the names of three ARS scientists doing outstanding work. A panel member agreed, on being queried about these names, that two of them were first-rate scientists (he had not heard of the third) but said they were studying factors that affect photosynthesis rather than the process itself. "If the USDA could only produce two shining stars, this is a pretty poor showing—we could show as many good people in a single department," this member added.

The size of the USDA's efforts on basic plant science research is hard to assess. The ARS has 170 plant physiologists on its payrolls (reduced from 188 a few years ago). Estimates of the number working on photosynthesis range from 12 to 20 scientists. Assuming for the moment that the Pound committee is correct in asserting that basic science has been neglected, how could such a situation have come about? Several possible contributory factors can be identified.

First, until last year's reorganization, and to some extent even now, the ARS was organized along commodity lines with an administrator known as the branch chief responsible for each crop. The branch chiefs, who in effect made most of the decisions on research programs, tended to look for short term results of immediate relevance to their own crop. Basic research was "pie-in-the-sky" for some branch chiefs, says an ARS plant physiologist. He adds that other chiefs were aware of the need for a good basic research program and would have created one, had it not been for the restrictions on funds and on hiring that have been placed on the ARS during the last few years.

Second, there seems to have been no one above the level of branch chief in the old ARS organization to stand up for the importance of basic research. Graumann, the former director of the plant sciences division, indicates that the impetus for basic research had to come from the scientists at the bottom, not the administrators at the top. "ARS administrators make no attempt to encourage or discourage basic research," he told *Science*. "This is left to the basic scientists. The administrators are concerned with fulfilling broad missions, basic and applied, such as improving the production efficiency of corn or oats. At no time did I bother myself with whether scientist Smith should do basic research in the area of photosynthesis. We didn't say so much should be reserved for research on photosynthesis or nitrogen fixation. We assumed the scientists at the bench level who were working with this kind of thing would, in counsel with their branch chiefs, see the critical needs to which they should address themselves." Asked what kind of scientific decisions an administrator would make, Graumann replied, "He doesn't, other than making sure we have a proper balance of scientists to accomplish our missions."

What kind of opportunity is there for ARS scientists to do basic research? Administrators say there is ample opportunity, and point with pride and some pain to the instance of Holley. Holley, however, is not a good witness for their argument. "There is the freedom within the system to support basic research," he told *Science*, "but it just isn't used. The reason it worked for me was that the director of my lab, W. H. Allaway, thought my work was important and gave me the support

Briefing

Congress Picks Up Technology Gauntlet

Since the expulsion of the science advisory apparatus from the White House, Congress has become the focus of a considerable amount of recent buzzing and humming about science—or, more accurately, about those aspects of technology which have national implications.

In late March, the powerful Senate Commerce Committee invented a new subcommittee on Science, Technology and Commerce with Senator John V. Tunney (D–Calif.) as its chairman. The committee will oversee science and technology activities in the Commerce Department. Its staff coordinator explained that, with the White House science office gone, the Assistant Secretary of Commerce for Science and Technology, a post just filled by Betsy Ancker-Johnson, a physicist formerly with the Boeing Co., has become "one of the two highest ranking science officials in government."

The new subcommittee will look first into energy conservation and regulation, including a Tunney bill to fund research on low-polluting auto engine alternatives. Then, later this spring, it will delve into a subject little studied by Congress: science and innovation as it relates to national productivity, and the apparent decline in national trade posture in high technology products.

Tunney is one of Edward M. Kennedy's (D–Mass.) closest friends in the Senate, and the arrival of a technology subcommittee under him has obvious implications in extending Kennedy's reach. Staffers on both sides indicate the two will work "hand in glove," which could mean a Mutt-and-Jeff style act with Kennedy, through oversight of the National Science Foundation, looking into basic academic research and Tunney, through the Commerce subgroup, tracking technology and trade. This duo will obviously carry one step further when in the summer the Office of Technology Assessment, of which Kennedy is chairman of the board, is established.

In the House Mike McCormack (D–Wash.), although only starting his second term in Congress, was just made chairman of a subcommittee on energy of the Committee on Science Astronautics, which of itself is something of a feat. Among McCormack's other achievements (he is a scientist by training) are a completed study of energy research policy—of which all 1700 copies were gone within a week—and a new seat on the Joint Committee on Atomic Energy. With the emergence of McCormack and Tunney, it would seem that science—or rather technology—has acquired two new lieutenants in Congress.

—D.S.

Pauling, Wald Support Shell Strike

A group of 29 scientists has joined the list of 11 environmental groups already supporting the 3-month-old strike of the Oil, Chemical and Atomic Workers (OCAW) union against the Shell Oil Company (see *Science*, 13 April 1973). Nobel prize winners Linus Pauling and George Wald, as well as environmental expert Barry Commoner, were among the signers of a statement that termed the success of the strike as "critical" and called American workers "unwitting 'guinea pigs'" in past re-

to do it full time. The previous director had thought it was worth half my time. But for Allaway, I would not have finished the structure [of the yeast alanine transfer RNA molecule] before someone else did and I would not have gotten the Nobel prize." Holley adds that, in his view, "Few administrators in ARS have the foresight to support basic research, because they don't recognize its importance for their own mission."

Besides the luck of the draw in the attitude of their administrator, another kind of restriction on "bench scientists," as scientists are referred to in the ARS, is the unwritten rule that they must conduct their research on the crop plant for which their funds are earmarked, whether or not it is the most suitable organism for the purpose. Even Hendricks, who headed a lab specially assigned to do basic research, set himself the limitation of always working on seed plants. ARS scientists say this restriction has eased somewhat since the reorganization last year, but H. R. Carns, chairman of the newly created Plant Physiology Institute at Beltsville, told *Science* that "If money has been appropriated for tobacco, then people funded by it are fairly well limited to working with tobacco. They may use other plants to supplement their work but only to supplement it." Scientists could work on *Chlorella* (an alga frequently used for basic studies of plant biochemistry) but it would require "careful assessment," Carns said. No one at the Plant Physiology Institute is working on *Chlorella* at present. Asked how serious a handicap restriction to a crop plant might be, the editor of *Plant Physiology*, Martin Gibbs, rated it as 'serious to quite serious.' "If you are trying to get to the basic cellular level, crop plants are not necessarily the organisms I would select. But with ingenuity you can get round this, providing that you have people who can devote the time and effort to doing so," Gibbs said.

With administrators leaving research decisions pretty much to the branch chiefs, the branch chiefs having an immediate duty to solve the short term problems of their particular crop, and the "bench scientists" ruled by their particular branch chief's attitude toward basic research, it is possible to see in principle how a strong fundamental research effort of the type advocated by the Pound committee could have failed to flourish within the ARS administrative system. A similar predominance of short term needs seems to have prevailed in the state agricultural experiment stations, although it is tempered by their responsibility for training researchers.

Even assuming the Pound committee is largely correct in saying that the federal and state basic research effort is poor and needs to be improved, that does not necessarily mean that the present activities are not in their own way of benefit to agriculture. Moreover, it is easier to change directions on an expanding budget, and for the last few years the ARS has been held on tight rein. In making its case for a better basic research effort, the Pound committee has said some things which are bound to hurt. Maybe understandably, administrators in the ARS seem more interested in stonewalling the committee's arguments than in addressing the issues they raise.

—NICHOLAS WADE

Briefing

searches into the medical hazards of environmental contaminants. The statement called on Shell to take a stand "more consistent with the public interest" by accepting OCAW's demand for a voice in health and safety issues. Through an innovative clause, OCAW seeks a joint labor-management committee with authority over health and safety issues, but Shell has maintained that these are its legal responsibility alone.

At a Washington press conference on 12 April, the convenor of the ad hoc group, Samuel S. Epstein, environmental toxicologist at the medical school at Case Western Reserve University, stressed that scientists have a stake in getting big companies like Shell to cooperate in examinations of the epidemiological and environmental hazards of most substances. The disputed contract clause, which has been accepted by more than 15 other companies, would open the way for such studies through the establishment of the joint labor-management committees.

Although the scientists signing the statement and represented at the press conference clearly all supported OCAW in the strike, it became apparent in the course of the questioning there that they had not taken a stand on related issues, such as a boycott of Shell products now under way. It was equally unclear whether the cosigners, as a group, would take any further action vis-à-vis the union or Shell.

Nonetheless, a union cosigner, Lorin Kerr, medical director of the United Mine Workers of America, saw advantages in having the prestigious scientists put forth such a statement. "For too long," he said, "occupational health has been isolated from the mainstream of public health. . . ." Kerr called on medical and environmental researchers to pay more attention to what he regards as an underrecognized, underfunded branch of medicine.—D.S.

John Burns a Candidate for Marston's Job at NIH

Serious candidates for Robert Marston's old job as director of the National Institutes of Health (NIH) apparently are being asked to fly to Florida to see President Nixon's friend Elmer Bobst as part of the screening process. In fact, many government scientists are saying that the Bobst interview is the one that counts most. As has been noted in this space previously, Theodore Cooper, director of the National Heart and Lung Institute and a leading contender for the job, has made the trip.

So, reportedly, has John J. Burns. Burns, a Ph.D. whose field is pharmacology, is vice president for research at Hoffmann-LaRoche, Inc., Nutley, New Jersey, one of the country's largest drug houses. Before taking a job with the pharmaceutical industry, Burns, who is well regarded by his scientific colleagues, worked for several years at NIH. Presumably, he would bring to the NIH a flair for business management that the Administration is looking for in its agency heads. Burns, a bachelor who reputedly works 20-hour days, is thought to have made a very favorable impression on Bobst, himself a former leader of the drug industry. Now well into retirement, the elderly Mr. Bobst is honorary chairman of the board of the Warner-Lambert Company.—B.J.C.