

on social systems (21). In surveys of the protogynous wrasses (22) and parrotfish (23), we have found a positive correlation between the relative abundance of a species and the frequency of initial phase males therein.

Our mathematics suggests that animals should change sex if one sex gains in fertility much more rapidly with age than the other. However, many animals, especially mammals such as deer, sheep, and goats, do not change sex even though older males in these species monopolize a disproportionate share of matings (24). Why do not more animals change sex?

The costs of changing the reproductive anatomy of animals which practice internal fertilization, and whose females are viviparous or bear fairly large eggs, may be enormous. Sex determination in mammals and birds may be too rigid to permit sex change. Moreover, many higher vertebrates may need experience as well as size to fight successfully for mates. A large animal which has just turned male may be at a hopeless disadvantage relative to his more experienced fellows, despite his size.

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25. We are most grateful for the use of the facilities of the Smithsonian Tropical Research Institute, and in particular for the use of a research vessel in the San Blas Islands. We are also very grateful to I. F. Downs and E. A. Fletcher for expert assistance in the field and laboratory, and to R. D. Alexander, S. Levings, G. H. Orians, and G. J. Vermeij for their extraordinarily helpful remarks and advice.

## NEWS AND COMMENT

# Drug Abuse 1975: The "War" Is Past, The Problem Is as Big as Ever

When ex-President Richard Nixon, in 1973, announced that the nation had "turned the corner" on drugs, he was alluding to what later proved to be only a twist in the road. The real turnabout, as it developed, was in public concern over the problem. For the consumption of drugs of all kinds in the United States is now flourishing as never before.

Drug abuse is a low-priority item in the Ford Administration. However, the renewed spread of heroin and the disarray in the nation's drug enforcement apparatus—publicized at congressional hearings last March—prompted the President last spring to order up a white paper on the whole matter.

This document, "White paper on drug abuse," prepared by the Domestic Council's drug abuse task force, made its appearance last month.

The white paper is not a startling work, but many drug experts believe it is the most realistic, and therefore encouraging, statement on drugs yet to emanate from the Executive Office. The report implicitly acknowledges defects in the Nixon drug

approach by stating that "we now know that the very real progress [made in the early 1970's] was, in the main, temporary and regional." It also admits what everybody but the Administration had long admitted—that total elimination of drug abuse is impossible. The task force says the situation can be improved considerably, though, without substantial new funding, if we concentrate on the most important things. In law enforcement, this means increased cooperation with nations that produce illicit drugs, and more emphasis on snaring major drug traffickers as opposed to small-time dealers. Acknowledging that "not all drug use is equally destructive," the paper ranks drugs according to their personal and social dangers, dependence liability, and size of the problem. Heroin, amphetamines, and barbiturates come out on top, and the paper says that abuse of the latter two substances "probably ranks with heroin use as a major social problem."

Of most immediate significance, perhaps, is the report's softened stance on marihuana. While not advocating its decriminalization, the report notes with ap-

proval efforts by states in this direction, and suggests that marihuana should have low priority in law enforcement activities. The paper reports that 17 percent of patients admitted to federally funded drug treatment programs in the first half of this year listed marihuana as their "primary drug of abuse." This it calls "poor utilization" of scarce resources. (One treatment official calls it "criminally ludicrous," since most of these referrals come from the criminal justice system as a result of small-scale pot busts.)

The perceptions in the report are hardly new, but their incorporation into official policy has been very slow. In the past they have been expressed in congressionally mandated studies such as the National Commission on Marihuana and Drug Abuse—the kind of document Presidents usually say "Thank you" for and toss on the shelf.

In view of the climate of retrenchment on drug treatment, some observers are gratified that the report strongly affirms the need for it. The notion of treating users of illegal drugs as people who need help rather than as criminals is still relatively new. Contemporary history of the situation begins in 1965, the official date for the beginning of the nationwide "heroin epidemic." The government launched its drug war—basically a war on heroin—in 1969. In 1971 President Nixon created the Special Action Office for Drug Abuse Prevention (SAODAP) within the Executive

Office of the President as a dramatic way to highlight the problem and provide central coordination for all law enforcement and treatment strategies. In 1972 the Drug Abuse Office and Treatment Act was passed, giving SAODAP a lifetime that was to expire on 30 June 1975. The National Institute on Drug Abuse (NIDA) was established in 1973 to carry on SAODAP's treatment initiatives as part of the newly formed Alcohol, Drug Abuse, and Mental Health Administration, which brought both alcohol and drugs out from under the umbrella of the National Institute for Mental Health (NIMH). All was attended by great noise and publicity, and fabulous amounts of money were poured into rapidly proliferating treatment centers for heroin. According to the white paper, the national treatment effort leaped from \$18 million in 1966 to \$350 million in 1975. Methadone became the rage, growing from an experimental drug to the treatment mode for more than one-third of addicts who sought help. Then the tide turned. The Turkish opium ban, arranged in 1971, began to have an effect, most noticeably in the East Coast heroin shortage of 1973. The long lines of addicts waiting to gain treatment began to disappear, and vacancies appeared in the programs. And Nixon said the corner had been turned. But in the midst of the self-congratulation, heroin, barred at the front door, started flooding in through the back yard from Mexico. By 1974, with federal funding leveling off, the treatment people in the field were warning that the problem was coming back in full force. In New York City, to take just one example, deaths attributed to heroin overdose reportedly increased 120 percent in the last half of 1974 as compared to the first half. Dope smuggling through Mexico is said to be at an all-time high, not only for heroin but for pharmaceuticals, marihuana, and cocaine as well. Now, as Vernon Patch, head of the Boston drug treatment program, says, "We have a mess on our hands."

Part of the mess can be attributed to the political motivations and erroneous assumptions about drug use on which the Nixon drug war was based. So, at least, says the Drug Abuse Council (DAC), a private foundation-supported group with a prominent voice in drug matters. In a lengthy and controversial article published last year in the *Washington Post*, Mathea Falco and John Pekkanen of the DAC explained that the Nixon offensive was spurred by public alarm over crime in the streets, the fact that heroin was spreading out of the ghettos and into the veins of young middle-class whites, and the reports of heavy opiate addiction among returning

Vietnam veterans—which aroused visions of hordes of armed, unemployed young men raging through the streets in search of a fix. When the alarm subsided—for example, most veterans, it was found, dropped their habits on returning home—so did public interest, as did the interest of a then Watergate-saddled President.

The Nixon strategy was based on the assumption that heroin supply and abuse could be virtually eliminated. It also tended to ignore the fact that stamping out heroin would not affect burgeoning misuse of pharmaceutical drugs, some diverted from medical channels and other illicitly produced, new fads such as cocaine, and, of course, alcohol.

The government now realizes that application of the moonshot paradigm is as inappropriate for drugs as for other offensives, such as the war on poverty to which it has been applied. NIDA director Robert I. DuPont, who commended the white paper for avoiding the "bellicose rhetoric" of war, says the analogy of weeding a garden is far more appropriate to depict the dogged and persistent efforts required to keep drug abuse at a minimum level.

#### Picture Ominous

And, meanwhile, the drug abuse picture has shifted in a way many describe as ominous. Heroin use is going up, particularly in the Southwest. The phenomenon of "polydrug abuse" has spread apace. Polydrug abuse is a very loose term, originally coined to refer to people hooked on amphetamines and barbiturates. It now generally denotes any pattern of drug abuse that is not alcoholism or heroin addiction. There are no reliable estimates of multiple drug abusers, but the white paper puts the number at about a half a million, roughly the same as the number of currently untreated heroin addicts.

A second phenomenon is the fact that marihuana has joined alcohol and nicotine as a drug of mass consumption. Some people do not find this alarming. Others do, like DuPont, who said at Senate hearings: "As consumption of marihuana has increased in the youth population, the consumption of alcohol and tobacco has gone up in those same populations right along with it." In other words, the seesaw effect—switching from one "drug of choice" to another—is not the operative law here; rather, if a person uses one drug, he is more likely to add others to his armamentarium of kicks.

Finally, there has been the spread of drug use to ever younger populations. NIDA says the fastest-growing group of drug users is the 8 to 14 age group. According to one estimate, 20 percent of people over 11 have tried marihuana, and a

recent NIDA survey of 16,000 high school seniors revealed that 6.2 percent smoked pot daily and 6 percent drank alcoholic beverages every day.

The cumulative picture is not pretty. Edward Senay, director of the Illinois drug abuse treatment program, describes kids sitting around the Chicago parks sniffing, popping, snorting, smoking, and drinking. David Smith, head of the Haight-Ashbury Free Medical Clinic in San Francisco, says his group supplied medical services at 75 rock concerts last summer, and of the drug problems they treated, 90 percent were related to "acute alcohol toxicity." The young have rediscovered alcohol but, as in every revival of an old fad, there is a new twist. Booze is now frequently combined with pot and pills, and with what seems to be an unusually urgent drive for oblivion.

The recognition of the new drug scene has not been matched by evolution in treatment. Senay believes the main government emphasis, in money if not in talk, is still on treatment for hard-core heroin addicts, and counseling and facilities for young drug experimenters are woefully scarce. Bernard Bihari, director of the New York City methadone maintenance program, agrees that NIDA was chiefly set up to deal with heroin, and polydrug abuse is "falling between the cracks." Polydrug treatment for these drug users simply means more money for detoxification, medication, and experimentation with various approaches such as individual and family psychotherapy, behavior modification, and relaxation techniques. NIDA did fund 13 experimental polydrug programs, but most have now expired, and there is currently no new money available for training or for expansion of treatment facilities. States and localities, too, are strapped for funds, as are community mental health centers (whose federal support comes from NIMH), which should be ideally equipped to deal with the range of psychological, social, and medical problems that embroil drug users.

The rising prevalence of alcohol use points up an arrangement that observers see as increasingly inappropriate—the separation of authority for treatment of alcoholics and other drug abusers. In the federal government, alcohol has a separate agency, the National Institute for Alcohol Abuse and Alcoholism, and the system of separate drug and alcohol authorities has been duplicated by many states. While different kinds of addicts require different treatment, Bihari and many others believe that separate funding authorities inhibit flexibility and the sharing of resources, and make no sense in view of the growing crossuse of drugs.

But alcohol's special status remains:

since it is a socially acceptable and legal drug, alcoholism treatment has a strong constituency and a long and venerable history. DuPont says the alcohol people would strongly resist incorporating with the drug people now that they have their own institute, and they don't want alcoholics to be classed with the criminal drug-using element. People at the DAC say it is attitudes like this that prevent policy-makers from developing realistic perceptions about drug abuse: "Any drug policy is doomed to failure that is based on the enormous and fraudulent dichotomy between licit and illicit drugs," says Pekkannen.

Public apathy towards the drug problem and its political manifestation—thin supplies of money—makes it unlikely that significant new treatment initiatives are in the offing. The NIDA budget has been hovering at about \$222 million a year, and if the additional \$30 million requested for fiscal 1977 is granted, it will go to expansion of current programs rather than research and experimentation. NIDA-funded research (whose budget dropped from \$34 million to \$31 million in fiscal 1976) continues to be heavily focused on the causes and treatment of heroin abuse, with particular emphasis on the development of new, long-acting narcotic antagonists that could block the effects of any dosage level.

Right now the most visible trend is in the domestic law enforcement arena—the decriminalization of marihuana. So far, six states have decriminalized the private possession of small amounts of pot,\* and just about everyone agrees that widespread

decriminalization is desirable and inevitable—if only for the practical reasons that use of the drug has become socially acceptable anyway, and valuable resources are being squandered on prosecuting users. Even DuPont, who thinks the spread of marihuana use is "terrible" and who ideally would like to see a world where no one used any drugs (DuPont himself, according to an aide, has given up drinking and smoking and even coffee), believes private possession should not be penalized.

At present, the federal government is still trying to sort out its drug responsibilities—no mean task for a problem that ranges across seven cabinet departments and 17 agencies. The Drug Enforcement Administration, organized 2 years ago as the lead agency for drug law enforcement, is still without a permanent director following the firing last May of John R. Bartels, Jr., to placate those who were leveling charges of corruption within the agency, and it has yet to figure out how to curb the flow of an estimated 10 tons a year of cheap, high-quality brown heroin from Mexico. A coordinating body to carry on the total strategy functions of SAODAP (which are now in the Office of Management and Budget) and foster co-operation between the legal and medical-educational (or supply and demand) sides of the problem is yet to be set up. A bill creating an Office of Drug Abuse Prevention in the Executive Office of the President was passed by both houses of

\*Most states have made pot possession a misdemeanor rather than a felony; no criminal arrest record is attached to the offense in California, Oregon, Alaska, Ohio, Maine, and Colorado.

Congress, but the Administration believes this function should be pushed out of the presidential nest and made the responsibility of the relevant agencies. So the white paper has recommended instead the creation of a Cabinet Committee on Drug Abuse Policy, with subcommittees on treatment, research, criminal justice, and so forth.

Whatever arrangement finally emerges probably won't matter too much in absence of renewed public commitment to controlling drug use. Smith says efforts to combat drug use are hobbled by the "cyclical and capricious" nature of funding policies which follow political exigencies, the delayed and warped responses to real need. He believes the only answer is national prepaid health insurance for drug treatment so that the money would follow the customers. Senay, distressed though he is by the money problem, believes there is a limit to what the government can do in a society whose every sacred value has been "ravaged and torn apart," leaving a culture whose maturity level is at the adolescent stage, where hedonism and "do your own thing" prevail. He doesn't believe much will change until an "outraged citizenry" gets its dander up—in which case there is always the danger of a rush to the kind of punitive drug laws that have been adopted in New York State.

Drug abuse treatment is still a newcomer to the health field, and as such is particularly vulnerable to political trends. At the moment it is out of fashion: neither a great crusade nor a matter of garden-weeding but, rather, a grim holding operation.—CONSTANCE HOLDEN

## Icebergs and Oil Tankers: USGS Glaciologists Are Concerned

The potential environmental problems associated with transporting oil from Alaska's North Slope to U.S. markets have been under discussion for so long that it is surprising for a worrisome new problem to turn up now, but it looks as though one has. A recent U.S. Geological Survey report—warning that icebergs from the huge, 425-square-mile Columbia Glacier near the port of Valdez may pose a menace to the supertankers that will soon be calling daily to take on oil from the Trans-Alaska Pipeline System (TAPS)—has

stirred concern enough at the U.S. Coast Guard headquarters in Washington for one of the admirals to send for the glaciologists.

What the glaciologists are saying is that the glacier, which juts into Prince William Sound just west of the Valdez Arm, may be on the verge of a "drastic retreat" and could discharge up to 50 cubic miles of ice into the sound over the next 30 to 50 years. Moreover, the fact that dangerous icebergs—which are not always readily detectable—could be borne by winds and

currents from the vicinity of the glacier into the shipping lanes is already compellingly evident in the northern end of the sound and especially at the entrance to the Valdez Arm.

Alyeska, the consortium that will operate TAPS, has said that even if the glacial retreat does occur, the consequences for the tanker fleet would be minimal, involving no more than occasional delays in the movement of ships in and out of Valdez. El Paso Alaska, the company which is seeking permission (*Science*, 24 October) to build a trans-Alaska natural gas pipeline and run a fleet of 11 liquefied natural gas (LNG) tankers from a terminal at Gravina Point, some 40 miles from the glacier, has as yet given no indication that it sees any potential problem at all.

But the Coast Guard's Office of Marine Environment and Systems, headed by Rear Admiral Robert I. Price, has asked