Foundation report last year indicated that there would be some options. Say you have these difficult areas—the outer continental shelf, oil, nuclear, western coal development, and so on. According to the Ford analysis you could elect to go with some and defer others. Do you think we have that kind of flexibility or are we going to have to move in all areas?

ZARB: We're probably going to have to move in all areas, but we ought to make sure that we've given enough attention to all areas and not exclusively stick an overwhelming amount [of money] in one technology or the other. In my view, we're going to have to go down a multiple track here to get it all done. I think the environmental community agrees with us although they don't say so publicly too often.

Q: This goes to FEA's future. As I understand it, the law that created you expires next June. Some people say that your agency, with 3000 employees, has got plenty to do in times of long gas lines, worrying about problems of allocation, but that in normal times you really don't do more than generate numbers about energy supplies and put out press releases because you don't have the legislative authority to do enough. Could you speak to this?

ZARB: Well, two-thirds of my people are assigned to the regulatory and compliance area. Under the law we need as many as possible for auditing and otherwise investigating all segments of the petroleum chain. As long as we have a federal price control and five federal allocation acts, we're going to need that kind of presence. On the other side of the question, we need to have a center point in government where all of these energy questions come to a focus. And if the Congress is going to continue to call upon us for a burst of data in our analytical work, and second, to do the regulatory and compliance work, and insist on controls, then we're going to have to have the kind of agency that we have. I'm sure we start enough trouble around town so that a lot of people would like to get rid of us, both in and out of the industry.

Q: Some government officials have said that we need a department of energy and natural resources. How do you feel about that?

ZARB: I think that's probably the direction that we're ultimately going to head someday, but we have too much to do in the next year to get our lives complicated with reorganization questions because that begins to sap everybody's time and attention.

NSF: Defense of Closed Peer Review System Not Persuasive

Peer review, as practiced by the National Science Foundation (NSF), is under intense scrutiny by the House subcommittee on science, research, and technology which recently completed 2 weeks of hearings on the subject. NSF did not make a very persuasive showing.

The issue was openness. At a time when the Congress is embracing openness as an antidote to Watergate, NSF stands firm for confidentiality. To open the peer review process to public, or even congressional scrutiny, could destroy it—because it is based on confidentiality. Good scientists will not make candid—meaning negative—assessments of each other's work if they have to operate in the open, or so the NSF argument goes. Several scientist witnesses before the subcommittee attested to that fact, presenting positions that have been heard before. But many of the congressmen were not readily convinced. However, they are not about to rush in and dismantle peer review at NSF. Having heard from about two dozen witnesses, they will sort out a lot of information before taking any action.

In evaluating NSF's manner of using peer review, one must make a distinction between what some persons call confidentiality and others see as secrecy. NSF's definition of confidentiality seems to go beyond the bounds, inasmuch as the agency maintains not only that it cannot reveal to Congress or the public the content of peer reviewers analyses of grant applications, but also that it cannot reveal the names of the peers who reviewed specific grants. [Under a recent ruling by the National Science Board which governs NSF (*Science*, 11 July), verbatim copies of peer reviews will be made available to the principle investigator on an application upon request. However, the ruling applies only to reviews received by NSF *after* 1 January 1976, and the identity of the peers will still be secret.] Confidential information, confidentially given, lends itself at the very least to what one subcommittee member called the "perception of secrecy."

NSF director H. Guyford Stever and his advisers do not see it that way. They insist that to release the names of NSF's peers would lead to disaster. "Suppose," said one NSF spokesman, "that a rejected applicant knew the identity of the scientists who reviewed and turned down his application. He could write his congressman and challenge their competence. We'd be under great pressure."

Arguments such as that one lost much of their effect, if they had any, when John F. Sherman, vice president of the Association of American Medical Colleges and former deputy director of the National Institutes of Health (NIH), testified about the way peer review works at NIH. By the time he was done, the NIH system which itself has come under criticism for being a closed operation, began to look like a paragon of openness compared to NSF. His testimony became something of a point of reference throughout the rest of the hearings.

NIH, Sherman testified, assigns all grant applications to one of some 50 or 60 review panels, called study sections, of 12 to 15 members each. The names of each of the members are public, and a majority of applicants not only know to which study section their grant was assigned but also who reviewed it. Picking up on Sherman's description of that aspect of the NIH procedure, subcommittee chairman James W. Symington (D–Mo.) asked whether a rejected applicant could call each of his reviewers to ask why they faulted the proposal, or protest their judgment, or otherwise "make waves." "Indeed, they could," said Sherman calmly, adding that very few do so however.

In contrast to NIH, NSF handles only a small portion of its grant applications exclusively by review by an official panel. In 44 percent of the cases, individual reviewers are selected by powerful NSF staff personnel, called program officers, who seek peer review comments by mail. These peers are chosen on an ad hoc basis, and never meet together in person (NIH study sections each meet 3–4 times a year). Their written comments on a given grant proposal go back to the program officer who can use them as he sees fit. Unless the applicant is on close terms with the NSF program officer, he never knows what the reviewers said.

The names of individuals on the few per-

manent review panels in NSF are available to the public, according to an NSF official who conceded that very few applicants know who even they are. The only place they are listed is in the foundation's annual report.

Although peer review at NIH looks good compared to NSF, it was apparent from some of the questions put to Sherman that some congressmen think NIH too could be more open. While endorsing NIH's custom of publishing the names of study section members, Sherman rejected the idea that the substance of study section meetings be made public or that the meetings themselves be open. Sherman expressed concern on two counts. Plagiarism might become a problem, he said. Suppose a young scientist from Hawaii submits a proposal which is discussed at an open meeting in Washington, D.C., which might be attended by representatives from one of a number of commercial scientific laboratories. What would stop anyone from stealing the young scientist's idea? What would stop investigators in a big laboratory from exploiting the idea before that poor young scientist could carry out his own experiments? Representative James H. Scheuer (D–N.Y.) seemed particularly untouched by the possibilities Sherman sketched out, saying first that moral pressure from the scientific community would probably be a real deterrent to stealing and, second, that it might be a good thing to get ideas into the "scientific stream of commerce" more quickly than happens now.

The other argument against opening peer review meetings is that to do so would put an end to confidentiality. No longer could a scientist criticize a colleague without being found out. In fact, one justification offered for keeping the meetings closed was that it protects peer reviewers who may be "overzealous" in their criticisms. Scheuer was quick to answer that, saying that to expose the overzealous to the public eye might well be a good thing.

Openness Solves Problems

Scheuer, by no means sounding like a man who had any desire to dismantle the peer review system, went on to speak about the "cleansing effect" open congressional meetings had had in the past year or so. In the wake of Watergate, congressional reforms were instituted that, among other things, opened mark-up sessions of committees. To many congressmen the idea of negotiating about appropriations in public seemed like an exercise in sheer idiocy. How could we horse trade with people watching? "Well," said Scheuer, answering his own question, "mores can yield to changing times. Total openness solves an awful lot of problems."

It is not entirely impossible that the scientific community can change too. However, NSF apparently is not going to take the lead. In response to a congressional request for the names of its peer reviewers, it sent a list of names in alphabetical order, without identifying what grants they reviewed. Representative John B. Conlan (R–Ariz.), who is one of NSF's severest critics in Congress, calls the list the Hong Kong telephone directory and says, quite rightly, that it is utterly useless in helping Congress do its job of assessing the workings of NSF.

Early in the hearings (*Science*, 8 August), Conlan charged NSF program officers with distorting the views of reviewers in internal summaries. He cited a summary of a review by Philip Morrison of the Massachusetts Institute of Technology as an example. Morrison then told reporters that it might be Conlan who was doing the

Briefing

Navy Mississippi Move Approved

A large share of the Navy's oceanographic activities will move from the Washington, D.C., area to Bay Saint Louis, Mississippi, according to an announcement made by the Department of Defense on 25 July. The proposed move has been contested by some university oceanographers who dispute that the new site is suitable for the "center of excellence" in oceanography the Navy has proposed (*Science*, 20 June).

The plan calls for the first of the 1200 employees who will eventually go there to move this summer. The most controversial office to be moved, known as "Code 480," which supports basic university research in oceanography and some of the country's major oceanographic institutions, is scheduled to move in about 1 year.

A member of Congress who has been fighting the move, Marjorie Holt (R-Md.), called it "politics, pure and simple." She was referring to the fact that it will mean more federal jobs in the home state of the chairman of the Senate Armed Services Committee, John C. Stennis (D-Miss.), with many employees probably living nearby in Louisiana, home state of another congressional Pentagon friend, former Representative F. Edward Hebert. But Trent Lott (R-Miss.), the congressman who represents Bay Saint Louis, was quoted as having commented: "Yes, of course there is Senator Stennis, and I'm sure the Navy is pleased to please him. And Hébert, too, so that made it a double goodie."

The question now is whether the geographic removal of "Code 480" from the main offices of the Office of Naval Research (ONR) in Washington portends more fragmentation of the latter group, which has been sponsoring basic research nationwide for more than 20 years. Some sources suggest that the Navy may next seek to move the electronics and the physics programs of ONR, although no specific plans have yet been mentioned. These sources report that higher-ups in the Navy have been trying to tighten control over ONR's basic research programs, that ONR has resisted such controls, and, hence, that relations between ONR and the rest of the department have been strained.

Signs of this strain appeared last week when the head of ONR, Chief of Naval Research Rear Admiral M. Dick Van Orden, retired a year ahead of schedule. In Navy circles, Van Orden was known as a vigorous supporter of basic research. But at a change of command ceremony to mark his retirement last week, with the Navy brass assembled, Van Orden spoke openly of his "failure" to convince the rest of the Navy that the basic research programs should be kept together in one place and that "Code 480" should remain in Washington.

Van Orden, 54, told *Science* that his decision to retire early was "not entirely unrelated" to the Navy's decision to move "Code 480" to Mississippi. He said he had discussed this and other differences of view "amicably" with H. Tyler Marcy, assistant secretary of the Navy for research and development, and told him: "I felt I was not on his team. . . . I felt the Secretary deserves someone working for him who can support his policies loyally."—D.S.

distorting but when he testified before the subcommittee on the last day he said only, "It does not appear to me that the brief quotation from my review . . . can be said to have misrepresented my position. It certainly did not summarize it carefully. But it did not purport to do so." Morrison then went on to say, in response to a question, that he is against revealing reviewers' names.

NSF director Stever appears to be intent upon preserving the confidentiality of the system unless Congress, by some official act, forces him to comply with its requests. Members of the subcommittee want access to NSF files, they want to see verbatim copies of reviewers' comments on individual grants, they want to know who is doing the reviewing and how they are chosen. Sherman testified that, although NIH did not make study section documents available to the public, the institution long ago worked out an arrangement allowing members of its congressional oversight committee access to its files. There was a gentleman's agreement, he said—committee members would confine their requests to matters related to committee business and would treat what they found with discretion; in return, NIH would let them see whatever they wanted to.

Stever, when asked whether some similar accommodation could be made with the science subcommittee, took a hard line. The Congress, he noted, has the authority to officially demand access to records. Or the matter could be taken to court. He said he would not mind having the issue of confidentiality settled that way. His position prompted subcommittee members to consider the avenues open to them, including subpoena power. It seemed there would be no friendly accommodation.

In comparing this situation to that Sherman described with respect to NIH, it must be pointed out that, for the most part, NIH's relations with Congress have been very good. NSF, however, has some enemies on the Hill, Conlan among them. It is no secret that he objects not only to the way in which peer review operates at NSF but also to the substance of some NSF-supported programs, especially those in the social and behavioral sciences. It is likely that NSF officials fear he would have a field day if he got his hands on all of the foundation's files, and they are not anxious to have to defend themselves against members of Congress who make what Stever calls different "value judgments" about research. Nevertheless, they may have to.

On the first day of the hearings, Conlan called for "total openness" between the NSF and the subcommittee as the best and least expensive way to check the potential and real abuses in the present NSF peer review system. On the last day, he repeated his stand and said, "In spite of . . . your own stated refusal before this subcommittee that Congress cannot have verbatim peer review documents or the names of reviewers of particular projects, Dr. Stever, Congress *will* prevail." It will if the members of the House subcommittee follow up on what they have started.

—BARBARA J. CULLITON

Institute of Medicine Names New Members

Forty new members have been elected to the Institute of Medicine–National Academy of Sciences. The election raises the total active membership to 305; the eventual maximum stipulated by the institute's charter is 400.

New members are elected by present active members from among candidates chosen for significant contributions to health and medicine, or to such related fields as the social and behavioral sciences, law, administration, and engineering. The charter requires that at least one-fourth of the members be drawn from other than the health professions.

Current activities of the institute include a large-scale study of medical manpower, centering on the payment of physicians in teaching hospitals for services to Medicare and Medicaid patients, and the beginnings of studies to identify the functions of primary health care and who should perform them and to evaluate the effectiveness and potentials for improvement of programs to assure quality of health care.

Newly elected to the institute are:

Faye G. Abdellah, U.S. Public Health Service, Rockville, Maryland

Lewis M. Branscomb, IBM Corporation, Armonk, New York

Herman R. Branson, Lincoln University, Pennsylvania

Lester Breslow, School of Public Health, University of California At Los Angeles

Neal S. Bricker, Albert Einstein College of Medicine

Noah R. Calhoun, Veterans Administration Hospital, Washington, D.C.

John C. Cassel, University of North Carolina School of Public Health

Florence S. Cromwell, University of Southern California, Downey

Leonard W. Cronkhite, Jr., Children's Hospital Medical Center, Boston

Martin M. Cummings, National Library of Medicine, Bethesda, Maryland

Bernard D. Davis, Harvard University School of Medicine

Carl Eisdorfer, University of Washington School of Medicine

Ronald W. Estabrook, Graduate School of Biomedical Sciences, University of Texas, Dallas

Saul J. Farber, New York University Medical Center

Renee C. Fox, University of Pennsylvania

Richard L. Garwin, IBM Corporation, Thomas J. Watson Research Center, Yorktown Heights, New York

Genevieve T. Hill, Atlanta University School of Social Work

I. Lawrence Kerr, Endicott, New York

Julius R. Krevans, School of Medicine, University of California, San Francisco

Sol Levine, Boston University

Gardner Lindzey, University of Texas, Austin

Patricia A. McAtee, University of Colorado Medical Center

Alton Meister, Cornell University Medical College

Lincoln E. Moses, Stanford University

Vernon B. Mountcastle, Johns Hopkins University School of Medicine

Franklin D. Murphy, *Times-Mirror* Corporation, Los Angeles

Robert F. Murray, Jr., Howard University College of Medicine

Alan R. Nelson, Memorial Medical Center, Salt Lake City, Utah

W. Richard Scott, Stanford University

Iris R. Shannon, Rush University College of Nursing

G. Tom Shires, University of Washington School of Medicine

Jeanne C. Sinkford, Howard University College of Dentistry

David H. Solomon, University of California at Los Angeles School of Medicine

Jonathan M. Spivak, *Wall Street Journal*

Robert Straus, University of Kentucky College of Medicine

Jack L. Strominger, Biological Laboratories and Sidney Farber Cancer Center, Harvard University

Louis W. Sullivan, Boston University School of Medicine

August G. Swanson, Association of American Medical Colleges, Washington, D.C.

Hans-Lukas Teuber, Massachusetts Institute of Technology

C. Gordon Watson, American Dental Association, Chicago