News and Comment

Elliott Committee: Basic Research Fares Well as House Group Hears 38 on Federal Support of Science

Representative Carl Elliott's Select Committee on Government Research opened public hearings last month, and if any consensus emerged from a string of university, government, and industrial witnesses, it was that, (i) the principal thing wrong with government support for basic research is that there isn't more of it; (ii) the basic research budget is chicken feed compared with funds going into developmental work; and (iii) if Congress wants research to go on producing golden eggs, it had better own up to the need to expand help to the nation's universities.

Just what Elliott and his eight committee colleagues will make of these points remains to be seen. Several members, on both sides of the party line, seemed to take them to heart, while one commented privately, "What would you expect from these witnesses? Most of them are living off government money." But in any case, from the *manner* in which the inquiry has so far been conducted, it would appear that there should be no grounds for distress except among those who feel that Congress' interest in science should begin and end with the writing of checks. Until relatively recently, its interest generally went no further than that, but now it wants to know more, and there is no reason—constitutional or otherwise—why it shouldn't know more, despite the feeling on the part of some persons that public discussion is incompatible with sound science administration.

In connection with Elliott's hearings, it might be objected that the committee raced through its witness list, allowing an average of 34 minutes apiece for 38 witnesses, many of whom came from across the country. But no important area inside, or associated with, the scientific community can claim that its views were not sought; and if Elliott can be faulted for being in a hurry—which he is, since he has just a year to finish his "comprehensive" investigation of research, and other congressional committees have meanwhile moved into the science race—he is at least showing responsibility, care, and a willingness to listen to everybody.

In speculating on the possible fruits of the Elliott inquiry, it is worth keeping in mind, first of all, that there is no anti-research movement in this country, at least not in the same way that there are movements or large numbers of people opposed to foreign aid, urban renewal, manned lunar exploration, and government-financed medical care for the elderly. Everyone is for research. No one runs for office on a pro-diabetes ticket. The Catholic Church promotes research as an answer to the birth control problem, and the tobacco industry promotes research as an answer to the health and smoking problem. Bumper stickers proclaim "Stamp Out Mental Health," but that's as close as anyone gets to being against the use of science to promote well-being. Elliott himself, in opening the hearings, stated, "Research produces knowledge; no society can progress without scientific investigation and development. I don't mind saying that the Chairman of this Committee is pro-research"—which might elicit the question, "What's new?" except for the fact that so many scientists have equated congressional interest with congressional hostility that Elliott, who is quite a shrewd and capable fellow, apparently felt compelled to tell the scientific community that he is not about to loose a dragon in the laboratory.

Since there seems to be ample evidence that the public—and the Congress—accept research as the key to a better world, it would seem that there is no political sense in clobbering research, unless it can be demonstrated that money has been going down the drain in large quantities; and, while this is something that the committee—by its very mandate—would be pleased to demonstrate, it is beginning to discover that in its quest for waste, duplication, and whatever may be amiss, basic research is a rather unpromising field. This is not only because basic research is in large part incomprehensible to laymen, but also because the committee has been getting an earful to the effect that basic research is relatively cheap and openly uncertain about producing useful results. (As B. D. Thomas, president of the Battelle Memorial Institute, told the committee, "If success is certain, there is no point to the experiment. Success often means the end of thought; failure may represent a fair beginning. . . . It is also dangerous to condemn research because of its apparent triviality or lack of apparent usefulness," he went on, adding his weight to a point that was made by many other witnesses who advocated leaving basic research as well supported and as unhampered as possible.)

One effect of this and similar testimony, it would seem, was to turn the committee's attention to the fact that developmental research—which is invariably coupled with basic research under the grand heading of R&D—is a very different creature from basic research, and that if anyone with only a year to spend is looking for things to set right in R&D, he might profitably concentrate on the D; it is this part that accounts for some 90 percent of the current $15 billion R&D bundle, and it accounts for it in terms of equipment, gadgets, and implements that are readily comprehensible to the public and the Congress. For example, how can a layman get excited, or even make a rational judgment, over whether support for molecular biology is adequate or inadequate? On the other hand, it wouldn't take much to get him up in arms over the billion dollars blown on the atomic airplane.

As a result, it appears likely that, in its quest for waste and duplication, the committee is going to be turning its attention to the developmental field, and may even emerge with a few kind words and a bid for increased support in the basic area. At the moment, it is judiciously silent about where it is heading, but after the first round of hearings, a rather conservative member, who might have been expected to reflect other views, commented off the record that "maybe we've failed in not doing as much for basic research as we should." Asked whether he thought there was waste in basic research, he replied that "if there is waste, it's a costly luxury that we have to have. The thing about basic research," he explained, "is that a small expenditure can pay off."

While the first round of hearings, which will eventually include 70 witnesses, is really nothing more than a rough dredging operation, designed to lead the committee on to specific issues, the fact is that it provided an excellent forum for many representatives of science and education to take on some of the myths and misconceptions that frequently surround congressional thinking in these fields. For example, Grayson Kirk, president of Columbia University, assured the committee that he didn't find government financial assistance painful to take. "I can say quite frankly," Kirk asserted, "that I don't lose any sleep at night because nearly half of my university's gross operating budget comes from federal research support." And Lee A. DuBridge, president of the California Institute of Technology, attacked the oft-stated contention that federal support for university research drives out other sources of assistance, pointing out that nonfederal support last year totaled $253 million—compared with $443 million in federal money—and that the nonfederal funds have in fact been stimulated by federal contributions.

Another point, frequently stated before the committee, was that duplication—with which the committee seems to have something of a preoccupation—does not often occur in basic research.

The matter was pursued with witness after witness, and in general the answers were the same. For example, Representative Clarence Brown (R–Ohio), in a colloquy with Leland J. Haworth, director of the National Science Foundation, said: "Now let me ask you the $64 question. You are sitting in a position where I know you are better acquainted with it than we are. . . . What can you tell us about that, Doctor? Do you see any signs of duplication in the field of research . . . and any conflict, any waste, any extravagance that might be eliminated by better administration?"

Replied Haworth: "In research, especially in basic research, the problem of duplication is not one that one really has to worry about, for the simple fact that basic research results . . . are freely published and all scientists can see them. Now no scientist wants to come along a little later and do just exactly what someone else did and already got the credit, so that it is a self-policing thing. One really doesn't have to worry about it. It takes care of itself." However, in development, Haworth went on, military and industrial secrecy can make it difficult for information to be disseminated, and duplication is sometimes the result.

Not surprisingly, industrial representatives took no issue with the plea that basic research be left to thrive in a university setting. Asked whether industry should do more basic research, Roy Smelt, chief scientist of the Lockheed Aircraft Corporation, replied: "We [Lockheed] are hard and fast on this definition that basic research is pursued for its own end out of natural curiosity. We tend to do just a very small amount of that because automatically in an organization like Lockheed, one asks immediately, 'Well, that is fine, what can we do with it,' and it automatically becomes applied research." Is enough basic research being done? Smelt answered: "No scientist would agree that there was enough effort in basic research." He qualified this by adding that a balance had to be struck on the basis of available resources, but concluded that "there are areas in the [basic] research field that are not having enough [support] at this time." These included, he said, "areas which approach more closely to the humanities, some of the areas which are not defense oriented."

Perhaps the most critical evaluation of federal support for developmental research was offered by Vannevar Bush, director of the nation's scientific effort during World War II. Bush, who was the architect of federal support for nonmilitary science in the postwar years, expressed the opinion that things have gone pretty well and that support for basic research "could go up somewhat more without causing any damage." However, he wasn't so sanguine about the fields of application and development. ". . . the American people seldom do things moderately," he said. "The program [of federal support] has been overextended, and is still rapidly growing. . . . When scientific programs are judged by popular acclaim," he went on, "we inevitably have overemphasis on the spectacular. That is just what we have today. . . . The spectacular success of applied research during the war led to a fallacy entertained by many. It is that any problem can be solved by gathering enough scientists and giving them enough money. To solve the problem of the common cold, assemble a great institution, fill it with scientists and money, and soon we will have no more colds. It is folly to thus proceed. The great scientific steps forward originate in the minds of gifted scientists, not in the minds of promoters. The best way to proceed is to be sure that really inspired scientists have what they need to work with, and then leave them alone."

In response to questioning, Bush said, "I think we are at the present time trying to do more than we have really top line men to handle it." He added, however, that NIH, among other government research programs, is "excellently managed," and he warned the committee that "people are sometimes likely to be overcritical of a great program if they find a small part of it that does not make sense. It is very difficult indeed," he told the committee, "to manage a large program without having some parts of it that do not amount to anything."

Like many of the other witnesses, Bush urged the committee to look kindly upon basic research. "I think where the difficulty is," he said, "[is that] the great bulk of our money is not going into basic research, it is going into applied research, engineering research, hardware, the things that are the most expensive parts of the thing. I think that is where we may be overdoing it."

This theme was picked up by Representative James C. Cleveland (R–N.H.), who asked: "Am I correct in saying that a dollar in basic research has the ultimate potential for going further than a dollar in applied research?"

Bush assured him that he was indeed correct, adding, "you may start on a basic research program and spend dollar after dollar and get nothing. That is in its very nature"—a point the committee heard many times without a quibble.

Throughout the speedy appearances of the witnesses, the questioning was generally down-to-earth. But there was one exception. When John C. Calhoun, science adviser to the Department of the Interior, appeared, Congressman Brown asked him whether the Department, which has jurisdiction over the National Parks, engages in research on "human behavior." Before Calhoun could answer, Brown explained that he was interested in this "because I know there is peculiar behavior sometimes in some of the public parks." Calhoun answered that his Department does no such research.

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