

- rather than the breadth of the services provided and encounter the further ambiguity that a distributive network may employ a starlike topology (see NERComP's current network depicted in Fig. 1).
5. The NERComP's research and development activities are currently funded by the Control Data Corporation and the National Science Foundation.
 6. I. W. Cotton, *Natl. Bur. Stand. Tech. Note 805* (1974), p. 34.
 7. Revenue Ruling 74-614, *Intern. Revenue Bull. No. 52* (1974).
 8. "State-college consortium denied tax exemption," *Chron. Higher Educ.* (16 December 1974), p. 7.
 9. B. Herzog, *Compcon* 73, 11 (1973).
 10. M. Greenberger, J. Aronofsky, J. L. McKenny, W. F. Massy, Eds., *Networks for Research and Education: Sharing Computer and Information Resources Nationwide* (MIT Press, Cambridge, Mass., 1974). This reference also includes a discussion of the NERComP network organization at an earlier point in time. See T. E. Kurtz, "The NERComP network," p. 282. NERComP's exploration of governance, user services, and operating network structures has been undertaken with the assistance of the National Science Foundation.
 11. The term "packet-switching" is often used to describe a network of the type under discussion here in which information is transmitted in blocks of limited size with origin and destination address codes included to control forwarding of the block to the proper host computer and the return of the appropriate response. We prefer the generic term "message-switching" in this context, which leaves open the question of how the message is "packetized" or broken down into smaller units for transmission. For an excellent discussion of

- these terms see the Final Report of the Ad Hoc Group on Packet Switching, "Study of areas for standardization in packet switching," American National Standards Institute (ANSI) Task Group X3S37 Document 75-10, 7 February 1975. I. W. Cotton, Chairman.
12. R. Ricard, former institutional representative from the University of New Hampshire and current chairman of OGAC, is responsible for the resource-chaining concept as applied to computer networks.
 13. The terms used here were inspired by those used by the Regional Medical Library Program for the distribution of medical materials through the inter-library loan system, administered by the National Library of Medicine. See H. M. Schoolman, *Bull. Med. Libr. Assoc.* 60 (No. 2), 284 (1972); V. Pings, *ibid.*, p. 274.
 14. D. L. Grobstein and R. P. Uhlig, *AFIPS (Am. Fed. Inf. Process. Soc.) Fall Joint Comput. Conf. Proc.* 41, 889 (1972).
 15. F. W. Weingarten, N. R. Nielsen, J. R. Whiteley, G. P. Weeg, *Study of Regional Computing Networks* (Univ. of Iowa Press, Iowa City, 1973); C. J. Mosmann, *Statewide Computing Systems: Coordinating Academic Computer Planning* (Dekker, New York, 1975).
 16. G. Marks of the Institute of Social Research, University of Michigan, first called this term to their attention.
 17. L. G. Roberts and B. D. Wessler, *AFIPS (Am. Fed. Inf. Process. Soc.) Spring Joint Comput. Conf. Proc.* 36, 543 (1970).
 18. EDUCOM has planned a simulation and gaming project in which key administrators at approximately 15 leading academic institutions will participate in the formation of a national network model, then play a game designed to show the

- probable effects on their institutions over a period of years of various decisions regarding network participation. This program complements many studies carried out by existing regional consortia, including NERComP, over a number of years.
19. Both NELINET and NASIC are programs of the New England Board of Higher Education.
 20. The Council for Computerized Library Networks, consisting of approximately 15 leading organizations in the area of application of computers to library networking, has recently formed to "identify, discuss and coordinate solutions to common problems." Its current interests include the inter-network governance issue.
 21. The NERComP board of trustees consists of: Thomas E. Kurtz (Chairman of the Board), Director, Kiewit Computation Center, Dartmouth College; Philip M. Morse (Vice-Chairman of the Board), Director, Operations Research Center, Massachusetts Institute of Technology; John Alman (Secretary), Director, Computation Center, Boston University; Edgar T. Canty, Director, Computation Center, Babson College; Alan D. Ferguson, Executive Director, New England Board of Higher Education; Greydon C. Freeman, Director, Computer Center, Yale University; Walter Freiburger, Director, Center for Computer and Information Sciences, Brown University; Jeremy E. Johnson, Director, Computing and Data Processing Services, University of Maine; Norman Johnson, Director, Academic Computer Facility, Wheaton College; Raymond K. Neff, Director, Health Sciences Computing Facility, Harvard University; Roderick Ricard, Institutional Representative, University of New Hampshire; and Conrad Wogrin, Director, Research Computing Center, University of Massachusetts. Robert A. Rolla currently serves as President.

NEWS AND COMMENT

White House Science Adviser: House Committee Rewrites Its Bill

Congress is moving with all deliberate speed on legislation to reestablish a science adviser's office in the White House, but it seems unlikely that action will be completed before the traditional autumn rush to adjourn. Thus the White House probably won't be able to start talking seriously with candidates for the job of science adviser until late this year or early next.

The most recent sign of progress is a new draft bill prepared by staff of the House Committee on Science and Technology to replace the National Science Policy and Organization bill introduced earlier this year by the committee's leadership, Olin Teague (D-Tex.) and Charles Mosher (R-Ohio). On the Senate side, the three committees with jurisdiction over science advisory bills are biding their time, waiting for the House to act. Democratic leaders of the Labor and Public Welfare, Commerce, and Aeronautical and Space Sciences committees seem to regard the new House bill as workable, although there is some feeling that it needs strengthening. A spokesman for Senator Edward Kennedy (D-Mass.) said, for instance, that, while the bill was generally commendable, sec-

tions detailing national science policy and duties of the science adviser seemed unnecessarily fuzzy and rhetorical.

The new House draft, dropped in the hopper just before the August recess began, is an amalgam of the original Teague-Mosher bill and a very brief bill drawn up by the White House (*Science*, 6 June and 4 July). As expected, the committee has discarded its proposal for a council of science advisers in favor of the lone science adviser and a small staff favored by President Ford. In a revival of a requirement placed on former science advisers, the new one, in his capacity as director of the White House Office of Science and Technology Policy, would be subject to Senate confirmation. Ford and most, if not all, the House committee favored confirmation and the implied extra access Congress would have to the science adviser. But some of the President's legal staff reportedly had objected on the ground that Senate confirmation of White House officials served to erode executive privilege. Their arguments apparently were not persuasive.

The new committee draft lays out the duties of science adviser in more explicit

detail than the Administration version's bare-bones, 70-word discussion of responsibilities. Unlike the Ford bill, the House version specifically grants the science adviser a role in areas of national security, economics, health, and environmental affairs and says that he or she "shall . . . participate throughout the budget development process." The precise relations between science adviser and other major policy units of the White House is, however, left for the President to decide. The House bill says only that the science adviser shall "develop appropriate working relationships with" the National Security Council and the Domestic Council.

At present, the titular science adviser, National Science Foundation director H. Guyford Stever, has no voice whatever in the area of national security and his leverage in domestic policy planning seems not much greater. There is, as a result, a body of opinion that the new science adviser ought to be a member of both the National Security Council and the Domestic Council if he is to have any real influence at these crucial focal points of power. The House committee, however, is trying hard to construct a science office that is acceptable to Ford and which he and other Presidents will use. And in simply specifying that the science adviser should have a role in these areas—to be defined by the White House—the committee has already gone beyond the vague job description proposed by the White House.

Like the Teague-Mosher bill it replaces, the new bill contains a long preamble set-

ting forth general principles of national science policy, although the wording has now been honed and simplified.

In addition, two new federal organizations proposed in the original House bill—a Department of Research and Technology Operations and a Science and Technology Information Utilization Corporation—have been discarded. Both had been proposed as a way of centralizing and generally improving the management of federal R & D programs and the government's handling of technical information.

Instead, the committee now proposes to attack these two management problems by the politically simpler avenue of a major study. Title III of the new bill proposes a Federal Science and Technology Survey Committee, to consist of 5 to 12 persons appointed by the President to work "in association with" the science adviser. In a 15-month period, the committee would be

expected to take stock of the "total context of the federal science and technology effort" with an eye to organizational reform, simplifying government regulations that may inhibit innovation, improving planning and analysis of R & D budgets, streamlining the handling of information, and speeding the transfer of new technology into the marketplace.

Action after the Recess

The White House Domestic Council hasn't yet indicated how it feels about the new bill, but talks with House science committee staff are expected to go on during the August recess so that markup of a final version may proceed in mid-September. Quick action there, coupled with cooperation from the Rules Committee, could pave the way for a House vote in late September. The Senate committees are now thinking about hearings late that month or

early October, so that a bill could reach the Oval Office in November.

Predictions of congressional activity are among the chanciest in Washington, of course. And as time goes on the science advisory bill runs an increasing chance of being shunted aside amid the last hectic attempts to agree on major legislation, most notably an energy program.

A new science adviser, along with the nucleus of a staff, could be in place early in 1976. But with time running out before the customary upheavals of a Presidential election year, advocates of the restoration worry that it's going to be more and more difficult to find a candidate for science adviser who is willing to take a job with perhaps less than a year's tenure and yet who will do credit to the office. Leaving the post vacant until after the election is not unthinkable.—ROBERT GILLETTE

PSAC Lives!

On 17 July, 15 prominent scientists met with the Vice President for 7½ hours and with the President for 1 hour in Washington. They discussed issues that could be taken up by the new White House science advising office which the Administration has proposed reestablishing and which Congress is likely to legislate before the end of the year.

The meeting was arranged at the request of Vice President Nelson A. Rockefeller, but organized by two of his long-time friends, Simon Ramo, vice-chairman of the board of TRW Inc., and Hans Mark, director of the Ames Research Center of the National Aeronautics and Space Administration. Many members of the group have been part of Rockefeller's personal "brain trust" for some time, and were associated with his Commission on Critical Choices for Americans before he became the Vice President. There were, in addition, some new faces, such as Lewis Branscomb, chief scientist of the IBM Corp., and Dixy Lee Ray, who had been an assistant secretary of state and chairman of the Atomic Energy Commission.

The charge to the group was to discuss problems that a series of task forces might take up in advance of the establishment of the new White House science office, which will probably take place toward the end of the year. The problems discussed were:

- Nuclear energy, materials control, and national security
- Food and famine
- International economics and technology transfer
- Productivity and information technology
- Communications, military and civilian
- Environment, health, and safety
- Biomedical and behavioral research policy

Participants indicated that the session was very informal; the task forces were not actually established, and no plans were laid for the group to meet again. The Vice President and his staff, evidently, will follow up on the advice of this group.

Critics of the Administration's proposal for a revived science office have said that there will not be enough time from the date the office is established to the November 1976 presidential elections for it to get much done. The interim task forces may attempt to get the office's work off to a head start.

But whatever else was accomplished, the meeting asserted what, in reference to the former President's Science Advisory Committee (PSAC), might be called the PSAC-principle: namely, that when a President or a Vice President wants to hear some science advice, he will call in a group of trusted experts to talk.

Those present were: William O. Baker, president, Bell Laboratories*; Lewis Branscomb, vice president, chief scientist, IBM Corp.; Harold Brown, president, California Institute of Technology; Lee A. DuBridge, former president, California Institute of Technology and science adviser to the President, 1969–70; John S. Foster, Jr., vice president for energy research and development, TRW Systems, Inc.*; Philip Handler, president, National Academy of Sciences; J. George Harrar, former president, Rockefeller Foundation; Wilmot N. Hess, director, Environmental Research Laboratories, National Oceanic and Atmospheric Administration; Hans Mark, director, Ames Research Center, National Aeronautics and Space Administration; Courtland Perkins, president, National Academy of Engineering; Simon Ramo, vice-chairman of the board, TRW Inc.; Norman Rasmussen, professor of nuclear engineering, MIT; Dixy Lee Ray, former assistant secretary of state for oceans, environment, and science. H. Guyford Stever, director, National Science Foundation and science adviser to the President; Edward Teller, director-at-large, Lawrence Livermore Laboratory*. Franklin M. Murphy, chairman of the Board of the Times-Mirror Co. and chairman of the President's Biomedical Research Panel, was invited but could not attend.—D.S.

*Member, Commission on Critical Choices for Americans.