to justify legislatively than the presumably more technologically applied work of the National Bureau of Standards. Or there may be other explanations: the adequacy of agency presentations, the mood of different subcommittee chairmen, or the fact that NBS lacks as definable a constituency as that which the universities comprise for NSF. Whatever the reasons, it is clear that academic scientists would be unjustified in feeling that "their" agency was in any way singled out for unfavorable treatment in the appropriations process. Over the total period of fiscal years 1962–68, NSF's appropriation increased 88 percent, Geological Survey's by 72 percent, NBS by 29 percent, and ARS by 97 percent. Many other federal bureaus and agencies would be happy to show a percentage increase in the same period of time equal to that of NSF.

This paper has made a limited examination of congressional appropriations process regarding scientific programs with a sizable component of basic research. Within its limits, however, it does permit some tentative conclusions about the Congress-science relationship—conclusions that are more auspicious for science than scientists might have expected. These may perhaps best be expressed negatively. First, appropriations committees do not, by and large, interject themselves into the substance of scientific research. They take this as a fact and concern themselves with the purposes and management of programs. Second, the legislators do not distinguish between basic and applied research and therefore cannot be said to single out basic research when looking for areas in which to make appropriations cuts. The classification of research into basic and applied may be a distinction close to the hearts of scientists—at least the basic scientists—but it is not salient to the legislators. They look at programs and their purposes as useful or not useful in terms of social objectives and make their judgments accordingly. Third, we find that one cannot generalize that research bureaus protected by extrascientific missions are any better or worse off in the appropriations struggle than is the National Science Foundation which stands on its own as an independent agency. On the basis of my studies, I think it not too great an overstatement to suggest that Congress appreciates science and its accomplishments for legislative purposes somewhat better than many scientists seem to appreciate Congress.

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NEWS AND COMMENT

Britain: Scientists Form New Group To Promote Social Responsibility

London. An impressive segment of Britain's scientific community has organized for a try at what has heretofore been an elusive objective of scientists on both sides of the Atlantic—a mass, sustained role in public affairs.

Adopting the title of the British Society for Social Responsibility in Science (BSSRS), the new organization is related in name and concept to previously established SSRS's in several countries, including the United States. Generally, these organizations have been strong on proclaiming principle and indignation, but otherwise have little to show for their work. Since the British are especially strong on proclaiming principle and indignation, they start as equals. But the new organization has also managed a particularly favorable combination of people, timing, and tradition, and as a result may be due for something better than its foreign counterparts. Among its approximately 200 supporters are ten Nobel laureates, which, of course, is so characteristic of any "conscience" movement in science that it may be that a Rent-a-Laureate service is at work. But these Nobel winners are among various researchers and administrators who figure large in the tightly knit affairs of British science, including Max Perutz, chairman of the Molecular Biology Laboratory at Cambridge; Michael Swann, vice chancellor of the University of Edinburgh; C. H. Waddington, an Edinburgh geneticist who is well known on the international science policy circuit; and Maurice H. F. Wilkins and Francis H. C. D. Crick, of double-helix fame. Also important is the fact that the Society, which grew directly out of the campaign here against chemical and biological weapons, derives a good deal of inspiration from the increasingly popular feeling that science too easily lends itself to harmful purposes. Among scientists, this used to be seen as a heresy peculiar to scientific illiterates, but now the evidence has accumulated to the point where even some of the elder eminences of science are uneasy about what can be traced back to their profession. In this respect, the British Society is fostered by the same sentiments that evoked the March research "teach-ins" at various American universities. But the similarities do not go far. While American scientists have shown little interest in theoretical formulations concerning relations between science and society, they have often organized and stepped outside their professional boundaries to take part in public affairs. They have done this, however, in fits and starts, and usually in response to what they perceived to be a crisis, as in the postwar fight over the control of atomic energy, or in the creation, in 1964, of the anti-Goldwater organization of Scientists and Engineers for Johnson-Humphrey. Without fail, these and similar ventures were followed by loss of interest or swift demobilization once the fight was over. The British record reveals occasional forays into public affairs—the CBW (chemical and biological warfare) campaign is currently the most prominent—but these have been few in number as compared with the postwar performance of American scientists. On the other hand, in contrast to their American colleagues, the British possess a solid foundation of

serious deliberation on the social implications of science. It was 30 years ago that J. D. Bernal produced his great work *The Social Function of Science*, and no American scientist, before or since, has approached that level of professional introspection. What they have generally addressed themselves to—and with indisputable success, until quite recently—is the question of why the federal government should spend more money on science. But that has produced a storehouse of fiscal tactics, not a social philosophy.

Meeting on the premises of the Royal Society, which some of the organizers felt represented a respectful nod from the "establishment," the BSSRS was inaugurated on 19 April with an all-day meeting attended by about 300 persons —no small turnout, considering that it was a sunny Saturday in London. Presiding was Maurice Wilkins, who opened the proceedings with an alternatingly lugubrious and hopeful analysis of the place science now occupies in the affairs of mankind. "We have now reached the point," he said, "where it is an open question as to whether doing more science is a good thing." Wilkins then navigated around to the position that it *is* a good thing, but only if the scientist recognizes that "it is irresponsible to engage in research if he is not prepared to consider the implications of his work." The solution, he continued, "is not to stop doing science. One couldn't stop it." Rather, Wilkins said, "science must be rehabilitated, its image must be refurbished." And this can best be done, he suggested, if scientists attempt to relate their work to improving "the quality of life."

While such generalities were in good supply at the meeting, specifics on the Society's role were rather scarce. Those who are skeptical about the potency of such organizations tend to regard the lack of clearly delineated targets as evidence of the scientific community's unsuitability for a continuing mass involvement in public affairs. Thus *Nature*, on 29 March, greeted the Society with a commentary that questioned the viability as well as the need for a BSSRS. Referring to organizational literature put out by an ad hoc committee, it asked, "What does it all boil down to in practice? Where is the money to come from? How will the Society avoid duplicating work done by Pugwash and other organizations?" So far, there are no concrete answers to these questions, though a general framework for the BSSBS was sketched in the 17 April issue of the *New Scientist* by two persons who are among the most influential of the Society's founding members—Steven Rose, a biochemist at Imperial College, and his wife Hilary, a sociologist at the London School of Economics. The Society, they proposed, should work inside the scientific community to promote a sense of social responsibility among researchers, and it should work outside to educate the public about policy issues that have scientific and technological components. More specifically, but still short of a detailed program, it was proposed at the inaugural meeting that working groups be established to look into various issues. Stress was placed on the importance of cultivating a concern for science's social implications early in the educational process, and this is to be handled by one working group. Other groups will be concerned with devising a code of conduct for scientists, public attitudes toward science, problems arising from sponsored research, and matters such as pollution, technological invasion of privacy, waste disposal, and drug safety.

There is no doubt that these are issues in which so much has gone wrong that any well-informed, goodwilled effort to deal with them must be welcomed. But it is an open question whether the SSRS approach offers much hope for anything beyond intelligent hand-wringing. Heretofore it has not—at least not on a sustained basis—but in Britain, as in the United States, the scientific community no longer enjoys the well-insulated, subsidized existence that for many years made it easy to ignore the outside world except when occasional crises intruded. One of the speakers at the BSSRS inaugural meeting, J. Maynard Smith of the School of Biological Sciences, University of Sussex, made this point when he noted that "the students have forced a change of attitude on us." Noting that it had formerly been easy for an established scientist to feel perfectly at ease with the place his profession occupied in society, Smith said that this was no longer the case. Referring to the "swing from science," which is an endless source of distress to British researchers and science administrators, he said that disenchantment with the effects of research accounts in part for the falloff in recruitment to science. And, he added, "questions arise in a teacher's mind when the subject to which he is devoted is rejected by students."

One great advantage of the BSSRS is that it springs directly from the anti-

POINT OF VIEW

Yarborough on Research Support

Senator Ralph W. Yarborough (D-Tex.), who succeeded to the chairmanship of the Senate Labor and Public Health Committee on the retirement of Senator Lister Hill this year, spoke on The Health Crisis in America *at the Albert Lasker Medical Journalism Awards luncheon in New York on 8 May. The following is excerpted from the portion of his remarks in which he backed increased support for medical research.*

Over the past three years, Federal budgets for medical research have shown little or no dollar increases, and the revised budget for the National Institutes of Health submitted by the new Administration on April 15th is the worst I have seen in my 12 years in the Senate. It cuts NIH appropriations approximately fifty million dollars under the hold-the-line budget submitted by President Johnson in January of this year. In recent years, sitting alongside of Lister Hill, I have listened to some of the most distinguished medical authorities in the country testify that a standstill research budget means a cut of ten to fifteen percent in research activity because of the rising cost of equipment and personnel. Each year since 1966, the number of new research projects supported by the National Institutes of Health has declined appreciably; with the new slashes projected by the Nixon Administration, our great universities and our medical schools will be forced to curtail budgets and release significant numbers of faculty members, at a time of catastrophic shortages in medical personnel in the nation.

CBW campaign that has been going on in the scientific community here for the past 2 years. In many respects that campaign has been remarkably successful. It embarrassed the government into opening to public inspection the Porton Microbiological Research Establishment, where the Defense Ministry does its biological weapons research. And the campaign can also be credited with having pushed the government into asking the Geneva disarmament conference to consider a ban on the production of biological weapons. Thus, the founders of BSSRS start out with the experience of having made themselves felt on an issue they deemed important. And, as a consequence of having been involved with this issue, there was a network of personal relationships that made it relatively easy to use the anti-CBW leadership as a nucleus for the new organization.

Present plans call for a monthly meeting of a London chapter of BSSRS, as well as for the formation of chapters in other parts of the country. Past experience does not provide good odds for the success of the newborn organization, but its founders are banking on the belief that the political activism of today's youth, coupled with widespread disenchantment with science and technology, provide a promising basis for this attempt to bring their profession into public affairs.—D. S. GREENBERG

Stanford Research Institute: Campus Turmoil Spurs Transition

A decision by Stanford University trustees to cut the university's ties with the Stanford Research Institute (SRI) was met last week by a renewal of the militant student action which in April induced a tightening of policies against classified research within the university (*Science*, 2 May).

The trustees set no deadline for disengagement from SRI, nor did they specify the future form of SRI organization. The trustees at the same time "wholeheartedly" endorsed a ban on the development of chemical and biological warfare (CBW) weapons recently imposed by an SRI executive committee. But the decision to divest the university of SRI ran counter to a principal demand of student critics. Militants had first concentrated their protests on work on CBW and counterinsurgency projects at SRI, but they had broadened their demands, insisting that SRI be converted to more "socially constructive" work. The militants argued that this could be achieved only if SRI were tied more closely to the university, so that its policies and operations could be tightly controlled.

Opposition to the severing of ties with SRI last week was at first expressed in a boycott of classes, which principally affected the arts and sciences faculty of the university. Then, last Friday, occurred the first real collision with police of the current campaign. Demonstrators sought to block access to an SRI branch located in the Stanford Industrial Park adjacent to the campus, and a clash developed during which police used tear gas and made a number of arrests.

SRI is a chief West Coast outpost of the postwar "knowledge" industry. The independent, nonprofit research institute was set up after World War II to give western industry access to advances in applied-research, economic-analysis, and management techniques made during the war. Stanford University served as a sponsor and financial backstop during SRI's formative years, and Stanford's trustees are the "owners" of record of SRI. By 1950 SRI was paying its way, and then federal contracting for applied research in the 1950's—the Korean War and Sputnik I were major milestones—was to provide the key to growth, change, and solvency.

SRI grew into the second largest of the independent research institutes, surpassed only by Battelle Memorial Institute. In recent years SRI, in both budget and staff, has been approximately half Battelle's size. (The SRI budget last year was about $65 million, and staff numbered 3000, half of them professionals.) After SRI in size came Arthur D. Little, Inc., a profit-making firm; Illinois Institute of Technology Research Institute (IITRI); and the RAND Corporation.

In 1968 SRI ranked fifth in total worth of contracts among nonprofit institutions performing research for the Department of Defense. The top four, in order of rank, were M.I.T., Aerospace Corporation, Johns Hopkins, and the MITRE Corporation.

SRI's two decades can be divided very roughly into three phases. In the early years the institute worked almost exclusively for industry, and the disciplines deployed were most characteristically engineering and economics. Crowning examples of the work of that era were the projects for the Bank of America, which produced the prototype of the computerized records system in banking of which the ubiquitous magnetically encoded check is the symbol. In SRI's second phase, the increase of federal contract work brought an expansion of SRI competence in the physical sciences.

The beginning of the third and current phase was less clearly demarcated. In the 1960's SRI has reacted to the greatly increased opportunities to perform applied research on education and urban problems. Federal money became available in unprecedented quantities with the legislating of massive education programs and the Johnson war on poverty. Not only the federal government but state and local bodies have turned to institutions like SRI for help in the design and evaluation of pioneering social programs. The evolution of U.S. involvement in Southeast Asia also unquestionably increased the government's demand for help, not only in devising new weapons and tactics but also in counterinsurgency and economic programs. To meet the demand, SRI has had to increase the size of its staff specializing in social and behavioral sciences.

The major point, perhaps, is that SRI has always been responsive to events in the marketplace. As one member of the SRI administrative staff said, "SRI work is an indicator of shifts in national priorities." SRI is a nonprofit organization chartered to serve the public interest. To survive, however, it must stay in the black, and that means operating where the action