state & society

Congress science-policy unit reflects changing interests

Congress has been considered for many years the weaker partner to the executive branch in making science policy decisions. Indeed, it is difficult to name more than a handful of Congressmen who have political clout as well as an interest in science policy. In addition the relatively slow start of the Office of Technology Assessment has been a disappointment to many Congressmen who had hoped that OTA would help Congress achieve equal status with the executive branch, especially after the demise of the Office of Science and Technology.

There is one particularly influential group to which Congressmen have been turning for nearly a decade for assistance in science policy matters. That group is the Science Policy Research Division of the Library of Congress Congressional Research Service. CRS provides research, information, analysis and consultative services exclusively to members and committees of Congress. The SPRD is headed by Charles S. Sheldon II, an economist, also considered by many to be the leading US authority on Soviet space activities. In addition to overseeing SPRD's staff of 38 professionals, Sheldon is chief-of-staff of the House Select Committee on Committees to reform the House (see box). Recently, before the House voted on reform, Sheldon spoke with us about science policy formulation in Congress, SPRD's relationship with Congress and the infant OTA, and how eventual reform in the House could affect science policy decisions in Congress.

Changing interest. The evolution of SPRD is a reflection of how Congressional interest in science has grown and changed during the past three decades, Sheldon told us. Prior to the mid-1950's there was no one in the Legislative Reference Service (the predecessor to CRS) who could quickly answer questions having a scientific content, largely because no one in Congress was asking that type of question. The few requests from Congress were sent to the science and technology division of the library, but it was not equipped to respond in the form and with the speed required by Congress. When Sheldon came to the Library in 1955, he became the in-house expert on scientific matters even though his degrees are in economics.

"Between fiscal years 1958 and 1964, the federal budget for science R&D more than tripled," Sheldon pointed out. "Soon, individuals in the scientific community and in Congress began to wonder how Congress could keep abreast of where these huge sums of federal money were being spent." The

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years between 1958 and 1963 saw a proliferation of committees and subcommittees in the House and Senate to follow federal research spending. As a logical extension of Congressional interest, SPRD was formed.

Diverse requests. Today, SPRD annually handles about 5600 of the 200 000 requests received by CRS. Sheldon's staff deals with requests from about 60

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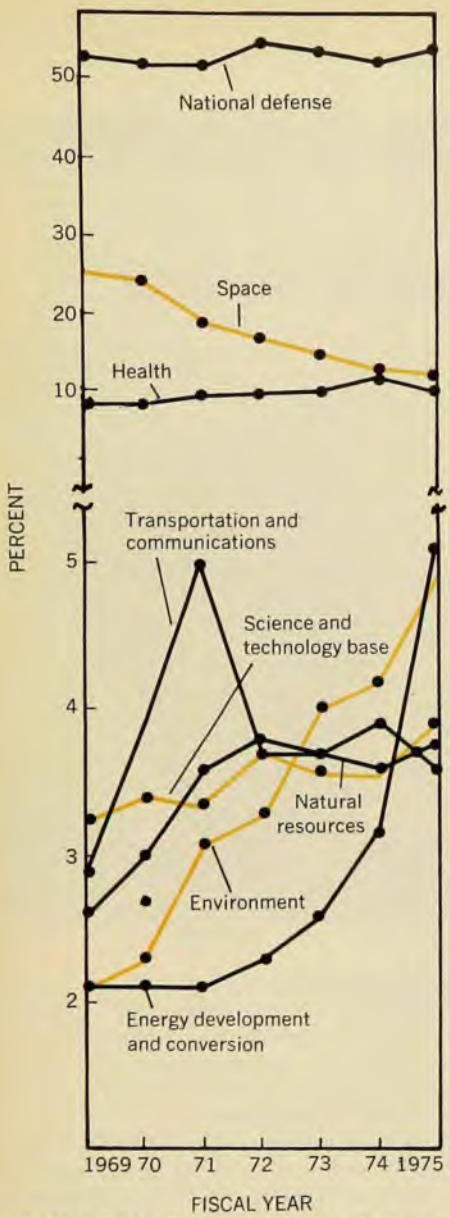
How much federal money goes to energy R&D?

A year ago, the Administration issued an FY 1975 budget request of $1.8 billion for energy and energy-related R&D—9.2% of all federal R&D money (PHYSICS TODAY, April, page 121). A newly released National Science Foundation report, *An Analysis of Federal R&D Funding by Function, FY 1969–1975,* offers a different perspective on federal R&D funding priorities—it shows energy R&D as 5.1% of the total. Why the disparity? In other reports R&D programs were placed into categories developed by the Office of Management and Budget. This system, according to the NSF report, was "designed to illuminate *overall* Federal objectives—many R&D programs were obscured or their true objectives were distorted, and a clearcut comparison of R&D priorities was not obtainable."

The change for this report, NSF says, is that "programs are assigned to functions on the basis of their primary purposes; hence programs that do not [for example] have energy research and development as their central mission cannot be shown under the energy function. The Office of Management and Budget was not under this constraint . . ." Benjamin L. Olsen, director of the study, explained to us that the proportion of total R&D for any given research category could be swelled if related research from other categories were included. Total R&D adds to 100% in the report, he said, so it was necessary to assign each program to a *single* category, based on the program's primary mission.

Breaking down federal R&D obligations ($19.6 billion expected for FY 1975) by the "primary mission" scheme yields the following percentages for the largest research categories: national defense (52%), space (13%), health (10%), energy development and conversion (5.1%), science and technology base, that is, basic (non-applied) research (3.9%), natural resources (3.8%) and transportation and communications (3.6%).

Funding trends. During the FY 1969–75 period, the largest growth, in terms of percent of total R&D obligations, has been in energy development and conversion, and environment. Space R&D has fallen considerably—from 24% in FY 1969 to an expected level of 13% of all federal R&D in FY 1975. The relative prominence of other programs in the total R&D picture during the period has been fairly constant.



Federal R&D priorities are shown for major research areas. Research programs were placed into categories by determining their primary mission. Data provided by the NSF.

Within energy development and conversion programs, the report notes that, in FY 1969, almost 90% of the money went to nuclear work, which received less than 60% in FY 1975 (although this smaller proportion represents twice the amount of money spent in FY 1969 when $286 million was allotted). The most impressive increase among nuclear-energy programs during FY 1969–75 is for controlled thermonuclear research, now with more than three times the obligations as at the beginning of the period. Fossil-fuel research has been promoted heavily in the later part of the FY 1969–75 period and it now forms 22% of energy R&D obligations compared with 6% in FY 1969.

Other R&D areas. The programs that comprise the science and technology base grouping (including NSF Scientific Research Project Support and AEC physical research) have grown gradually during the period with a dramatic 18% increase between FY 1974 and FY 1975. The NSF Science Education Improvement program has shown considerable growth since FY 1969, when it received 7.6% of education R&D obligations. For FY 1975 the allocation is 12.2%. Funding for NSF's International Cooperative Scientific Activities, classed under International Cooperation and Development (0.2% of federal R&D obligations), has grown from $500 000 to $8.1 million during FY 1969–75.

An Analysis of Federal R&D Funding by Function, FY 1969–1975 (NSF 74-313) provides a different and, for many purposes, a more useful view of federal R&D priorities. Copies are available for $2.25 from the US Government Printing Office, Washington, D.C. 20402. —RAS

Five-year air-sampling program covers the world

Commercial jumbojets will serve as atmospheric research vehicles as they participate in NASA's Global Air Sampling Program. The five-year program, scheduled to reach its peak in 1976, will involve several regular passenger aircraft carrying instruments that initially will monitor suspended particulates, carbon monoxide, ozone and water vapor in the layer 20 000 to 40 000 feet above sea level. By Summer 1975, instruments for measuring NO_x, carbon dioxide and condensation nuclei will be added.

Data, collected under contract with NASA's Lewis Research Center, will enable researchers to assess perturbations in the Earth's natural atmosphere. It is hoped, for example, that this information will reveal how much dust is being added by aircraft and whether jet vapor trails contribute to cloud cover. Widely separate airline routes will enable researchers to receive data for both the southern and northern hemispheres and will include coverage of the Arctic region.

Arecibo radiotelescope improvements completed

Work to upgrade the 1000-foot diameter radio/radar telescope at the Arecibo Observatory has been completed, resulting in a 2000-fold improvement in the telescope's sensitivity and a ten-fold expansion of the frequency range available for radioastronomy observations. The three-year, $8.8-million project was carried out at the Observatory, which is a part of the National Astronomy and Ionosphere Center, Arecibo, Puerto Rico. The center is operated by Cornell University under contract with the National Science Foundation. The telescope cost $9.3 million when it was originally constructed in 1963.

Changes in the instrument include replacing the wire mesh of the reflector bowl with aluminum panels and adding a 450-kilowatt transmitter to the existing ones. The new system will function as the strongest radio signal leaving Earth, strong enough to be detected anywhere in the Milky Way by instruments similar to the Arecibo telescope.

AEC declassifies work on micropellet fusion

The Atomic Energy Commission has declassified aspects of its laser-fusion research to permit the release of information on theoretical and experimental studies of microscopic fuel pellets. These pellets are filled with heavy hydrogen and used as targets. Specifically, the directive will allow publication of multiple-dimension calculations of the targets and their design and performance.

The declassification action was taken after a detailed study by AEC staff in consultation with AEC and industry experts.

Stricter limits urged on radioactive shipments

The Joint Congressional Committee on Atomic Energy has released a report that recommends stricter monitoring and regulation for air shipments of radioactive materials. The report, *Transport of Radioactive Materials by Passenger Aircraft* is the first of a series of studies commissioned by the Committee in May. John T. Conway, executive assistant to the chairman of the board of Consolidated Edison Company presided over the study panel.

Recommendations for passenger-aircraft transport include:

- lowering the maximum allowable radiation detectable at three feet from the package and within the passenger and crew compartments from ten millirem per hour to one-tenth as much.
- reduction, by a factor of ten, of the quantities of radionucleotides carried in currently specified types of packages and stricter limits on radioactive materials with half lives between 30 days and 10^8 years.
- prohibition against carrying dangerous radionucleotides such as Pu^{239} and Cf^{252} in quantities in excess of 10^{-5} curies except where required by national security.

Copies of the report are available from the US Government Printing Office, Washington, D.C. 20402 for $0.45.