OBSERVATIONS ON THE PSYCHOTOGENIC EFFECT
OF N-N ETHYLTRYPTAMINE, A NEW
TRYPTAMINE DERIVATIVE

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Since Evarts, Fabing and Marrazzi reported on bufotenine and Szára on N-N dimethyltryptamine (DMT) the tryptamine derivatives have been arousing increased interest. A team of the above Institute was the first to test DMT and N-N diethyltryptamine (DET) in man. These compounds were synthesized by Szára, by the method of Speeter and Anthony. DET was then synthesized again and analysed pharmacologically by Borsi and Lénárt.

Our aim was to elucidate the eventual toxic or psychotropic effects of the single metabolites of tryptophane in order to gain possible insight into the genesis of the metabolic disturbance in schizophrenia. In contrast with the so-called plantagenic psychomimetics (LSD, mescaline, etc.), the tryptamine derivatives seem to belong to the “somatogenic” group, which may be formed under special conditions also in the animal organism (de Boor). Thus far, bufotenine is the best known one among these compounds. This agent is hallucinogenic, occurs widely in nature and, according to Fabing, may be formed also in man as a result of abnormal serotonin breakdown. The intestinal bacteria may give rise to tryptamine formation from tryptophane by pathological decarboxylation. Tryptamine, according to Baruk and Nieuwhuysen, may act as a psychomimetic, although it usually elicits only psychomotor disturbances in animals. In the presence of a transmethylase enzyme system DMT may be formed from tryptamine even in the body. Although all these are merely speculations, the fact that similar metabolites are actually formed from tryptophane and these are closely related in structure to serotonin indicates that the experiments with these agents seem to have much greater significance in our effort to elucidate the biochemical background of endogenous or exogenous psychoses than the experiments with mescaline or LSD. Also according to Marrazzi serotonin or bufotenine, its dimethyl derivative “comes closer than does LSD to the type of endogenous psychotogen that might be a natural cause of some mental disturbances”.

The response to DMT, which differs from bufotenine in the absence of just one OH group, has been studied in 30 normal subjects and 24 mental patients. The experimental psychosis caused by 0.7 to 1.0 mg./Kg. of DMT injected intramuscularly begins within 3 to 5 minutes and lasts about 50 to 60 minutes. The characteristic symptoms of this model psychosis are intense vegetative changes, more or less marked anxiety, in some cases
neurological signs indicative of a functional disturbance of the non-dominant hemisphere, disturbances of mood and perception, first of all visual illusions and visions, alterations in the perception of time and space, shorter episodes of tenebrosity and loosened associations. In many of its features this disturbance was similar to the single phases of the LSD effect, but bore no definite resemblance to either the schizophrenic or the other endogenous-psychotic clinical states. It is less suitable than the other psychotogens for the purpose of auto-analysis. In schizophrenics the DMT psychosis is by far less colourful. (For further data the reader should consult the reports by Arnold and Hoffmann, Sai-Halász et al., Böszörményi and Szára.)

The pharmacological data for DET, the other tryptamine derivative, may be outlined as follows. In the mouse the intravenous LD₅₀ is 32 mg./Kg., in the dog it is 24-5 mg./Kg.

The effect on behaviour has been studied in dogs and rats. In 2 dogs 1 mg./Kg. of DET-HCl, injected intramuscularly, produced no noticeable changes. In 1 dog excitation developed about 15 minutes after the injection of 1-5 mg./Kg. intramuscularly. The animal, which had behaved absolutely normally, began to run up and down, did not recognize his master, did not listen to his name and refused food. This lasted about 15 to 20 minutes. A similar response was seen in another dog, which had been given 2 mg./Kg. of DET-HCl. In rats doses of 1 mg./Kg., 2 mg./Kg., 5 mg./Kg. and 7-5 mg./Kg., as administered through the intravenous route, caused excitation depending in grade according to the size of the dose, but no convulsions. The animals ran about, smaller doses caused them to climb, stand on two legs and retreat backwards. The 10 mg./Kg. dose produced clonic convulsions. All the animals survived, the response was 15 to 20 minutes in duration, followed by a depressive phase (Borsi).

In analogy to the LSD compounds, we expected the diethyl derivative of tryptamine (DET) to be more toxic than DMT in man and yet the only difference was that confusion was longer in duration and qualitatively different. These experiments involved 30 normal test subjects and 41 mental cases. The symptomatology of the DET model psychosis, as reconstructed from the protocols and from the subjective accounts given later, may be summarized as follows.

The model psychosis developing in response to 0·70 to 0·80 mg./Kg. of DET intramuscularly may be likened to the mescaline effect of mild or moderate severity, although in some features it resembles LSD intoxication. After the initial unpleasant vegetative symptoms subside, the majority of the test subjects develop a meditative, pleasant, euphoric mood, with the contact maintained. Consciousness is loosened, concentrative power is weak, the perception of space, time and body is disturbed. Other phenomena of depersonalization, as well as visions, illusions and not infrequently synaesthesiae also occur. Increased motor activity and anxiety occurred in only a few (5) normal test subjects.

As an illustrative example, we present the following protocol.

A.B., aged 26 years, a novelist, 0·65 mg./Kg. of DET. Pulse rate 104/min. Blood pressure 190/110 mm. Hg.
10.55. Injection is given.
11.05. Pulse rate 120/min. BP: 200/130 mm. Hg.
11.09. Mild vertigo is noted.
11.16. Pulse rate 100/min. BP: 200/130 mm. Hg.
11.23. He says laughing: "Now comes the attraction, I have the honour of seeing the elements of the universe in this moment. As if I saw algae, flagellates under the
microscope, in white and black. Though it's terrible that I can't express myself properly."

11.26. "Now I see some colours, too. As if I saw a shell, the rainbow colours are disintegrating rapidly. It is the trouble that meanwhile I am too much pre-occupied with myself, I enjoy it greatly, though I cannot concentrate on it well. If I close my eyes I see everything lighter."

11.30. "One's consciousness becomes air-like. From the neck upward I am feeling a shapeless lightness. (3 TAT pictures are shown to him, which he describes banally and shortly.)"

11.40. "I am filled with autotelic heaps of words, with autotelic word-magic, I cannot express myself."

"It is a bodyless, stupid, tickling sense of well-being. With my eyes shut I see fungus-shaped phenomena, as if they were clouds after an atomic explosion, in black, white and purple colour."

11.45. Pulse rate 88/min., BP: 200/120 mm. Hg. (He is listening to music by Chopin): "Music does not fascinate me, does not interest me, everything is so very much, one associates notes jumping about. I do not care about what I am seeing outside, I am occupied with myself. My ego has changed, I feel only a skeleton, the flesh and the accessories have apparently vanished from me."

11.48. "This is a low form of escape, because everything comes back, after all. It is rather tiresome to feel that one is not identical with oneself and that one is unable properly to express his ideas." (Listening to Don Juan by Strauss): "This does good to one's feelings, it appears to make sense, as if it had a shape."

12.05. "All is well, all is well as it is, we lower the standards not for ourselves, but for the environment." (While walking): "As if I were not walking, but the walls would be coming closer to me. It would be good if this would never end, because it is merely a registration into a kind of mood, thus, nothing happens: this is a high form of entertainment, that I close my eyes and think about what is happening, and so on, this too, is like that, meanwhile I am waiting and waiting, there are also difficulties in communicating my thoughts, as if the text had nothing to do with me."

12.12. "As if the essence of everything were brought to the foreground. If I 'ego-ize' my hand, it is big. My body is a bit strange from the neck downward."

12.16. Pulse rate 88/min. BP: 190/110 mm. Hg. "It is now for the first time that I know convention to be merely resistance brought to the consciousness. The relation of personality to communication is a grand thing: I start an idea in my mind and I say almost the opposite of it. Words are no longer suitable for expressing my thoughts. Also the world around me has changed: everything has a purpose, things have been distorted in the direction of their essence, what is big is very big, what is small is very small, and so forth."

12.23. He keeps hearing bells ringing, Easter bells. He asks for no music, because he hears music, ringing of bells, organ music, etc. even without the gramophone.

12.28. Asks for a looking-glass: "I do not let even facts influence me, I am pleased with myself."

12.31. The room appears to be big, as if it could hold everything, the walls are far away. "If we could inoculate this into all men, human inter-relations would undoubtedly improve greatly."

12.37. "Works of art have lost their significance, anything others have made is superfluous."

"I am feeling fine, I do not care even about my afternoon programme, everything is so far from me. Production is independent from its ethical charge, thus the problem of deceit—no deceit is unimportant."

12.46. "I miss only one thing, the joy of productivity. I am kind of depressed, I have not promoted my cause, nor that of others, for that matter. To a certain extent it is depressing that I am irresponsible, this is the 'sapienti sat' problem essential also for modern art."

12.55. Pulse rate 88/min., BP: 175/100 mm. Hg. He is euphoric, but slightly tired. He sees colours too brightly, believes a painting to be a relief.

Owing to his elevated blood pressure this test subject had been given a smaller dose of DET and thus his response was milder. None the less, loosened associations, the inclination to philosophic thoughts, the drive to speak, the appearance of new modes of experience, the difficulty of wording (he is an author-aesthete!?) were readily observable features, whereas the impairment of perception was less marked.

The symptomatology of the DET model psychosis may be summarized as follows:

(1) Vegetative symptoms. These appear 8 to 15 minutes after injection and are: vertigo, dilatation of the pupil, nausea, sweating, tremor, increase in pulse rate and blood pressure (to 120/min. and by 10 to 40 mm. Hg, respectively). The subjective complaints similar to a "hangover" are closely
similar to what occurs in the initial phase of the mescaline effect, but most of the unpleasant symptoms subsided within 40 minutes.

(2) The neurological symptoms were less marked in the DET effect than in the response to DMT. The main complaint was paresthesia, whereas transient increase and differences in reflexes, ataxia of the extremities and hypalgesia of the whole body occurred in some cases only. Some subjects experienced an increased drive to motor activity, sometimes in connection with anxiety. The athetoid motions of the left hand described by Szára have not occurred in our cases. We mention here also the impairment of the ability of drawing, though in some cases the distortion of perception and the mixed ataxic-apraxic disturbance undoubtedly played a role in it. A good example for this is a schizophrenic painter, who drew her own left hand in the different phases of the effect. In her case metamorphopsia, too, had undoubtedly a role to play (Fig. 1). The two drawings before experiment show clearly the
excellent technique of the professional painter (a). In the drawings begun at 60 and 100 minutes, respectively (b) the lines are loosened, uncertain. This is even more marked in the drawing started at 120 minutes (c), showing a distortion of shapes, of which she, too, complained. The drawings started 3 hours after the injection of DET (d) are comparable in quality to the pre-test ones. It is also remarkable how the artist ignored the quality of her performance during the experiment.

(3) Just as in the LSD and mescaline effects, the predominant disturbances of perception are visual ones under the influence of DET. Visions of elementary nature, abstract patterns, arabesques, etc. were common, others told us about scenic pictures ("a scene of ballet", "ornamental fish swimming to and fro", "dance of Centaurs", etc.). All these were essentially pseudo-hallucinations. Most of the test subjects had an illusionistic view of the surroundings ("everything looks like scenery", "the faces are like caricatures", "primitive", "of the Eastern type").

Also the perception of space was often disturbed. The planes, outlines were distorted, the walls have shifted away, curving slightly, some objects seemed to come menacingly nearer and nearer. The hallucinations were mainly colourful. It is remarkable that with the eyes open the visions and illusions had a shade of blue in the purple, whereas with the eyes closed the red and orange colours dominated.

Auditory hallucinations occurred less frequently, hyperacusis was more common. Music had a remarkably pleasant effect. In many cases music started synaesthetic experiences, as it was characteristically told by one of the test subjects, for example. He was listening to a violin concerto by Kabalevsky and said:

"The materialization of sounds varies all the time. Once ballet dancers dressed in transparent silver-like clothes were dancing, sliding on ice, then blades, lances, swords of different shapes broke through space, twinkling, shining, turning round and round. Then cliffs split apart, snow-covered peaks and blue ridges emerged from the ground toward the sky, then again there were many small ladders of glass and on them minute globules of sound were running up and down, dancing and jumping. Then again a small goldfish swam rapidly across an aquarium and the sound was the row of bubbles in its wake."

(4) In the majority of the normal test subjects the perception of time was definitely disturbed. Some of them spoke of a pleasant feeling of "timelessness", of a "loss of the category of time".

(5) Associations were usually accelerated, loosened, whimsical. During the second half of the experiment introversive or philosophic tendencies preponderated. In schizophrenia DET increased pre-existent changes in thinking, though in many a case this did not become manifest owing to the development of autism.

In 12 cases (non-psychotic test subjects) a shortened thematic apperception test was carried out 1 hour after the injection of DET, showing 3 pictures to each subject. (Nos. 1, 12 and 14.) Usually they did not concentrate on the task, only two test subjects told appropriate stories, but even these were conventional, bringing to surface nothing important. The others described the pictures grossly, some subjects criticized the quality of the pictures.

For example: "I have nothing to relate, at the most one might tell a
sentimental story, but I do not feel like doing that! I do not feel myself touched at all. A child leaning over a violin, a rotten picture."

(6) Mood was usually heightened, to euphoria except in 4 test subjects. Transient anxiety was common, usually with increased motor activity.

Many test subjects told us about having experiences of the "charismatic" nature (Savage and Cholden). They felt like approaching "truth", like getting ultimately a true picture of the world ("things have shifted toward their essence", "objects become their own symbols", etc.). These experiences further heightened mood.

(7) In the majority of the cases consciousness was clouded, and most test subjects likened the experience to drunkenness or to being half asleep. Every normal test subject remained contactible. Episodes of depersonalization phenomena, a strange realization of motor activity, uncertainty of body scheme, etc. marked the mild disturbance of the ego-consciousness. The so-called double orientation, which makes self-analysis, concentration on the pathological experience, but at the same time contact with the environment possible, was part of the DET effect, like it was with the other psychotogens. Otherwise, the clarity of consciousness varied, with its perimeter narrowing and widening.

(8) The eventual humoral shock-effect of DET has been studied in 10 test subjects, but all that the 0.8 mg./Kg. dose produced was a moderate lymphopenia and variations in the serum K level.

(9) The immediate after-effects of DET were slight fatigue, mild headache, depression and insomnia, respectively, which, however, did not exceed one day in duration.

It should be pointed out as a peculiar late effect that many of the normal experimental subjects showed artistic tendencies which they had not shown before. The majority of them, when relating their experiences, were sometimes subjective and rather lyric at times. This is understandable. But two subjects began painting pictures shortly after the experiment, one wrote a poem and another a short story, although none of them showed such tendencies before. To explain this sudden outburst of creative tendencies the same possibilities may be brought up as those mentioned by Arnold in his study on the creative activity in the early phase of schizophrenia. Of course, subconscious contents may be activated in this way, with the energy associated with them, but it is also possible that the work of art thus created is the result of a defensive reaction, initiated by the ab ovo imbalanced personality which suffered a trauma during the experiment. One of the test subjects began to paint "to be able better to express his otherwise inexpressible experiences and to explain them to his friends":

(10) EEG observations.

In 31 cases intoxication was followed by EEG studies. Owing to a lack of co-operation, the electrograms for 6 psychotic females cannot be evaluated and thus an account can be given of the EEG results for 10 normal adults, 14 schizophrenics and 1 female with epilepsy.

The acceleration of rhythm and/or the decrease of amplitude are detectable in the curves of all the 25 subjects examined. The acceleration of the alpha rhythm amounted in general to 1 to 2 c/s, in 2 cases it was 3 c/s. In 2 curves the initial rhythmic theta component disappeared at the peak of the DET effect and the alpha component was moderately intensified. (One
of these patients had been leucotomized 9 years earlier because of schizophrenia, the other was a female suffering from epilepsy.) The alpha-desynchronization on opening the eyes was complete even in the spontaneous curves in 10 subjects, it became complete in response to DET in 13 and remained partial in 2 cases. The amplitude and regularity of the alpha rhythm decreased in 23 cases, of which in 5 a transient full desynchronization developed (Fig. 2). A paradox alpha reaction did not occur. In 2 cases the alpha amplitude increased, but at the same time the alpha frequency increased.

In general, the EEG changes appeared parallel with the clinical development of the response to DET, with the maximum effect occurring 50 to 80 minutes after injection in the majority of cases. There was usually a marked parallelism also between the clinical symptoms and the absolute intensity of EEG changes. No correlation was observable between the single clinical symptoms (visions) and the EEG. In a case of a female schizophrenic the changes of the EEG differed somewhat from what was seen in the other cases. The amplitude of the alpha rhythm was markedly reduced and at the peak of the DET effect a 6 to 7 c/s high amplitude, bilateral-synchronous theta rhythm

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Fig. 2.—Female, aged 25 years. (a) Spontaneous EEG. (b) 55 minutes after the intramuscular injection of 0.8 mg./kg. DET. (c) 85 minutes after injection. All three records have been made with the patient's eyes closed. (Channel 1: right frontoprecentral, 2: right precentro-parietal, 3: left fronto-precentral, 4: left precentro-parietal. Time: 1 sec. Standardization: 50 μV.)
appeared in the anterior leads, which could be only suspected to be present in the spontaneous curve. This patient had been given 0.75 mg./Kg. of DET and clinically the intoxication was very mild.

The EEGs of the two hemispheres behaved in the same way in every case. There was no difference in the changes between the normal subjects and the psychotic ones, either. In the patient with epilepsy the focal left precentral steep-slow complex of the EEG did not change at the time DET was acting, though otherwise the wave spectrum was accelerated.

Thus, it is clear that DET, like mescaline, LSD, DMT and bufotenine, arouses electrical alertness.

As to the mode of action of DET, we refer to the observations made by Purpura, Rinaldi and Himwich, Marrazzi and Hart with LSD and by Kajtor with DMT and we assume that also that agent has a dual excitatory and inhibitory action, involving a facilitatory effect on the specific projection pathways and an inhibition of the cortico-cortical, transcallosal and of the non-specific projection systems. However, the clinical picture of the DET effect suggests that a dissociation (disturbances of somato-sensibility) may occur within the action on the specific afferent system, and certain forms and colours of the subjective visual phenomena indicate that there may be a direct action on the retinal synapses as well.

The majority of the uncommunicative, chronic schizophrenics became more communicative in response to treatment with DET. Even the vegetative symptoms and disturbances of perception did not interfere with the improved contact and the patients were particularly communicative during the third hour of the DET effect. Likewise, a favourable change followed the DET effect in 4 psychopathic and 3 severely hysterical patients. In cases of psychosis and neurosis DET appears to be superior to the intravenous barbiturates for exploration and for establishing psychotherapeutic contact, because the peculiar dual state of inhibition-excitation induces them to tell the truth about themselves. Changes in the mood, the temporary disinhibition, the increase in the intensity of experience, together with the possibility of acting out have a role in therapy. In the following we present a few illustrative examples of this.

Mrs. J.W., aged 35, had been suffering from depressive schizophrenia for 3 years. In response to DET she developed vivid visual hallucinations and illusions, then told us that she was still yearning for her lover of 14 years ago, who was living far away. It was because of him that she had divorced her husband and did not want to get married again. She was waiting for a miracle to bring her together with her lover again. (Insulin coma and other active treatments continued over months had failed to bring any of these ideas to the surface.)

H.E., female, aged 38, paranoid schizophrenic for 6 years, told us for the first time under the DET effect that she was strongly bound emotionally to her father. She did not get married, but established instead extramarital relations with a man resembling her father. The wife of that man had tuberculosis and she often wished that the wife would die and was therefore tortured by bad conscience. She would not be in that situation, were her father still alive.

L.M., female, aged 29 years, had been suffering from catatonic schizophrenia for 5 years. Under the influence of DET she became talkative and spoke about love of her fellow men. Later she told us that she had been attracted by one man only, a priest, and she would like to write to him. People were had, because they gossiped about her, telling that she had been in bodily contact with that priest.

Gv. J., female, aged 25 years, with acute paranoid reaction, acted out catharsis-like her conflict (she had a love affair with a married man and was afraid that her parents would discover it) under the DET effect and became symptom-free afterwards. Later, a relapse occurred at home due to financial and familial difficulties. Then she asked for DET again, because she felt that it had done good to her in the past.
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Many other patients with psychopathy told us truthfully about their problems under the influence of DET, but many protested against being given another injection, because they had talked too much under the DET effect.

The most suitable dose appears to be 0.8 mg./Kg. Whether it should be repeated or not, remains to be elucidated; we have given repeated injections to 5 patients only. In schizophrenics showing a tendency to stupor and in a state of excitation DET cannot replace, of course, shock and narcoleptic treatments, respectively and in such cases the administration of DET is unreasonable. Experience has shown us thus far that on completion of active treatment, at the beginning of socialization trials we can expect the most benefit from DET. A DET-interview may help to unmask eventual tendencies to dissimulation. Confabulation, so common in barbiturate exploration, did not occur under the DET effect, which seems to incline the patient to be frank and to seek support; it happened only in 2 cases of paranoid schizophrenia that the patients thought of poisoning and turned hostile to the experimenter.

DISCUSSION

DET appears to be highly suitable for medical autoanalysis, particularly because it exposes the body to less stress than LSD or mescaline; its effect is over in 3 hours and yet it made a temporary “living through” of many pathopsychological symptoms possible. The euphoria the drug produces may have the danger of addiction, but thus far only a single normal test subject has expressed a desire to have the DET model psychosis repeated.

Although the number of non-schizophrenic patients involved is small, also some of the so-called “normal” test subjects exhibited neurotic and psychopathic features. Experience has shown DET intoxication to be suitable for studying personality components and psychic features, because they become more plastic during experiment. In connection with the DET effect we can confirm Becker’s statement for the LSD experiments, according to which the content of manifestations depends on the life story, but constitutional factors also play a role in the evolution of a syndrome, some of which may have a special trend of manifestation that may be provoked equally by a toxic or a reactive psychogenic effect.

For obvious reasons, we did not want to explore our normal test subjects who had volunteered for the test, but even so they revealed much about themselves; even when relating later the experience they often spoke about data directly pertinent to their problems, desires and failures. We did not analyse directly their visions, although even these, being so similar in quality to day-dreaming, appear to have brought to surface ego-near contents, with a katathym-effective background, or wishfully, or reflecting fears (eventually symbolically). For example, one of our novelist-authors claimed that his nervous tension he called “cosmic anxiety” disappeared only for the 3 hours of the DET effect during some years; during the DET effect he could think over his artistic problems better. Another neurotic experimental subject, who is deeply religious, spoke about a union with God he had lived through ecstatically during the DET effect, after which he was extremely happy for weeks, because, as he put it, the DET effect proved his religiousness to be profoundly sincere and not only apparent.

Thus, DET may prove to be a useful aid in the psychotherapy of certain neurotics as well and the contents thus explored may be utilized also in psychoanalysis. The resulting regression, loosening of consciousness and the
desire for help increase suggestibility, help to establish psychotherapeutic contact, and to resolve for a time the progressive narrowing of life experiences, which, according to Lewis and Sloane, is one of the principal features also in the therapeutic effect of LSD in neurosis.

Several test subjects likened the DET effect to the deliriant state of typhus, pneumonia, trauma, etc., thus it has been suggested that the tryptamine derivatives may play a role in the genesis of certain exogenous pathological conditions. The severe disturbance of consciousness, which occurs as a rule in such conditions, and which greatly interferes with objective remembrance, may be explained by the presence of excessive amounts of toxic substances or by a loss of compensatory power in the body. In support of our view is the claim made by Turner et al. that "any psychic action of bufotenine must be of a delirious nature, i.e., of a toxic interference with cerebral mechanisms", as well as the statement made by Fabing and Hawkins in which the potential role of anoxia in the development of the bufotenine syndrome is emphasized. Maybe the "Zwischenstoffe" claimed to exist by Bonhoeffer are unmasked as metabolites of tryptophane. Further experiments with similar agents may contribute to our knowledge of the pathogenesis of the exogenous reaction types.

Research into the experimental psychoses involves innumerable methodological difficulties. These difficulties surpass even those faced in clinical pharmacology, if the complete symptomatology of the new psychotic agents should be described. In such a case namely the classic method of psychiatric observation and the subjective data supplied by the test subject should be relied upon, in the first place, the EEG and the various tests and repeated blood samples all interfere with the results, although the data obtained facilitate a more objective comparative study of the effect. The personality of the test subject and the pre-experimental atmosphere may have a decisive influence on experience and the repeated test with the same agent will find a biased test subject. It would be very difficult to apply the placebo or double-blind methods in the control of the experiments and the suggestive influence of the test subjects on one another is also very difficult to eliminate. The differences in response due to differences in personality can be elucidated only by carrying out very many tests and careful, detailed personality studies before the experiment. These evaluative difficulties were evident also by our DET experiments.

Although it is mainly in the field of phenomenology that our investigations are complete, it seemed worth while to outline the properties of this new tryptamine derivative, particularly because we believe DET to be the best and least noxious psychotogenic agent known thus far, which seems to have an unquestionable therapeutic effect as well, as is illustrated by the examples described.

**Summary**

After discussing the hallucinogenic derivatives of tryptamine known thus far and their significance, the authors outline the symptoms of the model psychosis which followed the intramuscular injection of a single dose of 0.65 to 0.85 mg./Kg. body weight of diethyltryptamine. A total of 71 test subjects (30 normal, 41 psychotics including 29 schizophrenics) have been involved in the study. The model psychosis produced by DET can be best likened to a moderate mescaline intoxication, although in some features it resembles the LSD effect. The effect is over in 3 hours. An illustrative protocol is presented and examples showing how the drug may help in psychotherapy are discussed in brief. The EEG changes produced by diethyltryptamine are described shortly; these bear resemblance to those produced by mescaline and LSD.

It is suggested that a correlation may exist between the tryptamine derivatives and the exogenous reaction types of mental condition.
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