

Health Research: A Small Start for an International Center

Geneva. What might have been the beginnings of an international institutes of health is coming to life in much more modest form as a research unit within the structure of the World Health Organization headquarters in Geneva. The new unit was shaped by a compromise which eliminated a proposed biomedical research division and left two divisions—epidemiology and communications science.

The decision to create the unit, taken formally last May by the World Health Assembly, WHO's governing body, came at the end of about 5 years of discussion of the concept of a "World Health Research Center" (WHRC). The original and more ambitious design had the support of an impressive international cross section of scientists and even received the blessing of President Kennedy, but drew objections from WHO member governments which forced the compromise. These objections, based mainly on a reluctance to see money and scientists go abroad to a major international research institution, reveal some of the impediments that now face proponents of international science projects.

A balanced and orderly account of the events leading to the compromise is difficult to give. In retrospect, British opposition to the big-lab plan—regarded as a key factor—appears to have been firm and consistent. But there was a period a year or so before the final decision was made when plans for the center seemed to be rolling along—Edinburgh had been mentioned as a possible site—and some informed observers thought the British blockade might be dismantled.

As for a tally of the supporters and opponents of the full-scale WHRC, votes on the proposal provide an unreliable guide. In WHO, as in other specialized agencies of the U.N., the preservation of consensus is the key to the effectiveness of the organization, and adjustments made in lobbies and delegates' lounges usually avoid

awkwardness on the floor of the assembly.

A factor which is difficult to assess is the modulation in the attitude of scientists toward the WHRC proposal. European biologists have been interested in seeing a research center in fundamental biology established in Europe on a regional or international basis, and while the WHRC lab was viewed as a possible answer, it appears that many did not regard it as the only or the best way to realize the ambition.

The cost of the project (a figure of \$145 million over 10 years, exclusive of capital investments, was most often mentioned) was from the start a major hurdle in an organization where budget increases are not voted lightly and demands from other programs are pressing. A scheme for voluntary financing of WHRC by the more affluent countries was advanced as a way to outflank this difficulty, but some observers think that, from the start, cost made inevitable the drastic scaling down of the center and the elimination of the biomedical research division.

What was clear at the outset was that, if a freestanding major health research center was to be created, the biomedical research division was an essential and also the most controversial element.

The tripartite plan for WHRC probably was given its greatest public impetus in September 1963 when President Kennedy spoke approvingly of it in a speech to the U.N. General Assembly and alluded, incidentally, to an "international institutes of health." What apparently appealed to Kennedy most was the opportunity for international cooperation in an important area of research which would be relatively free from the complications of technological nationalism and security problems which afflict research cooperation in, for example, the space or nuclear energy sectors. The proposal, as it came to Kennedy via the

State Department, was also attractive because of its emphasis on research on the somatic and genetic effects of drugs and environmental contaminants, for this was the period of concern caused by thalidomide and pesticide incidents.

The WHO proposal, in which the organization's director-general M. G. Candau has taken a personal interest, evolved over several years. One of its antecedents was a paper given at a Pugwash conference in 1961 by Martin Kaplan, an American who has had a number of years' experience in the WHO secretariat. Kaplan, whose research interests are in virology and epidemiology, is WHO chief of veterinary health and has also served as special assistant for research development in the office of the director-general and was at the center of planning for WHRC. The proposal itself was elaborated by panels of expert consultants drawn from a number of countries (principally European countries and the United States in this case), as is usual practice in international organizations. The full-scale proposal for WHRC was ready for a WHO executive board meeting in January 1965, and was examined in May by the World Health Assembly.

Panels of expert consultants in epidemiology, communications science, and biomedical research provided separate recommendations for divisions in their own specialties, but each set of recommendations emphasized that WHRC should give special attention to man-created health hazards and that the three divisions should be mutually reinforcing.

The consultants on epidemiology defined their specialty as "the medical science which concerns itself with the multiple determinants of the occurrence and distribution of health and disease." Until fairly recently, epidemiologists have been chiefly occupied with communicable diseases, and their control. Now epidemiological methods have been extended to the study of noncommunicable diseases and epidemiologists are increasingly concerned with genetic and environmental factors, the latter including behavioral as well as biological, physical, and chemical aspects.

The blueprint for a division of epidemiology called not only for the population studies which are the mainstay of the discipline but also for research in epidemiological theory to improve its mathematical under-

pinnings, which the panelists regarded as relatively neglected. They also emphasized the need for research on methodology and standardized methods of diagnosis, as well as agreement on definitions of diseases.

The communications science division was seen as applying advanced information-handling techniques and computer technology to the needs of the center and of WHO at large. According to the panel's original design, the division would carry out its own research program in addition to giving assistance in research to other parts of the organization. It was recognized that the demand for statistical and computing services in an organization like WHO will be heavy, and that one of the problems of the communications science division will be to avoid becoming simply a service facility.

In setting forth its recommendations for a division of biomedical research, the expert panel also put stress on the dangers of chemical mutagens and toxic agents. To meet a developing need, the division was conceived as a world center for research on methods of testing drugs and for the collection and dissemination of information on drug safety.

Research on the somatic and genetic effects of mutagenic and toxin agents, including chemicals and viruses, was also to be emphasized. This would entail tests on animals on a scale which, the panelists argued, could probably be achieved only through an international effort. The experts had in mind as a model the studies of radiation effects on mice carried out over a long period and on a large scale at the Oak Ridge National Laboratories.

In addition, the panelists recommended a substantial program in cellular and subcellular research, on the theory that, to understand the action of drugs and other extrinsic substances on biological systems, it is necessary to understand basic biology. According to the planners, not all branches of fundamental biology should be represented; rather, they sought the establishment of a core of activities on aspects of molecular biology which are peculiarly relevant to the studies of the effects of extrinsic substances.

Opposition to the proposal came most explicitly from the British Government. In June of 1964 the Secretary of State for Education and Science of the Conservative Government then in power gave a written answer to a question in the House of Commons which still

Getting Off the Road to Technology Gap: McNamara's View

Defense Secretary Robert S. McNamara last week went to one of the underdeveloped lands—the State of Mississippi—and advised an assemblage of its leaders that they might well join Western Europe in considering the causes and cures of the much-discussed “technology gap.”

McNamara, whose Department's \$7-billion-a-year research and development budget is often cited as a major underpinning of U.S. technological supremacy, spoke in connection with a fund-raising drive at Millsaps College. He did not offer the Mississippians any promise of the Defense Department's wealth, but he did set forth his own diagnosis and prescription for the “gap,” arguing that it is more a managerial than a technological gap, and that the basic ingredient for closing it is simply an expansion of the quantity and quality of education.

“Europe is weak educationally,” McNamara stated, “and that weakness is seriously crippling its growth. It is weak in its general education; it is weak in its technical education; and it is particularly weak in its managerial education. . . .

“In the United Kingdom, France, Germany, and Italy—for example—about 90 percent of the 13- and 14-year-old students are enrolled in school. But after age 15, there is a tremendous drop-off. Then, less than 20 percent remain in school.

“In the United States, 99 percent of the 13- and 14-year-olds are in school. But what is more important, even at age 18 we still have more than 45 percent pursuing their education.

“In the United Kingdom, there are some 366,000 students enrolled at the university level. Thus only about 10 percent of college-age individuals are attending institutions of higher learning.

“In Germany, there are about 270,000 students at the university level, and this represents only about 7 percent of all the college-age youngsters.

“In Italy, there are about 240,000 students at the university level; which, again, is only about 7 percent of the college-age group.

“In France, the picture is somewhat brighter. Some 400,000 students, about 15 percent of the college-age group, are actually receiving higher education.

“But compare these figures of industrialized Europe with the United States. Here we have more than 4 million students in college and this represents some 40 percent of our college-age population.

“What is also to the point is that modern managerial education—the level of competence, say, of the Harvard Business School—is practically unknown in industrialized Europe.”

Turning to the educational situation in Mississippi, McNamara observed that while the state has increased its expenditures, its relative standing nevertheless remains dismal.

“Though it places 14th among the 50 states in the expenditure of personal income going to education, it ranks last among the states in average expenditures per pupil.

“The dropout rate is high, as is the illiteracy rate. The median of 8.9 years of schooling is substantially below the nation's average of 10.6 years.

“The State's college-bound students rank well below the national average in scores achieved on the American College Testing program. Recent national scholarship tests show Mississippi to be last in the country in the percentage of students achieving a passing score.”

McNamara limited his gifts to advice. Mississippi, he said, might profitably adopt the Employee Matching Plan, under which business firms match, dollar-for-dollar, contributions that their employees make to educational institutions.—D.S.G.

sums up the official British case against a large international health research center. In his reply the minister quoted a memorandum from the Government's Advisory Council on Science Policy which made these three main points.

(1) In their Report for 1961-62, the Council pointed out the disadvantages of concentrating the best scientific talent in one place, thus isolating it from teaching functions in national universities, and recorded the view that centralized institutions were valuable only where research facilities required were of such an expensive character that they could not be provided on a national basis. The facilities required in this case need not be exceptionally costly, nor beyond the means of most countries with a capability for the kind of research which is in question.

(2) We have had occasion, in our Annual Reports, to comment on the condition of the biological sciences in British universities. Something approaching a revolution is in progress, and a new biology—which is more closely associated with the physical sciences—is now developing. But there is still an insufficient supply of first-class scientists to lead research and teaching in this field at our universities, and our most urgent need is to increase the supply of suitably trained research workers. It would be harmful to this country, and to its progress in biological research, if a number of our leading biologists were to withdraw to an international laboratory.

(3) The belief that the concentration in one very large institution of leading scientists from a number of countries would promote an interchange of knowledge and ideas which does not take place at the present time is, in our view, mistaken. We believe that, on the contrary, concentration of this kind might well have a sterilising effect, and reduce the influence of the people concerned on the development of research.

Some observers think the British position boils down to balance-of-payments problems and anxiety about the "brain drain." But, it is true, a coolness to the idea in nonofficial quarters was expressed through the *British Medical Journal* and *Lancet*. On the other hand, there was some lively advocacy of the proposal from inside and outside the scientific community. Whether, as one leading biologist suggested in an interview with *Science*, there is among British civil servants and scientists "a lack of enthusiasm for international projects generally" is hard to establish.

The official American position was more equivocal. The assassination of President Kennedy 2 months after he had espoused the WHRC idea makes the question of whether he would have pursued the matter an abstraction. The medical research establishment in the United States seems to have been am-

bivalent on the issue, and there are indications that PHS-NIH officials, like their British counterparts, were not anxious to see commitments made which might lead to expenditure of substantial sums for research over which they would have little control at a time when prospects were for tighter budgets at home.

Enthusiasm for the project was most evident among smaller industrialized countries, particularly in Europe, which saw WHRC as providing an opportunity for their scientists to participate and to acquire training in the sort of major research enterprise which these nations could not finance individually. The Soviet Union and the Eastern European countries seem to have taken a wait-and-see attitude during the preliminary stages and to have supported the compromise.

The underdeveloped nations in general approved WHRC in principle. Many of them, however, were reluctant to see the project financed out of the regular WHO budget, since payment of even a few thousand dollars, which in many cases would have been their share of the annual cost, would be regarded as a strain. Some of these nations also apparently had misgivings that the center might turn to research on problems which principally affected the major industrialized countries at the expense of pressing public health problems.

There were ambiguities also in the feelings of leading biologists, some of whom had been involved in the planning for WHRC. The European Molecular Biology Organization (EMBO) was founded in September 1963 to promote the development of molecular biology in Europe and neighboring countries. One of the main interests of the members was the establishment of a regional research laboratory in fundamental biology which would provide European biologists an alternative to emigration to the United States, in the way CERN provided a facility for Europe's high-energy physicists.

Some were convinced that a WHRC offered the best chance for a biologists' CERN, and at one time a proposal for making the EMBO lab the biology division of WHRC was discussed. But the lab envisioned by EMBO and the one in the WHRC plan were different in character, and many biologists seem to have had misgivings about seeking half a loaf.

The compromise (*Science*, 18 June 1965) provided \$500,000 from the

WHO regular budget for the first year's operations of the communications science and epidemiology divisions and placed the research divisions within the WHO structure. Proponents of the original plan had asked for autonomous status on grounds that only an independent lab would attract and keep top men whose main interests were in research.

The original plan had called for a buildup, over 5 years, to a staff of scientists, mathematicians, and technicians of over 700, plus some 150 professionals on fellowships. Under the compromise, a start will be made with a small organization of about 40. Fifteen of these will be professionals, seven in epidemiology and eight in communications science. Critics have argued that, if a small research organization within a large bureaucracy is told to assist with other programs, it will find it very difficult to carry out meaningful scientific work of its own.

On the other hand, the fact that the research divisions were established at all during a time of budgetary stringency can be viewed as a tribute to the skill of director-general Candau. It should also be noted that the basic resolution adopted in 1965 does not foreclose the possibility of a future scaling up of the research divisions and even addition of a biomedical research section.

Arguments for an international research center on the original WHRC lines can be adduced by, so to speak, standing the British arguments on their heads. Certainly there is still margin for dispute over effects of international research programs on national ones.

In practical terms, the demand, for example, for monitoring of diseases on an international basis is virtually certain to grow, and such an activity could presumably be best carried out by a WHRC. As for an international research laboratory in fundamental biology, such a facility could appear as an EMBO lab, as part of the research unit now being discussed as a memorial to the late Representative John Fogarty (*Science*, 3 Feb. 1967), or incorporated in an expanded WHRC. If and when one does appear it will probably signal both an easing of the tight money market in research and a shift in governmental attitudes on the perennial question of the payoff on basic research—in this case, on the relevance of research in fundamental biology to problems of health.—JOHN WALSH