

launch vehicles, the United States could easily increase its launch capabilities to 1.4 million pounds . . . per year." This "enhanced" low-growth approach would more than double the 1985 capacity, and produce enough to "support a space program with slow growth for many years." It could be done by slightly increasing the capacity of some ELVs, improving the shuttle's booster rockets, testing and possibly developing liquid boosters, using a lighter shuttle fuel tank, making ground operations more efficient, building another Titan launch pad, and using more automated production and processing facilities.

The entire "life cycle" cost of this approach would be \$110 to \$120 billion between now and 2010. For about the same price, but with greater risk, according to OTA, Congress could invest in one of several "transition vehicles." Included in this category are an unpiloted cargo version of the shuttle called shuttle-C, a greatly improved Titan rocket, or an entirely new system based on an interim version of the Air Force's Advanced Launch System.

If Congress decides to go ahead with construction of the space station next year, it might be worth buying shuttle-C just for that purpose. Its capacity is twice that of the shuttle, and it could reduce station assembly flights by seven, cutting costs by \$1.7 billion. According to NASA, that savings would more than pay for shuttle-C. But, OTA notes, NASA may well have underestimated.

Other vehicles fall into the futuristic category, to be used only if Congress is certain there will be a large increase in the launch rate between now and 2010.

Although OTA does not say so, the burden of argument seems to rest on those who think it is possible to sharply increase the amount of cargo sent to orbit. An incisive report by the Congressional Budget Office in May points out that transportation and other "infrastructure" costs already swallow the lion's share of the civilian space budget ("The NASA Program in the 1990s and Beyond"). Playing out NASA's existing programs will require large expenditures through the end of the century. According to this estimate, NASA's total budget must grow from \$9 billion in 1988 to \$16.4 billion in 2000 (constant dollars) just to cover the commitments already made. NASA had a terrible struggle climbing the first step in this long staircase this year, moving its budget up from \$9 billion to \$10 billion. It seems unlikely therefore that there will be room for any radical new departure in space transportation, unless something already on the books is dropped.

■ ELIOT MARSHALL

# War Breaks Out Over Drug Research Agency

*The National Institute on Drug Abuse had found itself in the midst of a battle over its role in the war on drugs, thanks to critical remarks by a White House panel*



*This is the sixth in a series on addiction. Next: Drug treatment programs.*

TO MANY ANXIOUS PARENTS who want their kids to "just say no," the federal agency responsible for studying the causes and consequences of drug abuse must seem an irrelevant and obscure enterprise, more concerned with manipulating the scrambled brains of drug-addled lab rats than with keeping the nation's 12-year-olds from taking their first puff of marijuana.

This frustration flared into open hostility in a report released this summer by the White House Conference for a Drug Free America. The report calls for a thorough evaluation of the National Institute on Drug Abuse (NIDA), based on "widespread concern" that "NIDA has grown into an overly bureaucratic agency that has lost sight of its mission." The report suggests that the small federal agency has completely failed "to build toward any solutions to the drug crisis."

These are surely fighting words, and researchers funded by NIDA have not taken the drubbing lightly. For their part, they countercharge that the White House report is a partisan attack on science led by zealous parents who are upset with NIDA because the institute has refused to fund their pet projects and has refused to tell their kids that marijuana is an addictive poison.

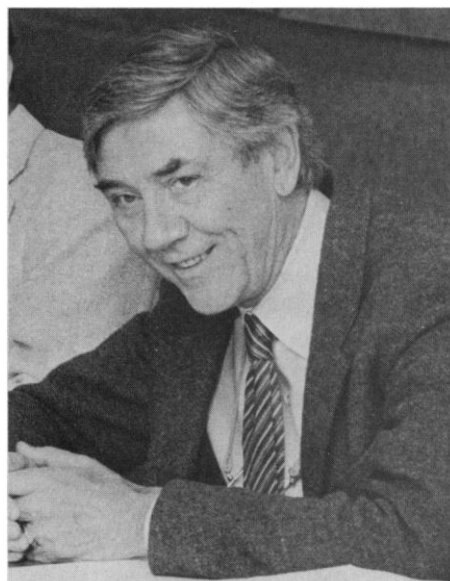
Whatever its ultimate impact, the White House report illustrates nicely the tension that arises when political agendas and moral goals are intertwined with science. The report also exposes a lingering confusion over the true mission of a place like NIDA, a mission that is defined very differently depending on whom you ask and when you ask them.

For example, some believe that NIDA should remain the quiet, but deadly serious, little research shop it has become in recent years, content to elucidate the roles of various opiate receptors and to figure out why mind-altering drugs make people feel so

good. At present, this is how NIDA sees itself: responsible for supporting scientists who want to ask questions about the "causes and consequences" of drug abuse and to evaluate the current thinking on treatment and prevention programs. To do this, NIDA funds the work of 400 principal investigators (see box).

Others, usually Washington types, would like to see NIDA throw itself headlong into policy debates, as it did in the good old days under Presidents Nixon and Carter. Of course, some people would just like to see NIDA gutted.

There are 33 government agencies enlisted in the current war on drugs, yet the White House group chose to single out only NIDA for a public whipping. NIDA is "a fourth-level bureaucracy" with 300 employees and about \$200 million a year, or "barely enough to manage its current research portfolio," according to Karst Besteman, a former deputy director at NIDA now with the Alcohol and Drug Problems Association in Washington. Why pick on NIDA? Terry Russell, general counsel for the White House conference, maintains that the report "honestly reflects what we heard around the country." Roger Meyer, a psychiatrist at the



**Charles Schuster:** NIDA's critics do not understand the slow and cautious nature of science.

University of Connecticut at Farmington, sees things in a different light: "When governments are charged with a political failure, it is not uncommon to blame the intellectuals."

The White House conference is clearly on the warpath. Put together under the auspices of 127 persons appointed by President Reagan and billed as "grassroots view of the nation's drug crisis," the report questions whether NIDA's research is "sufficiently valuable" or "largely duplicative" of work being done at agencies such as the National Institutes of Health and the Department of Justice. The report goes on to attack NIDA's peer-review system for awarding grants, a process which the report suggests is controlled by a cadre of narrow-minded academics.

None of this is music to the ears of NIDA scientists. "The research community is appalled by the document," says Meyer. Two scientists who participated in the White House conference insist the NIDA recommendations do not reflect the true feelings of the conferees. Mary Jeanne Kreek of Rockefeller University calls the report "misleading and inaccurate" while Lloyd Johnston of the University of Michigan labels it "anti-science and anti-intellectual." Both Kreek and Johnston are NIDA grantees.

In particular, certain forces active at the community level in drug education are after NIDA's scalp. "I just think that NIDA is a useless and hopeless agency as far as drug prevention goes," says Thomas Gleaton of Parents' Resource Institute for Drug Education in Atlanta. Instrumental in getting anti-NIDA language into the report, Gleaton and his colleagues have applied for grants from NIDA four times in the last 9 years. "We haven't gotten a dime," says Gleaton, who would like to see NIDA dismantled and a brand new agency dedicated to drug prevention created in its place.

Says Thomas Otto Moulton of the Committees of Correspondence in Topsfield, Massachusetts, another vocal White House conferee: "As far as I'm concerned, that agency is corrupt as hell. The whole damn mess should be exposed and then cleaned up." Moulton wants an audit of NIDA and all its grant recipients: "It's like an old-boy network that's been giving each other grants for years."

Moulton and Gleaton are particularly ticked off because they believe that NIDA has failed to give clear warnings about the dangers of all drugs, especially marijuana and cocaine. "The government should be telling us the straight story. They shouldn't be beating around the bush. They should tell us that marijuana and cocaine are addictive drugs. Period," says Gleaton.

## What NIDA Does for a Living

By the very nature of its task, the National Institute on Drug Abuse (NIDA) is different from its scientific siblings in the federal health bureaucracy. Studying heart disease and cancer are far less morally loaded pursuits than asking questions about the nation's craving for cocaine or the best way to detect drug metabolites in a job applicant's urine.

As federal genealogy goes, NIDA is one of three research institutes in the Alcohol, Drug Abuse, and Mental Health Administration, and as such is buried deep within the Department of Health and Human Services. "It's a fourth-level bureaucracy with absolutely no clout," says Robert Dupont, a former director of NIDA now at the Institute for Behavior and Health in Rockville, Maryland.

Yet despite its place in the federal universe, NIDA allies point with pride to some of the agency's contributions. NIDA supported, for example, the research that led to the discovery of opiate receptors in the brain, as well as the body's endogenous opioid substances—the endorphins and enkephalins. NIDA investigators may have recently found the binding site in the brain for cocaine, an important step on the road to elucidating cocaine's addictive properties. They have also developed a number of new drugs—naltrexone, clonidine, and buprenorphine—that will be used in the next decade for the detoxification and maintenance of narcotic addiction.

"NIDA finds a cure for addiction to an opiate and what's the reaction? A yawn," says Karst Besteman, a former administrator at NIDA now with the Alcohol and Drug Problems Association in Washington. "I guess it's just more prestigious to figure out therapeutics for respectable diseases versus why people get addicted to drugs."

Though NIDA is the lead federal agency for drug abuse research, it avoids policy battles and fulfills its mandate rather quietly, a mission NIDA defines as "sponsoring and conducting research into incidence and prevalence of drug abuse, its causes and consequences, and approaches to prevention and treatment."

NIDA has about 300 employees squirreled away in government-issue offices in the huge Parklawn Building in Rockville, Maryland, and at NIDA's Addiction Research Center in Baltimore. The agency's budget for 1988 is \$200 million, of which \$131 million supports extramural and intramural research.

The research—both extramural and in-house—covers a wide range of subjects: evaluating treatment schemes; examining drug use among high school dropouts; looking at prevention strategies targeted at families with histories of drug abuse; investigating interactions between cocaine, methadone, and alcohol; developing more sophisticated assays to measure drug use; and doing basic work on the reward pathways in the brain.

NIDA also gathers information on the country's healthy appetite for drugs. It supports the University of Michigan's nationwide survey of high school seniors, which gauges the consumption of mind-altering chemicals by young adults. In addition, NIDA collects data from emergency rooms and coroners' offices in 27 major cities, the idea being that a sampling of freak-outs and drug-related violence will give an indication of the level of drug use in a community.

In the last few years, AIDS money has come pouring into NIDA. In an attempt to control the spread of the AIDS virus among the country's 1.1 million users of intravenous drugs, NIDA will spend \$76 million on AIDS-related research and demonstration grants in 1988. Next year, more than half of NIDA's budget will go toward AIDS. There are currently AIDS prevention projects up and running in six cities, with five more in line. NIDA has been criticized for reacting slowly to the AIDS epidemic among drug users, who pass the AIDS virus by sharing dirty needles.

Another new venture for NIDA is the Office of Workplace Initiatives, which was established in 1987 to coordinate drug-screening programs within the federal government and to help the private sector initiate testing and employee assistance programs of their own. As part of the effort, NIDA has gotten involved in certifying laboratories that hope to test federal employees' urine for drugs. It is a move that has caused consternation among researchers who wonder whether rating commercial labs is an appropriate mission for a research institute. Charles Schuster, director of NIDA, replies that the agency has no intention of staying in the business: "We're not a regulatory agency nor do we view the certification program as something we want to keep."

■ W.B.

Says Charles Schuster, the present director of NIDA: "As a parent I can understand their frustrations. Arcane and enigmatic research titles don't seem to answer the question: How do I stop my 11-year-old from taking drugs." Schuster adds that "we have said things and done things in the past that have alienated people." But he says NIDA's critics do not understand the slow and cautious nature of science and the role of a scientific institute.

Allies of NIDA point out that prevention programs such as those pushed by Gleaton and Moulton are not even funded by NIDA, but by the new Office of Substance Abuse Prevention (OSAP) in the Alcohol, Drug Abuse, and Mental Health Administration. Since its debut in 1986, OSAP has doled out about \$24 million to 131 grantees, of which half were local organizations, many doing the kind of early-intervention and community-wide programs that Gleaton and his colleagues support.

Critics of the White House report add that they find it ironic that the conference chose to trash NIDA for failing to prevent drug abuse when it was the Reagan Administration itself which yanked NIDA's control over drug prevention and treatment programs in 1982. "They shot themselves in the foot with that one," says Besteman.

Indeed, during the first year of the Reagan White House, NIDA's budget plummeted from \$243 million to \$57 million, as funds earmarked for prevention and treatment services went to the states in the form of block grants. Extramural research at NIDA also suffered. "Morale went into the ashcan and people said, 'Let's just hunker down and survive,'" says Besteman.

Don Desjarlais of the New York State Division of Substance Abuse Services notes that when funding was transferred from NIDA to the states, the grants were cut by about 25%. Most states spent the money not on prevention programs but on badly needed treatment services. Desjarlais points out that even today, supply doesn't meet demand. Waiting lists for methadone maintenance slots can be as long as 6 months. Equally bad, NIDA lost its leadership role and its ability to gather information about how well treatment and prevention schemes worked, says Desjarlais.

Says Schuster: "How many people are in treatment programs? We don't know. We don't have that kind of information. We don't get that data back from the states."

A lack of good information from the hinterlands and inner cities is proving especially troublesome during the AIDS epidemic, when NIDA is asked to provide a detailed portrait of intravenous drug abusers and to answer specific questions about need-

le sharing and sexual behavior.

To make up for lost time, NIDA is getting into AIDS in a big way. In Reagan's budget request for 1989, more than half of NIDA's \$241 million will be devoted to AIDS research, with a hefty \$93 million going exclusively to slow the spread of the AIDS virus among intravenous drug abusers in 30 cities. Unfortunately, like many programs at NIDA, manpower has not kept up with the surge in money. George Beschner of NIDA reports that he has three staff members to supervise \$45 million in AIDS grants and contracts this year.

With more than half of NIDA's budget next year devoted to AIDS research and with angry parents calling for audits, where is NIDA heading? Debates about the future of NIDA range from the petty to the profound, from quibbling among NIDA-supported researchers over the relative importance of behavioral pharmacology versus neuroscience to bigger questions over NIDA's continued existence in the federal health bureaucracy.

Is it enough, for example, for NIDA researchers to study the mechanisms and behavioral aspects of various mind-altering chemicals, or should the scientists roll up their sleeves and get involved in setting

policies to curb drug use?

Many researchers involved with NIDA point with pride to the discoveries supported by the agency, including the presence of endogenous opiates such as endorphin, reward centers in the brain, receptors for heroin and cocaine, as well as the development of new drugs to treat addiction and withdrawal. "I think NIDA is doing very well and progress is certainly being made," says William Dewey, chairman of the Committee on Problems of Drug Dependence. "I don't think anything's broke at NIDA."

There is some disagreement. Robert Dupont, a former director of NIDA now at The Institute for Behavior and Health in Rockville, Maryland, thinks NIDA has moved inexorably away from anything to do with policy and become solely a research shop and funding instrument for bench scientists. Says Dupont: "The game isn't to publish the next paper but to curb drug abuse in this country. That's where the money is coming from. And that's what the country wants NIDA to do. If it fails to get involved, NIDA borders on irrelevance."

During a time of 12-digit deficits, "irrelevance" is not a pretty word to toss around in Washington, even during the midst of war.

■ WILLIAM BOOTH

## Biologists Eschew Weapons Research

A pledge "not to engage knowingly in research and teaching that will further the development of chemical and biological warfare agents" has been signed by 560 researchers in the United States.

Exactly what the signatories were pledging to eschew is not entirely clear, however. As one of the sponsors, Richard Novick of the Public Health Research Institute, acknowledged at a press briefing last month, if taken literally the pledge could cover a broad array of research that might indirectly be turned to military purposes.

Novick, who spoke at the briefing along with Jonathan Beckwith of MIT, Christian Anfinsen of John Hopkins University, and Jane Koretz of Rensselaer Polytechnic Institute, said he personally would draw the line at accepting funds from the Department of Defense to conduct biological research.

Indeed, the pledge was sparked in part by concern over the recent expansion of the Department of Defense's biological defense program, a research effort designed to develop defenses against potential biological warfare agents. Funds for the program have risen from \$16 million in 1980 to about \$75 million this year, and almost 50 universities have grants from the program.

The United States is barred by law—the 1972 Biological Weapons Convention—from conducting research to develop biological weapons. The work sponsored by the biological defense program involves the development of vaccines against highly pathogenic organisms, and efforts to develop protective clothing and detectors that would signal the presence of specific biological warfare agents.

Asked why he is opposed to such work, King argued that it is impossible to separate some types of defensive work from activities that could be used for offensive purposes—especially the development of defenses against genetically engineered organisms, which may require the construction of the organisms themselves. Although he acknowledged that the program funds work that is important for disease control, he said "if it is really for civilian purposes, let's put the money into NIH."

The pledge, which has been circulating around U.S. campuses for the past year, appears to be an opening shot in a campaign against expansion of Department of Defense funding of academic biology. The Boston-based Committee for Responsible Genetics organized the effort. ■ COLIN NORMAN