

Scientists in state government

At the state and local levels too, legislators are finding they need informed scientific advice.

Seville Chapman

That we live in a technological world is evident to all of us. Certainly public policies regarding energy, transportation, coastal-zone management, pollution, waste management, urban technology and health-care delivery affect our lives and our pocket books.

In principle the legislative branch of government determines these policies, and the executive branch implements them. In practice on complicated technical matters it has been more common for legislative bodies to direct the executive to study the problem, set regulations and enforce them. The legislators, however, are much closer to the people than the executive bureaus, and a trend already has begun for some legislative bodies to take a more active part in determining policy on complex problems. To do so they must be kept aware of information crucial to the policy issues; for this information, they need a scientific staff.

Customarily, legislative bodies have not had much staff, commonly none at all.¹ For some years the New York State Legislature has had a progressive attitude, and in one 1970 study² it was rated first in the US in regard both to being informed and to being representative. At that time the State Assembly had three professional staffs; a Ways and Means Staff, a Legal Staff and a Central Program Staff, in addition to other groups that provided various services.³

In February 1971, New York State Assembly Speaker Perry B. Duryea established the Assembly Scientific Staff to bring scientific and engineering expertise and perspective to the legislative process. The Staff anticipates and responds to requests from chairmen of Standing Committees (of which there are 21—it is in the Committees where much of the real legislative work gets done) and collaborates with other staffs. At this moment the Staff consists of three professional scientists, a research and administrative assistant and two secretaries. The Staff is supported by the Assembly, but some of its programs are supported by a grant to Speaker Duryea from the Office of Intergovernmental Science and Research Utilization of the National Science Foundation. Among these NSF-supported programs are interaction with professional societies and public-service legislative studies, which are done by students and professors and lead to advanced degrees. Few other states have any mechanism for

obtaining technical legislative inputs: California has a distinguished council; Illinois has a scientist on loan from NSF; Kentucky and Alabama are initiating programs; several states are trying to get some program of scientific information established.

How many bills have technical ramifications? In the 1973 Session from January through May,⁴ 12 047 bills came before the New York Assembly, 10 562 came before the Senate; 1333 of these bills passed both houses and went to the Governor, who signed 1045. The bills cover an enormous range of subject; some are minor, some, like the \$9-billion budget, are very important. Depending on definitions, 5 to 20% may be said to have technical ramifications. Some estimates in some states give a higher proportion, but the point is that by any estimate it is a lot of bills.

Dealing with legislators

Normally legislators get information from hearings (from a scientist's point of view a typical hearing is a disjointed, uncoordinated, adversary process), from constituents, friends, and the media, and from staff if there is a staff. Free advice comes from lobbyists. Although scientists may wish to give a bit of time to a public matter, recall that doctors and lawyers charge for their professional services, and professional scientific counsel should be no less worthy.

Certainly in technical areas expert information is an essential—even if a minor—aspect of the problem. The controlling aspects are usually sociological, economic and political ones. Most scientists don't understand politics—nor do I—but politics does involve the means for getting things done. It is easy to say "they ought to do something"; it is much more difficult to contribute to the doing in the real world. Scientists and engineers are accustomed to isolating their problems, in which case the solutions often are straightforward. But it is pointless to solve a problem technically by an economically or politically infeasible method. In matters of public policy, problems cannot be isolated, so I urge people to work with the system we have and—where possible—contribute to making it more effective.

In general the problem for the scien-



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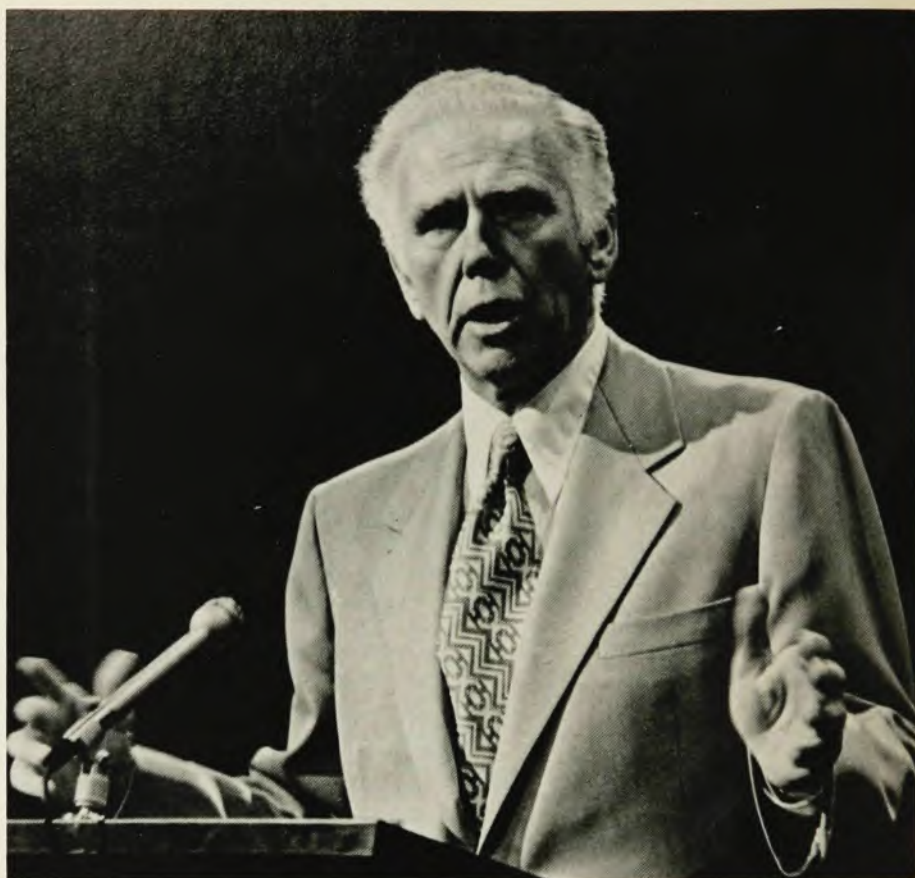
tist is not where to find the technical information. If it exists it can be located usually quite quickly by asking the right people. If it does not exist (How many gasoline stations have gone out of business in each county? How safe will a liquid-metal fast-breeder reactor be?) that fact becomes apparent rather quickly.

The main problem is communicating the information. Now in an engineering firm or in a university laboratory, complete rigor is an essential part of a technical discussion, which typically may last an hour. A legislator, who represents 125 000 or more constituents, deals with thousands of bills and cannot devote much time to any one matter. Two minutes is a relatively long time and many meetings in hallways, where important matters are decided, last only 20 seconds. Therefore the information must be condensed and summarized, in one page if possible (two at the most) if it is to have an impact. A short conversation is even better. If compressing information into such a small dimension seems to be a severe constraint, recall that a legislator cannot vote an explanation but only yes or no—exactly one bit of information.

The importance of getting the information to the legislator at the right time cannot be overstated. If the political positions have already been taken it is probably too late. If there is as yet no public discussion and no interest by constituents, it may be too early. And all of us must recognize that we should not suggest decisions to legislators. They make the decisions. We should provide them with information on the consequences of alternatives.

This discussion has illustrated some of the cultural differences between legislators and technologists.⁵ The gulf between them is not often recognized explicitly, but it is great. Both groups usually are intelligent, energetic and motivated toward the public good, but their backgrounds, value systems, methods and information base are far, far apart. They often do not know what questions to ask each other. If we scientists are to be effective, we must make substantial efforts to meet them at least halfway.

One interesting example of such an effort was the New York State Assembly-AISLE Conference on Energy and the Environment, which was held in the Capitol and Legislative Office Buildings in Albany on 21 to 23 January, 1974. Speaker Duryea invited 35 Assembly members from both political parties plus some staff; AISLE, a consortium of twenty professional societies in science, engineering and public administration (the letters stand for Intersociety Liaison Committee on the



Perry B. Duryea, Speaker of the New York State Assembly, who sponsored a conference last January on Energy and the Environment that was attended by members of the Assembly and representatives of AISLE, an intersociety liaison committee on the environment.



Examining a solar-energy panel at the NY State Assembly-AISLE conference are (left to right) State Assemblyman Joseph M. Reilly and Volker A. Mohnen and Ronald Stewart (both of the Atmospheric Sciences Research Center, State University of New York, Albany).



A workshop on "consumer uses of energy" at the same conference includes (left to right) Howard B. Hamilton (University of Pittsburgh), NY State Assemblyman Eugene Levy, Howard Tag (Select Committee on Consumer Protection) and Assemblyman Neil W. Kelleher.

Bibliography for science and politics

The literature on science and public policy is very extensive. The Commission on Science Education of the American Association for the Advancement of Science, 1515 Massachusetts Avenue, N.W., Washington, D.C., publishes an annual titled *Science for Society: A Bibliography*, prepared by Howard T. Bausum. These documents (four have been published) contain hundreds of pages of references. A few of the references that I have found useful are:

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Environment), invited 65 delegates from their membership to represent their professions, not their employers or organizations or societies. The Acoustical Society of America is affiliated with AISLE, but the American Physical Society is not, although at least four APS members attended as delegates of other societies.

This conference was unique in that scientists and engineers from industry, government, and universities met in six six-hour long "shirt-sleeves" workshops. In these dialogs with experts in law making, they were devising or endorsing politically practical, technically sound ideas for legislation in the 1974 Session. As of April more than 30 bills related to the conference were "in the hopper." The 40 pages of recommendations are contained in the *Proceedings*.⁶

Whether one agrees with the conclusions or not, it is significant that typically ten engineers and scientists thought they were technically sound, and four or five Members thought they should at least be considered politically.

There are many ways that professional societies or their members can affect public policy.⁷ The main point is for scientists not to talk as they do with other scientists at professional society meetings, but to speak plainly with the public officials on an equal footing, recognizing that the scientist is expert in his field and the public official in his. To form a partnership between these two types of experts may seem like a lot of effort, but it can be done, and it works.

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