

Science Politics: An Invitation from the White House

If the 2-year hiatus* in the award of the National Medal of Science denoted an estrangement between the Nixon Administration and the scientific community, the ceremony for 11 Medal of Science winners on 10 October would have to be interpreted as signaling a desire by the White House to patch things up.

According to those who have attended the ceremonies in the past, this year's event was more carefully staged and better attended than previous ones in recent years. And in contrast to most earlier ceremonies, when presidential comments tended to be fairly perfunctory, President Nixon this year was obviously well primed and prepared. He spoke for about 10 minutes without notes, but his remarks had a beginning, middle, and end as well as a definite point. It is also worth noting that Nixon made the effort on a day when the war in the Middle East was raising serious questions for U.S. policymakers and when Vice President Agnew would announce his resignation.

Nixon made no allusion to Agnew's troubles, or to his own over Watergate, except possibly in one wry aside which drew laughter when he said "we who are not the scientists, because there is no political science, I can assure you. . . ." Under the circumstances, it is understandable that Nixon might wish to increase rapport with any sector of the public. Nevertheless, the President's ceremonial gesture, combined with Administration overtures to professional scientific and engineering societies in recent months, would seem to show a disposition toward a domestic détente in science.

There was nothing startlingly new in what Nixon said, but he used the Middle East conflict to give emphasis in developing the two main themes of his remarks. First he addressed himself to the issue of military research, a sore point in the period when the Vietnam war alienated many university scientists from the Johnson and Nixon administrations. Nixon noted that "through the years it has been neces-

sary for the scientific community to make a contribution in the area of defense, and I could only remind this audience that unless the United States were strong and its strength were credible at the present time, we would not be able to play the role that we believe is a peace-making role in the Middle East or in any other part of the world."

Then, however, he went on to say, "For the first time in 12 years the United States at the time these awards are being made is at peace with every nation in the world, and that is symbolized, it seems to me, and brought home by the fact that the eleven award winners are concentrated in the area of peaceful enterprise."

He devoted the major part of his remarks to a discussion of the energy crisis and its implications for American science. Nixon described self-sufficiency in energy as a national goal and achieving it as a major challenge to scientists. Alluding to the concern of scientists over the research budget, he drew a clear parallel between the federal support of research for defense or space objectives in the past and expanding support of "peaceful uses" of research now. He gave the impression of one making an offer he felt scientists could not and should not refuse.

Too much significance should not be read into guest lists, but the audience at the award ceremony in the East Room of the White House was a large and ecumenical one. The event was organized through the good offices of National Science Foundation Director H. Guyford Stever, who is also science adviser to the President, but arrangements were approved by the White House. In addition to the medalists and their families, those attending included Cabinet officers and members of the White House staff, notably Treasury Secretary George P. Shultz, presidential counselor Melvin R. Laird, and Office of Management and Budget Director Roy L. Ash, key men in determining Administration decisions on funds for science.

On hand also was a large delegation from the science establishment, from both the Washington chapter and elsewhere. Notable among the guests was Jerome B. Wiesner, who was President Kennedy's science adviser and is now president of the Massachusetts Institute of Technology (M.I.T.). His presence is worth marking since he was on the White House "enemies list" which came to light when the Watergate hearings were beginning. M.I.T. was also the subject of a stillborn White House staff memo which proposed the institution as a target for punitive cuts in federal funding (*Science*, 20 July). In general, a mild spirit of letting bygones be bygones seemed to prevail.

The portion of the President's remarks in which he discusses the energy crisis follows:

In that connection, if I could again relate the problems that we presently have and face in the Mideast to the future insofar as government support of research is concerned, the flare-up in the Middle East reminds us again of how dependent the United States, and even more so, of course, much more so, Western Europe and Japan are on the oil supplies of the Mideast, and what is happening in the Mideast today reminds us again of a fundamental fact that we must face up to in the years ahead.

The United States, as a great industrial power, cannot continue to be dependent upon an uncertain source for energy which could be cut off at any time. That is why one of the major goals of this Nation must be to become self-sufficient in energy.

Now to say that is easy, to accomplish it is difficult. But this opens, of course, a great new peaceful challenge to the men and women of science. While we are short on oil reserves, as you know, the United States has almost half the known coal reserves in the world, but developing coal in a way that it can be a clean fuel, developing it in a way that excavating it will not despoil the geography or the environment too much, this is a great task for science and requires a much greater contribution in the field of research than we presently have been making, than we have made in the past or are presently making.

A second area so well known to the scientific community is in the area of nuclear power. And here the peaceful use of nuclear power, the fast breeder reactor, the possibility of even leapfrogging that and going to fusion for purposes of creation of peaceful power at a cost that will be competitive, this is another area which could help us toward becoming self-sufficient in energy, which, as a Nation, we must adopt as a goal.

I turn then to a subject of concern to all of us, particularly to young Americans, the subject of the ecology, the environment. And we often hear that produce energy and all that is required to produce

* The last award ceremony was in early 1971.

National Medal of Science Winners

The National Medal of Science was presented to 11 recipients of the award for 1973 in ceremonies at the White House on 10 October. The medal is the federal government's highest award for achievement in science, mathematics, and engineering. The President is advised on the selection of recipients by a committee of scientists currently chaired by physics professor Charles P. Slichter of the University of Illinois. The recipients are as follows:

Daniel I. Arnon, University of California, Berkeley: "For fundamental research into the mechanism of green plant utilization of light to produce chemical energy and oxygen and for contributions to our understanding of plant nutrition."

Carl Djerassi, Stanford University: "In recognition of his major contributions to the elucidation of the complex chemistry of the steroid hormones and to the application of these compounds to medicinal chemistry and population control by means of oral contraceptives."

Harold E. Edgerton, Massachusetts Institute of Technology: "For his vision and creativity in pioneering in the field of stroboscopic photography and for his many inventions of instruments for exploring the great depths of the oceans."

William Maurice Ewing, University of Texas, Medical Branch at Galveston: "For extending and improving the methods of geology and geophysics to study the ocean floor and to understand the last remaining unexplored province of the solid earth—that which lies under the sea."

Arie Jan Haagen-Smit, California Institute of Technology: "For his unique contributions to the discovery of the chemical nature and source of smog, and for the successful efforts which he has carried through for smog abatement."

Vladimir Haensel, Universal Oil Products Company, Des Plaines, Illinois: "For his outstanding research in the catalytic reforming of hydrocarbons which has greatly enhanced the economic value of our petroleum natural resources."

Frederick Seitz, Rockefeller University: "For his pioneering contributions to the foundations of the modern quantum theory of the solid state of matter, and to the understanding of many phenomena and processes that occur in solids."

Earl W. Sutherland, Jr., University of Miami: "For the discovery that epinephrine and hormones of the pituitary gland occasion their diverse regulatory effects by initiating cellular synthesis of cyclic adenylic acid, now recognized as a universal biological 'second messenger,' which opened a new level of understanding of the subtle mechanisms that integrate the chemical life of the cell while offering hope of entirely new approaches to chemotherapy."

John Wilder Tukey, Bell Laboratories, Murray Hill, New Jersey, and Princeton University: "For his studies in mathematical and theoretical statistics, particularly his pioneering work on broad analysis and synthesis problems of complex systems, and for his outstanding contributions to the applications of statistics to the physical, social, and engineering sciences."

Richard T. Whitcomb, National Aeronautics and Space Administration, Langley Research Center, Hampton, Virginia: "For his discoveries and inventions in aerodynamics which have provided and will continue to provide substantial improvements in the speed, range and payload of a major portion of high-performance aircraft produced throughout the country."

Robert Rathbun Wilson, National Accelerator Laboratory, Batavia, Illinois: "For unusual ingenuity in designing experiments to explore the fundamental particles of matter and in designing and constructing the machines to produce the particles, culminating in the world's most powerful particle accelerator."

it is directly contradictory toward our goal of a clean environment, and the answer is that must not be so and anyone in the scientific community would agree, it is not necessarily so.

We face, for example, it is said, the possibility of a fuel shortage particularly in the northeastern part of the United States this winter. We believe that we can find a way to meet that problem. But those who particularly and exclusively, should I say, concentrate on the need for clean air, a better environment, would recognize the truth that if one freezes to death, it doesn't make any difference whether the air is clean or dirty.

And so, which comes first? The energy in that case, but, and here is the problem for science, we can and must develop the energy that America needs for its jobs, for its progress, for its transportation, but at the same time, develop that energy in a way that will not despoil the environment of our country, and in fact will clean it, as one of the award winners from Southern California, his citation, will indicate today.

Finally, ladies and gentlemen, let me simply conclude by pointing up something that I know concerns many of the scientific community and that is why it is that the budget for science is not moving up at the levels that many of you think is essential if the United States is to maintain a position of leadership in this area.

Well, the budget is a problem in many areas. I can only say, however, that in the field of basic research, when it comes to problems of energy, when it comes to problems of the environment, the other areas that I have mentioned, we must allocate a larger proportion of our national income to these areas, and by doing so we not only will make a contribution toward the scientific community and developing the scientific capabilities of our people, but we also will make a very great contribution to a better Nation here at home.

What I am saying very simply is this: We all know that because the United States needed a concentration on defense at a critical time, and then later a concentration on space, that this opened broad, new vistas in the area of science, and this also resulted in a much greater Federal contribution and the justification for it from a budgetary standpoint, but now as we turn from war to the works of peace, we must not cut back on that research.

What we must do is to channel the efforts in the field of research to peaceful uses, the field of energy, ecology, and not to mention—and not, of course, by mentioning these two to in any way downgrade the efforts we should make in the field of health, education and the others, which these citations will cover.

How serious Nixon is about achieving the objectives cited in his remarks will be indicated by future budgetary activities. In recent months, however, there has been plenty of evidence that the Administration wants to make changes not only in the substance of science policy, but also in the way that policy is made. The most obvious in-

indicator was the shift of the science advisory apparatus from the White House to NSF. Underlying the change seems to have been not just a dissatisfaction with the science advisory machinery, but also with the basic relationship between the scientific community and its federal patrons which has prevailed since World War II.

Not too deep an excursion into the sociology of science is necessary to find that the science advisory apparatus has been dominated by university scientists who gained prominence in the mobilization of scientists and engineers during the war. In the last decade, that relationship has grown less comfortable. The young turks of World War II have become the old guard. They have held on to positions of influence, and younger colleagues have not yet moved up to succeed them. At the same time, the Vietnam war caused relations to sour between many university scientists and the Johnson and Nixon administrations. A number of influential university scientists extended the habits of academic freedom to the science advisory arena, adding opinions on policy to technical advice, and often doing so in public. Furthermore, university scientists tended to display a coolness toward both Johnson and Nixon of which neither could have been oblivious.

This year there have been clear signals that the Administration was looking for ways to modify the prevailing ties with the scientific community. Probably the clearest of these came in public comments by William O. Baker, president of Bell Laboratories, who is widely regarded as the outsider who is best informed and most influential in Administration science affairs. At a meeting of the American Physical Society in April, for example, Baker said, "Now we continue our plea that the national community respond to the new opportunities and above all to maintain the vital independent linkages between those who know and do science and technology and those who govern and administer for the public benefit. Our Academies, and above all our scientific and professional societies, have been repeatedly and warmly considered in creating new combinations of public and private resources for the progress of research, learning, and development."

Baker went on to note that "we are heartened" by an open letter to the President from the Congress of the Joint Engineering Societies offering

Scientists and the Public Interest

"The public interest movement in the United States is in a critical time of transition," declares Samuel S. Epstein, one of the leaders of a campaign to give consumer advocates more clout. Epstein believes that this is the time for public interest groups to get together with each other or, at the very least, to make an effort to know what the others are doing. To this end, he proposes the creation of a new organization that would serve as a focus or "rallying point" for all the public interest groups in the country. As presently conceived, one of the main functions of this organization would be to collect and disseminate information about who's who and what's going on in the world of the public interest specialist.

Epstein, professor of environmental health and human ecology at Case Western Reserve University in Cleveland, Ohio, finds fault in the present state of the art of public interest advocacy that might be corrected by some kind of coordinated effort. As he sees it, there are two major deficiencies. One is a lack of initiative. Consumer groups, he maintains, spend too much of their time running around putting out brush fires. The other is the lack of responsiveness of scientists and engineers to societal issues. He charges that scientists in general, and committees of the National Academy of Sciences in particular, often fail to give advice with the public interest foremost in mind. Therefore, he would like scientists specifically representing the public to be included in the membership of all relevant government committees.

Issues such as these were discussed recently at a meeting on "Science, Technology, and the Public Interest" at the Brookings Institution. In letters of invitation, participants were asked, "... is there a need to develop an organization such as an 'Academy of Public Interest' or an 'Academy of Unrepresented Interests'?"

The conclusion, apparently, was that there should be a national organization but that the creation of an academy is a bit too ambitious.

What will happen, in all likelihood, is this. A yet-unchristened organization will open an office in Washington with a small staff. It will either publish a newsletter or help finance one that a public interest group already has going—a newsletter with information about what pieces of consumer legislation are in Congress, what problems exist in federal agencies that merit attention, and what actions various individual groups are taking. Also envisioned is a national roster of scientists who are both qualified and willing to testify on public interest issues or to sit on government committees. The organization, says Epstein, might also publish a journal and sponsor an annual meeting.

If this coordinating organization comes into being, it will be funded by the Monsour Medical Foundation, which sponsored the meeting at Brookings. The foundation, located in Jeannette, Pennsylvania, about 20 miles from Pittsburgh, was created in 1966 and dispenses about \$600,000 a year. Approximately half of that money is used to provide medical school scholarships for students who will practice in the Jeannette area.

The role of the scientist in advising the government on public interest issues was also a principal topic of discussion at a recent meeting in Alta, Utah, which was sponsored by the American Academy of Arts and Sciences. There, representatives of learned societies met with members of public interest groups but, by the end of the 3-day conference, apparently showed no inclination to take any clear action. Although many scientists present reportedly believed that the general sentiment of the memberships of learned societies is that they should do something, it is unclear what the members want, or whether they would pay the higher dues that public interest activities would inevitably require. According to participants, a suggestion at the meeting that the societies develop lists of members willing to help out in public interest issues evoked little response.

—B.J.C.

help in devising and executing a sustained policy for the use of science and engineering. At hearings on science policy machinery held in July by the House Committee on Science and Astronautics, both Baker and Stever alluded to a broader potential role for professional societies, and then on 10 September, Stever invited officials of the scientific and engineering professional societies in to explore in general terms the contributions the societies could make to science advisory/science policy problems.

Some initiatives had been taken earlier by the societies. Prompted at least in part by a concern over the change in venue of the science advisory operation and the slow pace of progress toward establishing an Office of Technology Assessment for Congress, American Chemical Society President Alan C. Nixon had taken the lead in creating a Committee of Scientific Society Presidents. The group met in June and again in early October and

appears to have made some progress toward developing a common attitude and policy on taking a more active role vis-à-vis federal science policy. A similar pattern seems to be developing with the engineering societies.

Immediate prospects that the professional societies will make efficacious science advisory inputs seem rather doubtful. Most of the disciplinary societies have only recently begun to come to grips with the problem of modifying their traditional concern with narrowly professional matters to give more emphasis to the economic interests of their members and to public policy issues. Friction between university and industry members or between managers and bench scientists remains to be reconciled in some organizations. And there are also residual jealousies among scientific societies and ill will between scientific and engineering societies.

In favor of greater professional society activity in the policy arena is

that the societies do after all represent a national cross section of scientists or engineers. Furthermore, the elected officials of the societies tend to be somewhat different in personality and interests from the university scientists who have dominated the science advisory apparatus. It is not a clear-cut contrast between organization men and individualists, but there are differences in style and temper which may make the society regulars more congenial to the present Administration. Not least of all, most professional societies have displayed uncertainty about what their aims and functions should be, and the Administration's offer of participation could help fire them with new purpose.

All in all, it would be obviously wise for the scientific community to examine carefully the new terms which President Nixon seems to be offering. However, the recent invitation from the White House did, figuratively, seem to be directed to scientists and engineers in general.—JOHN WALSH

Auto Pollution: EPA Worrying That the Catalyst May Backfire

High-level administrators at the Environmental Protection Agency (EPA) are considering whether they should do away with the catalytic converters that U.S. automakers are planning to install on some 60 percent of their 1975 model cars, which they will start making next summer. The move may be taken to avoid what one official terms a "technological backfire."

This sudden review has been spurred by several tests which show that the catalyst, originally designed to reduce hydrocarbon and carbon monoxide emissions, may at the same time be spewing unacceptable amounts of another dangerous pollutant: sulfuric acid. What officials will determine in the next week or so in a special "white paper" to be sent to the administrator of the EPA is whether, on balance, the benefits of the catalysts outweigh this potential health hazard.

Preliminary testing by EPA scien-

tists, and those at Ford Motor Company and at Esso Research and Engineering, Inc., show that the platinum-lined catalyst is promoting the conversion of sulfur in gasoline into sulfuric acid mist, a process that is often demonstrated in freshmen chemistry courses and commonly utilized in industry. Moreover, the projected roadside concentrations of this sulfuric acid mist range from 3 to 15 times those which top health officials consider safe for asthmatics, elderly people, and possibly children.

EPA's top air pollution enforcement official, Robert L. Sansom, Assistant Administrator for Air and Water Programs, when asked if the catalyst might be withdrawn for 1975 cars, replied that the various studies still need to be correlated, but that "if it shows there's a substantial health hazard, of course we'd consider it." And Stanley M. Greenfield, As-

sistant Administrator for Research and Development, stated, "Both the federal government and the industry have to think seriously about the full implications of catalysts . . . before the decision is made to go ahead." In a recent internal memo he urged a thorough review of the problem and concluded, "If this requires that oxidation catalysts not be utilized in 1975 motor vehicle models, so be it." EPA's new administrator, Russell E. Train, is aware of the problem and is expected to make a statement about it soon.

What is so potentially embarrassing to the EPA about this development is that, since the agency's establishment in 1970, it has spent untold numbers of man-hours and taxpayers' dollars bringing the reluctant auto industry into compliance with the landmark 1970 Clean Air Act. And, for their part, automobile manufacturers have developed the catalytic converter as the means of achieving the 90 percent reduction in hydrocarbon and carbon monoxide emissions which the act requires.

Originally, the 90 percent standard was to take effect beginning with 1975 model cars. Under an EPA decision of last April, nationwide application of this standard will be postponed until the 1976 model year. However, in the