

More favor for applied science

Science policy in the United States Government has generally been an ad hoc affair. Individual projects were debated and decided on their own merits without any serious attempt to fit them into an over-all strategy of scientific advance.

As long as levels of financial support were high, no one worried. In the post-Sputnik era science was golden, and the rain of money fell on the just and the unjust alike. Questions of priority were set aside and a national commitment to the support of science was tacitly assumed.

Then support fell, and the wailing and gnashing of teeth commenced. Questions of the relative priority to be assigned different branches of science, of the proper relationship between basic and applied sciences and of the existence and size of a national commitment, began to be debated. Scientists began to say that an explicit policy, a long-term plan to let them know where they stood, ought to be presented.

The Nixon Administration has a liking for grand strategies, game plans and sweeping reorganizations. It appears that it is now about to impose one on the scientific establishment.

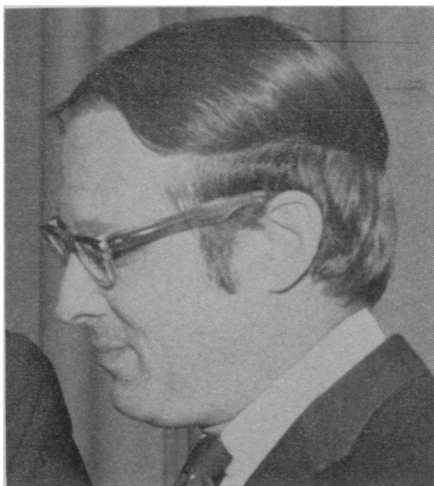
Dr. Edward E. David, the President's new science adviser (SN: 8/29, p. 158), told the staff and guests of the National Bureau of Standards last week that national science policies are being worked out and will be presented to the President some time in the near future. He discussed some of the ideas that are going into the discussions and what he called "my prejudices" in approaching the questions involved.

One of the most important things that Dr. David made clear is that there will be less manna to be picked up. For the decade of the 1970's, he predicts (even though eight years of the decade lie beyond the election of 1972) that there will be no more blank checks. The days of the 15 percent growth rate that many considered standard are over.

He reminds the scientists that they are no longer the heroes of the people. People have seen much evil come from the discoveries of science and are beginning to wonder whether those in charge of science are responsible people (SN: 1/2, p. 5).

The emphasis of future policies seems definitely to favor applied science. Dr. David repeatedly mentions new products and services and the needs of society. His peroration:

"The opportunity for both excellent research and new products and services in response to the needs of society ought to be the driving force in setting science policy."



NBS

David: *Emphasis on society's needs.*

Among the needs of society that Dr. David finds most important are health care, power production and remedies to environmental pollution. He mentions a program to make adequate health care available to the whole population. This will require a great increase in the quantity of health care, and he says, "We must have the technological capability to increase the supply."

This will require a research and development effort, not only in disease prevention and cure but in logistical questions such as whether hospitals and computers really go together.

Dr. David sees research and development as an input-output system in which people and ideas go in and products and services come out. He feels that Government ought to pay more attention to the output side than it has done.

Especially he feels that the Government ought to do more for what he calls demonstrations or pilot projects. That means the translation of a technological development into a marketable industrial process. The Government, he feels, should do more funding of such demonstrations either wholly or in cooperation with industry.

Governmental support of basic research, he says, should be on a level-of-effort basis, as is done by a number of industrial organizations. Some people have suggested that a particular proportion of gross national product be set aside for basic research. Dr. David believes that this approach is too rigid, though he does not say by what other formula he would calculate his level of effort. He does say that the basic research that is done should be justified by its quality as judged by knowledgeable people and by a comparison with work being done elsewhere in the world.

Scientific education is in trouble because the sudden cuts in support have resulted in wide-spread unemployment

and bleak prospects for graduates. As an example of the sort of thinking going on, he remarks that some people have suggested doing away with Government traineeships and allowing the number of Ph.D.'s produced to fall to the level determined by the needs of the market. Dr. David does not endorse this, but he says some changes will be necessary. He counsels caution in making changes since, he says, anything done today will affect conditions six years hence and no one can be sure what they will be.

The organization of Federal science is another policy topic that keeps cropping up. From what Dr. David says about this, the oft-repeated suggestion of a Department of Science apparently finds no more support among the present Administration than it did in previous ones.

Another approach is the suggestion of the House Committee on Science and Astronautics to create a body called the National Institutes of Research and Advanced Study, which would gather under one organization-chart box about 50 percent of all Government science.

Dr. David mentions that this is under discussion and cites arguments pro and con without saying whether he favors it. He does say, however, that mission-oriented agencies such as the Defense Department should be allowed to do much of their own research, thus disagreeing with the Senate, which has exhibited a tendency to try to limit research by mission agencies. □

ARTHRITIS TREATMENT

Two more possibilities

An estimated 17 million persons of all ages in the United States suffer from the pains of arthritis. As most of them know well, the cause of this disease which, like cancer, is actually a host of related disorders rather than a single disease entity, remains elusive. Its treatment, variable in nature, is equally variable in effectiveness.

There are theories of its etiology, backed by circumstantial evidence, not proof. That with the widest currency at present holds that arthritis is an autoimmune disease in which the body reacts against itself, and suggests that viruses may play a role in triggering this reaction. Treatment for the pain of arthritis, an inflammation of the joints, ranges from aspirin, which is often effective, particularly in early stages, to use of the steroid cortisone to administration of gold salts. None is uniformly effective and serious side effects are associated with cortisone and gold.

Last week, at a meeting in Washington of the Arthritis Foundation, scientists elaborated on current theories of