Book Reviews

Cannabis

Uses of Marijuana. SOLOMON H. SNYDER. Oxford University Press, New York, 1971. x, 128 pp., illus. $5.95.

"Marijuana is symbolic of a more passive, contemplative, and less competitive attitude toward life than has been traditional in the United States. It is usually denounced by people who like things the way they are. Whether society accepts or rejects the drug will undoubtedly have some influence on the evolution of our national character." With this sociophilosophical observation Solomon Snyder ends his little book. It is evident that we are at a critical stage in the history of this drug when so many people are flouting the law by using it that it is undermining the integrity of our legal system. But why are they doing so? The answers contained in this well-organized, concise, and readable book seem to be that the use of this drug is venerable, the supply plentiful, and the effects pleasurable and relatively safe. Even though the author does not take an explicit stand, the reader must come to the conclusion that the legal prohibition of marijuana is based on irrational arguments, or claims not supported by scientific evidence, and is inconsistent with other laws.

The book is intended for the layman and is written in a rather breezy style, but it gives an adequate description of the basic chemical and physiological properties of cannabis preparations and the tetrahydrocannabinols. Each chapter is selectively documented and in total there are 104 references. So many books about marijuana have been written by laymen who give their armchair opinions of the drug or describe its subjective effects that it is a distinct service to have a professor of pharmacology and psychiatry at Johns Hopkins collect the most relevant facts on the subject for us.

The title may suggest that the book is devoted largely to the therapeutic indications of marijuana, but the description of marijuana as medicine covers less than 15 brief pages. Unfortunately, too, the accounts of various 19th-century cannabis enthusiasts who treated such conditions as pain, convulsions, and uterine bleeding with the drug are presented in a rather incautious fashion; in order to be convinced, today's clinician demands double-blind controls as verification of anecdotal material. Yet before we dismiss the 130-year-old claims of an Irish physician that cannabis acts as an analgesic, a muscle relaxant, and an anticonvulsant, we must remember that the properties of another remedy from botanical sources, digitalis, were accurately described by Withering in 1785. Anecdotal evidence is often worthy of confirmation, and modern, well-designed studies of therapeutic properties of marijuana are certainly in order.

Today drug companies must spend huge sums of money to demonstrate efficacy and lack of toxicity of new products. What company would gamble on cannabis unless it received legal and financial support from the government? The major therapeutic possibilities of marijuana seem to lie in its mood- and perception-altering properties. Studies of the psychotherapeutic properties of another hallucinogen, LSD, have been rather disappointing, but, as Snyder points out, it clearly belongs to a different class. Cannabis is certainly a potent agent with strong effects on the central nervous system, effects that people go out of their way to obtain. The reviewer would like to know whether users take the drug to treat their own anxiety or depression or merely out of curiosity or for conviviality. This question remains unanswered.

There is no doubt that the drug has been popular for a very long time. Snyder shows very well in his historical summary that cannabis has been used for thousands of years, in China, India, then the Near East, and finally Europe and America in our own era. Until 1492 civilized man almost invariably took his medicine by ingestion. Shortly after Magellan circumnavigated the world Sir Walter Raleigh circumvented the portal system, and they both owe their success to Columbus, who discovered tobacco smoking and brought it to the old world. Not long thereafter opium and cannabis were smoked as well as tobacco.

Cannabis did not appear to be a problem of great concern anywhere in the world until the 1930's. Snyder stresses the role of the United States Bureau of Narcotics in promoting the severe legal restrictions imposed on marijuana on the basis of meager evidence of toxicity. He describes in some detail the events leading to the passage of the Marijuana Tax Act of 1937, HR6385. This law ended the medical use of marijuana in this country and probably throughout the world and led to the difficult "drug problem" facing society today. Among the few lonely, courageous voices that warned against the consequences of this act was that of William Woodward, legislative counsel of the American Medical Association.

The chapter on the behavioral effects of marijuana concentrates on the perceptual and sensorimotor changes it induces. There is a good discussion of the work of Weil, Clark, Jones, Melges, Hollister, and a few others who have managed to overcome the considerable obstacles to human studies. In general, investigators have found that American marijuana as it is usually smoked produces such slight effects that it requires subtle or complex tests to detect them. The marijuana cigarette is, in effect, a low-fixed-dose preparation (like beer) which limits the intake of the active ingredient, delta-1-tetrahydrocannabinol (THC). It is hard to eliminate the effects of suggestion on such responses as hallucinations or altered time sense. We can see that what is clearly needed is more dose-response studies to indicate, for example, what levels of THC in the blood are needed to produce a given effect. And to do these studies would require greater availability of the drug for investigators and the development of techniques for measuring THC in the blood.

Why do people smoke marijuana? The reinforcing effects of cannabis and the motives underlying its use are scarcely dealt with in the book, and the omission reflects a lack of literature on the subject. Snyder notes that THC does not appear to produce physical dependence as the opiates, barbiturates, and alcohol do. Animals have not yet been induced to self-administer THC or any of the other hallucinogens; perhaps these drugs are uniquely biologically reinforcing to humans (unlikely), or investigators have not been clever

enough to devise animal techniques that work (possible), or reinforcement may be at a more intellectual level involving curiosity and bravado, the pleasure of new experience and the adventure of danger (likely). Social facilitation or peer pressure obviously plays a role in all drug habits, at least in the initiation phase. Social psychological factors are largely ignored in this book, but have been dealt with at length by others.

We might also ask whether THC directly stimulates the brain reinforcement centers studied by Olds and Stein, or affects other parts of the brain which synthesize amines, such as those studied by Aghajanian and Freedman, and which secondarily influence the reinforcement centers. Could it be that people smoke marijuana for the same reason (still unknown) that they smoke tobacco cigarettes, inasmuch as the motor patterns in the two habits are superficially similar? Much work remains to be done to clarify the role of physiological mechanisms in the reinforcement provided by drug habits. These central questions are not discussed in this book.

The chapter on research progress is a good summary of current work on the pharmacology of marijuana. One oft-reported paradox, mentioned several times in this book, is that habitual marijuana smokers appear to be more sensitive to the drug than novices, whereas they might be expected to be more tolerant. Snyder cites evidence (p. 103) that a metabolite of THC, 7-hydroxy-delta-1-THC, might be the active product formed by the liver and that it takes time and experience for the liver to become efficient at forming this substance. However, presumably even this substance is metabolized. Is its destructive enzyme less active or induced more slowly? Snyder cites the experiment of Lemberger *et al.* which showed that the radioactivity from labeled THC fell more quickly in experienced than in naive subjects, and he argues (p. 104) that this observation is evidence for the presence in experienced subjects of more active metabolites in blood. But possibly levels of 7-hydroxy-delta-1-THC are also lower in these subjects. If so, they may be sensitive to something other than THC or its metabolites.

As Snyder notes, the inverse tolerance of heavy users may represent an ability to inhale more efficiently. This point should ultimately be clarified by the determination of THC or active metabolites in blood. It seems very likely that a sophisticated drug user would perceive subtle nuances of drug effects more clearly than a nonuser. Needless to say, this matter will have to be settled by double-blind studies, since the sophisticated subject knows what to expect from a low dose and may be more suggestible.

The chapter entitled "Dangers" really deals with the heart of the marijuana controversy today. The Indian Hemp Commission in 1893 and the La-Guardia Commission in 1938 tended to exonerate marijuana from serious adverse effects. Nevertheless the Federal Bureau of Narcotics has always regarded (and still regards) marijuana as a dangerous drug. One of the effects most feared is that marijuana smokers will rapidly escalate to heroin. Surveys indicate that although it is common for heroin users to have used marijuana, marijuana users do not commonly take to heroin. Snyder suggests that there may even be an inverse relation between the use of marijuana and of heroin in certain circumstances (p. 86).

Although there is no evidence that marijuana causes physical dependence, and psychological dependence requiring regular daily use is rare, the possibility that heavy use or even a single use in a sensitive individual might lead to psychiatric disorder still exists. Cases of marijuana psychosis have been reported, although cause and effect are not clearly distinguishable in uncontrolled clinical observations. The same question still exists with LSD. Does marijuana cause an "amotivational syndrome" in hippie youth? Again, this is hardly a question that can be answered scientifically. After reviewing the evidence from 21 studies Snyder concludes that "moderate social use of marijuana corresponding to the American habit of social drinking is unlikely to have grave harmful consequences. The pothead, however, may be running greater risks." Even moderate marijuana smoking, like social drinking or moderate tobacco smoking, may carry a small increased risk of disease, which only large epidemiological studies will reveal. After all, even such nutritious products as cane sugar and butterfat are turning out to be harmful. It is ironical that a young health-food fancier who eats only organically grown food because of the danger of pesticides may turn on with pot with never a qualm about being poisoned.

It is this reviewer's opinion that the marijuana controversy centers on the question of whether the government should continue to restrict the use of this plant. The pharmacological actions of THC may contribute to this controversy, because the drug disturbs perception and thinking, though usually not very much when taken in the form of a marijuana cigarette. But the issue is basically a moral and legal one concerning whether individuals have the right to inhale or ingest or smoke substances which might incapacitate them. The sociological and economic determinants of moral restrictions have been dealt with by others, frequently in ways that reflect the religious, educational, and political backgrounds of the authors. Conservatives tend to be authoritarian and restrictive, and liberals permissive. It isn't hard to guess where Snyder stands.

Marijuana is only one of many substances that governments have attempted to control. In this century the laws restricting the production, distribution, and use of such agents as opiates and alcoholic beverages have provided the basis for marijuana legislation. In previous centuries monarchs tried to prevent their subjects from using certain products that are now well within the law, such as coffee, tea, and tobacco. There have been religious restrictions against pork (Jewish), beef (Hindu), caffeine and nicotine (Mormon and Seventh Day Adventist), and alcohol (Moslem), and there have been the austerities of the puritan tradition. One may get the distorted impression from the sensational stories in the press, and also from the untitled photographs of marijuana smokers scattered through Snyder's book, that the puritan ethic with regard to drugs is fighting a losing battle for the younger generation. In truth the vast majority (more than 80 percent) of our youth does not use marijuana. John Kaplan, in *Marijuana—The New Prohibition* (World, 1970), has pointed out how inconsistent with the puritan tradition our laws are today, tolerating alcohol, a dangerous intoxicant, but penalizing marijuana, a generally more innocuous drug. Even though Snyder refrains from drawing conclusions for the reader, and the opinions on the jacket of his book describe it as "unbiased," it is likely that the material in it together with that in John Kaplan's more clearly advocative book will provide the basis for the ultimate legalization of marijuana.

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