

Brash and ebullient

The fledgling National Academy of Engineering is delighted to find it has a role to play as adviser to the Government

by Carl Behrens

If, in the public image, the scientist is a rather remote idealist, the engineer is a specialist with his feet on the ground.

To hear members of the National Academy of Engineering tell it, that image is pretty accurate.

The 237-member NAE was formed a little more than three years ago because prominent engineers felt they weren't getting the hearing they deserved. The National Academy of Sciences was the chartered adviser to Government on matters that demand an expert scientific judgment, and scientists—not engineers—were dominant.

Now, three years after formation, the new group appears to have found acceptance—there is no lack of projects the NAE has been asked to undertake.

"Our big aim now is not to find projects, but to do them right," says NAE president Eric A. Walker, who is also president of Pennsylvania State University. "It's important that in the younger days we don't flub things."

Part of the gathering acceleration is due to expanding membership. When the academy was set up, with 25 founding members, it was decided that new members, elected on the basis of their professional accomplishments, should be added gradually rather than bringing the institution up to full strength immediately.

In this way, it was felt, a broader membership would result than if nominations were to come exclusively from the founding members.

As a result of this policy, the academy by 1967 had only 95 members. Since under the academy charter members give their advisory time without pay, and since many of the early members were hard-pressed industry executives—the founding members included such prominent names as Elmer Engstrom, president of RCA, Michael Haider, chairman of Standard Oil (N.J.), and Simon Ramo of TRW, Inc.—the academy's ability to undertake many jobs was limited.

The election of 93 members last year and 50 more this year has expanded the capabilities of the institution to a more reasonable level; and President Walker would like to see even more members.

Because it was able to ensconce itself in the already-functioning structure of the century-old National Academy of



Pennsylvania State University

Pres. Walker: important not to flub.

Sciences, the NAE has been able from the first to concentrate on matters directly related to its work and not expend effort on setting up house. Besides having at hand a functioning staff and ready-made location, the NAE can make use of the older academy's operating subsidiary, the prestigious National Research Council. Many of the studies undertaken by both academies are carried out through the NRC.

Ongoing projects of the NAE include:

- Design of civilian airplanes. Until recently commercial airliners were converted military planes; now they are being designed from scratch—an example being the supersonic transport. The question of where this design effort should originate: in the National Aeronautics and Space Administration, or in private industry, is one aspect of the engineers' study.

- Education of engineers in the life sciences. The National Institutes of Health asked the academy to look into ways of training bioengineers.

- Ocean engineering. Broad claims and predictions have been made about the future riches to be gained from the sea. The NAE is evaluating these possibilities, with the support of a number of agencies including the navy.

- Technological assessment. Congress, increasingly concerned about technological side effects, has asked the NAE to advise on the usefulness of a permanent institute to predict what new technologies will do for the country, and what bad effects could be expected.

Technically, all of these projects

could have been proper areas of investigation for the National Academy of Sciences, which was set up with a Congressional charter a century ago to advise on both scientific and technical questions. The working force was also there—the Engineering Division of the National Research Council is one of its largest, and includes the extensive Highway Research Board.

But the actual membership of the science academy was exceptionally lean on engineers, who were outnumbered more than 12-to-1. Besides denying the engineering fraternity the prestige of election to the NAS, which they felt they deserved more than they were getting, the older academy brought a different attitude to projects they were asked to undertake for Government.

The ocean study is an example, says NAE Secretary Dr. Harold K. Work. "We're getting right down to the practical possibilities in the project," he claims. "If the NAS were doing it, all they'd get would be another oceanographic study."

The engineers' attitude that the NAS is not very practically oriented is not really backed by the evidence of its past accomplishments, some of which have had important practical results. It probably reflects the different makeup of the engineering academy, 60 percent of whose members come from industry. The feeling reflects a more conservative, cautious attitude—one that doesn't like getting involved in political questions such as Vietnam, as the NAS occasionally has. "Scientists," says Dr. Work, "like to get involved in areas they know nothing about."

Despite the minor friction involved in such questions, the association between the Academies has turned out well. "We'd never have been where we are today without the NAS," says Dr. Walker.

On its side, the NAS has found it useful for the NAE to take on projects which the older academy felt were important but which it didn't feel quite competent to handle.

The ultimate value of the NAE probably won't show up for 10 or 15 years, according to one Government official who has dealt with the academy.

But the demands on it indicate that the need for practical engineering advice was and is felt in Government.