in one way or another with an encephalitis study in Japan; studies of highway pavement, textbooks, polar research, and mutations; conferences on tropical botany, beef, transportation, and laboratory animals; and a thousand other activities. Some contend that there was acceptance of any chore tossed its way, as well as a beating of the bushes to acquire still more. But in any case the ever-growing hum of activity was not the most significant aspect of the Bronk presidency. What was most significant was the fact that, during his presidency, the Academy slowly but continuously developed as a powerful influence in the relationship between the scientific community and its new patron, the federal government. In 1956 Bronk became chairman of the National Science Board and thus occupied a key position in the formative days of the National Science Foundation. He was a White House adviser in the early days of his Academy presidency and was appointed to the President's Science Advisory Committee when that body was formally established after Sputnik. Meanwhile, in a manner reminiscent of the Compton committee's role in creating the Manhattan Project, the Academy flourised as a spawning ground for conceiving "big science" ventures to be sold to the federal government. A 1957 report by the Academy's Committee on Oceanography is generally regarded as the genesis of today's vast federal program in oceanography. The Academy was intimately involved in formulating programs for the International Geophysical Year. It provided a protective—too protective—womb for what turned out to be the Mohole debacle. During some of the chilliest days of the Cold War, the Academy, through professional acquaintanceships and, later, through a formal exchange program, maintained and nourished one of the few nondiplomatic channels for Western contact with Soviet citizens.

Thus, in 1962, when Bronk retired from the presidency, the Academy and the world around it were very different from what they were on that day in 1950 when he was the innocent beneficiary of an old vendetta. In a society that was increasingly dependent upon science and technology, the Academy now stood as a powerful instrument for influencing the growth and objectives of science and technology. The manner in which it has performed in this regard will be the subject of a third and final article—D. S. GREENBERG

Military Research: A Decline in the Interest of Scientists?

"A lot of us have finally decided that we aren't going to study war no more"—Former Defense Department official.

Since the beginning of the Second World War, many American scientists have regarded it as a duty to work on military research in times of national emergency and have often done so with enthusiasm. However, according to a number of people in the defense area, many scientists now seem to show little feeling of obligation to do military research. Rather than being rallied to the national colors by the Vietnam war, many first-rate scientists seem less interested in doing defense research, whether because of their views on Vietnam or because of other political and intellectual reasons.

Defense Department Opinion

On the other hand, officials of the Department of Defense (DOD) tend to minimize the difficulty of finding scientists to do defense work, except at the higher salary levels. The Department finds that both industry and universities are often providing more ample salaries than DOD can. While generally dismissing the problem of attracting academics, one DOD official said that he found it more difficult to find social scientists in the wake of "a strong revulsion against dabbling in other countries" which followed the furor over Project Camelot. DOD officials do not think that the Vietnam war has inspired scientists to undertake military research.

The lack of positive response to Vietnam is also noted by Gordon J. F. MacDonald, a former U.C.L.A. professor who now works as the vice president for research of the Washington-based Institute for Defense Analyses (IDA) and serves on the President's Science Advisory Committee. "There is no major desire of the scientific community to come forward and help solve this problem as they did in World War II and, to a lesser extent, in Korea. For the scientists, it is business as usual," he said, in one of a series of interviews with scientists and defense researchers conducted for this article. MacDonald does not think that Vietnam drives people away from defense work, although it was said elsewhere that one IDA researcher resigned because of his distaste for the Administration's Vietnam policy. For organizations like IDA, McDonald indicated, it is difficult to attract young people into military research and also to retain the senior people in the field. "A lot of people are bored with defense questions," he said.

Along with most other people in the field, MacDonald believes that a major cause of a declining concern for defense problems is that many scientists have become more interested in applying their talents to civilian issues, such as the problems of the cities, the poverty program, and new transportation systems. "Defense still has a negative flavor," MacDonald said. "The civilian problems are more complex; they have much greater visibility; the political consequences are likely to be greater, and they are more likely to be controversial. All these factors add to their excitement."

Another thoughtful IDA administrator, George Rathjens, Jr., head of the Weapons System Evaluation Division, exhibited some frustration about the difficulties involved in finding top scientific talent to work in military research. "You can't get those guys now; you can't get any of them," he said. Rathjens feels that there is a declining interest among topflight scientists on defense problems, but he added, "It may be fiction. I feel it, but I can't document it. I know, however, that it is pointless for me to talk to certain people." Although agreeing about the lure of the civilian sector, Rathjens attributes "disaffection" of scientists primarily to two factors: "First, there is

a very large amount of disagreement with U.S. policy in Vietnam; that's half the story. Secondly, people feel that the cold war is over; that's the other half." Rathjens does not believe that everyone who is disillusioned with Vietnam policy is refusing to work on defense. "Some people who are not committed on Vietnam feel that it's such an awful mess that they'll do anything to get it over with," Rathjens said. In his opinion, the primary reason why people work on defense questions now is "not that the country needs a better weapons system, but rather that the Defense Department is spending a lot of money and it should be well spent."

To make work on defense more attractive, some defense research organizations have actively sought contracts on civilian problems. IDA contributed the section on science and technology to the recently released Crime Commission report. Other groups, such as RAND, are engaging in an increasing amount of civilian work, even though their primary focus is still defense. Vice President Lawrence J. Henderson, Jr., who directs RAND's Washington operations, said that he had not seen great evidence of a decline in interest in defense, but noted that this was the first year in which RAND was unable to obtain the proportion of new Ph.D.'s which it desired. He said that he had received secondhand reports that some scientists, who themselves are still active in working on defense matters, are suggesting that their students should not work for RAND or other defense research organizations. Henderson, however, attributes the scramble for scientific talent to work on military problems mainly to the "dearth of able people."

Boredom with Military Problems

A definite feeling of "defense research fatigue" can be found among those who have left the business. "Defense problems are boring, just deadly dull. After a while you get the feeling that you're just turning the crank," commented Harold Adams, who is now a faculty member at the State University of New York at Albany. Before going to Albany, Adams had worked on defense matters for the Stanford Research Institute for more than a decade. He believes that the large group which originally left the academic community to work on defense problems feel that "they have accomplished the things they signed up to do" and are now more inclined to devote their attention to civilian Great Society programs.

William Gorham, who is now an assistant secretary in HEW and who formerly served with RAND and the Defense Department, agrees that civilian problems now seem more exciting. He said, "A large group of us saw ourselves coming to where we were before. The defense field has been pretty raked over, but there's a lot of unplowed civilian land."

For Gorham, the current disinclination to work on defense problems is due to the "intellectual reasons" mentioned above and to "moral reasons." For a large number of physical and social scientists, Gorham thinks, "There is no question about it. They just don't feel happy about Vietnam." Others interviewed, including Adams, thought that Vietnam was driving people away from defense research. "There is a fundamental revulsion on Vietnam in the egghead community," Adams asserted; "Academics would rather support the forces of life than those of death, and, in terms of defense research, Vietnam throws this problem into vivid relief. In the past, we didn't worry about this, but burrowed further into the methodology."

On other university campuses, Vietnam is listed as one of the main reasons why people are less interested in military research. At Cornell, one scientist, who preferred not to be named, said that the war in Vietnam influenced some of the younger men

Anthropologists Overwhelmingly Approve Research Ethics Statement

By a vote of more than 13 to 1, the Fellows of the American Anthropological Association have adopted a statement which, in part, deplores the employment of anthropological research as a cover for foreign intelligence activities. This "Statement on Problems of Anthropological Research and Ethics" was initially discussed at the Association's meeting in Pittsburgh last November. After tabulating the results of a mail ballot earlier this month, the Association announced that 729 Fellows approved the statement and 59 voted against its adoption.

The statement was based on the year-long study conducted under the direction of Ralph L. Beals of the University of California, Los Angeles. (An article on the Beals report and the Association debate appeared in *Science* on 23 December 1966). In his study, Beals said that it could be stated "with considerable confidence": that agents of the intelligence branches of the United States Government, particularly the Central Intelligence Agency, have posed as anthropologists; that some people, trained as anthropologists, who have represented themselves as anthropological researchers, have been affiliated with the CIA; and that some anthropologists have been financially supported by "obscure foundations" only to discover later that they were expected to provide intelligence information to the CIA. To meet this reported danger, the anthropologists agreed that "academic institutions and members of the academic community should scrupulously avoid . . . involvement in clandestine intelligence activities. . . ." Other points on which the majority of anthropologists concurred include:

- "Except in the event of a declaration of war by the Congress, academic institutions should not undertake activities or accept contracts in anthropology that are not related to their normal functions of teaching, research, and public service."
- "The most useful and effective governmental support of anthropology in recent years has come through such agencies as the National Science Foundation, the National Institutes of Health, and the Smithsonian Institution."
- "It is the responsibility of anthropologists to maintain the highest professional standards and to decline to participate in or to accept support from organizations that permit misinterpretation of technical competence, excessive costs, or concealed sponsorship of activities."—B.N.

not to enter defense laboratories. At the University of Maryland, physics department chairman Howard J. Laster noted "a much more emotional resistance to the defense effort" recently and said that "a large portion of the physics community is opposed to Vietnam."

On the other hand, some scientists minimize the importance of Vietnam as a determinant of a lessened desire to do defense research. George B. Kistiakowsky, Harvard chemistry professor and former science adviser to President Eisenhower, said that any decline in interest antedates the Vietnam war. Kistiakowsky emphasizes the relaxation of Cold War pressures and the large growth in the number of scientists in military facilities as factors which have let the university community give its time more freely to academic pursuits. Along with other scientists, Kistiakowsky points out the difference in the experience of the generations on defense matters: "I belong to the generation that put 5 or 10 years into military work in the World War II period. That generation is getting pretty old. The younger people didn't have that incentive to get involved in military problems."

The contrasting experience of different age groups is, no doubt, important in understanding the current situation. Many senior scientists still seem quite willing to advise on defense problems on which they are knowledgeable. The White House science office reports no difficulty in finding distinguished scientists to act as consultants on defense questions. Many younger scientists, however, received their education in an era when defense needs were not felt to be pressing and do not show a similar interest.

At a number of universities, there seems to have been a growing concern recently about the wisdom of accepting research money from noncivilian government agencies. The Vietnam war, the Defense Department's Project Themis and Project Hindsight, and the well-publicized disclosures of CIA funding to various groups, have tended to make some scientists worry a little more about the sources of their money. One physicist reports that his colleagues resolve the heightened tension about DOD grants by saying, "I'll take the money, but I'll be sure that there are no strings attached." The struggle over the number of Federal "strings" will probably become more intense.

No Single Explanation

It seems that there is now less desire, especially among topflight academic scientists, to work on defense problems than was the case a few years ago. It would probably be a mistake, however, to attribute this development to any one factor—whether it be Vietnam, Cold War détente, boredom with military matters, or greater attractiveness of the civilian sector. And, of course, many scientists are still devoting themselves to military problems. One university administrator called the falloff in interest "small but significant." Obviously such a decline is important if it is an indicator of the future pattern of the intellectual concerns of top-quality scientists. Despite the demands of the Vietnam war, "Defense work is now only a small piece of the opportunity," in the words of a scientist at the Johns Hopkins University. If the national defense need does not become more urgent, scientists will continue to pursue their opportunities in nonmilitary research without feeling pangs of patriotic guilt.

—BRYCE NELSON

Funding Project Themis: A Clarification

In a communication to *Science*, an official of the Pentagon's Directorate of Defense Research and Engineering (DDR&E) has pointed out that one of the technical objections to Project Themis raised by the AAUP chapter at the University of Montana in an internal memorandum and cited in *Science* (7 April 1967) is based on a misunderstanding. The AAUP memorandum interpreted the Pentagon's description of the method of financing Themis projects to mean that the Department of Defense would support projects on a decreasing basis, paying 100 percent the first year, 67 percent the second year, and 33 percent the third year. The memorandum assumed that each university accepting an award would supply the balance during the subsequent years, and raised the question, "How long before all University research funds are committed to defense-related projects?"

While a reading of the Pentagon's Themis brochure makes it easy to see how the confusion arose, the actual funding mechanism is different and considerably more complex. But it does call for the Pentagon to provide a guaranteed—and constant—level of support for Themis projects for as long as the Pentagon and the recipient are in mutual agreement that the research should continue.

In his letter to *Science*, DDR&E Deputy Assistant Director Robert Uhrig says:

> Let us assume that the University of X has been awarded a contract to carry out basic research under Project THEMIS at a level of $180,000 per year, starting 1 July 1967. On that date DOD would commit $360,000 to the U of X allocated in the following manner: $180,000 for the first year (FY 1968), $120,000 for the second year (FY 1969), and $60,000 for the third year (FY 1970). If the DOD decides to continue this program, then an additional $180,000 will be committed to the University of X on 1 July 1968, allocated as follows: $60,000 for the second year (FY 1969, bringing it up to the $180,000 per year level), $60,000 for the third year (FY 1970, bringing it up to the $120,000 per year level), and $60,000 for the fourth year (FY 1971). On 1 July 1969 another $180,000 would be committed to the University of X, to be allocated equally—$60,000 to each of the following three years. This pattern could continue indefinitely into the future as long as the research was carried out in a mutually satisfactory manner. Such an arrangement allows the university to make commitments, particularly to new staff members and graduate students without waiting until the contract is renewed.
>
> If the DOD or the University wishes to discontinue the research program at any time, the $120,000 allocated for the next fiscal year and the $60,000 allocated for the following year after that would be available to the University of X to phase out the program, to give time to relocate or reassign personnel, and to wind up the research in an orderly manner over a two-year period.

Uhrig also pointed out that this method of funding "differs significantly from the standard procedure used by DOD and most other Federal agencies."—E.L.