

technical advice on policy matters.

Some feel one solution is to stimulate more involvement by the professional scientific societies toward assessing the possible future impact, both beneficial and detrimental, of development in their fields. Others feel small, independent organizations of concerned scientists, such as the Federation of American Scientists (FAS), are the best future key for candid appraisal of technical problems. The value of FAS and similar groups, observers feel, is their function as technologically sophisticated adversaries of major programs (most recently the SST and the ABM) to balance out the equally sophisticated and well organized advocates of the programs within industry and government. Traditionally, advocates of a new high-technology program get together, decide what they want and emerge with a full plan. By then, it is often too late for opponents to mount a campaign against the project.

The project may be sprung on an unprepared Congress, lacking the information to determine the technological options. Several speakers at a AAAS symposium on the use of scientific information in policy making called for new kinds of efforts and institutions to provide needed technical information to legislative bodies. Bernard N. Manheimer, a program officer in the Department of Housing and Urban Development, emphasized the need to intervene very early in the decision-making process, well before elected representatives have made up their minds on the issue and before they have reached the stage of formal public hearings.

During the past year, the FAS has revitalized itself and emerged as an important influence on major technological matters debated in the national arena. It was especially vocal in gathering and presenting information opposing Administration claims on the arms race (an alleged Soviet nuclear lead, U.S. SALT-talk proposals, and a supposed gap between Soviet and American research and development). FAS also opposed the SST, the Administration's reservations on the Geneva Protocol, and the Amchitka nuclear test.

This week at its own annual meeting during the AAAS sessions, the FAS presented its first public service award. It went to Richard L. Garwin of International Business Machines and Columbia University for his testimony against the SST.

In addition to his Congressional testimony, Garwin was the chairman of a PSAC panel whose report critical of the SST was kept under wraps by the White House from March 1969 until August 1971 (SN: 9/4/71, p. 141), after the SST had been defeated. Garwin, this week, showed no bitterness



Mayer: *Is science conscienceless?*

at the Administration's handling of the report but said it did provide some lessons. "I thought that the Government was justified in holding up the report but was unwise. It was sacrificing long-term interest for short-term advantage. That's over now. What has been shown is that the public really does want the information and that the Administration didn't create a very good picture of itself by holding it back."

One of Garwin's concerns now is with the need for far more public analyses of programs. "This would be not technology assessment but program assessment." He calls for 10 independent centers outside the Government to assess such matters as the prison system, the regulation of transportation, the structure of the Armed Forces, and the nature of weapons systems.

In contrast to the FAS, which specialized in gathering and disseminating detailed technical information on technological programs, the SESPAs organization prefers tactics of confrontation.

Carrying out plans made the evening before, dissidents delayed and disrupted a speech given by Sen. Hubert H. Humphrey (D-Minn.) on peace through change at a AAAS symposium on value and knowledge requirements for peace. Before the presentation, they occupied the stage and fastened to the back curtain posters and signs critical of Humphrey's association with the Vietnam War when he was Vice President. AAAS program manager, Walter Beryl, pleaded with the protesters to give Humphrey the right to speak. They left the stage and Humphrey made the presentation. Throughout the talk he was interrupted with obscenities and shouts of "war criminal!" and "liar!" from a relatively small group of SESPAs members. At one point, a protester who had earlier narrowly missed Humphrey's head with a large paper airplane fired a tomato that bounced off the podium. A security guard came on stage and escorted the man out of

the auditorium. After the speech one of the group read a citizen's arrest citation against Humphrey accusing him of war crimes, but no attempt was made to carry it out physically.

The next day Harvard's Daniel Patrick Moynihan, vice president of the AAAS, issued a statement apologizing to Humphrey and lashing out at the disruption, which he termed political harassment and a threat to free inquiry. He said he objects to the politicization of the AAAS. In his own protest, he canceled his scheduled vice presidential address.

But Barry Commoner, another member of the AAAS board of directors, objected to Moynihan's statement. He said he felt it better to allow than to disallow the expression of strongly felt political emotions.

The irony was that Humphrey pointed out and criticized many of the same aspects of science that protesters had been concerned about, such as, nearly half of all research and development is devoted to, as Humphrey put it, "perfecting means of destruction." He called for alternative conception of the nation's long-run interests that would lead to different priorities.

That same theme was heard many times over during the week. □

Psychology and noise pollution

Most studies on effects of human life of various forms of pollution have concentrated on physical effects. But the effects may be psychological as well as physical. Especially in the case of noise, environmental stimuli may affect different individuals in different ways. Some research has been done on physical effects of exposure to high intensity noise. In a session on response to environmental stimuli, scientists at the annual meeting of the AAAS discussed psychological effects of noise.

Psychologists and environmentalists are beginning to recognize that an individual's attitude toward certain noises and his perceptions about their sources may influence their effects on him. Response to aircraft noise, for example, varies according to the individual's fear of a plane crashing into his house and his opinion on whether the producers of the noise could abate it if they chose.

A group led by Paul Borsky of Columbia University is beginning a new research program in which a random sample of residents near New York's John F. Kennedy International Airport are surveyed. In addition, laboratory studies will be conducted. Subjects in an acoustical laboratory, furnished like a typical middle-class living room, will be exposed to simulated aircraft noise. The subjects will rate each

noise according to its interference with a television program they are watching and according to the annoyance they feel at the noise.

David C. Glass, a psychologist at New York University and Jerome E. Singer of the State University of New York at Stony Brook have conducted laboratory experiments on behavioral effects of noise. They exposed the subjects to noise of varying intensity and regularity. Their research confirmed previous findings that noise per se has minimal effect on task performance. "Laboratory-produced noise does not affect the subject's ability to do mental and psychomotor tasks ranging from the boringly simple to the interesting and creative."

But exposure to noise may have serious aftereffects and the degree seems to depend on the subject's aversion to the noise. Intermittent noise was found to be more aversive than continuous noise and had a correspondingly greater effect on the subject's subsequent ability to perform complex tasks and to tolerate frustrations. When the noise was presented at irregular intervals so that it was unpredictable from the subject's viewpoint, it did not degrade performance of simple tasks unless the subject was working at maximum capacity. In such a case, say the researchers, the noise apparently produces a mental overload and information processing is inhibited.

All their findings, they say, "underscore the importance of cognitive factors in mediating the effects of noise on behavior."

In another test, subjects were told that if they pressed a button, the noise would stop. This perception of control over the noise had a dramatic effect on aftereffects: post-noise tolerance of frustration and quality of task performance both increased substantially. These results suggest, they say, that perception of control reduces the aversive impact of unpredictable noise—the subject's feeling of helplessness—and so also reduces the deleterious aftereffects. □

How hormones act on cells

Now that quite a lot is known about the general action of various hormones and about physiological activities within cells, biologists are beginning to figure out how hormones might work at or within particular target cells. There is a good reason to believe that protein hormones do not enter the target cell, perhaps because they are too big to get through the cell membrane. But there is concrete evidence that some smaller steroid hormones are able to get into the target cell and very possibly exert their influence directly

on the chromosomes inside the cell.

Because chromosomes from the salivary glands of fruit flies are especially easy to see under the microscope, biologists have used these insects' salivary gland tissue to see how steroid hormones might affect chromosomes. Puffy rises can be seen in salivary gland chromosomes at certain times in the fruit flies' development. These rises are believed to represent gene action—production of protein by DNA, perhaps. Each puff could well represent a gene site, but this has not been proven. About a decade ago, researchers showed that the fruit fly molting hormone, ecdysone, can induce puffing in salivary gland chromosomes. Hans Laufer of the University of Connecticut reported at the meeting of AAAS that he has recently observed that juvenile hormone induces chromosome puffing as well.

Juvenile hormone keeps the fruit fly young until it is ready to mature. The hormone is neither a steroid nor a protein, but a lipid. Laufer says he does not know whether the hormone actually enters the cell. It may somehow work on the chromosomes from

The drugged Americans: Aspirin-poppers not spared

It is hardly news that there is a flagrant overuse of prescription and nonprescription drugs in the United States and that this overuse has largely contributed to the over-all drug abuse problem with marijuana, LSD, heroin, pep pills and what have you. At the AAAS meeting a physician, a pharmacist and a health economist spelled out particulars of the indictment.

As an example of abuse of prescription drugs, Charlotte Muller, health economist at the City University of New York and a member of the Mayor's committee on amphetamine abuse, pointed to amphetamine consumption. Studies, she asserted, show that amphetamines do not help weight reduction very much, yet many physicians continue to prescribe them.

Prescription drug sales are \$4 billion annually, but nonprescription drugs also come to a fat \$2.4 billion. One of the reasons for this overuse, says Richard Penna of the American Pharmaceutical Association, is that people view nonprescription medications like other items of commerce. They think nonprescription drugs are harmless and are watched over by "some ill-defined but potent forces in Washington."

Although there is no proof that overuse of medications has turned youth to pill-popping, considerable evidence indicates that an overmedicated society has been influential in this direction, Muller and Penna agree. Muller says

outside of the cell wall.

The Connecticut biologist also described work he had done to get a better idea of how ecdysone and juvenile hormone might influence puffing or gene activation. He initially reasoned that because the two hormones act more or less sequentially in the life of the fly, they may act in opposition to each other on the same chromosome puffs, or genes. But under manipulated laboratory conditions, he found that the hormones can exert biological activity simultaneously on the living fruit fly. The fly can produce egg yolk protein by action of ecdysone, for example, while juvenile hormone at the same time prevents the fly from growing up normally. Laufer concluded that because the hormones can work in concert, they probably exert their effects on different chromosome puffs or genes, rather than on the same ones. In subsequent tissue experiments on salivary gland tissue he showed that ecdysone and juvenile hormone indeed exert selective responses among chromosome puffs. He also found that some puffs were not affected by either hormone. □

that once amphetamines get into the family medicine cabinet, they "soften up receptivity" to drugs among youngsters. Some parents have gone so far as to give amphetamines to restless children. (Although amphetamines are stimulants for adults, they tend to calm children down.)

Don Luria, chairman of the department of preventive medicine at the New Jersey Medical College and chairman of the New Jersey State Council on Drug Addiction, said a study of 12,000 youngsters in New Jersey showed that escalation of drug use among youth—from marijuana, say, to LSD (the usual pattern)—is definitely related to dosage. Youngsters who use pot less than once a month, for example, have less than a 4 percent chance of turning to LSD. Once-a-month users have a 10 percent chance. Weekly users have a 22 percent chance. Luria said he has no doubt that parental drug behavior has created an attitude of drug indulgence among these youths, but no studies have yet made a conclusive link.

In discussing incitements to drug overuse, the speakers came down particularly hard on the drug companies and their advertising. Penna said that television ads for nonprescription drugs have created tremendous pressure for purchase. Many ads, he declared, "create diseases where none exist," and then offer remedies that may not work