the development of human potentialities at all levels. It takes more than an educated elite to run a complex technological society." In the light of genetics this makes sense. Full development of human abilities is thwarted by inequality of opportunity in caste and class societies. Nonfulfillment of human potentialities is a waste of human resources. This may have been unavoidable in a world in which man eked out a meager existence from recalcitrant nature. The cultural flowering of ancient Greece may have been impossible without slave labor, and the social graces of baroque Europe may have been impossible without the toil of its peasants and artisans. But to waste human resources is inexcusable in a world of technology able to produce enough and to spare. Even those who are convinced that their substance is finer than the common clay can no longer demand that the growth of others be stunted so that they themselves may blossom.

To say that equality of opportunity is a necessary condition for human self-realization and self-fulfillment is not to solve problems, it is merely to state them. And perhaps the central problem is, in Gardner's words (*7*): "How can we provide opportunities and rewards for individuals of every degree of ability so that individuals at every level will realize their full potentialities, perform at their best and harbor no resentment toward any other level?"


**References**

1. Th. Dobzhansky, *Evolution, Genetics and Man* (Wiley, New York, 1955).
2. ———, *Mankind Evolving* (Yale Univ. Press, New Haven, 1962).
3. G. S. Ghurye, *Caste and Class in India* (Popular Book Depot, Bombay, 1957).
4. N. K. Bose, *Man in India* **31**, 107 (1951).
5. B. Wallace and Th. Dobzhansky, *Radiation, Genes, and Man* (Holt, New York, 1959).
6. S. Wright, in *The Biological Effects of Atomic Radiation, Summary Report* (Natl. Acad. Sci.–Natl. Research Council, Washington, 1960).
7. J. W. Gardner, *Excellence* (Harper, New York, 1961).


# News and Comment

## Medical Research Funds: NIH Path Through Congress Has Developed Troublesome Bumps

Important elements in both the Senate and the House are showing increasing dissatisfaction over Congress's decade-long honeymoon with medical research.

There is no possibility of reversing the role of the federal government as the principal source of funds for medical research; it is well established in that role, and there is no demand for reducing support or developing alternative sources of funds. What is stirring the discontent is the generous and uncritical attitude that Congress regularly takes toward the budget of the National Institutes of Health, which is the principal channel for federal funds for medical research and allied activities. Along with defense and beating the Russians to the moon, medical research has regularly found no built-in opposition on Capitol Hill. NIH, perhaps uniquely among federal agencies, goes to its appropriations hearings prepared, not to defend its budget requests, but to explain, in response to friendly questioning, why it is not asking for more. The outcome of these hearings invariably has been appropriations above the Administration requests. Since there is no political mileage in opposing medical research, the appropriations have regularly been passed by both houses, despite the grumblings of a few critics. These grumblings have risen year by year along with the NIH budget, until at present they constitute what NIH officials regard as something more serious than mere background noise from fiscal conservatives.

The critics are dissatisfied, first, with Congress's practice of giving NIH more than the Administration has requested for it, and then, with NIH's procedures for supervising the use of the money by its research grantees. The opposition is expected to come to a head shortly when the Senate takes up an NIH money bill that provides a total of $900.8 million, which is $120.4 above the Administration's request. Leading the opposition is Senator William Proxmire, Democrat of Wisconsin, who has introduced an amendment to cut the appropriation back to the Administration's figure. In previous years, such efforts were considered unlikely to meet with success, but last year a similar amendment, offered by Senator Prescott Bush, Republican of Connecticut, attracted 37 votes and lost by a margin of only 13. Pressure in behalf of the expanded appropriation would increase if the margin narrowed, but a few years ago there was no possibility whatever of lining up 37 senators against enlarging the NIH appropriation.

The House has already passed its version of the NIH budget, adding only $60.4 million to the administration's request. The bill in that chamber went through without any significant effort to sidetrack it or lower the amount (the vote was 371 to 24), but the opposition for next year is finding sustenance in a report issued last week by the intergovernmental relations subcommittee of the House Committee on Government Operations. The gist of that report was that NIH is pouring funds into medical research without making very much of an effort to keep track of how the funds are being used. NIH officials, in testimony before the subcommittee, did not dispute the charge that their follow-up on grants is quite limited; they argued, rather, that the most productive method in financing research is to pick good people with good projects and let them carry out their work without encumbering them with excessive reports or visiting inspectors. The subcommittee, expressing a skeptical view of human nature, doubted that this was a wise way to deal with federal funds. The report came too late to have any effect on the NIH budget in the House, but it is being cited in the Senate in support of the argument that generosity puts no pressure on NIH to watch its pennies.

The congressional generosity enjoyed by NIH is a phenomenon that produces

envy and puzzlement in other agencies —with the exceptions again of defense and space, which, so far, have not had to fear for their funds. To receive the full request year after year would be considered a paradisiacal state of affairs by most agencies, but NIH has consistently done far better than that. At the same time, its growth has been phenomenal, and would have been so even if Congress had been merely content to go along with Administration requests. In 1953 the Administration request was $55 million; Congress appropriated $59 million. By 1960 the request had risen to $294.2 million; Congress raised this to $400 million. In the fiscal year that ended last month, the Administration asked for $583 million; Congress appropriated $783 million. Last year the Administration counteracted congressional generosity to a limited extent by refusing to permit NIH to spend some $60 million of its appropriated funds. This step helped promote economy, but it also produced dividends of congressional ill will that the Administration, in its troubled relationship with Capitol Hill, would rather not acquire.

### Return on Investment

Underlying the congressional ferment over the NIH budget is the imponderable of what is a proper return on investment in medical research. Since no one is for disease and Congress is in favor of science and understands very little about it, the presumption has always been in favor of those who advocate larger expenditures. This presumption accounts for the unparalleled success enjoyed by the heads of the appropriations subcommittees that handle the NIH budget—Congressman John E. Fogarty, Democrat of Rhode Island, and Senator Lister Hill, Democrat of Alabama. As lay students of medical research they have no peers in their respective houses; when a critic rises to question their advocacy of a larger budget, they can cite medical "breakthroughs," achieved and just around the corner, ad infinitum. As their witness, they cite the truly phenomenal results that have been achieved through the burgeoning of medical research under federal financing, and implicit in their defense of the bigger budget is the possibility that the budget cutters may unwittingly eliminate the one project that may find the key—to who knows what? It is not easy to stand in opposition to these arguments. Even so devoted and astute a budget slicer as Congressman H. R. Gross, Republican of Iowa, finds himself on difficult terrain when he takes on medical research. Gross has a good time terrorizing the State Department, but when he takes to the floor to debate the NIH appropriation, he generally manages no more than a few pot shots. For example, in a recent House debate he noted that a report on NIH grants contained a list which stated " 'applicant, type of institution,' and then the heading is 'discipline." I am curious to know what discipline means in this connection," Gross said.

The ranking Republican on Fogarty's subcommittee, Melvin R. Laird, of Wisconsin, explained to Gross that "these are fields of medical science. . . ."

"I am just curious to know what the word means," Gross went on. "Is it a medical term, or what is it?"

"It is generally used in medicine. It is a specific field of study," Laird explained further. Gross, apparently satisfied, then went on to pick lightly on other matters.

(It should be noted, however, that Gross and other skeptics do have their influence on the congressional guardians of NIH, who, in turn, have a great deal of influence on NIH. In the same debate, Gross demanded information on a previous expenditure of "some $89,000 for a study of behavioral cocktail parties." Fogarty replied that "we immediately took this up with the Public Health Service [the parent of NIH], and I understand the project has been discontinued." In other instances, NIH has been advised by its congressional friends that it would be advisable to steer away from funding studies that easily lend themselves to ridicule. However, it would be incorrect to assume that NIH employs this principle as a guiding star in selecting projects, or that Fogarty expects it to. When critics leaped on NIH for supporting Professor Harry Harlow's study of relations between infant monkeys and their mothers, Fogarty's subcommittee stoutly defended the project and came close to denouncing the critics as ignoramuses.)

While Fogarty and Hill have led the way in assuring NIH of a generous and ever-growing supply of money, NIH itself is encountering increased congressional concern over the manner in which it is using the money. Economical operation is a holy grail for Congress, and as the NIH budget grows—and therefore attracts more congressional attention—NIH officials are pressed to assure Congress that they are keeping a sharp eye on the taxpayer's dollar.

In testifying before the Government Operations subcommittee, James A. Shannon, NIH director, simply was not talking the language of Congress when he testified that, in providing funds for research "selection of good men and good ideas—and rejection of the inferior—is the key. All subsequent administrative actions having to do with the adjustment of budgets and so forth are essentially trivial in relation to this basic selection process."

### Grant Is a Trust

Shannon added: "The research grant is, in essence, a trust. It is an award made to an individual or group after a critical examination of past performance and of the proposed line of research. Once the award is made, the use of granted funds is left to the investigator and the institution. They are accountable for exercising the trusteeship responsibility."

"Are you suggesting," Shannon was asked, "that the scientists who prepare budget requests for their research projects are best qualified to determine the minimum requirements of the project?"

"Who else could do it better than they?" he replied.

The questioner proceeded, and it soon became plain that Shannon and the committee were operating in different worlds: "Isn't it a human tendency for people to ask for the funds they would like to have if past experience suggests these are the amounts they might get?"

Shannon replied: "we have never operated our business that way. Nor do we believe that most scientific groups in the country have an asking and a selling price for their product, which is research activity. I think we get a realistic appraisal of what they need to do the job. What they ask for is the result of their best judgment."

Shannon conceded that NIH has been slow in responding to a committee report, issued last year, which urged NIH to develop tighter supervision over the use of its money. But he maintained (i) that it is difficult to recruit personnel who can exercise meaningful supervision and (ii) that the supervisory function properly belongs to the universities and other institutions where the research takes place.

"What is to prevent a scientist," he was asked, "from getting a substantial grant for experiments on white mice and deciding, instead, that Paris in the spring

is nice and taking a trip around the world and occasionally dropping in at medical schools so long as he is careful to turn in a report in which he has all the receipts for travel?"

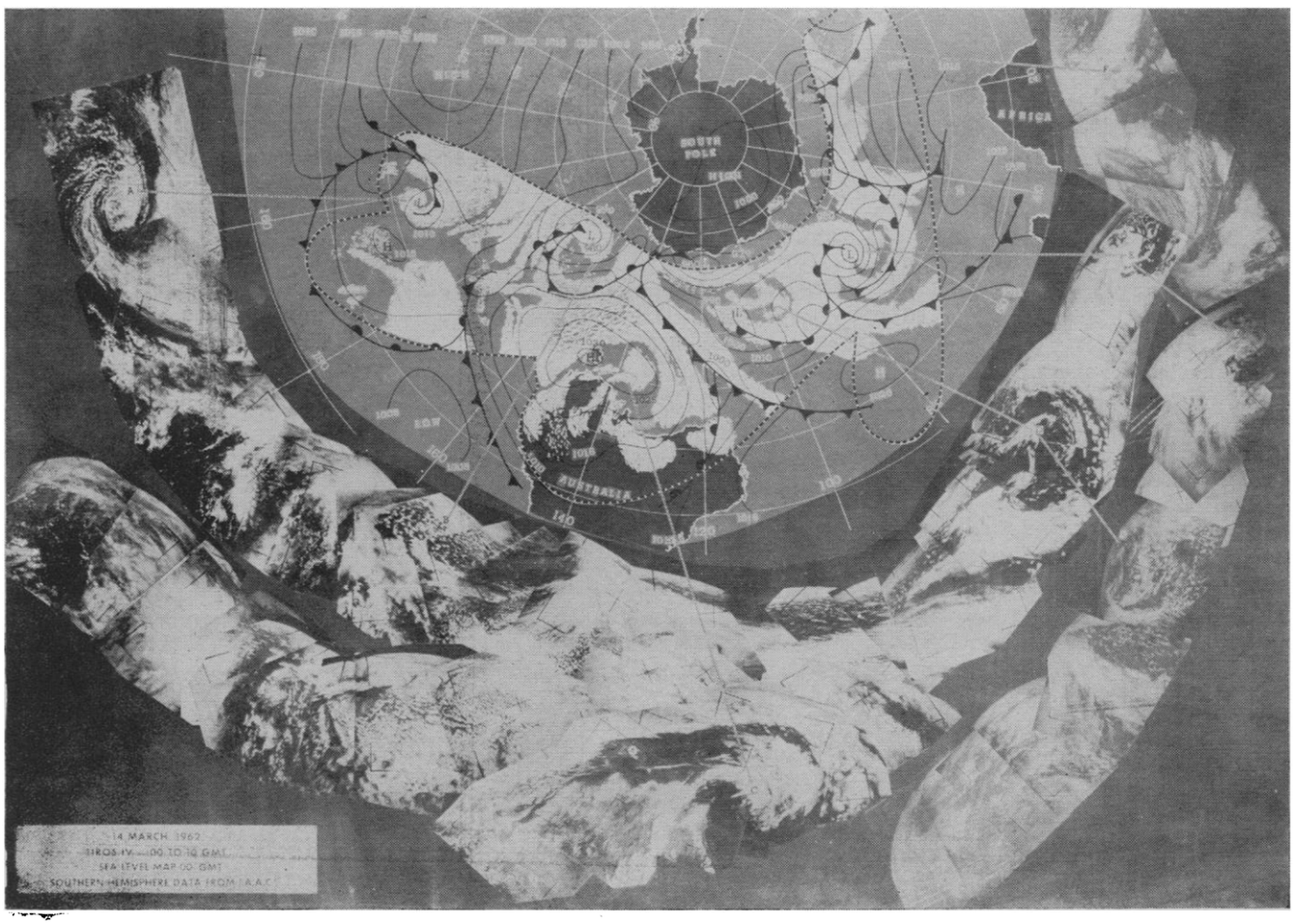
Shannon replied that "the discipline of the institution is our only protection against precisely what you said. We have no internal devices that protect us from that." He added that any scientist who sought to divert funds for such travels would probably run afoul of his institution, and, if he did not, his failure to produce results in his research would make it difficult for him to obtain a renewal of his grant.

"What you are saying," a committee staff member suggested, "is that it would be difficult for anybody to get two trips around the world on the basis of a grant for white mice."

Shannon and his associates at the hearing rejected this interpretation but failed to win the committee over to their confidence in the self-discipline of the scientific community.

The outcome of the hearing was a report which has been warmly received by those Senators who have been planning this year's attack on another expanded NIH budget. The closing remarks of the report are: "It appears that Congress has been overzealous in appropriating money for health research. The conclusion is inescapable . . . that the pressure for spending increasingly large appropriations has kept NIH from giving adequate attention to basic management problems. The committee expects NIH to give high priority at this time to the task of correcting its management deficiencies and strengthening its capacity for the effective and efficient operation of these vital health programs."

The mounting congressional opposition represents no immediate danger to NIH's growth. The Administration regularly seeks larger annual budgets for NIH, and there is no significant effort afoot to reverse this practice. But the congressional habit of adding to the administration requests is now coming within range of the opposition, and if it should succeed, the opposition would very likely start probing into the Administration budget, which might easily yield some cases that would not promote the cause of generous budgets for medical research.—D. S. GREENBERG




Composite pictures of cloud conditions in the Southern Hemisphere, taken on 14 March by Tiros IV, superimposed on a surface weather map. The area covered measures over 10 million square miles and extends more than half way around the world. The spiral vortex in the upper left (*A*) represents the center of an intense cyclonic area nearing the end of its life cycle about 1000 miles east of New Zealand. The storms on the right (*D*, *E*, and *F*) are new, vigorous storms in which the cold air has just begun to spiral around the storm center. Bands of bright clouds parallel to the Australian coastline (*C*) indicate showers and thunderstorms; immediately offshore the skies are clear. In the more poleward regions, vast areas of cloudiness alternate with clear areas; such patterns locate frontal zones separating warm, moist, overcast air masses from cold, dry air sweeping in from Antarctica. Isobars and fronts on the map show the movement and boundaries of the air masses. The generally overcast area near Antarctica is produced by the strong westerly winds—known as the "roaring forties," "howling fifties," and "screaming sixties"—and the cyclonic storms imbedded in them.