Secretary of Health, Education, and Welfare, public hearings, and a possible final resort, to legal action by the state or federal government to end or reduce the pollution in question. The new law applies only to "interstate pollution," and establishing origins of and responsibility for pollution is likely to provide fuel for legal argument.

Mental Retardation. The full name of the new law, the Mental Retardation Facilities and Community Mental Health Centers Construction Act, accurately suggests its provisions. A total of $329 million is authorized, including $150 million in matching grants over the next 3 years for constructing community medical centers and $126 million over 5 years for building research and treatment facilities for the mentally retarded. An additional $53 million over 3 years is provided for training teachers of retarded children and those with other handicaps. Cut out of the bill in House-Senate conference was $427 million over 8 years to underwrite staffing of the community centers. Funds for the new program have not yet cleared the appropriations committees.

These "new starts" were certifiable achievements for the Kennedy-Johnson administration, but they seem to have been won in spite of, rather than because of, the temper of Congress, which in general has been inclined to retrench.

NIH. To cite the example of the agency which has grown accustomed to annual giant steps in its appropriations, NIH, Congress this year shattered its own munificent precedent by reducing the NIH request for funds by $12 million, to $918 million. Since the fiscal 1964 figure is still nearly $40 million higher than the previous year's budget, the action can hardly be called a smashing stroke of economy, but until last year, Congress had the generous habit of topping the administration request substantially.

In the same HEW budget, NIH's parent agency, the Public Health Service, was again denied funds to establish an environmental health center in the Washington area and was also rebuffed on a request for permission for the HEW Secretary to appoint up to 150 PHS employees at salaries of up to $30,000 a year as a device to attract highly trained personnel who can command high salaries elsewhere.

The mood of Congress also seemed evident in its treatment of the agency which to Congress most clearly represents scientific research, as distinct from mission-oriented development work—the National Science Foundation.

NSF. A House-Senate appropriations compromise put the NSF budget for fiscal '64 at $353 million. This was some $30 million more than NSF received in '63, but it fell far short of the $589 million requested. The slashing reduction in the request scotched administration hopes of using NSF funds for a drastic expansion of federal support of graduate education for engineers and scientists.

In hearings in both House and Senate, NSF last year suffered unaccustomed knuckle-rapping on such matters as transferring research funds to other government agencies, the conduct of Project Mohole, and its prolificacy in starting new programs. Officials from NSF and from other science-based agencies last year found the atmosphere unmistakably cooler and the questioning stiffer than in the past, and the altered climate on Capitol Hill is likely to persist.

NASA. Officials of the space agency were subjected to the most lengthy and intensive authorization and appropriations hearings in its relatively brief history. Reduction of the NASA budget requests by $600 million to 5.1 billion has been discussed in this space. In the final conference version of the NASA appropriations bill, the conferees who had been tying strings to NASA's money suspended objections to the agency's academic grant program so long as NASA "used good judgment," but ventured resolutely into foreign policy by prohibiting use of NASA funds for a joint lunar expedition between the U.S. and any other country (implicitly the U.S.S.R.).

AEC. The Atomic Energy Commission budget also underwent a more thorough pruning than usual. The final fiscal '64 appropriation was $2.7 billion, which was some $106 million less than the 1964 budget request and $392 million below the previous year's appropriation. The cuts, for the most part, were made on an across-the-board basis and will affect most divisions and activities of the agency. A spokesman for the agency acknowledged that the reductions were the most stringent imposed on the AEC, at least in recent years.

Arms Control and Civil Defense. The effect of the partial test ban treaty on congressional attitudes is still difficult to assess even in relation to two agencies which might be expected to be most sensitive to such developments —arms control and disarmament and civil defense.

The Arms Control and Disarmament Agency budget request for fiscal '64 was for $15 million ($11 million of it for research). The appropriation was $7.5 million, compared with a million dollars less last year.

The case of civil defense is more complicated. Appropriations of $111 million were voted, virtually the same figure as last year. But this does not include any funds for a shelter construction program. The House last summer, in a reversal of form, authorized $190.6 million for shelters. Senate hearings on the proposal are nearing completion, and a decision on shelters will have to await the new session.

Congress's bank-examiner outlook on science this year also affected the Office of Science and Technology, headed by presidential science adviser Jerome B. Wiesner, the agency in the Executive Office of the President charged with helping to coordinate and rationalize federal science. Some $1,025,000 was asked for the OST budget for fiscal '64, compared with about $765,000 last year. Congress roughly split the difference, appropriating $880,000.

In the second session of the present Congress the legislators are likely to grow better informed on the subject of federal science through the investigatory efforts of the ad hoc Elliott committee (*Science*, 13 December) and new standing committees on research and development in the House, such as the Daddario and Price subcommittees, which have been discussed in this space. Congress has a lot to learn about R&D, but for science it seems certain that the 88th will be the Congress of the hard look.—JOHN WALSH

Disarmament: Its Economic Impact To Be Studied by Johnson Panel; Subject Has Been Little Explored

One of the most intractable residues of the cold war is the dependence of the American economy on defense spending, which in recent years has reached the level of approximately $1 billion a week. Although the so-called "military-industrial complex" has been the target of considerable polemic, the actual effects of the relationship between industry and the military have

received relatively little serious study. By everyone except a handful of independent-minded academic economists and social scientists, the cold war has been taken as a permanent fact of life, and there are few among the scientists, engineers, technicians, laborers, industrialists, and bureaucrats whose livelihoods are linked with it who have had the foresight to conclude that it will not last forever or the flexibility to develop saleable skills in an unrelated field.

Now, however, three currents of events have retrieved the issue of the economic effects of the cold war from the land of fantasy and brought it plainly to the highest levels of government. One is the recent test ban treaty with the Russians, together with the small signs that a more thorough detente may be in the offing and the tentative probings for mutual reduction of armaments. A second is the growing recognition that the U.S. has been overproducing nuclear weapons, and that the Atomic Energy Commission already has on hand weapons materials that far outstrip the Pentagon's projected requirements for the next decade. A third current is President Johnson's ostentatious obeisance to the American totem of Economy. What they all add up to is not, of course, disarmament, but a limited disengagement of the military and industry—cuts in the military budget, changes in the patterns of military spending, and new interest in the neglected subject generally known as the economic consequences of disarmament.

Cutbacks in Defense

The process of disengagement has already begun, with Secretary of Defense McNamara's announcement, on 12 December, of plans to discontinue activities at 33 defense bases "no longer required by the armed forces." The action was expected to lead to the release of 7800 military and 8500 civilian personnel, and to an annual saving of more than $100 million. It was described as being "in line with President Johnson's announced goal of economical operation of all agencies of the government," and it had the effect of hitting ostensibly budget-minded Congressmen where it hurt most—in their own districts. Despite loud protests, there are strong indications that more of the same will follow, with certain naval installations most probably next. Other shifts in defense patterns are also in the offing, and none are likely to be particularly popular with Congress.

Partly to emphasize his administration's concern with the consequences of defense cutbacks to particular communities and the nation as a whole, President Johnson, on 21 December, announced the formation of a high-level government Committee on the Economic Impact of Defense and Disarmament, under the chairmanship of Walter Heller, head of the President's Council of Economic Advisers. Johnson requested the heads of several other agencies—the Pentagon, the Departments of Commerce and Labor, the AEC, NASA, the Arms Control Agency, the Office of Emergency Planning, and the Bureau of the Budget—to designate a senior official to serve on the committee permanently. (Missing from the list is a representative of the White House Office of Science and Technology. Retiring presidential science adviser Jerome B. Wiesner had an independent interest in disarmament matters which antedated his Washington appointment by several years. When he came here he was instrumental in the creation of the Arms Control and Disarmament Agency, and he kept his White House staff closely involved with all the government's arms control and disarmament operations. The new science adviser, Donald Hornig, is thought to be less personally interested in disarmament affairs. Two OST staff members will continue to work on disarmament problems under Hornig, however, and the agency will have an unofficial observer on the new panel.)

The new presidential panel is expected, among other things, to make some fundamental decisions about what the government's role in dealing with economic effects of defense shifts ought to be. The panel is not to begin new studies of its own, but is to review and coordinate existing work on the subject, and possibly make recommendations for further studies. Reviewing, however, can hardly take up much of its time, since there is precious little to review. The committee is beginning an enormous job with very little background intelligence on which to depend.

The outlines of the defense economy are clear enough. According to a paper prepared by economist Emile Benoit, of Columbia University, for the Arms Control Agency, the defense program accounts for nearly a tenth of the total U.S. production of goods and services and employs roughly the same percentage of the labor force. Within industries, the degree of dependence on defense contracts varies considerably. Approximately 95 percent of the employment in aircraft and missiles, 60 percent in ship- and boatbuilding, and 40 percent in radio and communications equipment is dependent on defense expenditures, while, on the other hand, only 6 percent of employment in transportation and 2 percent in construction is connected with defense. Geographically, the same variation exists: in 1959, for example, missile and aircraft production accounted for at least 82 percent of the manufacturing employment in San Diego, 72 percent in Wichita, 52 percent in Seattle, and 27 percent in the Los Angeles area, while other parts of the country were relatively untouched.

Lost Opportunities

The Pentagon provides state-by-state analyses of the distribution of its funds, but it knows very little about the effects of cutbacks or changes. All that is known is that when a change takes place, an industry or state or community is apt to be in very serious trouble. Although the Arms Control Agency and the Pentagon, as well as several other agencies, all have small staffs working on this problem, no one has been paying much attention to it for very long, with the result that several good opportunities for studying the effects of shifts in defense spending have been missed. A good example is the case of Boeing Aircraft in Wichita, Kansas, which at the peak period of production of B-52 bombers, in 1957, employed 55,000 aircraft workers. B-52's went out of production last year, about 25,000 people lost their jobs, and no one, except perhaps an Industrial Development Committee set up by the Wichita Chamber of Commerce, bothered to find out very much about what happened to them—whether they migrated to other aircraft towns, went on relief in Wichita, switched to other fields, required retraining, or what.

In short, there have been no field studies, by either the Pentagon or anyone else, of the actual human effects of changing defense requirements, and there is little basis on which to predict or prepare for consequences of the more sweeping changes that are now anticipated.

While several different agencies could conceivably sponsor such field studies, only the Pentagon is in a position to predict where the major impacts of its procurement policies will occur in the future. Information about future changes in weapons schedules is classified, and not available outside the Pentagon. This not only handicaps outside scholars who might otherwise be encouraged to interest themselves in the field but even hampers the attempts of the Pentagon's economic adjustment advisory office to forewarn the Department of Labor.

Business Buries Its Head

What little work has been done has been concentrated on the effects of government's relationship with particular industries, but for the most part even here the Pentagon's attitude is to let business take care of itself—something most defense-dependent businesses have shown little inclination to do. The Pentagon's advice to its contractors has consistently been that they should turn their attention to the civilian market, to the 90 percent or so of the gross national product which is not related to defense. But while there has been some tendency among the big military supply industries to diversify their interests somewhat, there has been almost no serious talk of conversion, despite repeated urging from a variety of Pentagon and other government officers. Essentially, the Pentagon can do no more than try to stimulate businesses and communities. It is forbidden by law to award contracts or to create price differentials to relieve economic distress caused by changes in its procurement policies. As one Pentagon official put it, "we are not running a relief agency, and communities as well as businesses will have to look out for themselves."

This has been the general attitude of government on the question of its responsibility for solving problems caused by changes in government spending patterns. The Pentagon is planning to begin some broader research into the subject next year, and other agencies are becoming more alert to the problems, but though interest is growing, action is still far behind. It is safe to say that a lot of hard work remains to be done before President Johnson's new committee can hold intelligent, well-informed discussions, let alone plan for actual accommodation to the new developments in defense.

—ELINOR LANGER

Announcements

President Johnson has announced that the 1963 National Medal of Science will be presented to five persons at a special White House ceremony this month. The awards will be made to:

Luis Walter Alvarez, "for inspiring leadership in experimental high energy physics, continuing development of the bubble chamber, discovery of many states of elementary particles, and contributions to National defense." Alvarez, 52, is a physics professor and associate director of the University of California's Lawrence Radiation Laboratory.

Vannevar Bush, "for distinguished achievements in electrical engineering in the technology of computing machines, in the effective coupling of the physical and life sciences; and in mobilizing science, engineering and education in enduring ways in the service of the Nation." Bush, 73, during World War II was director of the Office of Scientific Research and Development, and Advisor to the President. He has been vice president and dean of engineering at M.I.T., and president of the Carnegie Institution of Washington.

John Robinson Pierce, "for outstanding contributions to communications theory, electron optics, and travelling wave tubes, and for analysis leading to world-wide radio communications using artificial earth satellites." Pierce, 53, is executive director of the Bell Telephone Laboratories research-communications principles and communications systems divisions.

Cornelius Bernardus van Niel, "for fundamental investigations of the comparative biochemistry of microorganisms, for studies of the basic mechanisms of photosynthesis, and for excellence as a teacher of many scientists." Van Niel, 66, is professor emeritus at Stanford's Hopkins Marine Station.

Norbert Wiener, "for marvellously versatile contributions, profoundly original, ranging within pure and applied mathematics, and penetrating boldly into the engineering and biological sciences." Wiener, 69, is professor emeritus of mathematics at M.I.T.

The National Medal of science was established by Congress last year, and is awarded by the President to persons "who in his judgment are deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical, or engineering sciences." Recommendations for the awards are made by the 13-member President's Committee on the National Medal of Science. The late Theodore von Karman was the first recipient.

Two University of California geologists last week received the $1000 AAAS Newcomb Cleveland Prize for the paper they presented during the 1962 AAAS meeting. **Jack Evernden**, a professor of geology, and **Garniss Curtis**, associate geology professor, at the university's Berkeley campus, received the award for their paper, "The dating of early man and his cultures by the potassium-argon method." It provided more precise information on the dates of the Late Tertiary and the Pleistocene eras.

The Newcomb Cleveland Prize, begun in 1923, is the oldest award offered by AAAS. It is given annually for a paper representing "an outstanding scientific contribution," and which was presented during the previous year's meeting.

Morris Rosenberg and **William J. McGuire** last week won the AAAS Socio-Psychological prize for their research on human attitudes. Each received a $1000 honorarium.

Rosenberg, social science analyst at the National Institute of Mental Health, was cited for his paper "Society and the adolescent self-image," in which he describes the differences in self-esteem of high school juniors and seniors in varying social, cultural, and economic conditions. McGuire, in the department of social psychology at Columbia University, won the prize for his research on "Immunization against Persuasion," a study of the ways attitudes toward unquestioned beliefs are best reinforced.

The AAAS Socio-Psychological Prize is awarded annually for a "meritorious essay in socio-psychological inquiry," which "furthers the comprehension of the psychological-social-cultural behavior of human beings."

Grants, Fellowships, and Awards

Applications are being accepted for the S. F. Emmons fellowship in **economic geology**. Applicants must be qualified for graduate work, and must present a suitable topic for study. Application deadline: *1 February*. (C. H. Behre, Jr., Department of Geology, Columbia University, New York 27)