Book Reviews

Effects of Cannabis in Another Culture

Ganja in Jamaica. A Medical Anthropological Study of Chronic Marihuana Use. VERA RUBIN and LAMBROS COMITAS. Mouton, The Hague, 1975 (U.S. distributor, Mouton/MacFarland Publications, Scotch Plains, N.J.). xx, 206 pp. $9.95. New Babylon Studies in the Social Sciences, 26.

Until the middle to late 1960's there existed among scientists and medical researchers a kind of consensus on marijuana. The overwhelming majority of articles and monographs published on cannabis prior to, say, 1965 adhered to the following basic tenets: (i) the effects of cannabis, both acute and chronic, both medical and psychiatric, are pathological; (ii) there is no use of marijuana without abuse; (iii) the effects of cannabis are a direct function of the pharmacological and biochemical actions of the drug itself and cannot be significantly or systematically mitigated by extra-drug factors; (iv) the phenomenology of the drug experience, or the "subjective" realm, is of little import, and anything that a marijuana user verbalizes about his or her experiences with the drug is irrational and epiphenomenal; (v) the marijuana smoker is neurotic and motivated by self-destructive impulses.

This consensus had disintegrated by 1970. Today, the marijuana pathologizers are on the defensive. Each new finding announcing damage to another organ or function of the body is met with a refutation or with a parallel study demonstrating negative findings. Many researchers are arguing that not only can we not reason from effects in animals to effects in man, we cannot even reason automatically from effects in one social and cultural setting to effects in radically different settings. The idea that there is anything like (for example) a "complete marihuana intoxication syndrome," as a clearly defined clinical entity, is now widely regarded as obsolete. (It has, however, been argued that old scientists never change, they just die off, making way for new scientists and new ideas in science.) It might be pretentious to claim that the past 10 years have witnessed a scientific "revolution" among cannabis researchers in the sense described by Thomas Kuhn, but a radical change has clearly taken place: a healthy state of chaos now seems to rule the field.

Ganja in Jamaica summarizes the major findings of a study carried out under a contract with the National Institute of Mental Health. The study was a collective effort, drawing on the work of almost a score of researchers in fields as diverse as anthropology, pathology, sociology, medicine, psychiatry, and psychology. A report on it, entitled "Effects of Chronic Smoking of Cannabis in Jamaica," was presented to the Institute in March 1972, and the study was well known to researchers in the field long before its publication in the present form.

Only by examining the use of a drug in a wide range of settings and environments can we piece together anything like a well-rounded picture of what it does to people. For most drugs, what we know comes from studies on a narrow range of subjects—usually American, and usually "captive" prison, hospital, or college populations. Consequently, we should welcome the appearance of any careful, systematic, rigorous study of cannabis use in other cultures and other kinds of populations.

Cannabis is consumed in Jamaica in a fashion totally unlike the typical pattern of American use. To begin with, marijuana (or *ganja*, as it is referred to in Jamaica) is typically smoked mixed with tobacco. This is almost never done in the United States. (As the authors point out, this presents difficulties in interpretation of effects, since those of the tobacco and those of the cannabis are difficult to separate.)

More striking is the difference in the quantity of cannabis consumed. In the United States, a typical current user will smoke one or two marijuana cigarettes, weighing roughly 1 gram each, a week. Smokers who turn on once a day or more make up about 10 percent of current users, and perhaps 10 or 20 percent of the daily users—or between 1 and 2 percent of all current users—are high all the time. Jamaicans smoke prodigious quantities of cannabis by American standards. In one part of the report it is claimed that the average user consumes seven "spliffs" (a kind of joint or marijuana cigarette) a day. Heavy use is defined as consumption of more than eight spliffs a day, moderate use five to eight, and light use one to four. Of course, since a random sample was neither sought nor achieved, it is difficult to know how typical these users are of Jamaican smokers as a whole. The authors indicate that their subjects are not atypical. In any case, it would be extremely difficult to locate American marijuana users who smoke as much as these Jamaican subjects.

The third difference between American and Jamaican cannabis consumption is the potency of the drug consumed. The average potency of the Jamaican samples assayed (each subject was asked to submit his supply for analysis) was just under 3 percent Δ^9-tetrahydrocannabinol (THC) by weight. The typical stash of reasonably potent Mexican marijuana consumed in the United States is roughly one-third as potent. The heaviest-using Jamaican smoker therefore consumes at least 10 times as much THC as his American counterpart—and possibly as much as 25 times as much.

The consumption of *ganja* is also distinctive in its incidence in the population. The authors estimate from the communities they surveyed that 60 to 70 percent of the rural working-class population—men, women, and children—consume some form of cannabis. (In addition to being smoked, *ganja* is also brewed in a kind of tea, but "non-smokers tend to draw a sharp distinction between the effects of tea drinking and those of smoking"; even members of strict fundamentalist Protestant sects that condemn *ganja* smoking permit its members to drink it in tea.) This is, as the authors point out, "undoubtedly one of the highest rates of marihuana use for any population in the Western world."

The widespread use and nearly taken-for-granted status of *ganja* implies another difference between Jamaican and American use. Here, the smoker is socialized into use as an adolescent or young adult by partially subculturally distinct and to some degree isolated enclaves of peers. The Jamaican learns about *ganja* from earliest childhood, almost always from parents or other adults, and typically has already used it, in tea, before smoking it during a period of adolescent experimentation. Smokers are not considered deviants by non-smokers; in fact, except for devout Christians, "among the rural poor, to smoke is to conform; not to smoke may mean social marginality."

Most readers will find the five chapters on the acute and chronic effects of *ganja* of greatest interest. In a nation where possi-

bly a majority of the population smokes a potent form of cannabis frequently, what are the effects of this drug on behavior and on medical and psychiatric condition? The aspect of the research that has already received the most notice is summarized in the chapter "Acute effects of *ganja* smoking in a natural setting." Four individuals were selected for study. They performed a set of agricultural tasks before smoking and after smoking, that is, while "normal" and while under the influence. Videotapes and detailed measurements of these exercises were taken and the test and control performances were compared. The tasks involved weeding, hoeing, and turning a plot of soil with a hand fork. The subjects were allowed to smoke their own *ganja* in the quantity they typically consumed under ordinary, everyday conditions. The quantity and potency of the cannabis smoked were also carefully monitored.

The results of this study are surprising and contradict completely the "amotivational syndrome" thesis that marijuana's effects, both acute and chronic, produce lethargy and sloth in the user. In fact, precisely the opposite was the case. Under the influence of *ganja* these four farmers worked harder, expended more kilocalories, and exhibited a greater number and variety of movements than when not under the influence. Moreover, when a number of farmers smoked together, their task-oriented cohesiveness was significantly greater than when they had not smoked. However, their work tended to be measurably less efficient. More activity was observed for somewhat less productivity. Whether this was a function of simple inefficiency or of a greater attention to the kind of detail that does not directly translate into output was not determined by the researchers.

On the ideological as well as the behavioral level, *ganja* was implicated in work motivation. "Almost without exception, users maintain that *ganja* enhances their ability to . . . perform manual labor, and that they regularly consume *ganja* with this objective." Users claim that "*ganja* has the immediate effect of producing a burst of energy sufficient for completing laborious tasks. . . . Almost unanimously, informants categorically stated that *ganja* enabled them to work harder, faster and longer." In fact, the "major reason given for *ganja* use is the perceived stimulus to energy and work motivation." Users smoked strikingly more frequently during periods when they worked than when they could not work. The farmers perceived that they worked harder and that their productivity was greater under the influence—a perception, the authors speculate, that may be functional in increasing their subjective rewards for work and consequently their motivation to work. Far from contributing to an "amotivational syndrome," then, it is reasonable to infer that *ganja* smoking in Jamaica is a component in a motivational syndrome.

Another aspect of the study involved a series of clinical psychological, psychiatric, and medical tests and measurements on 30 smokers not under the influence and 30 matched nonsmoking controls in a hospital setting. (Actually, the researchers found it extremely difficult to find subjects who had no experience at all with cannabis; some of the controls had made limited experimental use of *ganja*.) The mean duration of use for the smokers was 17.5 years at an average daily consumption of seven spliffs of 2.96 percent Δ^9-THC cannabis. The chronic users were asked not to smoke during their week-long stay in the hospital while the tests were being conducted. No signs of a withdrawal syndrome were observed in any users. An elaborate series of studies was conducted; users were compared with nonusers with respect to blood pressure, electrocardiogram, chromosome breakage, electroencephalogram, signs of depression and neuroticism, liver functioning, respiratory functioning, hematology, including number of white blood cells, motor coordination, memory, and so forth. No significant differences between users and nonusers were detected except that users tended to exhibit hypoxia, a deficiency of the delivery of blood to the tissues and organs of the body, somewhat more than nonusers. As far as the researchers were able to determine, the chronic use of potent cannabis is not toxic to the human mind and body.

Given the rash of supposed findings on the pathological effects of cannabis use, most of which have received a great deal of publicity—including enshrinement in a report of a Senate subcommittee hearing, *Marihuana-Hashish Epidemic and Its Impact on United States Security* (U.S. Government Printing Office, 1974)—these data should come as a surprise to many readers. It is generally true in medicine (and this holds even more strongly for an illicit substance or activity) that pathology is news, normality is not. The tests and experiments purporting to demonstrate the ravages of marijuana consumption (Stenchever's chromosome study, Nahas's study on cellular immunity, Campbell's cerebral atrophy study, for example) receive enormous attention from the media, and their findings become accepted as fact by the public. But when careful refutations of such research are published, or when later findings contradict the original pathological findings, they tend to be ignored or dismissed. We are reminded of the LSD-chromosome scare of the late 1960's, which turned out to be groundless. The pathology stories were broadcast everywhere; the refutations received very little attention. The medical and psychiatric findings of *Ganja in Jamaica* do not deserve the same fate. Taken together, the five chapters on the acute and chronic effects of *ganja* are one of the most significant sets of findings on cannabis ever assembled in a single study. They are worthy of widespread dissemination.

One of the more interesting findings to emerge from this study relates to the "stepping-stone" hypothesis. Some observers (for example, Gabriel Nahas, in *Marihuana: Deceptive Weed*) claim that there is a biochemical escalation imperative built into cannabis. The more one smokes, the less one enjoys it; tolerance to the effects of the drug sets in, and users search about for more potent drugs. Nothing like that occurs among the heavy, chronic *ganja* smokers of Jamaica. No other drugs were used, aside from aspirin, tea, alcohol, and tobacco. The only hard drug use known on the island is indulged in by North American tourists. So much for the stepping-stone hypothesis.

The self-descriptions of subjective effects (appendix 7) are fascinating for their contrast with North American experiences with marijuana. A majority of American smokers say that marijuana powerfully sharpens their taste of food, keenly alters their hearing, especially of music, and significantly slows down their sensation of time passing. In this study each of these three effects was reported by only a small minority of the 30 subjects—six, five, and one respondent, respectively. This emphasizes the sensitivity of cannabis effects (especially subjective effects) to the sociocultural context in which it is used. There are no subjective effects of cannabis in the abstract, apart from the immediate and the larger social and cultural setting of use. In the United States, use tends to be episodic, recreational, and hedonistic. In contrast, working-class Jamaican smokers "are oriented to pragmatic rather than to psychedelic reactions." The use of *ganja*, the authors explain, is "a situational syndrome," and the drug is "selectively taken for specific purposes," mainly in conjunction with work. The impact of definition and expectancy upon effects is "paramount."

Although I found the studies on the acute and chronic effects of *ganja* first-rate and valuable, the anthropological and sociological participant observation study, the historical summary, and the introductory

material tend to be less informative. Some (although not all) of the introduction relies on secondary and tertiary materials, resulting in a few inevitable errors. (The authors repeat the hoary myth that the "earliest recorded medical use of the plant occurs in a Chinese pharmacopoeia, c.2700 B.C." Actually, the *Treatise on Medicine* referred to was compiled about the 2nd century B.C., and it was not written by the supposed emperor—actually a god of agriculture in ancient China—Shen Nung, as is generally believed.) A few minor errors creep into the figures taken from other sources. (Jamaicans spent slightly under 40 million Jamaican dollars on alcohol consumption in 1965, not 15 million, as the authors write.) Some of the most interesting assertions are undocumented. They claim that "no differences in libido between smokers and controls were found on medical examination." How was this determined? What, specifically, were the findings? On the whole, the sociological and anthropological aspects of the study are sketchy, anecdotal, unsystematic, poorly documented, and unsatisfying. The authors claim that seven communities were studied by the project team, and yet only one is reported on. Why only one? The statistics and figures for the medical studies are detailed, even meticulous. Why are they so sketchy and infrequently presented for the sociological aspects of the study? Why were careful surveys of these villages not taken, recorded, and published in the book? Why was a house-to-house interview study not done? (It is practically impossible to do such a study in the United States, but entirely feasible in Jamaica, where the use of *ganja* is partly tolerated by the authorities.) The authors make a number of observations, assertions, and estimates without documentation; many could have been documented in the field, within the scope of the study they did, with relatively little more effort. The authors deny that cannabis is used as an alternative to alcohol (contradicting the claim of Raymond Shafer in the foreword), since *ganja* smokers also often drink rum. The research could have determined specifically what proportion of drinkers smoke and what proportion of smokers drink. Users claimed to smoke more during work periods than while idle. Why wasn't a week-by-week tabulation of the specific quantities consumed during both circumstances actually conducted? Gaps in the data such as these prevent this excellent study from becoming a classic.

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Settings and Outcomes of War

Military Deterrence in History. A Pilot Cross-Historical Survey. RAOUL NAROLL, VERN L. BULLOUGH, and FRADA NAROLL. State University of New York Press, Albany, 1974. lxii, 416 pp. $20.

Although farsighted scholars as far back as Condorcet or Buckle or de Bloch have urged the applicability of the scientific method to macrosocial and political conditions, it is only in the past few decades that anything like a tradition of scientific research on subjects such as war and diplomacy has begun to develop. The volume at hand falls squarely into this tradition. It is dedicated to Thomas Milburn, a social psychologist who, as director of Project Michelson in the late 1950's and early 1960's, made a valiant effort to bring high-quality social science research to bear on the U.S. Navy's strategic deterrence role. In that enterprise, he brought 20-odd researchers (including this reviewer) into individual and collaborative studies that might add to understanding of internation influence and the role of force therein.

Naroll, Bullough, and Naroll begin their ambitious empirical investigation by selecting at random one decade from each of 20 different "intellectually influential higher civilizations" between 125 B.C. and A.D. 1585; in each of those spatial-temporal realms they identify the dominant nation or major power (called the Conspicuous Actor) and its chief rival. While the title of the book suggests that military capabilities and doctrines are the main predictor variables, the authors actually examine the effects of 27 different variables. Further, they seek to account not only for the frequency of war in the 20 epochs sampled but also for some of the outcomes of war, including territorial losses and gains.

The predictor (or, more precisely, postdictor) variables are essentially descriptive of the dominant power or its rival or both, or of the relationships between the two. They fall into five groups: (i) military, reflecting relative capabilities and postures; (ii) geographical, reflecting the proximity and geography of the actors; (iii) diplomatic, reflecting previous war between the two, their alliance and diplomatic activity levels, and whether or not the war they fought, if any, during the sampled decade was initiated by surprise attack or an announced declaration; (iv) administrative, reflecting types of regime, experience of rulers, and presence or absence of civil war; and (v) cultural, reflecting trade, exchange, and tribute between the major power and its rival.

After specifying the cases to be examined and the variables to be used in this comparative historical exercise, Naroll *et al.* turn to the matter of operationalizing the variables. And while the effort to articulate the coding and scaling rules has certainly been made, these procedures remain far from satisfactory. Part of the problem is the exclusive reliance on dichotomous categorization, in which the codes are "present," "absent," or "no data," when most of these conditions could vary along an ordinal or interval scale. Equally serious are the absence of an explicitly worded coders' manual and the apparent failure to use multiple and naive coders. It appears that the investigators themselves, fully aware of the theoretical focus and armed with less-than-operational coding rules, handled the data-making operation. The systematic and reproducible conversion of reported historical facts and traces into machine-readable numbers is the very heart of research of this type, and while the authors clearly appreciate this, they in effect tell us to do as they say, not as they do.

Leaving aside these matters of data quality control (Raoul Naroll has authored a book of that title), we look at the analyses and results. In table C-2, we find the correlations: product moment coefficients for the covariations among the interval-scaled outcome variables; phi coefficients among the qualitative (dichotomous) predictor variables; and point biserial coefficients for the relationship between the predictor and outcome variables. The latter, of course, are what interest us here, but there seem to be very few strong associations. To quote, of the 56 correlations, only "four were significant at the 10% level, one-tailed." But none of these four reflect the association with which the book is primarily concerned: the extent to which these background variables account for the amount of war experienced by the major power and its chief rival during the sample decades.

From this point of view, the study is of course disappointing. It would have been exciting to discover that certain conditions and events have been consistently associated with the incidence of war over so broad an empirical domain. But even had robust patterns emerged, we would have to regard them skeptically. Not only is there the possibility of data contamination noted above, but (despite a valiant effort on the part of the authors to avoid the problem) a mere 20 episodes embracing every region of the globe and a span of 16 centuries just cannot be accepted as representative; the diversity is just too great. This leads, quite naturally, to the obvious question: why not examine a larger set of cases (preferably the entire population of them) within a spatial-temporal setting that has, on its