

# Letters

## Marihuana

The study by Weil *et al.* on the effects of marihuana in man (13 Dec., p. 1234) was admirably designed and executed, but the authors' conclusion that marihuana is a "relatively mild intoxicant" had no relevance whatever to the data presented. The subjects smoked two marihuana cigarettes! Two ounces of bourbon undoubtedly also would have had mild effects. The short- and long-term effects of smoking eight or ten marihuana cigarettes daily (or several grams of hashish) have been inadequately studied, but the available evidence (1) suggests that "mild" they are not.

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### References

1. A. Benabud, *Bull. Narcotics* 9, 1 (1957); R. N. Chopra and G. S. Chopra, *Indian J. Med. Res. Memoirs* 31, 1 (1939); H. Isbell, *Psychopharmacologia* 11, 184 (1967); M. I. Soueif, *Bull. Narcotics* 19, 1 (1967).

It is not as startling as one might suppose to find that naive subjects (like old-fashioned honeymooners) do not get particularly high, or even get high at all, and that they experience some impairment on intellectual and psychomotor tests after smoking marihuana, whereas regular users get "high" and even appear to improve slightly on the tests. The ingestion of a novel food (1), or a novel drug, or any other novel procedure, which changes central nervous system activity, calls for a symbolic interpretation of that change. It is often stressful for the inexperienced individual to decide what appears at that time to be the most meaningful interpretation. Studies on humans have indicated that elevated adrenocortical hormone levels may occur in novel, ambiguous situations (2), and cortical stimulation in dogs could be produced in response to the ingestion of small doses of novel substances, such as aspirin and oxytetracycline, although these compounds apparently do not selectively activate the cortex. The activation "improves the possibilities of differentiation in and regulation of the activities evoked by

the specific properties of the substance" (3). Each of us interprets his own central nervous system activity in the light of his total past; that is, the history of his genotype, phenotype, and their interactions between themselves and their environments. A novel drug, however, which has not been part of the total past of the individual, can only evoke a tentative symbolic interpretation which is colored by anxiety and exaggerated expectations.

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### References

1. S. H. Revusky and E. W. Bedarf, *Science* 155, 219 (1967).
2. M. Sabshin, D. Hamburg, R. Grinker, H. Persky, H. Basowitz, S. Korchin, J. Chevalier, *A.M.A. Arch. Neurol. Psychiat.* 78, 207 (1957); J. Mason, *Recent Progr. Hormone Res.* 15, 345 (1959).
3. A. A. Kramova and T. M. Vorob'eva, *Fiziol. Zh. SSSR* 46, 1387 (1960).

... During the past 11 months 157 patients were admitted to Brooklyn State Hospital with psychotic behavior and a history of drug abuse. They constitute about 7.7 percent of all admissions, an increase of over 300 percent during the past 3 years. A detailed, not yet completed, investigation into the causes of the psychiatric problems of 114 of these patients ... shows that in 7.9 percent cannabis did play an essential role in their symptomatology. This ranged from acute panic reactions to marihuana-induced "bad trips" and precipitated schizophrenic episodes. The figure increases to 8.5 percent if only the marihuana smokers among the admissions are considered. There is little doubt that these figures will increase with the growing availability of "synthetic grass" (THC) on the illicit market. So far, only five of our patients have used it, and one of them with disastrous results.

Weil states that it is "... safe to study the effects of marihuana on human volunteers who smoke it in a laboratory." This is not so. Skliar (1), in 1934, reported eight cases of psychopathology after single marihuana doses and this has since been confirmed in additional singular cases by Najera and

by Milman (2). We have tried to find denominators by which psychopathological reactions could have been predicted in those in whom they occurred, but our results to date do not appear too promising.

It seems to me that reports such as Weil's should be based on much broader evidence and be worded much more carefully in view of the enormous leverage any encouragement can have in the present flood of abuses.

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### References

1. N. Skliar, *Allg. Ztschr. Psychiat.* 102, 304 (1934).
2. G. Najera, cited as a "personal communication" by R. D. Johnson, *Rhode Island Med. J.* 51, 171 (1968); D. H. Milman, *J. Pediat.*, in press.

This study has added to the controversy. As a methodologist, I feel that the authors have missed the opportunity of planning their experiment so as to make a valid comparison between naive and chronic users of marihuana. I can appreciate the difficulties they had to face. ... The fact that chronic users were tested only on high doses is indeed unfortunate, since it is not possible to eliminate the placebo effect in these people.

The authors talk about three groups of treatment (Table 2, p. 1238) when, in fact, there are only two groups—naive and chronic users. Though there is no mention of it, I have assumed that the allocation of naive subjects to various treatments was completely randomized. The Latin-square design allows for the evaluation of the "order" effect. It would have been interesting to find the influence of the first treatment, whether high, low, or placebo, in comparison to the subsequent ones.

In the "Results" section, there is an ambiguity regarding the statistical treatment of chronic users. Though the authors caution us about the inappropriateness of comparing chronic users and naive subjects, they still find that the "differences between the chronic and naive groups" are "statistically valid." This would imply that all the results of the tests from each group were pooled. I doubt that this is the case, and there is the ambiguity. Furthermore, the randomized allocation of chronic users to different treatments being impossible, since there was only one treatment, statistical analysis of the results of chronic users can apply only in com-

paring each subject to himself or all subjects among themselves. . . . How "high" the chronic users would have been on the placebo cannot be established, but an educated guess can be inferred if one aligns the following facts: (i) only one out of nine of the naive subjects had a definite marihuana reaction; (ii) it is only through repeated exposure to marihuana that getting "high" becomes evident—subjectively evident; (iii) the nonusers need to be taught the subtle effects of the drug; and (iv) the chronic users performed more effectively on certain tests. . . .

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While Keup's observations of patients at Brooklyn State Hospital are interesting, I do not see their relevance to anything reported in our recent article. We were very careful to define our quite limited purposes in conducting the research: ". . . simply to collect some long overdue pharmacological data . . .," not to make judgments about the safety or dangers of marihuana. For the kinds of data we sought, our sample size was sufficient, as any experimental pharmacologist will testify. I do not agree with Keup's contention that his observations are more important evidence on the question of safety; the literature is cluttered with uncontrolled (and largely contradictory) studies of this sort, and it is impossible to draw conclusions from them. Finally, I do not know of a single instance in which a substance procured illicitly as THC has turned out in fact to be THC upon chemical analysis.

Many of Joubert's questions about methodology will be answered by careful reading of the article. I believe we made clear that our experiments were primarily concerned with naive subjects; data from chronic users were reported because they were interesting, unexpected, and, incidentally, consistent with the preliminary results of several other studies now in progress. The phrase "three treatment groups" referred to the high dose, low dose, and placebo treatments given to the naive subjects. Allocation of subjects to these groups was random, and no differences in order of treatments were observed. Comparison of naive and chronic subjects was done with pooled data from chronics (who received high doses) and pooled data from naives on their high dose treatment only. I see

no ambiguity here. I share Joubert's regret that we did not test chronic users on placebos; if he can provide a placebo that will fool a regular marihuana smoker, I will be happy to run the appropriate experiments.

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### Chromosomes of Criminals

Recent news items indicate that some lawyers and juries are inclined to excuse human males having an XYY chromosomal arrangement as not responsible for criminal acts. This would seem to have large implications for the scientific as well as the legal community, to say nothing of the past and potential victims of these acts.

There is strong evidence that a tendency toward some aggressive, or other types of behavior, may be inherited in the normal way; that is, through genes. Suppose it is established that certain genes do predispose people toward forms of criminal behavior. Then will these people be excused as not being responsible for their acts? Does this mean that only behavior attributed to environment would be considered as responsible acts in the legal sense? Then who would decide between people responsible for their acts and people not responsible?

As more becomes known about the role of inheritance in behavior, a Pandora's box of truly gigantic proportions could be opened. Is a man any less a menace because his crimes are, in part at least, genetically induced? Can such a man premeditate a crime and is he guilty if he does? I would not want to see all the answers given by the lawyers or by the philosophers who argue about "free will."

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### Midwest Colleges:

#### United on National Policy

The Great Lakes Colleges Association and the Associated Colleges of the Midwest recently issued "A Joint Statement on Federal Support of Higher Education" which expresses the views of 22 private, primarily undergraduate,

institutions noted for high quality education. Although we do not speak for institutions other than our own, we are aware that many others share our views. We believe:

1) Each sector of higher education everywhere will require continued and increased federal support if this country is to meet its educational needs in the decades to come.

2) The report of the Carnegie Commission, cited in the statement, presents a broad, bold plan which our member institutions endorse.

3) Undergraduate education has received a disproportionately small portion of federal support even though it is the sole source of students who enter graduate programs.

4) Little attention has been given to the special—and expensive—efforts of certain institutions which maintain high quality programs, and which send a disproportionately high percentage of students into training for the professions.

5) Although Congress has supported the natural sciences, there has been a lack of significant support for the arts, humanities, and certain social sciences. This lack will progressively create serious imbalances.

As new forms of federal support to education are imminent, we wish to present as clearly as possible the accomplishments, potential capacities, and needs of our sector of higher education. Our two associations have appointed a Joint Committee on National Policy, empowered to speak for us all. The members are Landrum Bolling, Earlham College; James P. Dixon, Antioch College; Sidney Rand, St. Olaf College; and Miller Upton, Beloit College.

This committee will give our views to those close to the development of pertinent legislation. Our main hope is not to seek exclusive support for our own special interests, but to see that the kinds of institutions we represent are recognized as an extremely important component of the nation's educational resources. We are keeping our colleagues at the Association of American Colleges fully informed of our concerns and activities.

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