

require that every individual grant for construction or staffing of community mental health centers be approved by the National Health Advisory Council.

"While we support a role for the Advisory Council on the development of broad policy and recommendations on research and training grants," he said, "this procedure will complicate the decision process and create unnecessary barriers to the development of comprehensive community health programs."

The President wound up the statement by saying he was asking the Secretary of HEW "to submit legislation to repeal the requirement that all grants be approved by the National Advisory Mental Health Council."

The advisory council to which the President referred represents one of the two main types of outside advisory committees serving federal agencies. The advisory councils are prescribed in many laws which HEW administers and were created to give policy guidance to agency heads. Members of the councils are usually citizens selected for their prominence or, since membership is mildly honorific, named as a form of political reward. Many groups are required by law to approve all grants made under the law they advise on, but usually they follow staff recommendations.

These advisory councils are not the

same as the study sections or technical advisory committees, whose members are selected for their competence in a particular discipline or research field and are widely used in HEW and other agencies to evaluate research applications. Unlike the advisory councils, the study sections do not have statutory basis. They are created administratively and can be dissolved in the same way.

Advisory panels deal both with research closely connected to service programs and with basic research. And the current anxiety in the HEW research community boils down to a fear that the Administration's streamlining attitude toward the advisory councils and study sections which deal with applied research may be extended to the basic research review process.

Malek, in response to questions from *Science*, said that his group was looking at all grant programs, but, he said, "we all realize" that basic research tends to be "so esoteric and complex" that it would be inappropriate to decentralize the review process.

Malek said he knew that "some people are unhappy," and that, because of the pressure of time, "we have not done an information job on interest groups." He said he thought more information would "put out the fires." "Our motives on this are very pure," he commented.

The Malek task force is to continue work for another year, and basic research has a prominent place on the agenda.

Answers to questions addressed to officials at NIH and the National Institute of Mental Health and to university-based members of study sections, about the effects of decentralization on basic research advisory panels, indicate that review procedures on basic research have so far not been affected. The "so far" is significant, since there is awareness that basic research is under study.

The peer-group system of evaluating research proposals has never been without critics. The system probably worked most satisfactorily in a period when a substantial annual growth factor in the research budget could be relied on. There are complaints now that the system slights younger men and new areas of research. It is fair to say, however, that a majority of scientists believe the study-section review is still the best way to insure scientific quality and fairness in the grant-making process.

During the 1968 campaign, President Nixon said "the need is not to dismantle government but modernize it." Until the Administration makes clearer its intentions on scientific review, a lot of scientists will be waiting for the other shoe to drop.—JOHN WALSH

Arms Talks: In-Group Debate on the Technical Issues

For the United States, international arms control negotiations have always been preceded by extensive negotiations within the government on what the American position should be. As the 16 April deadline for strategic arms limitation talks (SALT) with the Soviet Union approaches, the Nixon Administration has been engaged in surfacing and settling internal disputes on the objective of the talks. Interested parties outside the administrative bureaucracy, including the Senate Foreign Relations Committee and academic specialists in disarmament, are concerned that their

side of the argument may not be getting a fair hearing. They discern a battle between, on one side, the Pentagon leadership, which seems to prefer arrangements that will permit continued qualitative improvements in strategic arms, and, on the other side, a murky, and perhaps weak coalition of forces within the Administration which favors arrangements that will restrict the arms race qualitatively as well as quantitatively (*Science*, 27 March).

There are two fundamental questions at issue. The basic question is whether the United States should aim for a

freeze on strategic weapons deployments and characteristics at the current level, or should be willing to allow each side to install antiballistic missile systems (ABM's) and multiple, individually targeted warhead systems (MIRV's) for offensive missiles. The former position is favored by those, in and out of government, who want to freeze the arms race; the latter position is favored by those who feel it is necessary to proceed with the development of new generations of strategic arms (*Science*, 27 March).

The Administration's decision on the basic question appears to turn on the issue of verification, which means the ability of U.S. officials to establish with reasonable confidence that the Soviet Union will not secretly develop and install weapons which could upset the strategic balance. If the Administration concludes that elaborate on-site inspection would be required to police a freeze, then the odds of agreement



Henry Kissinger

with the Soviets will go down. If, on the other hand, officials conclude that a freeze can be policed by photographic satellites and other "unilateral" means, then the odds of agreement with the Soviets will go up.

The possibility that the Administration might insist on more stringent inspection standards than the Soviet Union is likely to accept has generated a great deal of concern among those senators and academic scientists who want to halt the arms race and reduce the level of nuclear arms on both sides, both to free resources for domestic needs and as a means of reducing international tensions.

The concern has focused in particular on testimony by John S. Foster, Jr., the director of defense research and engineering, last August before a House Foreign Affairs subcommittee. Foster raised the following obstacles to a proposed moratorium on testing and deployment of MIRV's.

- A flight-test moratorium on multiple warhead systems would be ineffective because the Soviet Union could perfect such systems by other, clandestine means.

- An agreement not to deploy MIRV's therefore would require on-site inspection of U.S. and Soviet missiles for verification.

- The Soviets have thousands of anti-aircraft missiles in place which could be "upgraded" into antiballistic missiles. Either MIRV's should be retained to counter this possibility, or some way must be established to verify an agreement with the Soviets not to

install new ABM systems or upgrade the surface-to-air missile (SAM) systems. Foster doubted that upgrading of the SAM systems could be detected by present unilateral observation means, and he even suggested that such upgrading may already have taken place.

(The Soviet SAM systems to which Foster referred are known as SA-2 and SA-5. SA-2 missiles were installed by the Soviet Union in Cuba in 1962, and subsequently in North Vietnam and Egypt. They have abounded all over the Soviet Union since the late 1950's. SA-5 missiles form the so-called "Tallinn system" which defends the north-western approach to European Russia, across the path of ballistic missiles fired from the United States. When the U.S. MIRV program was first launched in 1967, defense officials believed the Tallinn system to be an ABM network. They subsequently concluded that it was designed to shoot at high-altitude bombers. "Upgrading" either network to shoot at incoming missiles would require major improvements in radars, computers, and command and control systems.)

Foster's view of the risks was challenged by Stanford physicist Wolfgang K. H. Panofsky in a Chicago speech last 10 November. "What is ignored in these discussions," he said, "is the total picture in which such 'cheating' would have to be carried out: The Soviets would have to make a deliberate decision in the face of their treaty obligation to man a large-scale program starting from design and engineering, through a clandestine test program and leading to secret deployment, and they would then have to have the confidence that the resulting system would be reliable enough so that it could be used in a first strike role against the United States. . . ." Panofsky favored including a prohibition on new or modified air-defense systems in SALT so that the problem of detecting an "upgrading" program would be minimized. But he contended that unilateral inspection would give adequate warning of any large-scale attempt to alter the strategic balance by clandestine deployment of MIRV's or ABM's.

No Administration official has openly contested Foster's critique of a unilaterally inspected MIRV-ABM ban. But Lee DuBridge, the President's science adviser, recently acknowledged that he favors such a ban, provided U.S. suspension of MIRV tests is linked to Soviet restraint on ABM's and provided there are certain controls on



John S. Foster

MIRV tests to increase confidence that the agreement is not being abrogated. The sorts of test controls which have been discussed include advance announcement of all missile tests, and testing on agreed ranges with impact points so located that the other side could use its own observation methods to verify what kind of reentry vehicle was being tested.

The Administration's review of SALT questions is in the hands of the National Security Council, an inter-agency body that advises the President on foreign and defense policy. The principal working group for SALT is known as the Verification Committee; as its name suggests, it deals with the technical and political problems centering on the verification of an arms limitation agreement. Members are drawn from the Defense Department, the Arms Control and Disarmament Agency, the State Department, the Intelligence community, and the staff of Henry Kissinger, Nixon's assistant for national security matters. The Kissinger staff manages the review and prepares summaries of the different positions raised by agencies, advisers, and consultants. The President reads these papers, but apparently prefers not to discuss the issues directly with any of the proponents. The ability of all sides to get a coherent hearing in the SALT review clearly hinges on how good the Kissinger staff is at summarizing arguments fairly.

A number of academic arms control specialists fear that the NSC system, under Kissinger, isolates the President

from expert scientific advice. In a recent newsletter of the Council for a Livable World, Harvard chemist William Doering and M.I.T. physicist Bernard T. Feld wrote, "There is evidence that the President has come to rely almost exclusively on a small group of officials within his own Administration for advice on national security and defense problems. . . . Consider the President's statement [on 30 January] that an anti-Chinese [ABM] defense would be 'virtually infallible.' This assertion suggests that the President has . . . neglected to draw on informed scientific opinion outside the government. No responsible scientist or engineer with experience in military technology would support the concept of an 'infallible' population defense." Technical opinions should be presented directly to the President by qualified scientists, not "translated by Kissinger's staff," another Cambridge scientist complained recently. The system "is terribly dangerous," he asserted, and "could affect all important matters where there's a technical component."

Another complaint frequently heard from arms control specialists in Congress and the academic community concerns the role of the Defense Department on arms control matters. The Pentagon is generally acknowledged to have more resources for study of technical arms control problems than the Arms Control and Disarmament Agency (ACDA) or DuBridge's office, including the President's Science Advisory Committee (PSAC). And liberals consider the Pentagon leadership—including Foster, who opposed the 1963 limited test ban treaty, Assistant Secretary for International Security Affairs G. Warren Nutter, a foreign policy aide to Barry Goldwater in the 1964 Presidential campaign, and Defense Secretary Laird himself—uniformly unsympathetic to ending the arms race. "The Pentagon crowd represent the most negative element for arms control we've ever had in office there," a leading member of the Cambridge, Massachusetts, arms control community recently said. Such men fear that the Pentagon, using its superior technical resources to support an anticontrol bias, has dominated the SALT review. This concern was more prevalent last fall than it is at present; in the interim, scientists with views opposed to Foster's have had a chance to present their arguments to National Security Council

members and the SALT review staff. But their uneasiness about the impact of their views persists.

In a recent interview DuBridge told *Science* that while "many individual scientists may feel they are not consulted," nevertheless "every possible line is explored" in the SALT review. "There are no limits on what is discussed, and all questions are thoroughly examined. I am brought in where technical matters are involved to represent the views of PSAC and its strategic panel," which in the past year was headed by Stanford physicist Sidney Drell. "The NSC staff then prepares extensive papers in which the arguments pro and con are exposed" so that the President can weigh them.

ACDA officials also contest the charge that they are handicapped by lack of staff and resources in the SALT review. In their view consultants and industry contracts can adequately supply any missing technical expertise.

But officials in the office of Defense Research and Engineering dispute this. "Weapons systems change so rapidly that a man who stays out of the business a year or so gets behind," said one. "Most of these consultants, especially in the academic community, are just not in touch. My observation during the ABM debate last year was that none of the people on the outside knew anything about the system [in a detailed way]. If I wanted to know anything about radar I would go to a junior engineer at Bell Telephone Laboratories, not to a senior guy at Rand. "The function of prestige consultants is to provide leverage or political power for something you want. The consultants feed off that. They understand the system very well."

The problem of verification involves both technical questions and the assessment of risks. In this respect it finds a close parallel in the 1960–1963 debate on underground nuclear test inspection. Although that debate had an important technical component, it was essentially political, for two reasons. First, no technical solution can fully solve the basic problem of trust. Clever men can always think of ways in which the other side might plausibly cheat: in 1963 the big question was whether underground testing might be disguised by "decoupling"—conducting underground tests in large caverns to muffle the seismic effects. Second, policy positions on risk-taking inevitably are influenced

by domestic political pressures. There are strong vested interests in developing, producing, and managing the technology of strategic war. These interests create a large economic and political constituency which is, at bottom, unfavorable to arms control agreements that reduce the amount of money the government spends on arms. Much the same situation also appears to exist in the Soviet Union.

Commenting on the failure to negotiate an underground test ban in 1963, Jerome Wiesner, then President Kennedy's science adviser, wrote (in *Where Science and Politics Meet*), "I believe that military and political conservatism on both sides prevented us from achieving a comprehensive nuclear test ban and will seriously restrict the speed with which further desirable arms limitation agreements can be achieved."

The jury on a strategic arms freeze is still out.—ANDREW HAMILTON

RECENT DEATHS

Maitland Baldwin, 51; clinical director and chief, surgical neurology branch, National Institute of Neurological Diseases and Stroke; 9 February.

Alexander F. Balmain, 71; former assistant professor of history and sociology, Fordham University; 7 February.

Alvin V. Beatty, 61; professor of biology, Emory University; 11 February.

John Davidson, 91; professor emeritus of botany, University of British Columbia; 10 February.

Gordon M. Fair, 75; former dean of engineering, Harvard University; 11 February.

Donald H. Kaump, 62; director of toxicology and pathology, Parke, Davis & Company's research laboratories; 13 February.

Walter Koppelman, 40; professor of mathematics, University of Pennsylvania; 26 February.

Daniel Ludwig, 67; professor of physiology, Fordham University; 6 February.

Ernest L. Stover, 76; former chairman, botany department, Eastern Illinois University; 30 November 1969.

Roger G. Wilkinson, 57; professor of physics, Indiana University; 25 December 1969.

William A. Wissler, 77; metallurgist and consultant with Union Carbide; 14 January.