness of psilocybin in a neurotic patient with gait disturbances. Roubicek and Drvota (18) found psilocybin produced a marked improvement in a compulsive neurotic refractory to psychotherapy, insulin and tranquilizers. Hollister (15) reported that psilocybin evoked a dreamy introspective state at dose levels which did not produce predominant somatic effects, nor marked impairment of mental function. Serel (20) found euphoria produced by psilocybin to be a great aid to psychotherapy in a group of 15 neurotic patients. David and David (1) found it to produce euphoria, "some regression with loosening of the ego protection mechanisms", and increased insight; Lothar Knauth (16) found that psilocybin caused a general relaxation, visual hallucinations and manifestations of auto-sufficiency. No schizophrenic-like states were induced, all subjects having absolute control over their action when necessary. There was no difficulty in communication, though the sense of auto-sufficiency was such that there was very little desire, or none, for verbal communication.

At the Department of Pharmacology, University of Mexico, we administered psilocybin to nine male volunteers whose ages ranged from 23 to 55 years, and who, as far as was known, had never been under psychiatric care nor suffered any mental disorder. Psilocybin was administered in doses from 130 to 225 mcg/kg., and interviews took place before, 30 min., and 90 minutes after the drug was administered. Blood pressure, pulse rate and pupillary size were recorded at approximately the same intervals. Observations of the volunteers were carried out up to four hours after psilocybin administration. The setting was neither "therapeutic" nor medical, but purely experimental, the study being carried out in a Department of Pharmacology.

All of the volunteers showed marked mood changes, described by them as: "internal happiness", "marvellous good health", inner "peace and tranquillity", "the most agreeable sensation they felt in their lives". Each of them felt this was a unique experience they had never had before, except for one who related his feelings to orgasm. The state of well being, always present, was usually associated with introspection. They also reported an increased interest and capacity for communication with others, and developed "trust" in the experimenter. Three subjects with timid personalities experienced a complete dis-

appearance of shyness. It is remarkable how one of them started to speak in the English language, because he felt he could relate better to people speaking in English than in Spanish. (In the Spanish language two second persons are used: one that denotes closeness or "tu", and a formal one used to approach people the first time or with authority figures. This subject felt that in English he could feel the same closeness towards everyone.)

The pattern of the visual hallucinations varied and were very scanty or absent in two of them. The volunteer who received the largest dose had hallucinations in different forms and colours, the most interesting of which he described as: "sexual hallucinations" consisting in nude women assuming various postures. He also repeatedly saw his psychoanalyst's image. (This volunteer had been under psychoanalytic therapy for anxiety neurosis associated with impotence, but did not reveal this until under drug effect.) When the hallucinogenic picture in this subject was excessive, he presented signs of depersonalization. After thirty minutes of being in this state, he became anxious and said: "hallucinations had occupied every place in my mind", and he felt "there was no potential for thought". Forty-five minutes later he appeared normal and stated that in the moments of maximal drug effects his "profound feeling" or his "real I" knew that the picture had been produced by the drug, and so was only temporary. A second subject revealed that he had been under psychoanalytic therapy three years before the experiment and had volunteered for this study "for therapeutic reasons".

A large number of publications have emphasized the psychotherapeutic use of hallucinogenic drugs. The trend in the majority of these reports is that hallucinogens shorten long-term psychotherapies by either reviving "the emotional phase of early childhood" or increasing recall of affective memory.

It is well known that the process of reviving the memory of unpleasant experiences (abreaction) is an important factor in the course of psychotherapy, but there is evidence that suggests it is not the type of emotion, but rather its intensity which is responsible for the therapeutic effect (24). The differences between the several hallucinogens have not been completely clarified with respect to effectiveness in psychotherapy, neither has it been shown whether these drugs act on the psychotherapeutic process or whether they possess therapeutic value regardless of the doctor-patient relationship.

In this pilot study, volunteers reported the development of "trust" for the persons giving them the drug, and an increased capacity for communication; all this without a psychotherapeutic setting. It is interest-

ing, too, that one of the volunteers who was previously in psychotherapy recalled seeing his analyst's face around him during the experience.

An important question emerges when one sees reports on psycholytic therapy: is the therapeutic action of hallucinogens entirely due to CNS effects regardless of the so-called "psychotherapeutic relationship"?

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The direction taken (whether homosexual or heterosexual) depends on the psyche.

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HOMOSEXUALITY

DEAR SIR,

The flaw in the theory put forward by Dr. Gregory Mayne (*Journal*, August, 1967, p. 923), and others who suggest that there is an endocrine basis for homosexuality, lies in the fact that, as I can say from experience, only about 5 per cent. of homosexuals have physically any signs of endocrine lack. These show eunuchoidism, as evidenced by feminine hair distribution, fine type of skin, poor development of the genitalia, etc. However, one encounters eunuchoid patients who resemble these physically yet are heterosexually inclined.

Are we to believe that something like 95 per cent. of homosexuals are affected psychologically by some anti-testosterone or anti-androsterone without any effect on their physique? This seems hard to believe.

Again, how does Dr. Mayne explain that some cases of homosexuality are curable by psychotherapy? Can one, by adequate psychological treatment, reverse the damage done at "the critical period" by incorrect hormone levels?

It is easy to explain the appearance of homosexuality in the youngest of a series of sons. This child is frequently the apple of the mother's eye and she conditions him to behave in a feminine manner (as I have explained in my *Textbook of Psychosexual Disorders*). Again, the male appearing in a series previously containing only females is subjected to an excessive feminine influence and receives similar conditioning.

I would not suggest that lack of hormone in the adult has no effect, since the endocrines act, as it were, like the petrol in the tank, to provide a driving force.

MANIC DEPRESSIVE PSYCHOTIC WITH A 48-HOUR CYCLE

DEAR SIR,

The report by Jenner *et al.* (*Journal*, August, 1967, 895-910) on the "Manic Depressive Psychotic with a 48-hour cycle" made stimulating reading. I agree with the authors that their physiological data do not, in the present state of our knowledge, illuminate the underlying manic depressive process.

Regarding the isolation experiment quoted in the same paper, I would be glad to learn how the arbitrary figure of 22 hours per "day" was derived. In the light of recent research into the physiological clock, it might have been more productive to allow the patient to establish his own circadian rhythm. This can be achieved by excluding all external time clues from his chamber, as has been done by Aschoff (1965) on healthy subjects.

Under such experimental conditions this patient may well have established a more normal sleep pattern, as well as possibly experiencing an amelioration of some of the other parameters of his Psychosis. This suggestion, in general terms, has already been made elsewhere (Heymann, 1967).

I should be pleased to ascertain the authors' views on this question.

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