NAE: Search for a Form Produces a National Academy of Engineering in a "Partnership" with NAS

After several years of discussion and a surmounting of differences between scientists and engineers which seem to arise from training and temperament, a National Academy of Engineering (NAE) has been formed to take its place beside the National Academy of Sciences (NAS).

The new academy has been established under the authority granted NAS by Congress in the act of incorporation, in 1863. Formally, therefore, the engineering academy will be part of the structure of the Academy of Sciences. NAE, however, will share with NAS responsibility for advising the government on matters of science and technology, and, as NAS president Frederick Seitz said at a press conference held 11 December to announce formation of NAE, "the new Academy of Engineering will have essential autonomy in its choice of officers and in electing its membership. It will work closely with the members of the National Academy of Sciences and their officers in conducting the affairs of the National Research Council."

Asked to describe the relationship between NAE and NAS using an analogy from business organization, the new president of the NAE, Augustus B. Kinzel, replied, "I would say, more of a partnership."

If NAE's birthright is a little hazy at the moment, there can be no doubt that the new academy answers a strong demand from American engineers for greater recognition and a more direct role in the making of federal policy on science and technology (*Science*, 22 May, p. 980).

The form of organization for the new academy represents a compromise. Some engineers had demanded a completely autonomous engineering academy, chartered independently by Congress and entirely separate from NAS and equal to it. At their other extreme, there was sentiment within NAS to make the engineers' organization merely a branch of NAS–NRC.

Following action at the NAS annual meeting, a middle way was opened when NAS president Frederick Seitz, who might be called a godfather to NAE, last spring appointed a 25-man committee to organize a national academy of engineering. Members of the committee, all engineers, were nominated by the Engineers Joint Council, the leading national organization of engineering societies. Ten of the committee members were also members of the Academy of Sciences.

Observers say that the plan finally approved by the NAS council, which went into effect early this month, closely resembles one put forward several years ago, which at the time met strong opposition within NAS.

Kinzel, NAE's first president, is vice-president for research of the Union Carbide Corporation. He was active in the Manhattan District project during World War II and has served in a series of important federal advisory posts. Kinzel is a member of NAS.

Vice-president is Eric A. Walker, president of Pennsylvania State University and a recent president of the Engineers Joint Council. Secretary is Harold K. Work, director of the research division at New York University. Treasurer is Thomas C. Kavanagh, a consulting engineer who was chief engineer for design and construction of the 1000-foot (300-m) radar-radio telescope at Arecibo, Puerto Rico. Kinzel, Walker, and Work were, respectively, chairman, vice-chairman, and secretary of the committee of 25, and Kavanagh was a member.

The NAE's articles of organization give it a structure similar to that of NAS, with governing authority, as in the case of NAS, placed in its officers and a council. The Academy of Sciences council, however, will have power of approval over proposed amendments to NAE's articles of organization.

As set forth in the articles, the "objects and purposes" of NAE are as follows.

"1. To provide means of assessing the constantly changing needs of the nation and the technical resources that can and should be applied to them; to sponsor programs aimed at meeting these needs; and to encourage such engineering research as may be advisable in the national interest;

"2. To explore means for promoting cooperation in engineering in the United States and abroad, with a view to securing concentration on problems significant to society and encouraging research and development aimed at meeting them;

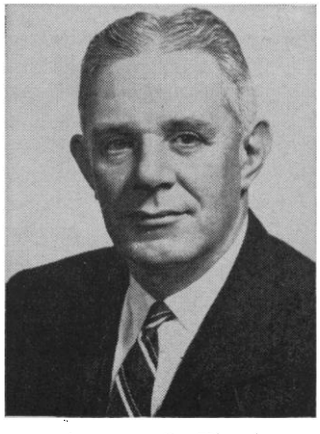
"3. To advise Congress and the Executive branch of the Government, whenever called on by any department or agency thereof, on matters of national import pertinent to engineering;

"4. To cooperate with the National Academy of Sciences on matters involving both science and engineering;

"5. To serve the nation in other respects in connection with significant problems in engineering and technology; and

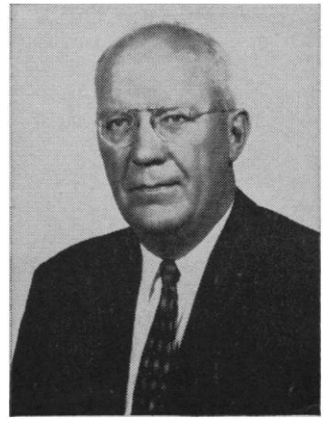
"6. To recognize outstanding contributions to the nation by leading engineers."

The lines of division of labor between the two academies in responding to requests for advice are not drawn

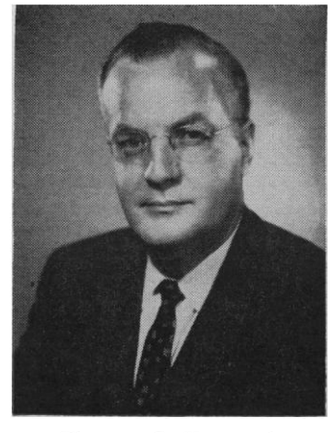


Augustus B. Kinzel

Eric A. Walker



Harold K. Work



Thomas C. Kavanagh

in detail. Decisions on which group should handle a particular question will be made by a "joint board" made up of equal numbers of members from the two academies.

It is evident that the work of a group like the highway research board, in the NRC, is in the engineering domain, and that recommendations from this board should be approved by competent authorities in the Academy of Engineering. Other matters will not be so clear-cut. Some will require opinions from both academies or, perhaps, joint efforts. It is certainly conceivable that scientists and engineers may differ, and that separate reports may be submitted.

Hope of insuring close cooperation seems to have been the major factor leading to the present tandem arrangement for the two academies rather than independent status for each. Speaking of the decision against setting up a separately chartered engineering academy, Kinzel said, "The main reason, and I might say the sole reason, was that we wanted to do everything possible to avoid creating a barrier between science and engineering, and to do everything possible to eliminate such barriers."

Basic criteria for election of members to NAE, according to the articles, are, (i) "important contributions to engineering theory and practice, including significant contributions to the literature of engineering," and (ii) "demonstration of unusual accomplishments in the pioneering of new and developing fields of technology."

In one way, selection of members for the engineering academy may prove to be inherently more difficult than selection of members for NAS. In the sciences a prime criterion of distinction is publications. In some fields of engineering—electrical engineering, for example—publications provide a reasonably good guide, but in other fields, an engineer must be judged by his visible achievements, such as a bridge.

The committee obviously hopes to insure that members will be highly qualified, distinguished individuals, and to insulate the academy against the corporation logrolling which is apparently influential in some professional engineering societies. Also, managerial talent alone, it seems, will not qualify an engineer for membership in the NAE.

The 25 men on the organizing committee have been made charter members of the new academy, and plans are afoot to expand membership in the academy to about 100, through careful selection over the next several months. Membership then will be increased at a slower rate, to about 300. The National Academy of Sciences now has about 675 members.

Until NAE finds its feet, NAS will continue to pay for studies on engineering now in progress and to house NAE without charge in the Academy building on Constitution Avenue. A new $1-million wing, which has been built with the aid of a National Science Foundation grant and contributions from industry, will provide the space. This togetherness, financial and physical, will, it is hoped, promote a cooperative spirit between the two academies.—JOHN WALSH

Career Awards: No More New Ones Will Be Made under NIH Program

No more new awards will be made under a Public Health Service Program which provides up to $25,000 a year in salary for more than 230 senior investigators in health-related research.

The decision to stop making new awards came at the end of a 6-month moratorium during which PHS–National Institutes of Health officials carefully reviewed the 3-year-old research career program (*Science*, 18 Sept., p. 1283).

Those who now hold career awards will continue to receive support. The most recent count showed 234 investigators at 98 institutions included in the program. Holders of career awards who move to new institutions will lose their grants.

Not affected by the cutoff on career awards are the so-called development awards in the same research career program. These development awards are designed to support younger researchers in the earlier stages of their careers. Development awards have a 10-year maximum, but the career awards are renewable indefinitely so long as the recipient fulfills the terms of the award, which emphasize full-time research.

The cutoff on career awards is attributable partly to a squeeze in fellowship funds caused by a decline in the rate of increase of the federal budget for health research. NIH policy makers have also been seeking ways to strengthen research institutions and have apparently decided that continuously increasing the number of career grants to individuals was not the best way to do it.—J.W.

U.S. Medicine: LBJ Commission on Heart Disease, Cancer and Stroke Offers Sweeping Recommendations

The President's Commission on Heart Disease, Cancer and Stroke, a 28-member panel charged last March with orders to "do something" about the heavy burden of these diseases, issued a report early this month which may dwarf the row over Medicare and be the starting point for this country's most serious debate on the direction of U.S. medicine since Harry Truman proposed a national health plan.

Given the doggedness of organized medicine in opposing so relatively peripheral a federal activity as medical insurance, a group that urges the government to throw itself wholeheartedly into developing centers for the actual care of patients with stroke, cancer, and heart disease will surely be accused of suffering from a fourth disorder, dementia in high places. But the commission, headed by the noted Texas surgeon Michael DeBakey, was established on the radical premise (to quote from Johnson's 1964 Health Message to Congress) that although "the flow of new discoveries, new drugs, and new techniques is impressive and hopeful . . . the American people are not receiving the full benefits of what medical research has already accomplished." (*Science*, 20 Mar.) The commission accepted and amplified this premise. "Every day," its report* states, "men and women are dying who need not die . . . not for lack of scientific knowledge, but for lack of the right care at the right time. Every available fact," the report emphasizes, "points to the same conclusion—that the toll of heart disease, cancer and stroke can be sharply reduced now, in this nation, in this time . . . without further scientific advance."

These statements are more than an implicit rebuke of contemporary medicine for neglecting patients. They are, first, a warning to the profession that the long-lamented schism between academic and clinical medicine has ceased to be a matter of exclusively professional concern and has become a national problem. And they are the starting point for a series of original and comprehensive (and costly) recommendations which, if enacted, would almost certainly produce far-reaching alterations in the character of American medicine.

The core of the commission's report is its proposal for an extensive, national