ing between Kissinger and the Soviet ambassador in Washington, Anatoliy F. Dobrynin. Traffic in the back channel is tightly held, so much so that even the SALT delegates may not know what has been discussed.

The style and much of the substance of the SALT talks has been laid bare in a remarkably detailed study based on National Security Council memoranda and much other inside information.* The author, John Newhouse, has since been appointed counsel of the Arms Control and Disarmament Agency. As Newhouse tells it, the SALT talks were preceded on the American side by Kissinger's institution of new arrangements—including the Verification Panel—to prevent the various parts of the bureaucracy presenting only agreed positions of no harm to themselves. All interested agencies were made to assent to a range of options, the component parts of which Kissinger could shuffle around as the state of negotiations required.

The first phase of the SALT talks lasted for 30 months and required mountainous labor for each mouse produced. The first round, which began in November 1969, was spent mostly in exchanging information. There was not much movement until round two when, in what the White House concedes to have been an intellectual blunder, the Americans offered a proposal to limit ABM's to Moscow and Washington only. This was intended as a bait to get the Russians talking about limitations on MIRV's. To the Americans' surprise, the Russians snapped up the offer which, it turned out, meant an ABM for the Soviet Union only—Congress would not have voted one for Washington, D.C.—and the offer had to be reneged on.

Rounds three and four were gloomy for the American side: the Russians seemed to be stalling and just letting them talk. But some crucial milestones were passed. Kissinger made it clear through the back channel that the Russians would get no agreement on defensive weapons without a limit on offense as well. And the White House, once leery even of parity, conceded the principle of allowing the Russians a 3 to 2 advantage in missiles.

The tempo of the talks picked up a little in round five, which began 1 day before Kissinger's visit to Peking and the initiation of triangular politics. The Soviets proposed the "one plue one" deal on ABM's that was eventually accepted—each side may have one ABM round its capital and one elsewhere. In round six they agreed to a sublimit on their very large missiles like the SS-9. This was one of the top American priorities; failure to gain it might have cost Nixon the support of the military and maybe other parts of the government.

By April 1972, the time was ripe for Kissinger to visit Moscow and put the package in near final shape. He agreed with Communist Party leader Leonid I. Brezhnev for the Russians to have a 3 to 2 edge on sea based missiles in return for a freeze on the Soviets' very active submarine construction schedule. The White House got the Joint Chiefs of Staff to approve this deal in return for a speed-up of the Trident submarine program.

A large number of significant details remained to be disposed of during Nixon's visit to Moscow in May 1972. It was not until the last minute, after the Russians had made several crucial concessions, that it was clear there would be any treaty at all, says Newhouse.

The immense obstacles to reaching an agreement in SALT phase one were only overcome because the two sides had a strong common interest in doing so. The same interest still prevails, and there is no necessary reason, despite Watergate, why Nixon's next Moscow visit should not also produce a solid accord.—NICHOLAS WADE

* J. Newhouse, *Cold Dawn: The Story of SALT* (Holt, Rinehart & Winston, 1973), $7.95.

Virus Cancer Program: Review Panel Stands By Criticism

For quite a while, the National Cancer Institute's very expensive, very targeted Virus Cancer Program (VCP) has made a lot of people very mad. After a year-long review, a special committee of the National Cancer Advisory Board has now said officially what virus program critics have been saying privately. The VCP is an exclusive scientific club that has been able to make its own rules about how to spend the vast sums at its disposal, and these have not always been very good rules. The committee, headed by Norton Zinder of Rockefeller University, neither said nor implied that the program should be discontinued, in spite of the singularly negative tone of its report. What it did say was that the VCP must make some substantial changes in the way it does business.

First, the committee said, the VCP is too expensive. (It costs about $50 million to $60 million a year and consumes slightly more than 10 percent of the total NCI budget.) Second, the program must be opened up to the scientific community. At present, it is run by a handful of persons who have undue control over large amounts of money, which goes to only a limited number of laboratories. Furthermore, the individuals who award contracts are in a position to award them to each other, which somehow does not seem quite right. The committee called for new management practices and a good stiff measure of peer review by outside scientists.

The Zinder committee was appointed by the cancer board in March 1973 in response to growing criticism of the virus program (*Science*, 24 December 1971). Composed of basic scientists who, for the most part, are not part of the cancer virus community and who were known to have their doubts about contract research, the committee was predictably harsh on the virus program. Benno C. Schmidt, chairman of the President's Cancer Panel, which reports directly to the President, spoke with *Science* about the committee's bias. "One thing I've learned since I've been panel chairman," said Schmidt, who is an investment banker, "is that you can get any kind of advice from the scientific community that you want. If we had wanted to hear about all of the things that are right about the Virus Cancer

Program, and there are many, we'd have appointed one sort of committee. But we needed to know what was wrong with it. So, we appointed a committee that would tell us that."

The Zinder committee publicly presented its report to the board at its March meeting. It had previously submitted its findings to the board at a closed session last winter (*Science*, 14 December 1973). At that time, the board failed to officially accept the report, saying among other things that some of the committee's recommendations were illegal. The committee was asked to meet with members of the board to negotiate a revised report. (For example, the committee suggested that the VCP terminate all of its existing contracts within the next 3 years—as they expire—and start over again with a clean slate. The cancer institute, for reasons Zinder says he still does not understand, claims it would be illegal to do that.)

At the time the cancer board first received the Zinder report and requested a negotiation, *Science* asked Zinder to comment on the possibility of changing any of the things the report had said. The tone of his response implied that he thought it was a stupid question: "A report is a report. What is there to change? We stand behind it." And he and his colleagues did. In presenting it to the board last month, he said, "The committee stands on the document you have received and considers it our report."

The committee reviewed the science as well as the organization of the Virus Cancer Program. Many of those in administrative control of the VCP are men whose careers are intimately linked to the idea that there is a relationship between certain RNA viruses and human cancer. Much of the research the program supports is aimed at substantiating this idea. VCP support of research on DNA viruses is comparatively small. The committee recommends ". . . an integrated program with a built-in series of checks and balances to prevent the special notions of particular individuals from carrying the day. For example, should the first definitive [human] cancer virus turn out to be a papova virus [one of many suspect DNA viruses], the VCP would be in a strange position. It scarcely supports any work in this area and only recently has gotten seriously involved with the DNA viruses such as herpes," Zinder said in an opening statement to the board.

Commenting on the quality of research in general, Zinder declared, "Our own analysis is that about 50 percent of the program is supportable at some level." What he and his committee would like to see is an opening up of the program so that more virologists could be supported. Along these lines, it reviewed all of the grant applications in virology that have been submitted to the National Institutes of Health (NIH) (excluding the VCP) and to the American Cancer Society. Its conclusion is that all of those grant applications that are "meritorious" but unfunded could be supported for $5 million to $6 million. Were that to happen, a lot of criticism would be stilled. Board member James Watson, of Harvard University and Cold Spring Harbor, who has been one of the VCP's more vociferous opponents, agrees that such an expansion would help. "Bad feelings about the VCP exist because there are a lot of virologists who share the same goals. The ones in the VCP were very rich. The others, who are just as good, were very poor."

In the committee's view, one source of this unhealthy elitism is the control wielded by a few individuals, and it named Robert Huebner, George Todaro, and Robert Manaker in particular. These men have extraordinary power in their capacities as chairmen of the three largest "segments" of the VCP.* A segment is an administrative entity of the VCP that is responsible for awarding contracts in a given area of research. Huebner, for example, heads the solid tumor viruses segment. Todaro is chairman of the tumor virus detection segment; Manaker, the segment for developmental research. Contracts are awarded by a "working group" appointed by the chairman segment who, all too frequently, name to these groups the very people who are receiving contracts.

Inordinate Power Creates Tension

On this issue, Zinder told the board that "There is an inordinate amount of power in the segment chairmen's group. It is this power that is responsible, for real or imaginary reasons, for the tensions that exist among contractors in the program and accounts for the antipathy to the program in the scientific community."

The problem is compounded by the fact that Huebner and Todaro, in addition to being segment chairmen, are also branch chiefs—the equivalent of being chairman of a university department. Thus, they control contract money as segment heads and run large intramural research programs at the same time. One charge that has been made against this structure is that it is too easy for a segment chairman to contract for work that will supplement that which he is doing in his own in-house laboratory.

But the conflicts do not end here. Under the present VCP scheme, which is likely to go, a branch chief can also be a "project officer," as in-house NCI scientist who is in charge of a particular outside contract. Both Huebner and Todaro are among the NCI's project officers. According to the Zinder committee, "The role of the project officer varies from unawareness of his position as such, through benign neglect, to overseeing the day-to-day operations of the contract. . . . [T]he extensions of intramural activities of project officers are those of (i) Dr. R. Huebner at Microbiological Associates, Flow Labs, and to a lesser extent at the University of Southern California; (ii) Dr. G. Todaro at Meloy Labs; (iii) Dr. C. Boone at Meloy Labs; (iv) Dr. R. Gallo at Litton Bionetics; (v) Dr. S. Aaronson at Hazelton Labs; and (vi) Dr. R. Bassin at Litton Bionetics. The aggregate funding of these operations is over $10 million per annum, or about one-fourth of the total program. We may note that for the most part these contracts are with private industries located in the Bethesda area. In addition, some other NCI staff scientists work at these various laboratories."

Critics see this kind of extension of the intramural NCI program as empire-building. NCI scientists claim, some of them validly, that they got into contract research for a simple reason—staff. With the present freeze on hiring at NIH, and throughout the federal government, it has been virtually impossible to hire anyone, particularly technicians and postdoctoral students. Therefore, senior investigators found themselves unable to get the necessary support personnel. By going out on contract, they could.

The absence of positions has been a matter of major concern to all of NIH for some time and has been the cause of considerable conflict between NIH and the Office of Management and Budget. Now there is reason to believe

* Huebner's segment dispenses about $19 million a year, Todaro's about $7 million, Manaker's about $12 million.

that at least the NCI will be able to hire new people—possibly as many as 100—but it is by no means certain yet. Whether the scientists now working on contracts will be able to return to NCI depends in large part on whether there will be enough slots for the people in their laboratories. (There are persistent, and well founded, rumors that Huebner will leave NIH altogether, probably to go to southern California. He was not available to comment.)

It is an understatement, to say the least, to note that the Zinder committee has managed to shake up a lot of people at NCI, and there is evidence that many of its recommendations will be put into effect, as nearly everyone agrees they should. But it would be wrong to see the report as a condemnation of the VCP from start to finish or to surmise that the program is going out of business.—BARBARA J. CULLITON

Science Advising: New Setup Has More Resources, Less Visibility

Ever since January 1973, when the Administration abruptly announced that the 16-year-old presidential science advisory apparatus was to be removed from the White House and transferred to the National Science Foundation (NSF), there has been speculation that presidential science advisers are becoming extinct and fit only to be exhibits in Madame Tussaud's wax museum.

Now, 10 months after the plan went into effect, the worst predictions that the White House exile would be followed by a general downgrading of science have failed to come true: the advice of scientists is indeed being sought by the government; the new advisory apparatus is preparing to fund about three times as much work as the old; finally, because it is in part a response to the energy crisis, the new arrangement has changed old definitions of science advice. It may come as a surprise to those who are fond of bemoaning the loss of the White House niche, but there is one school of thought in Washington which says that one can give creditable science advice without blowing one's horn on the presidential podium. As a veteran bureaucrat said: "It raises the question of whether you can give effective science advice without talking about it all the time. I think you can."

The new setup is headed by the science adviser to the President, H. Guyford Stever, who is director of NSF. Stever oversees two new offices: one, originally a short-term response to the energy crisis, the Office of Energy R&D Policy (OEP), headed by Paul F. Donovan; the other is a recast Office of Science and Technology (OST) called the Science and Technology Policy Office (STPO), headed by retired Navy Captain Russell C. Drew. A third element in the structure is the old Federal Council on Science and Technology (FCST), which Stever talks about revitalizing as an interagency forum for science-related studies. A fourth is NSF itself, some of whose 1190 employees have been called upon to work part-time for the science adviser. For fiscal year 1975, OEP and STPO will contract and grant $6 million for studies. In addition, NSF's administrative budget will pay for 46 full-time positions, plus consultant fees, plus travel. By contrast, the old Office of Science and Technology in the White House had 50 staff slots, and a total budget for contracts, consultants, and other items of $2 million.

In a recent interview, Stever admitted that being out of the White House means "you don't have that White House aura, and that's a distinct aura you'd like to have." But, he quipped, "If we believe some of the stories, we know that a couple of Presidents talked with their science advisers and a couple haven't. We have to have a fifth President before we know who's going to win!"

But once away from questions of aura, and whether one talks with the President, Stever and other officials can cite a long list of scattered tasks that the new arrangement has done for other parts of the executive branch. Some high-ranking members of the Administration—although not the President, as far as can be ascertained—have indeed sought Stever's aid. Last summer, Stever and STPO helped resolve a dispute involving the National Oceanic and Atmospheric Administration (NOAA), the Air Force, and the Office of Management and Budget (OMB) over future weather satellite systems. NOAA and the Air Force have similar polar orbiting weather satellite systems, known as Tyros-N and Block-5, respectively. But they both resisted OMB suggestions that it might be economical to merge. STPO made a study and recommended a partial merger. As one official said later, "STPO came out on the side of OMB. It didn't do what the agencies expected it to do. I guess that means it's capable of some independence."

Frederick B. Dent, Secretary of Commerce, asked Stever to rule on whether the nation's oceanographic land facilities and ships are as badly in need of repair and modernizing as some in the oceanography community have claimed. The study is in process, and, Stever says, the issue of new facilities will cause interagency wrangling.

Peter M. Flanigan, assistant to the President for international economic affairs, has asked Stever to participate in a committee study of technology exchange with other nations, a subject the FCST had been studying, in its characteristic, desultory manner for years. Hence, Stever requested a quick study to be done within NSF.

Finally, Henry Kissinger's National Security Council has asked Stever to set up a small group to monitor, on a long-term basis, the "flow" of science and technology to and from the United States and the Soviet Union in the new exchange agreements in all fields, from health to agriculture to space.

Stever also says he has taken steps to revive the FCST. In theory, the group is a meeting ground for the research heads of all the agencies. But for the last several years, agencies have preferred to fight their battles with each other elsewhere, leaving FCST little meaningful work or authority. Now FCST meets only with preassigned subjects—such as technol-