inclined to question or to attempt to relate a present experience to a past one, or vice versa. In fact, during the LSD studies, the patient verbalized without interruption. My first impression was that this related to the same sense of solicitude mentioned before. "Poor guy, he's contending with quite enough. Why increase his discomfort?" That may have something to do with it, but would such a solicitude exist in the normal therapeutic hour? I doubt it. I was an onlooker of an experience *within* another person. These patients were less with me in the office. This lack of interpersonal awareness showed itself to me in minor ways. I found myself less concerned on these days with what I said, or my state of dress, *because* I felt myself an observer of a process rather than an interactor.

The patients experienced a similar lack of interpersonal awareness. One said, "I am entirely apart, in a different world, my private dream world, and yet I am aware of this world too." Another patient was attempting to describe how the defenses against loving the therapist were crumbling, and mentioned a sense of self-consciousness in describing them. When asked how the self-consciousness related to the therapist, he denied a connection, stating emphatically, "You're just a piece of furniture!"

This example illustrates the intensity of the patient's feeling for the therapist, and yet the feeling is dissociated from the person of the therapist. Whether a patient speaks of a sense of closeness or vents his fury, these emotions are experienced by the therapist less warmly or painfully than outside the LSD experience. Even though one learns with experience in therapy under LSD that it is not only possible but useful to question and interpret, the sense of distance from the patient during LSD hours remains.

It might be questioned as to whether there is something contradictory in feeling a strong concern for the patient and at the same time a sense of distance. When the therapist feels solicitude and when he is somewhat helpless to alter the course of events, he has already removed himself from intimate interaction with the patient and has become an observer.

To summarize, when a patient receives LSD, the psychotherapeutic relationship is altered. The LSD situation produces solicitude, anxiety and helplessness in the therapist, and may increase the feeling of distance between the therapist and patient. The ability to relate successfully is the essence of treatment. LSD is given with the hope of establishing a better therapeutic relationship and of undermining defenses which prohibit the development of such a relationship. And yet the secondary effects of the administration of this drug can defeat the very purpose which one has set out to achieve.

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## COMMENTS ON THE PSYCHOLOGICAL EFFECTS OF MESCALINE AND ALLIED DRUGS

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This report refers to observations of incidental and unintended therapeutic effects of mescaline and LSD and some comments on their relevance to our understanding of the schizophrenic process.

Most reports of the therapeutic value of these agents have stressed their role in freeing the expression of thoughts and emotions connected with events of the past (1–4). I have observed this in a number of our subjects, volunteers from our staff and medical students. We have not used these drugs on patients. I believe that this abreactive effect is somewhat greater with the hallucinogenic drugs than it is with the barbiturates. Mescaline and LSD do not dull consciousness. Therefore, a person is able to recall the past under their influence while preserving at the same time full vividness of present experience.

Other psychological effects of these drugs

which have not yet received the attention they deserve are the changes in the perception of present experiences. Recalling the past, in my opinion, has value only insofar as it leads to a different point of view of the present; this different experience of the present, therefore, may be of much therapeutic value. Mescaline and similar drugs alter the present experiences of the subject in ways which may well be remarkably therapeutic.

These drugs in some people can increase the experience of beauty. The intensity of the colors and the fascination with colors and shapes which many subjects experience leave an unforgettable residue of appreciation for the beautiful. If the subjects look for beauty and see it where they did not see it before, is this not therapeutic?

The subject's perceptive experience may pass from ordinary perception through illusions to hallucinations, while all the time he thinks he sees the same object. What is changing? Not the walls and ceilings; of this he is assured by others in the room. Therefore, the changes must be part of himself. But what part? He has a different perception of the world around him, but is it necessarily a false perception? If I put on my glasses and see the details of the distance more sharply, no one could say that I am hallucinating! But if under the influence of mescaline I see color and forms which I did not see before, they say I am hallucinating. But is this necessarily so? It may be that I really have achieved a new and better vision of external reality.

The brain has been compared to a great filter which screens many stimuli from the mind. Mescaline may reduce the filtration powers of the brain and let in some of the beauty which our brains ordinarily hide from our awareness. Gastaut (5), from a neurophysiological point of view, seems to have meant something similar when he suggested that the fundamental action of LSD consists in decreasing the "filtering" activity of the central nervous system and thus increasing the number of stimuli reaching awareness. Although I will not deny that some and perhaps many false perceptions may occur under the influence of these drugs, I think it is a mistake to overlook the possibility that these drugs may bring us, at least partially, into contact with a world of which we know little and should know a great deal more. I am emboldened to make this suggestion by my readings of the experiences of clairvoyant persons, some of whom have been most sensible and critical observers, and have given accounts of their perceptions in different states of consciousness. Their descriptions of altered perceptions of space, body and time, and of synesthesiae bear a remarkable resemblance to the reports from persons under the influence of mescaline (6).

The significance of this aspect of the mescaline experience is that the subject may come to have a different attitude towards perception. Most persons who have thought much about perception have discarded the theory of naive realism. That is, they know intellectually that the sense data they perceive differ from the real object which is the source of the stimuli for these sense data. I say they know this, but they, nevertheless, do not know it with conviction. Such conviction can come during and after a mescaline experience. The difference resembles that between reading a play and seeing a play performed or, better still, performing in one. The ultimate truth about perception still evades us. It may be that our every day perceptions do indeed present to us one aspect of reality (7), and that in other mental states (such as that induced by mescaline) we experience another aspect of reality. What matters is that we should avoid identifying our sense data with the totality of the objects perceived. After the mescaline experience, the subject may have a heightened realization that his every day sense data only present (and most imperfectly) a part of the real world around him. This may bring him further along the path of detachment from sense data, towards the non-attachment (and accompanying peace) of which mystics tell me.

Another relevant experience is the subject's realization of the instability of his own perceptions and of his own thought images. He may have acquired a strengthened awareness of his own Self. Some subjects become temporarily lost in the imagery evoked by the drugs. They cease to distinguish observing Self from images and, losing sight, enter a state which may be indistinguishable from dream states, deliria or schizophrenic reactions. Other subjects experience something which I compare

to a spectator's remembrance of himself in a theater. Sometimes the playgoer becomes lost in a play. We say that he identifies himself with the actors and the stage. But then for a moment or longer, he may remember that he is sitting in his seat watching the actors. Something like this may also explain what happens during the mescaline experience. Watching the images pass before the observing Self, the subject may suddenly have a realization of the separateness of that Self from the images. Thus, he may come to distinguish what Jung (8) has called the objective psyche and the Self. In this respect, his experiences may resemble mystical states. It reminds one of the Hindu's distinction between Atman and non-Atman.

I have emphasized that the experiences and effects, mentioned above, do not come to all subjects. Much of modern psychotherapy seems excessively preoccupied with the past to the exclusion of techniques which will change the patient's experience of the present and his way of viewing his existence. Mescaline and similar drugs may offer means of helping patients to such changes.

The value of these drugs in clarifying our understanding of schizophrenia has been debated by competent observers holding opposite views (9, 10). At present, one can only offer a tentative opinion. I should like to review some of the similarities and differences of schizophrenia and the drug-induced mental states. Impairment of perception, thinking, and affect occurs in both with preservation of orientation and unclouded consciousness.

Some investigators have suggested that the effects of the hallucinogenic drugs are not pertinent to the study of schizophrenia because they induce a toxic psychosis. However, I cannot agree with those who believe that the effects of mescaline (and other similar drugs) closely imitate the phenomena of febrile deliria and other acute brain syndromes. Although the visual perceptive disturbances of the mescaline experience resemble the perceptive disorders of febrile deliria, that similarity alone does not warrant our believing that mescaline produces nothing but a "toxic psychosis". In the febrile deliria, consciousness is impaired; and in the mescaline psychosis, perceptive disturbances (including hallucinations) occur with clear consciousness. In this important respect, the mescaline state resembles schizophrenia more than it does febrile deliria. These facts remind us that our nosological concept of toxic psychosis is no longer of help. Mescaline certainly is a toxin, but so are phenobarbital, alcohol and caffeine. Each of these toxins produces different psychological effects. The question at issue is whether some or all of the symptoms of schizophrenia are mediated by an endogenous toxin. Under the heading of toxic psychosis, we have to consider a number of different toxins, external and internal, each having different effects, and each acting upon different organisms whose individual responses add further to the variety of observable phenomena.

Among the differences between the mescaline psychosis and schizophrenia, we must recall that disturbances of perception do not occur in all schizophrenic patients. Disturbances of auditory perception are relatively common in schizophrenia, and less often observed in the mescaline psychosis. Disturbances of visual perception occur much more frequently with mescaline. Disturbances of thinking do not occur in all subjects under the influence of mescaline. In fact, we find an extraordinary diversity of symptomatic patterns both in schizophrenia and in subjects under the influence of these drugs. It seems likely that what we call schizophrenia is really a congeries of disturbances having some similar symptoms, many distinct and many of different origins. The symptom of fever was similarly confused when physicians were just beginning to distinguish many origins of fever—e.g., typhus, typhoid, etc. One also recalls Bleuler's phrase, "the group of schizophrenias." More recently Meduna (11) separated out one of the group of schizophrenias which he called oneirophrenia, a dream-like state. In this condition, perceptive disorders are prominent and thinking disorders slight. The mescaline psychosis more closely resembles this group than it does the so-called classical schizophrenia.

A number of different factors enter into phenomenological data both of the schizophrenias and of the mescaline psychosis. We must consider all of these factors in order to

understand the wide variety of symptomatic patterns in both groups. In the case of the mescaline psychosis, we must pay attention to the following variables: different abilities to detoxify and excrete drugs; different sensitivities of the cells in the central nervous system to the action of the drug; different thought contents which may be released; and different reactions of the subject to the altered perceptual experiences of the body and environment, and to the welling up of previously unconscious images and unfamiliar emotions.

Schizophrenia and the experimental psychoses are most similar in that the subject has uncontrolled and unfamiliar thoughts and feelings. The heightened speed of imagery and the disturbance of thinking are remarkably alike in both the natural and the artificial psychoses. The subject under the influence of mescaline is frequently absorbed in his fantasies and does not wish to participate in any interview or testing. If he is prevailed upon to undertake some simple test, such as the serial subtraction of 7 from 100, he may start off well enough, but then almost immediately forgets what he is doing, presumably because some new thought has invaded his field of awareness. The same defect of attention interferes with his ability to abstract. He cannot hold one thought long enough in the field of consciousness to bring another one up to it for comparison. Since he cannot get two thoughts together, he cannot abstract whatever they have in common. Similar defects of attention probably underlie the impaired thinking of patients with schizophrenia.

What appears further depends upon a number of other factors. The subject taking mescaline is fortified by the knowledge, which he usually preserves, that his experience is transient and controlled. The patient entering the strange world of schizophrenic perceptions has no support. His alien thoughts are induced by some current and continuing stress. This may further intesify his anxiety.

An experience of one of our subjects illustrates how these two conditions may become almost inextricably entangled. While under the effects of mescaline the subject experienced an unusual amount of depersonalization; that is, his sense of Self was diminished rather than enhanced. The effects persisted and were by no means entirely over when it was considered safe to take him home. The next day he seemed to have recovered, but the third day he relapsed into a state of reverie and idleness. Instead of doing his usual work, he passed his time in fantasies. These were accompanied by some alarm at his condition, and he began to have bizarre hypochondriacal ideas about himself. He expressed ideas about having various grave diseases, such as paresis, and demanded tests for them. He was treated as if he had been a patient with schizophrenia. He was not admitted to a hospital, but was seen for psychotherapeutic sessions once a day for a few days. The disturbance gradually wore off, and after a week the subject had recovered entirely and with considerable insight. During the course of the interviews the subject revealed a life-long habit of daydreaming, especially during times of stress. He had been undergoing an unusual stress in his personal life at the time he took the mescaline. About the whole experience he commented, "I guess the mescaline provided me with a model for the solution of my problems."

I am far from insisting that these drugs induce states which exactly resemble schizophrenic conditions. Quite clearly they do not. But I think we can say that both processes have common factors. They may have different origins and their final directions again diverge. Somewhere between they seem to travel along similar paths. They exhibit psychopathological disturbances which are nearly if not exactly identical. This similarity promises much of value for the future expansion of our knowledge.

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# REMARKS ON LSD AND MESCALINE

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A number of drugs are used today in conjunction with psychotherapy: barbiturates —especially sodium amytal; amphetamine in the form of benzedrine or the related desoxyn; ether; $CO_2$; mescaline; LSD; and others. Each time one of these treatment methods was introduced, a considerable amount of literature developed claiming specificity in its use. It was claimed that barbiturates used in conjunction with psychotherapy had specific virtues and values which the other drugs did not have. The same was stated about $CO_2$, ether, and now for mescaline and LSD. There are, of course, variations in the action of these different agents. Nevertheless, basically they all accomplish something similar.

The actions could be described as (a) euphorizing, (b) disinhibiting, (c) relaxing, (d) cathartic, (e) activating or stimulating, and (f) anxiety-producing. The widely used narcotherapeutic methods with sodium amytal accomplished their task by relaxing and disinhibiting the patient, producing a frame of mind in which the patient became more communicative and released material which was formerly not obtained or blocked. The technique with barbiturates was essentially an anxiety-reducing and eliminating form of treatment. Amphetamine or desoxyn has different actions in different individuals. In some it leads to relaxation and disinhibition, which in turn leads to catharsis, while in others it is definitely stimulating, tension-producing, and at times even anxiety-producing, leading to disinhibition and catharsis. Mescaline and LSD are essentially anxiety-producing drugs and in addition underscore and magnify the patient's symptomatology. The increase in anxiety and fear of loss of ego integration could lead to releasing of material which was formerly not obtained or was repressed. In some individuals, mescaline and especially LSD have also a relaxing and somwhat euphorizing effect. It is, therefore, possible to obtain psychic material not revealed before, owing to suppression or repression by using drugs which either relax or stimulate or do both. The question arises whether psychodynamic material obtained by these various drugs is or is not very similar one to the other. Does a patient under sodium amytal reveal different psychodynamic material than with benzedrine or LSD? If the material is similar then, of course, any drug which is able to remove suppression and repression of psychic material could be used as an adjunct to psychotherapy. On the other hand, if the drug should have a certain specificity, then it will have to be demonstrated what kind of psychic material is apt to be produced by one or the other of these drugs. Careful studies of a large number of patients who were under the influence of different drugs did not reveal to us any marked specificity as to the use of these these different agents. This is especially true in those patients in whom different drugs were used at different times.

Studies of the literature do not reveal much regarding their specificity. Sometimes exactly the same mechanisms are claimed for amphetamine or mescaline as were described years before for barbiturates or $CO_2$. A much more pertinent issue than the specificity of release of psychodynamic material would be the question how far a patient responds better for psychotherapeutic purposes to one drug than to