

## Federal and Academic Relationships: The Biomedical Sciences 1974\*

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### I

There has been an abundance of recent comment on biomedical research, related education, and medical services, and on the federal support of all three. This has been stimulated by the dynamics of the federal legislative process including that of the annual appropriation and by rapid substantive changes in all biomedical fields. Equally important has been the difficulty in maintaining adequate program performance in the face of increasing operating costs and a changing perception of the federal support role. Then too, controversy has been a natural consequence of striking differences in executive and legislative opinion concerning what the federal role should be in support of each of these essential activities. The interplay of these factors has interjected a sense of uncertainty into the situation but has not fostered dispassionate consideration of emerging problems of public policy.

The past four or five years have been particularly deficient in this latter respect. There have been few comprehensive studies bearing on public policy within the biomedical field such as might define important issues for purposes of public discussion (1). There is a serious need for studies of the desirable characteristics which should obtain for each program area, i.e., research, education and service; the establishment of a desirable set of comprehensive and interactive goals; the federal role in the pursuit of these; and what is expected of the nonfederal sectors in these respects.

Rather, there has been a tendency, in these rapidly evolving fields, for the informational channels to be jammed by a combination of press interviews and public presentations by federal officials and representatives of voluntary agencies and associations, and by published comment and analyses in the various elements of the special medical and scientific press. In all this the scientists have been surprisingly silent.

The exchanges which have taken place have done much to fuel the fires of controversy and little to provide a full understanding of the basis of the changing objectives of the federal agencies (2). It has not been helpful in the discussion of program proposals to have the informational base of a complex activity limited to a series of individual issues treated as though they are isolatable problem areas. This is a particularly difficult situation which obtains when there is little access to general studies such as those on "training grants"

by a PSAC panel, on medical manpower production and utilization by the staff of DHEW, and the definitive staff studies of NIH and DHEW which deal with broad program issues and serve as the base for later executive judgments.

It is not proposed that any interested individual be made privy to the totality of the discussions which lead to ultimate executive decisions. This would serve as a barrier to the general discussions within an agency essential for the evolution of a sound position. On the other hand, recent federal legislation in the information field seems to have as a primary intent the provision, to the legislature and the public, of the informational base on which important executive decisions are based and specific programs proposed. In the absence of such information there can be little public understanding of what can be expected to be the continuing role of the federal establishment in the biomedical area.

Then too, changes in the federal administrative structure of OMB and DHEW appear to have placed program decision-making at organizational levels deficient in evident scientific and professional competence.

This combination of a poor public information base and a technical deficiency in the administrative structure gives to decisions the appearances of frivolity or triviality. Program planning and related decision-making seem to lack the appearances of crisp competence; and concepts of partisanism and loyalty within a politicized process as policy guides are poor substitutes for openness and competence in the analysis, planning, and execution of programs.

Rapport, understanding, and a willingness to view biomedical fields on a continuing basis within a long-term context has not always been so difficult. The information base in the past, particularly with respect to the biomedical sciences, has been provided largely through the intimate interaction of the career staff of DHEW with society in general and the scientific community in particular. This was broadly encouraged by a number of Secretaries of the Department of Health, Education and Welfare; particularly notable were Marion Folsom and Arthur Fleming during the Eisenhower Administration, and John Gardner during the Johnson years. Although each of these Secretaries had his own problems with top management of the Executive Branch, each favored full and free exchange of information on plans, programs and problems, and extensive use of career staffs in exchanges on problem areas with the variety of interested "publics."

But lest this presentation acquire the character of a simple tirade against the federal agencies, it should be made quite clear that the attitudes of individual scientists and the conventions which govern their institutions are also wanting of perfection. The institutions are particularly important in determining the productivity of the biomedical programs. Those of an academic nature produce the bulk of scientists, contain a large segment of the mature scientific manpower,

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and utilize substantial amounts of federal funds in various biomedical areas.

One could go on in this vein to no particular purpose. Such remarks, colored as they are by personal bias, will have little value in convincing others who are equally biased in an opposite direction and they are unlikely to lead to new courses of action. But, they may be important as a point of departure in establishing the need for the formulation of a new conceptual base, and perhaps new operational conventions for the further development of the biomedical fields, as well as in the formulation of a set of goals, and in developing program strategies for their accomplishment. The balanced effectiveness of the set of activities which might eventually derive from such an exercise could have a profound influence on the health, and indeed the happiness, of every citizen of the nation, and have a considerable influence on many problems with international dimensions.

The satisfaction of such a need will not be a simple matter. It will require a sophisticated understanding of the substance of each general activity, i.e., research, education, and service; and then an inquiry in depth into the role which can reasonably fall to the federal sector and to others in the evolution of essential programs. Of particular importance to the latter inquiries will be the need to consider the long-term consequences of alternative basic philosophies.

The section which immediately follows will bear directly on these needs. It will emphasize the science aspects of the biomedical fields, but with a continuing appreciation of their complex relationships. The dollar value of various programs will not be the subject of detailed comment in this document, and it is to be emphasized that the dollar value of any broad undertaking should be a derivative rather than a primary consideration. But, at any level of federal expenditure for health, particularly during a period of modest and continuing increases, the distribution of support among the related activities subtended, and the terms and conditions of the support, are at least as important as the absolute levels of support which obtain. In a more definitive study of these matters both the total amount and the changing pattern of federal support must be subjected to serious and detailed examination since secular changes of these are the objective evidence of the conceptual base of the activity.

## II

### Some problems

It is not unreasonable, with such large annual expenditures, to expect the nation to be well served by the biomedical sciences, by well-conceived educational enterprises, and by effectively operated medical service systems. Contrarily, the unease expressed by the various biomedical "communities" reflects a general dissatisfaction with the nation's programs in each area. Some complaints seem to be quite reasonable; others are emotion-laden and bitter, parochial in outlook, and self-serving in nature. Nonetheless all should be examined seriously, since the complaints tend to be serious in degree, relate to fundamental tenets upon which programs are based, and originate from responsible people.

The leadership of the *executive branch* is less than enchanted with a number of programs receiving federal support. In their view, some were poorly conceived, some continued although their objectives have been achieved, others are relatively non-productive, and still others, unsuited for continued federal support, much less at their previous budgeted levels. Ac-

cordingly, it has been proposed that some programs be abolished and others contained or redirected.

Commenting on such conclusions, it may be said that the set of conclusions is not unusual in any serious program analysis, particularly if the program is large, and has evolved at a rapid rate. They reflect a fairly conventional view of organizational specialists seeking "more suitable management devices" for the effective executive control of programs and for an increase in program productivity within a new definition of public policy and a new set of program goals. When properly used, such an approach may well secure an increase in the benefit derived from a given federal expenditure.

However, these same criticisms, i.e., poorly conceived, poorly designed, nonproductive, etc., have been the currency of a number of poor management surveys within government in recent years. In consequence, they are suspect unless accompanied by thoughtful and definitive studies of substantive goals, alternative ways of their achievement, and the consequences of the implementation of a derived series of recommendations. Otherwise, superficially reasonable program modifications can be proposed by executive management that challenge the credibility of the objectives of the proposed changes and the strategy to be utilized for their achievement. In such a situation, the proposal may produce concern and disillusionment of the staff responsible for the implementing of change, and of the public which is affected.

Actually, the lack of executive attention to these latter imperatives seems to many to be the central problem in the present federal management of the biomedical sciences. Broad program changes during the past five years are the result of a series of discrete incremental changes, each usually the result of an individual executive judgment; but in the aggregate the series has produced striking changes in fundamental operational policy. Further, the consequence of change has not been anticipated by sophisticated staff documents which examine these consequences within some set of responsible policy guides and the broad strategic basis of the program. Nor have the series of individual actions been viewed as a set of related program decisions with consequences to a number of interactive program areas. Importantly too, an opportunity for quite formal discussions of proposed change with affected "publics" has not been systematically sought. These features of the process of change cast the operations of the federal establishment in a mold characterized by arbitrary action within a setting of inconstant purpose.

As a result, the derivative discussions which follow the proposals for program change tend to be contentious, argumentative, and relate to program detail and support dollars. These considerations cannot, in themselves, lead to well understood and acceptable operating policies, and it has seemed to many that a number of executive actions have been taken because of non-programmatic reasons, including:

1. An intent to restrain federal expenditures as a primary end without regard to the long-term consequences to the programs affected.
2. A reduction in the extent of federal participation in the solution of a number of societal problems in a fashion which does not provide for prior discussion of the operating and philosophical consequences.
3. A conviction that major substantive decisions can be made in the biomedical area by administrative personnel at the political level, and not require the intimate partici-

pation of the career professional staff of the agency, or formal, responsible, competent and open participation of advisory groups both in the formulation of a problem and in the development of a program for its solution. This perception of the current federal conventions is particularly disquieting when accompanied by an explicit executive limitation on Congressional access to the undirected professional advice of career professionals within an Agency (8).

The situation which appears to have developed now results in discussions largely limited to an after-the-decision exchange of biases rather than a search for sound solutions to difficult national problems with a conviction that each is amenable to open and dispassionate examination.

A key administration conclusion, itself arrived at without particular study, is that the primary deficiency in the biomedical areas is a "management" and not a "knowledge" deficiency. This conclusion itself is amenable to reasonably objective evaluation and its validity basic to many fundamental program decisions affecting the health and vigor of the biomedical enterprises. But, the present structure and the operating conventions of the executive branch make a definitive analysis of both the working premise and the derivative judgments difficult and an unlikely occurrence. It does not seem likely that the biomedical area will benefit by careful examinations such as were initiated in the past by the executive branch and conducted by external committees such as those chaired by Bayne-Jones (3), by Bain (4), by Wooldridge (5), by Ruina (6), by some of the committees and panels of PSAC, and by some of the Presidential Commissions which were particularly effective (7).

*Biomedical scientists* are quite troubled by the changing pattern of federal support for many fields of direct concern to them. The changing patterns include:

1. The intent to abandon federal support for graduate education.
2. An emphasis, in program development, on short-term social need rather than a balanced consideration of this and scientific opportunity.
3. The emphasis on the central direction of research.
4. The absence of generally agreed upon policy guides that can secure some constancy of objectives as the base for program development.

Underlying some of the specific complaints of scientists, and more important than the complaints themselves, is the general sense of unease in the academic community. This stems from a conviction that the DHEW and OMB leadership does not have a fundamental understanding of the dynamics of science (8), and the need for the maintenance of excellence and strength of the biomedical establishment. This general unease may stem in part from frustration. Nonetheless, there is a valid base for this in a number of departmental actions which most surely have been based on rationalizations of preconceived notions rather than derived from careful and objective staff study.

These are not trivial matters, although at the present level of public information some of the points made above must be taken to be matters of reasonably well informed opinion rather than of firmly established fact. Contrarily, it is possible to provide a weighted analysis of the likely consequences of major Departmental proposals on the effectiveness of the

biomedical programs, on the general attitudes that they generate in the group of scientists that must achieve the goals that are set forth, and of the likely success of a proposed course of action and alternative ways of achieving a desirable objective.

Such an inconstant and superficial approach is reflected in some of the Departmental proposals that were particularly objectionable to institutions and scientists alike. Some of these now seem to have been abandoned, as a result of Congressional, social, and/or scientific pressure. But, even when abandoned, the manner in which they were handled has had an important influence on the progressive disillusionment of academic science. Five examples are particularly notable, two of which are under continuing consideration.

Importantly, none of these five Departmental proposals appears to have been crisply arrived at as the result of a competent staff study conducted by a group of capable scientists and science administrators and made available for free discussion with the groups particularly affected prior to reaching an initial conclusion to go forward with an action program. Such proposals may surface in the form of an internal memorandum that later becomes generally available; as a note of intent published in the Federal Register (9); as a statement in a public address or press interview of the top staff of DHEW; or as a statement in a completed budget submission. Certainly these are poor media of transmission for proposed actions covering significant program proposals.

In the category of completed actions are:

1. The proposal to abandon or radically modify the NIH peer review system for research grants. This proposal seems to have been abandoned, at least temporarily.
2. The institution of third party payment for patient services provided to research subjects within the NIH Clinical Center. This proposal also seems to have been abandoned.
3. The proposal to abandon the fellowship and "training" programs of NIH. The termination of federal support for graduate education continues to be a goal except perhaps in the case of NCI programs. Substitute programs are limited to a modest post-doctoral fellowship program in narrowly selected shortage areas and to general loan programs (10).

In the category of action proposals still under consideration are:

1. The abolishment of the categorical structure of NIH.
2. The use of federal support dollars to exert direct pressure on medical schools to modify their perceptions of their educational mission (11).

The general environment within which such proposals originate is portrayed by the DHEW Assistant Secretary for Health and Science in a Letter to the Editor of the Washington Post (2) dated January 1974, by several presentations made by the Assistant Secretary (12), and in a quote from OMB appearing in the most recent FASEB Newsletter (8). These clearly espouse the view that though day to day decisions can continue to be made by NIH, the broader decisions will be made at the political level by Presidential appointees, that few of the latter require participation of scientists in the decision-making process, and that NIH would have profited by a more enlightened leadership in the past. This hardly shows a penetrating insight. One suspects that such a comment is rarely without some application to any program at

any time. But of the above notations, that quoted in the Federation Newsletter is the most startling (8).

It is not surprising from this collection of views of the executive branch that the role of NIH has undergone striking change in recent years in its relations to the decision-making process, to the scientific public, and to the Congress. The changes emphasize the role of the Assistant Secretary for Health and Science as a line operator in the decision-making process, and this could be made quite reasonable, but only if mature scientific and professional as well as social and political considerations can be brought to bear in an evident and formal fashion on the decision-making process at top levels within the new functional structure of the Department. There is no barrier to the accomplishment of such a desirable objective save the view of OMB and the Department that it is quite unnecessary.

But such complaints, particularly those relating to the unease of biomedical scientists, are only reasonable if an equally critical examination is made of the attitudes of scientists, the substance of their views and actions; and indeed if this examination is extended to include the attitudes of the managers of the institutions which contain the scientists.

It is clear that the perception of the individual scientist of his societal obligations may be limited; and this is understandable even if these perceptions do not show too much insight into the general nature of the very problems that may cause him unease. Generally, most individual scientists have neither the training nor the detailed information that would make them individually important contributors to the solution of broad policy problems such as must be stated in a social as well as a scientific context, and in terms of complex shared responsibilities of the Congress, the executive agency, the scientist, the institution within which he works, as well as the general public and its specialized agencies (13).

Such a deficiency on the part of individual scientists is correctable by responsible leadership. Meanwhile, it is notable that scientists in general continue to hold consistently reasonable attitudes on the role and importance of fundamental science, both as an end in itself and its utility in the ultimate solution of complex practical problems; in the need for a sound and balanced program among the various segments of science and in each a healthy mix of fundamental, applied, and developmental research; in the need for graduate education supported in a fashion which secures excellence; and the need for both stable institutions and long-range objectives for the continued development of a healthy biomedical science.

But relative to a leadership role in fields of public policy, the instruments available have not been effective. The National Academy of Sciences (NAS) has been unwilling so far to mount serious studies of problems inherent in the contemporary federal attitudes, at least in relation to the biomedical sciences (14). Then too, the Institute of Medicine (IOM) of NAS seems to have been too distracted by the social aspects of medicine and its service systems and too little concerned with the nature and essentiality of a broad science base for medicine. The professional societies, although most have established public policy committees, have not provided adequate staff for the development of an effective operation. Except for the detailed categorical studies of Cancer (15) and Heart and Lung Disease (16), the substantive analyses of the biomedical sciences of a general nature are limited to the earlier reviews by Handler (17) and NIH (18). Modest reports on the generalities of the Biomedical Sciences

by the Welt Committee for the American Association of Medical Schools (AAMS) (19) and on the "Cancer Conquest Program" by the Thomas Committee (20) of the IOM are helpful but were not meant to be inquiries in depth of a more general nature. A number of reports on medical manpower and on the cost of education have been made by AAMS. There have also been a number of study reports by individuals and committees from within the Clark Kerr activity supported by the Carnegie Corporation. But none of these alone or in combination has a capability of providing the needed conceptual base for the medical sciences and related activity.

Meanwhile, the abolishment of the President's Science Advisor as an independent position, the disassembly of the President's Science Advisory Committee and the Office of Science and Technology, have removed forces that could provide effective coupling between the general academic community and the higher councils of government, and a reasonable interpretation of the needs of society and the potential role of science in their satisfaction. Administrative changes within DHEW, as noted above, have done more for the biomedical field than these changes have done to the more general academic and scientific environment of the nation. There has been, then, an effective removal of the internal capability of official agencies to interact broadly with academic science and then mount countervailing forces opposing unwise federal actions in the science area.

*The Management* of institutions with broad involvement with biomedical fields is also troubled with what they view to be an uncertain future. The changing conventions of federal support are reflected in an explicit manner in the executive department's interpretation of the nation's research needs, a diminishing concern for a number of aspects of education, and an increasing will to set qualitative and quantitative goals in the health education and services area. It is apparent that the Department fully understands that it holds the medical institutions in particular hostage through its present support of medical and biomedical programs. It seems willing to utilize the pressure of federal dollars to force compliance with Departmental decisions. This is quite clear in the proposal for new legislation in the health education area (11).

Fortunately the Congress is in continuing disagreement with the Department's attitudes toward the support of what heretofore have been considered the reasonable goals of essential institutions with national missions. The areas in contention are the level of support of fundamental research and the general level of support of programs for both graduate and medical education; the need for some measure of stability for institutions broadly engaged in pre- and post-doctoral training, and the need for open discussion between the career staff of DHEW and Congressional committees on items that relate to scientific needs and opportunities in the achievement of short and long range goals.

*Comment.* Such a litany of complaints, though not particularly helpful in itself, can serve as a takeoff for an inquiry into the characteristics of the operation and support of the related functions of research, education, and service in the biomedical fields; the effectiveness of each function; and the interactive nature of the three within the more general system of medicine. Such characteristics will largely determine the health and vigor of our nation's medical establishment.

There are many short treatments of the biomedical research sciences: on graduate education; on physician and

related paramedical education; and a host of activities in the service area. Taking the number of these studies, one would judge that the biomedical area was perhaps one of the best-studied areas in contemporary science and technology.

Actually, this is not the case. As emphasized earlier, little concern has been expressed in the literature for the further development of a conceptual and philosophical base for these undertakings and for the long-term development of the extensive and important federal portions of these activities. Too frequently, it is not realized that the federal portions of the support programs, as time goes, are still of fairly recent origin. In recent years there has been too little consideration of their conceptual base, and perhaps too much consideration for both the operational details of specific programs and for the financial base of the aggregate enterprise, despite the more general revolutionary advances in this area of science.

The months immediately ahead are particularly suited for a general study of the biomedical fields. It is likely that a compromise between executive and legislative intent will have been forced by the courts, with executive impoundments of appropriated funds curtailed and regularized. Then there is a new budget to consider for fiscal 1975. Though the new budget is without value as a financial proposal, due to the release of massive amounts of impounded 1973 and 1974 funds, it does express in a general fashion Mr. Nixon's view of a "new federalism". This is said to emphasize the payment of federal funds to individuals and the support of services through state and local mechanisms; and to minimize direct subsidy of institutions (21). The translation of this view into action in the medical area, if followed slavishly, will cause serious problems for students, scientists, their institutions, as well as the products of their activities.

For these several reasons, it is both important and timely to review the generalities of the past, present, and future federal activities within the health field within a general context of social need and economic capability. The nation's biomedical enterprises are moving into, or indeed are now in a critical period, and it is difficult to believe that the executive branch is in a good position to analyze the needs and opportunities in an objective and realistic manner.

### III

#### Concerning a study

The development of studies which can serve as a conceptual base for the nation's biomedical enterprises will be a complex undertaking. They must encompass the substantive understanding of the major fields of activity and the general desiderata that should obtain for their institutionalization and support. A simple point of entrance into such an undertaking would be to develop a few simple propositions each of which is applicable to the general purposes of the study. The following can serve as a beginning basis for such an approach.

1. The biomedical sciences are interactive with the general science base, on the one hand, and with medical education and medical services, on the other. No one of these can be considered completely out of context with the other two. All are under stress at the present time.
2. The resolution of the major problems has been made the more difficult by changes in executive attitude and executive structure. These changes have largely neutralized the effectiveness of internal control of public policy and derivative programs at high federal levels.

3. In consequence, a fresh input into the problem from non-federal sources is badly needed. Advantage would be derived from a carefully designed effort with a university base. However, the situations proposed for study are complex. Their study should be preceded by careful planning, and undertaken with an appreciation that a simple rearrangement of previously held biases will not be particularly helpful.
4. Finally, the primary currency of the reports which can issue from such derivative studies will be value judgments. Nonetheless, there are many factual data which must be accumulated and analyzed. These data must encompass the operational characteristics of each major activity within an historical, a developmental, and a contemporary context. Particularly pertinent will be the secular trends which are objective indicators of the maturation of different fields, on the one hand, and changing federal policy concerning federal support, on the other.

But the problems of medicine and the biomedical sciences do not break down easily into a set of simple questions, each derivable from one of these propositions. No combination of the latter will be unique and universal descriptors of the systems under study. Rather the propositions will be most useful as a series of related guides within which a variety of discrete problems can be examined.

Quite apart from the individual studies which may be undertaken, the overriding purpose should be the development of a coherent philosophical base for the nation's biomedical activities. The characteristics of such a base are that it subtends a series of activities extending from fundamental research, on the one hand, and the use of derived knowledge in the management of disease, on the other. Further, it must provide for a reasonable and stable role for the federal establishment which is complementary to what is both feasible and desirable from within the private sector.

It is unlikely that such a study will be undertaken by DHEW on its own initiative or indeed accepted by them as a necessary or desirable objective at this time. Unfortunately too, the executive branch exercises tight control over the bulk of the nation's staff capacity for the examination of biomedical activities. In consequence, it will be difficult for the Congress or a public group to undertake studies in depth on the broad issues in the field without establishing its own staff group. But, this is possible and can be centered about a carefully selected group of thoughtful professionals from within the university community. Such an effort will require an institutional base, a willingness of a number of professionals to devote substantial time to the undertaking, and moderate support for about a two year period.

Freedom for the studies contemplated can be best secured if the studies are undertaken with support from private sources, perhaps as a joint undertaking of several foundations. There need be no duplication of recent studies by others or built-in conflicts of interest.

#### References and notes

The text deals with an array of issues no one of which is explored in depth. Moreover, each is surrounded by some measure of controversy relating to administrative doctrine, to the evolution of public policy, and to the structure of the decision-making apparatus, as well as to the substance of science and the balance between scientific opportunity and societal need. To observe the spirit of the disquiet which now obtains in many quarters is not

difficult; but to provide the validation of a point of view much less easy.

In consequence, the notes and references presented will be most useful as entry points into the further study of the complex operant systems. The brief explanatory notes given with many of the citations may be helpful.

1. (a) *Science and the Evolution of Public Policy*, The Rockefeller University Press, 1973; James A. Shannon, Editor.  
(b) *The Advancement of Medical Research: A Twenty Year View of the Role of the National Institutes of Health*, James A. Shannon, *The Journal of Medical Education*, Vol. 42, p. 97, February 1967.  
(c) *Relationships between Science and Federal Programs*, James A. Shannon; *Federal Proceedings*, Vol. 26, p. 1275, September–October 1967.

These deal with an earlier perception of problems originating in the nation's general fiscal difficulties which were made crisply apparent in *The Economy Act of 1967* and the subsequent impoundment of funds. This curtailment was the more difficult to manage due to President Johnson's concurrent wish for increased emphasis on short term and applied research. This type of pressure was progressively increased and reached a maximum in the Nixon 1970 budget which presented the Congress with substantial reduction in many biomedical budget categories. Importantly, qualitative changes in outlook, including both extensive changes in goals and administrative conventions, had their serious effects in the early part of President Nixon's second term. The destructive effect of these was the more drastic because of the already existing curtailments and a continuing increase in inflation. The viewpoint is largely one of public policy.

2. (a) "Trouble at NIH"; Editorial, *The Washington Post*, January 19, 1974.  
(b) "On the Question of Autonomy", a Letter to the Editor, *The Washington Post*, January 24, 1974, from Assistant Secretary of DHEW Charles C. Edwards.

These pertain to a still unresolved conflict between Departmental authority and scientific competence and the disparate distribution of these within the Department in relation to policy formulation, resource allocation and program execution. This disparate distribution has direct relevance to the citations noted under 8 and 12.

3. *The Advancement of Medical Research and Education, through the Department of Health, Education, and Welfare: Final Report of the Secretary's Consultants on Medical Research, and Education*: DHEW, Stanhope Bayne-Jones, M.D. Chairman (82 pp.). U.S. Govt. Printing Office, Washington, June 1958.

This was a broad examination of the programs of the NIH. It was undertaken as the result of Secretary Folsom's tentative decision to expand biomedical research as rapidly as would be consistent with the maintenance of excellence. The report deals with a perceived need for a progressively expanded Federal support for a number of biomedical activities and the terms and conditions which should characterize such a program. It was completed shortly before Secretary Folsom left office, but with the latter's recommendation it was used by his successor, Secretary Arthur Fleming, as a guiding set of policies for a progressive expansion of the scope of the NIH programs. This approach met with full approval of the Congress with a resulting working relationship that provided the executive proposals for a sound legislative base for the program, with the Congress providing the program emphasis through the appropriation process. The key to the subsequent expansion with continuing excellence was free and open communication.

4. *Physicians for a Growing America*, Report of the Surgeon General's Consultant Group on Medical Education (95 pp.), Frank Bane, Chairman. Public Health Service, U.S. Dept. of Health, Education, and Welfare, U.S. Govt. Printing Office, Washington, October 1959.

This report was commissioned by Surgeon General Burney; it inquired into the present production and distribution of physicians and likely changes in the decades ahead. There was an evident need to expand physician production and a less clearly stated though clear need to modify both the geographic distribution and specialty training of physicians. This report, taken in conjunction with demographic studies on population size and distribution and an assessment of the financial capability of medical institutions, clearly indicated a need for some subsidy from the federal establishment if the needs were to be satisfied, and as such was a healthy beginning of the Federal concern for professional education, reflected later in 1962 by the first programs of aid to medical schools. Realistic programs of aid for the educational program continue to be one of many barriers to medical excellence.

5. *Biomedical Science and its Administration: A Study of the National Institutes of Health*, Report to the President by the NIH Study Committee, Dr. Dean E. Wooldridge, Chairman (213 pp.). The White House, U.S. Govt. Printing Office, Washington, 1965.

Commissioned by Dr. Jerome Wiesner, then President Kennedy's science advisor, the study was quite comprehensive and covered both policy development and execution in terms of the many goals of NIH.

The study program was undertaken by consultants to the Office of Science and Technology, and though costly, was thought to be worthwhile in itself and also as a pattern to be followed in the examination of other large federal science enterprises.

The Committee was composed of biological and physical scientists, engineers and administrators drawn from industry as well as the academic world and reflecting medical, biomedical, physical, engineering, and management capabilities. The report was generally commendatory, and expressed the opinion that the activity was then well managed. It was suggested that over the longer run it would likely be necessary to strengthen the office of the Director of NIH and add a senior advisory group reporting directly to the Director of NIH on general matters of broad science strategy.

6. *Report of the Secretary's Advisory Committee on the Management of National Institutes of Health Research Contracts and Grants*, Jack P. Ruina, Chairman (81 pp.). U.S. Dept. of Health, Education, and Welfare, U.S. Govt. Printing Office, Washington, March 1966.

Commissioned by Secretary Gardner, the report was the work of a committee composed of biological and physical scientists, engineers, and science administrators. The purpose of the study was to define the circumstances that should guide the further development of the programs of the NIH and how a combination of grant and contract programs could be most appropriately administered.

The report was important in resolving at least at the then current program level, difficulties and controversies between the House and Senate subcommittees and between the staff of NCI and NIH and a minority of members of the National Cancer Advisory Council. But this is a delicate matter.

7. In the earlier years panels developed under the President's Science Advisory Committee, the Office of Science and Technology and some of the President's Commissions had a profound influence on the nation's scientific and educational establishment. A few examples of these reports can be given (in addition to 5 above).

*Scientific Progress, the Universities, and the Federal Government*. Statement by the President's Science Advisory Committee (33 pp.), The White House, U.S. Govt. Printing Office, Washington, November 15, 1960.

*Science, Government, and Information: The Responsibilities of the Technical Community and the Government in the Transfer of Information*, A Report of the President's Science Advisory Committee (52 pp.). The White House, U.S. Govt. Printing Office, Washington, January 1963.

*Report of the National Advisory Commission on Health Manpower*, J. Erwin Miller, Chairman, Vols. I (93 pp.) and II (595 pp.), The White House, U.S. Govt. Printing Office, Washington, November 1967.

*Scientific and Educational Basis for Improving Health*, Report of the Panel on Biological and Medical Science of the President's Science Advisory Committee (66 pp.). Published as an appendix to Hearings Before the Subcommittee on Public Health and Environment of the Committee on Interstate and Foreign Commerce, House of Representatives, 93rd Congr., 1st Session, on HR 5640 and HR 5948—Health Research Fellowship and Traineeship Act of 1973; U.S. Govt. Printing Office, Washington, 1973.

Notably one of the final PSAC Panel Reports dealt with the controversial decision to discontinue the training grant program at NIH in considerable detail. Though the report was the work of a competent group over an eighteen-month period, dealt with the renewal of scientists as an important aspect of the maintenance of excellence and productivity in research, and was completed in the latter part of 1972, it has never been released.

8. (a) *The NIH Budget, FY 1975*. FASEB Newsletter, Vol. 7, No. 2, p. 1, February 1974.
- (b) *Office of Management and Budget: Skeptical view of scientific advice*, Barbara Cullington, Science, Vol. 183, p. 392, 1 February 1974.
- (c) *Special Analyses, Budget of the U.S. Government, Fiscal Year 1975*; U.S. Government Printing Office, Washington, Stock No. 4101-0091.

Several aspects of these warrant special attention. These include

(1) The view expressed by OMB (8b) which bluntly rejects the need for scientific input into the decisions which relate to the allocation of resources. The examples given are clear indications of a lack of insight into how comparative measures can be put to effective use and the role a thoughtful non-scientist can profitably play in major policy decisions involving the substance of science.

(2) The analysis of the Presidential proposal for the allocation of resources for fiscal 1975, given in the FASEB article in summary form (8a) and presented in expanded form in the Special Analyses.

9. *The Federal Register* is a normal and important informational route for the publication of executive decisions particularly insofar as they have an impact on industrial R&D. However, when utilized as a primary informational device, particularly in areas that will profit by broad scientific discussion, it is more apt to cause controversy than clarification of important science issues. Examples of this are found in the case of the fertility programs of NICHD and the Cancer Program (NCI) at Fort Dietrick, which do not appear to have been particularly successful.
10. The curtailment of the training programs of NIH, i.e., pre- and postdoctoral education in the sciences, and advanced experience within the medical and surgical specialties within the context of their science base requires re-examination. Note is taken of this since the DHEW recommendation for termination, except for a modest fellowship program, has been made without a thorough exposition of the reasons; and since the programs are thought to be important. At various times the programs have been considered to be poorly conceived, costly, contributory to technological unemployment, not now considered to be a proper function of the federal establishment, etc. A re-examination should be undertaken but with a broad point of view, to define their direct contributions to a lively science, to the continuous renewal of excellence, to a broadening of the educational offerings of pre- and post-doctoral programs, and of professional and general educational programs, and to sustained excellence in the delivery of health services. The training programs can be shown to have done all these things. Then, if they are abolished, reasonable alternatives to accomplish comparable ends should be clearly in mind.
11. *Support of Medical Schools* (Symposium on the Federal Support of Science and Scientific Institutions). Annual Meeting of the AAAS, San Francisco, February 25, 1974. Presentation by Charles Sprague, President, University of Texas Health Science Center, Austin, Texas.  
This will likely be published shortly in the AAMC Journal on Medical Education. The text deals with the inconstancy of federal purpose in the support of medical education. The point is made that excellence in such a process requires a mix of education with parallel activities in research and in service and that general sources of support for these national institutions (i.e., medical schools) will be grossly deficient without broad and stable federal support. The analysis is given in detail.
12. Some public presentations by Dr. Charles C. Edwards.
  - (a) *Science and Accountability* (May 21, 1973). Presented at commencement exercises, The Philadelphia College of Pharmacy and Science.
  - (b) *A Candid Look at Health Manpower Problems* (November 5, 1973). Presented at the 84th Annual Meeting of the Association of American Medical Colleges, Washington, D.C.
  - (c) *Building a Health Strategy* (January 18, 1974). Presented as the Presidential Guest Address to the Annual Meeting of the American Academy of Orthopaedic Surgeons, Dallas, Texas.
  - (d) *Address to the NIH Scientific Community* (February 21, 1974).
  - (e) *Science, Freedom, and Accountability* (March 12, 1974). Presented as the Oscar Schwidetzky Lecture at the 48th Congress of the International Anesthesia Research Society, San Francisco, California.

The presentations listed in this citation were selected by Dr. Charles C. Edwards as being an adequate outline of his and the Departmental views on the current programs and prospects of the Department's activities in health, with particular emphasis on the biomedical sciences and medicine generally. It is unfair to provide comment in the absence of presenting the actual text of these and other comparable documents. But they are likely to be available on request from DHEW, and if read critically, they are portrayals of the level of understanding from which the Department operates. Superficially they read well but do not manifest an incisive grasp of the realities which characterize the biomedical fields.
13. The best examples of exceptions to this criticism are the participation of individual scientists in the public policy considerations of their professional societies, a beginning by the Institute of Medicine of the NAS in the analysis of the nation's science, and the regular analysis of public policy in the FASEB Newsletter. Systematic studies of broad interrelated activities within the biomedical field, though not yet available from these groups, are to be looked forward to with interest.
14. It is too early to determine the influence that will derive from the activity of a new committee of NAS, chaired by James Killian. Some description of the new committee is given in a recent note in *Science* (*A new look at Federal Science*, J.W., Science, Vol. 183 p. 496, 1974).
15. (a) *National Program for the Conquest of Cancer*: Report of the National Panel of Consultants on the Conquest of Cancer. Prepared for the Committee on Labor and Public Welfare, U.S. Senate. U.S. Govt. Printing Office, Washington, April 14, 1971.  
(b) *The National Cancer Plan*, National Cancer Institute, National Institutes of Health. Department of Health, Education, and Welfare.  
Vol. 1. Summary of Research and Operational Strategies.  
Vol. 2. Digest of Scientific Research Recommendations:  
—Summary of project areas proposed for the National Cancer Plan.  
—An analysis of midrange resources requirements for a National Cancer program.

Currently in draft form are

- The Report of the Director, NCI.
- Strategic Plan for 1976–1980.

16. *New York Times*, article by Harold M. Schmeck, Jr. (Date-line Washington, April 14, 1975).

The program plan for the expanded research of the Heart and Lung Institute is now in the process of clearance for release.

The study committee was chaired by Dr. John S. Mills. A first draft of the report was completed September 1, 1972, the final draft a month later. The delay in the official release of an advisory committee report on a high priority area in research is difficult to understand. The report was completed during the early expansion of research programs of the Institute and presumably influenced development within the limits of the funds available in 1973 and the appropriation requests for both fiscal 1974 and 1975.

17. (a) *Biology and the Future of Man* (936 pp.), Philip Handler, Editor. Oxford University Press, New York, 1970.  
 (b) *The Life Sciences* (526 pp.). Committee on Research in the Life Sciences of the Committee on Science and Public Policy, National Academy of Sciences. NAS, Washington, 1970.

Together, these monographs address themselves to the revolutionary progress in the biomedical sciences in the prior years and anticipate a rapidly evolving science in the future. This was an extraordinary effort that was particularly timely. Having been completed well before the recent federal interventions in the scientific process, these works can be used as the base for examination of the conse-

quences of an inconstant federal role, generally emphasizing short term objectives, on the productivity of the activity in recent years.

18. *The Advancement of Knowledge for the Nation's Health: A Report to the President on the Research Programs of the National Institutes of Health*, Office of Program Planning, NIH (202 pp.). U.S. Govt. Printing Office, Washington, 1967.

This is an analysis in depth of the programs of the NIH in support of biomedical research. The analysis is by categorical institute. The study was undertaken at the request of President Johnson with the end in view to demonstrate the reasonableness of the balance in program objectives of NIH at the time. The request was stimulated by an earlier skepticism on the part of the President of the value of "research as compared to results." The summary had merit, in that President Johnson removed the pressure to convert a mixed program to one that would be primarily short term in nature.

19. *A Policy for Biomedical Research*, Report for an Ad Hoc Committee of the Council of Academic Societies, Association of American Medical Colleges, Louis G. Welt, M.D., Chairman, Supplement to *Journal of Medical Education*, 46:690–743, August 1971.
20. *The National Cancer Program Plan*, Report of the Ad Hoc Review Committee of the Institute of Medicine, National Academy of Sciences, Washington, December 15, 1972.
21. Nixon, Richard. *The Budget Message of the President*. The Budget of the United States Government. Fiscal Year 1975; 93rd Congress, 2nd Session, House Document No. 93-265. U.S. Govt. Printing Office, Washington, February 4, 1974.