you complete your PhD, you should appeal immediately to your local draft board. Write a letter, giving the board all essential academic details, attaching letters of support from your department head and thesis advisor. If you are a good advocate of your own cause, by all means request to appear in person before the board. The last sentence of your letter should say, "If you will not reconsider my classification, please consider this my formal request for appeal." (Don't have a chip on your shoulder. You can irritate the board with the wrong letter.) At the same time, make sure your school sends the board the requisite forms (no. 103 for graduate students, no. 109 for undergraduates).

If your local board turns you down, request that your appeal be sent to the appeal board in the state in which your school is located. Should your state appeal board also reject your application by a vote that is not unanimous, ask your local board for Presidential appeal (provided by the national appeal board which is appointed directly by the President).

A unanimous vote of rejection by your state appeal board ends your own appeal rights. But any other party (your congressman, Scientific Manpower Commission) may request a review of your case from the state director, in your local-board state, who in turn can elect to send your case to Presidential appeal. If this fails, the national Director of Selective Service may be asked for review, and he may send your case to Presidential appeal.

Industrial physicists who have been reclassified 1A and seek deferment may request that their cases be studied by the scientific advisory committee in their state. The committee will then make recommendations to the state appeal board as to the essential nature of the physicist's work. The appeal process for industrial physicists is then similar to that of students.

Current practice. In general, the higher your review, the better chance you have of continuing your studies until completion of your PhD (or continuing your critical work). This is because state boards have a broader view than local boards, and Presidential review considers your case from the viewpoint of national interest. State or Presidential reviews usually restore deferment to worthy PhD candidates.

Students and scientists seeking more information on the draft should obtain a copy of "Draft Act" for 25¢ from the Scientific Manpower Commission, 2101 Constitution Ave., N.W., Washington, D.C. 20418. The Commission will also be happy to assist students, scientists or employers who have problems with Selective Service.

The scientist as legislator—a talk with Weston Vivian

Weston E. Vivian, Democratic Congressman from the second district of Michigan and former teacher and industrial scientist, enjoys a perspective on political events that few other scientists or lawmakers possess.

In a recent interview we had with him on Capitol Hill, Vivian told us that Congressional interest in science has yet to reach a peak, that staff and time limitations effectively check Congressional supervision of federal science and that he, himself, would like to see greater scientific involvement in the economy of the nation. He also spoke of what it feels like to be both engineer-scientist and Congressman, what his personal conflicts are and how scientists can make their voices heard to greater effect in Washington.

Vivian, early in his career, was undecided whether to become a lawyer and go into politics or pursue the life of science. He first chose science and went on to earn his MS at MIT and his doctorate in engineering at the University of Michigan. After several years of research and teaching at Michigan, he and a group of university scientists founded the Conductron Corp., a company that has specialized in radar and electronics work.

Then two years ago, Vivian returned to his political and legal bent by running for Congress, defeating the incumbent by a bare margin and becoming the first Democrat to represent his district since the early days of the New Deal. He was subsequently appointed to the House Committee on Science and Astronautics, one

of the key science committees in Congress, having jurisdiction over the National Science Foundation, National Bureau of Standards and National Aeronautics and Space Administration.

In recent years scientists have seen Congress involve itself more and more in scientific decisions, penetrating not only into budgetary matters but also into scientific coördination and values for the entire nation.

We asked Vivian:

• *What do you see as the future trajectory of Congressional interest in science?*

"Congress is far from reaching its peak of interest in science. The impact of science and engineering over the past hundred years is just beginning to be reflected in Congress now. Congress is merely catching up with the times. I expect more and more functions to be transferred to science committees within Congress."

• *Is Congressional concern over science largely a pork-barrel interest?*

"It's becoming more of a pork-barrel interest than before, simply because R&D now absorbs some $16 billion in federal expenditures each year, one dollar out of every seven spent. But it's not the conventional pork barrel. In years past, the pork barrel produced immediate jobs or a brand-new bridge.

"This is not so with science today. Few science projects do create many jobs. What they do, however, is strengthen the economic resources of a region. The construction of major scientific enterprises in a district tends to mean economic strength over dec-

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ades and even generations. Consider my own district, for example. It's a very prosperous one. But I'm concerned that it's becoming a one-industry district, and I want to help diversify its industry."

● *What do you see as limiting Congressional involvement in science?*

"First, there is the continuous conflict between the Congress and the executive. Congress's powers are very great. But the activities of Congress are restricted by time and staff demands. Congressional staff members are totally saturated. I, myself, am interested in a great many topics, most of which I simply don't have the time to look into. And I barely have enough time to formulate intelligent questions for my staff members to work on."

● *Would you alter the thrust of our science policy in any way?*

"I feel that we are not providing enough support to the economic sector as opposed to space and defense. Other nations are putting a larger fraction of their effort into developing better products for commercial use. Secondly, I'm very much concerned with extending our ability to train scientific people to work in underdeveloped countries.

More panel decisions. "I also would like to see the 'judgement of peers' method of decision play a larger role in evaluating grant proposals. The National Science Foundation does a good job in this respect, but I cannot say the same for the Defense Department or the Space Agency. Many people in the federal agencies have their own blind spots and prejudices, particularly when it comes to awarding a large number of small-and-medium sized projects."

● *What sort of career do you have in mind for yourself? Is your political activity merely an interlude to your industrial scientific work?*

"I spent some 20 years in engineering and science, and enjoyed best the scientific side of my work. I have now spent about two years in political life. I can visualize myself, the voters willing, enjoying a generation as a politician and later as a statesman (as all politicians fondly hope). But there are moments when I wonder whether I took the right step, whether

all the exasperations and stresses in the life of a Congressman are worth the sacrifice of a scientific career."

● *As you sit in committee, listening to hearings, is there sometimes a conflict between your scientific attitudes and your political values?*

"Quite often. Many topics important to science are not politically attractive to my constituents. For example, I have strong interest in building up the technological capabilities of nations overseas. The scientific evolution of mainland China fascinates me; I'm very much concerned about establishing scientific contact with the Chinese. Some of my constituents regard such interests as heresy. Yet I feel they are justified both from a scientific and national viewpoint.

Public attitude changing. "Then there are matters that I'm interested in as a scientist but which people in my district might consider as trivial. They wonder, 'Why should anyone care about the spin resonance of some metallic ion?' But this problem of public appreciation of science is not now as serious as it was ten years ago. The public is beginning to realize that even those scientific things they don't understand can be very important."

● *Would you recommend political life to other scientists and engineers?*

"I find many activities in life enjoyable; science is one, but political activity is no less so. And I would certainly recommend the latter for scientists who feel so inclined. Day by day political life, however, is not the same as the day by day life of science. It is a life of dealing with thousands of people, all too often through only superficial contacts or on trivial matters. The subject matter we deal with, though, is by no means trivial."

● *Do you sometimes recognize a science pressure group in Congress?*

"Yes, but nothing compared to those that exist in other fields. In fact, I rarely get pressure from scientists, even though I am on two science subcommittees. And very few of my colleagues ever mention such pressure from scientists as we receive from manufacturing, labor, conservation and other groups. I would say that the science bloc works principally on the executive rather than on Congress."

● *What can scientists do, either as individuals or in groups, to make their voices heard in Congress?*

"The most productive thing they can do is organize their arguments in rational presentation, condense them into brief subject matter expositions, and then visit their Congressmen. Letters, not one but several, are important also. When many write on the same subject, the matter doesn't become crowded out from the Congressman's mind for sheer absence of pressure. Frankly, I think scientists should communicate more often with Congressional committees. I find very little of such communication.

● *Is there, then, too little activity on the part of scientists in Washington?*

"Scientists tend to view the federal government as the executive. Scientists rarely see the Congressional side. They perceive of the administration and its specialists as colleagues, persons with whom they can communicate. But, I regret to say, most scientists conceive of Congress as a remote world of untrustworthy persons, incapable of profitable response. Scientists are also afraid of being accused of playing politics."

● *But so many scientists complain that they get no response when they do write or come to Washington.*

"Depends with whom they communicate. Many science committee members attend hearings frequently. Some others rarely attend at all. The scientist has to learn who these people are. You have to distinguish between the interested and the uninterested.

Scientist's view wrong. "The view the typical scientist has of the average Congressman is inaccurate. Scientists fail to recognize that many interested Congressmen want to receive competent advice. Congress cannot monitor billion-dollar programs without learning from scientists what are the good and bad portions of the science appropriations. Most committee members take their technical responsibilities very seriously and do their best to reach judgments based on whatever sound information they can derive."—BH