

of interest, if surprising, to learn that the Armed Forces keep a total of sixteen officers on hand to answer congressmen's questions and to help them with constituents' problems involving the military.

Since the NIH has no such largesse to dispense, one wonders what Greenberg would suggest being done to get its story before Congress. It could, of course, begin by spending a few millions annually on publicity operations in order to render the public as familiar with NIH as it is with NASA. Possessing no planes or submarines, and having no bases in Florida, it might conceivably try to gain the attention and favor of congressmen by setting up a system of medical care for them.

Instead of being chided for not competing in the use of expensive and diversionary public relations techniques, it seems not unreasonable—and quite judicious—to congratulate NIH for sticking to business and doing what Congress established it to do. It is even probable that Fountain's subcommittee, with its keen interest in seeing that federal funds are properly spent, would take a dim view of the establishment of the sort of public relations system that would be necessary to bring NIH as much before the public eye as NASA or the Armed Forces.

For some time Greenberg has seemed to emphasize the view, held by many nonmedical investigators, that NIH is finally getting its comeuppance, that the honeymoon is over, and that corrective measures were long overdue. Lost to view is the fact that degradation of NIH extramural programs will have a profoundly deleterious effect on all scientific research—not merely on medical research—and on university operation in general. Also being somewhat obscured is the fact that the Fountain subcommittee has not turned up evidence of gross mismanagement although it has apparently found numerous relatively small items that need revision. But its published reports to date contain no evidence that sweeping reforms are indicated. Nor is there good reason to believe that the net effect of the recent changes in the NIH grants manual, or the proposed new regulations, will be to save federal funds.

Greenberg is absolutely right in holding that someone needs to speak for NIH, and that its story needs telling vividly and aggressively to the nation at large. One might go further and consider the possibility that, unless the

story is told quickly and well, NIH may reap catastrophe. But it is fatuous to suppose that vast publicity campaigns, conducted tours, and various sorts of handouts can really do the job. Owing to the nature of its work, NIH has a great deal of trouble telling its story and blowing its own horn. It is not simply a question of hiring skillful science writers and putting on nationwide TV programs. Putting a man in orbit is infinitely more dramatic and more comprehensible to the lay population than basic studies on mucoproteins, however hopefully one points out what certain experimental results, if they occur, may lead to in terms of cure and prevention of disease.

To get its story across to laymen and to legislators, to claim the credit it so richly deserves, and to be allowed to continue exploring new avenues of research administration and stimulation, NIH needs help from groups that have, up until now, for the most part remained silent. Support for NIH programs should logically come from university officials and investigators all over the country. These groups can, if they will, acquaint their communities and their congressmen with the meaning and success of NIH programs to date. Until and unless these key groups rouse themselves, NIH is not likely to be able to extricate itself from its current dilemma.

It is a horrendous example of a splendid federal achievement that may fall or be emasculated almost by default. And I am not sure that some of the tacks taken by Greenberg are helping to prevent such a result.

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Chapman has energetically exercised his freedom to draw whatever implications he liked from my remarks about NIH and Fountain, but I suspect that we really see eye to eye on the main issue, which, as Chapman agrees, is that NIH has not made any reasonable effort to acquaint the general public with its good work. I don't think NIH should emulate the NASA and military publicity carnivals, and I said so, though apparently I didn't convince Chapman. I think he is right in saying that university officials and investigators should help to tell the NIH story, but this does not reduce the role that NIH itself has to play in representing

the medical research community to the public. Chapman says that NIH's business is "biomedical research and education," and that it therefore should be congratulated for sticking to its business and not playing public relations. What, may I ask, is the business of the "university officials and investigators" to whom Chapman feels the task should fall? Why can't both NIH and its grantees work on the problem together? As I have repeatedly written, NIH has a splendid story to tell to the American public. I think it would be good for the public and NIH if that story were told.

—D. S. G.

### Broader Outlook for Research

I believe that much of our research and development expenditures is oriented in quite a narrow vein. When one speaks of civilian, industrial-technology research, the image is almost invariably that of product- and industry-oriented research, as illustrated by the building industry, the leather industry, and others. These are only one type.

Many other research programs can be undertaken for all, rather than one segment of, civilian industries. The following areas quite urgently need support: metal working, advanced quality control and reliability for civilian product manufacturing, cost and time estimation models for debugging automatic equipment—this might make available estimates for better decisions for or against automation, information-theoretic measures of mental work (fitting tasks to people), talented manpower utilization, design process or approach (as compared to research approach), biomechanical and any physiological measures of learning, prediction models for human task performance (the realm of science does not even know the equation of a human motion, a quite elemental concept which must be developed before further progress can be made); plus many other behavioral areas like organization theory, communication control, and group dynamics.

Universities can and should be doing this kind of research. Yet the only time such work is emphasized is if it happens to intersect with the more glamorous programs now underway.

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