Letters

Atomic Scientists and the Political Mystique

The review, in your issue of 24 January, by Adolf A. Berle of *The Atomic Age*, a collection of papers from the *Bulletin of the Atomic Scientists*, delineates the issue between government —the man of government and the political scientist for whom the reviewer speaks—and the scientists and science of today, of the atomic age. To those, whether scientists or not, who recognize that war and the issue of war and peace cannot be left to the men of government, Berle concedes much, more than men of his persuasion and background are in the habit of conceding. But in the end, in a summation heavy with the dead hand of authority, he tells us that scientists are naive and fall short of the majority of mankind when it comes to understanding how to accomplish a change in national and world affairs: Men in government know best.

Churchill furnished the slogan about Russia, "a riddle wrapped in a mystery inside an enigma"—that is to say, Russia was beyond our understanding. In much the same way Berle makes government a mystery:

> Now government of any kind, let alone government on a world scale, is perhaps the most amazing and the most mystifying achievement of men. To a historically trained mind, it is a major miracle that government was achieved and is maintained in any substantial area of the earth's surface.

Again:

> But it so happens that power is itself a mystery whose explanation has scarcely even been intellectually organized.

He seeks to calm us by putting nuclear war in perspective; class struggles and international struggles have killed five million here, and fifty thousand there, and there are weapons other than nuclear explosions that can destroy the human race—chemical and biological means. With a mixture of condescension for scientists in politics, and admiration for their good intentions in entering this mysterious area, Berle implies that they should stick to their knitting:

"Physical scientists entering politics were, of course, out of the field of their precise competence." Who can deny it? But what becomes of democracy if only professional political scientists are to rule or participate in government? And what have the *cognoscenti* accomplished? In our time, two world wars, other wars, cold war, and the threat of extermination.

Scientists have "moved . . . into a field about which most human beings know rather more than most scientists." Who comprises the electorate in this country, knowing rather more than the scientists who moved into the political arena? Almost one-third vote for any Democrat, almost one-third for any Republican (the parties are hardly distinguishable in platform, and in foreign policy are largely bipartisan). And 36 percent did not vote when President Kennedy was elected. With 10 percent of the population Negro, the 36 percent abstentions were obviously not chiefly disfranchised Negroes. Apathy and disgust because of the lack of real choice offered over the years must be recognized as a symptom of the low level of political development in the country, below that of most political democracies—but, oddly enough, somehow ahead of that of our scientists!

Meanwhile, scientists carry on, despite all warnings. Pugwash remains and continues. *The Bulletin of Atomic Scientists* plans "to expand its role by contributing to public knowledge the implications of science for society and by stimulating both scientists and nonscientists into thinking and acting in those increasingly important areas where science and public affairs meet."

J. B. C. Woods
93 Perry Street, New York 10014

Predicting Returns from Research

Lueck's letter of 7 February concerning scientific advisers to Congress suggests that there exist, in quantity, hard-boiled scientific administrators who can with confidence see the long-range profit-and-loss statements resulting from a proposed piece of research. Having striven in this direction myself for a number of years, I have concluded that Lueck overstates the case. I would like first, however, to argue against the profit motive in this application.

If one of these most wise administrators can see a cash profit at the end of a piece of research, it would seem the research should be sponsored and conducted by the profit-motivated industry and not by the government. Obviously, things are more complicated than that. "Profit," in Lueck's sense, must be related to national goals and the shifting sands of international politics. If such an administrator were presently seated he would be assisting in the control of research within the frame of whatever political administration succeeds President Johnson's (and Chairman Khrushchev's). Unfortunately, research does not produce in phase with political changes.

If, as I have found, predicting the ultimate profit from a proposed piece of research is a highly uncertain business, it may be sounder to aim for a high level of productivity with a high *average* value. May I suggest a guideline for this purpose? All research proposals that are reasonable by almost any standard should be accepted, if possible. The crux of the scheme is close and systematic review of each project to see if the research is proceeding as well toward its technical goals as one ought to expect. Rather than ask if bug counting in eastern Manitoba is a profitable piece of research we might ask if it is being conducted according to the most modern (and economical) methodology and if the investigator's progress is consistent with the goals he set himself in his original request. If not, it is possible that it is not being vigorously and purposefully pursued, or it is possible that the project is too difficult—even impossible of success—within the framework in which it is being carried on. Either of these cases is about 75 percent justification for canceling the project.

It is clear that many elements of private judgment will be applied to the

selection of government-sponsored research, but I would like to argue in favor of an approach which contains features of both freedom and control in such a way as to permit the productive scientist an opportunity to prove the administrator wrong in his value judgments.

RICHARD I. ROSSBACHER
Box 78, 822 Boughter Road, Dahlgren, Virginia 22448

Travel Funds, Biochemists' Meeting

It has recently come to my attention through several inquiries that some confusion exists regarding support for attendance at the Sixth International Congress of Biochemistry by grantees of the U.S. Public Health Service. Officials of the Public Health Service have informed me that costs for attending this international congress in New York City, 26 July to 1 August 1964, are permissible charges under domestic grants in exactly the same manner as would apply to attendance at an ordinary scientific meeting in the United States.

The limitations on international travel under PHS grant regulations apply to meetings held outside the United States. PHS grants which include funds for attendance at this scientific meeting or similar meetings not otherwise limited may support appropriate costs of attendance at this congress.

ROBERT A. HARTE
Office of the Secretariat, Sixth International Congress of Biochemistry, 9650 Wisconsin Avenue, NW, Washington, D.C. 20014

Teaching Science in Turkey

I am teaching sociology this year in the Universities of Istanbul and Ankara and intend to prepare a couple of my books in sociology for translation into Turkish. I have 1500 students, of whom those at Ankara are sophomores in the faculty of political science and those at Istanbul are from all classes in the faculties of economics and letters. In the course of my lectures, which concentrate almost entirely upon social change and the dynamic aspects of sociology, I referred to the subject of carbon-14 dating. To my surprise, none of my students or my assistants (Ph.D.'s) had heard of it before.

Since I am not well versed in physics, I had to find some explanation of carbon-14 dating that I could understand myself and could use to answer the students' requests for further information. One book dealing with the subject was listed in the American library at Istanbul, but it had been stolen. I found a copy of it in the similar library at Ankara and discovered that it was good up to 1960. But work in this field moves very fast. Even if the 1960 book had been translated into Turkish and had been a best seller, it would have been outdated by the time I needed it. I had some 1963 and 1964 issues of *Science* and searched through all of them, even the advertisements and the letters, and put together what I could to explain unstable isotopes and carbon-14 dating methods. I had to repeat the resulting lecture (during which I showed an advertisement for an electron microscope) seven times to different classes.

The archeological museum at Ankara uses carbon-14 measurements and dating and has a newer book about it. These two books and one or two informed persons constitute all the sources of information on the subject I could find in Turkey. Yet this country is trying to teach science in Turkish. I think a more radical solution is needed. I do not believe the sustained volume of literature necessary to make modern science intelligible and usable can be supported in the Turkish language. Should not all graduate education in a country such as this be done in English?

CARLE C. ZIMMERMAN
Faculty of Economics and Sociology, University of Istanbul, Turkey

Effective Legislation

In the editorial "Devil's advocates" (28 June 1963, p. 1365) a sane pragmatic approach is adopted to the immediate problem of making available to Congress effective advice in those enlarging areas of legislative action in which extensive technological and scientific capabilities and judgments are involved. The formation of special groups of able scientists, charged with the responsibility of digesting all the pertinent facts and then giving concise advice, is already becoming essential to effective legislation in the Western democracies.

To enforce this argument, however, the editorial points out that some eminent scientists would make poor legislators (some of them currently make bad scientific administrators, too!)—but it leaves the impression that the status quo should be preserved, the seats in Congress or Parliament being largely occupied by men with business, legal, or trade union backgrounds. From a political rather than a budgetary viewpoint it seems to me even more important to devise realistic means for gradually changing the composition of legislative bodies than to improve their present scientific judgments.

This can be illustrated, within limits, by analogy with many large companies operating within certain established industries, such as railroading and steelmaking. Such companies have been compelled by the pace of technological progress to provide their managements with highly competent advisers and consultants. In addition, in such industries it is becoming essential for the active board of management to include a substantial proportion of men whose natural bent and formal education lies, not in the arts, commerce, industrial management, or law—although they must have a flair for, and adequate training in, management—but in engineering, science, and technology. Management without such men stomps through the 1960's on a wooden leg. They do not, of course, replace the active engineers as consultants on specific technical problems, but the management of modern industries must embrace a wide spectrum of the intuitions, background interests, and mental habits which underlie "rational" decision and policies.

It is even more important that the members of our legislative bodies should, in time, represent a balance of the interests and achievements of current society. This is true irrespective of the present power of particular political machines or of graft in specific local wards. The necessary social upheavals in Britain during this century owe an immeasurable debt to those members of Parliament who not only had great political gifts but also had their mental roots firmly in the worker's world. These men were able to launch out into politics through the trade unions, and then to keep in touch at the "grass roots" level by virtue of their background. If they failed to become established in political life they could return to effective roles within their trade union organizations.

Within Western countries it is almost impossible at present for a young man with legitimate political aspirations to