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WHAT DO WE DO ABOUT SCIENCE?

According to the decision of the Council of the American Association for the Advancement of Science, the Directors are planning a conference on science and public policy to take place in Washington on March 15, 16, and 17. This parliament of science should be one of the most significant events in the history of the Association. The following statement not only outlines the preliminary plans for the meeting but gives the background philosophy which led to its calling and guides the committee in its planning.

The power of man through science is currently assuming a new order of magnitude. Power has always been sought avidly. Sometimes it has been used disastrously; often it has been used wisely. How America shall keep abreast of the developments in science and scientific technology; how it shall help avoid disaster; how it shall ensure that new knowledge (the age-old synonym for power) will be used for the benefit of mankind in general and its citizens in particular are among the most important questions before the public today.

But the American public is disturbed, worried, and confused. We were supposed to be well in the lead, scientifically and technologically. Now, all of a sudden, this comfortable assumption is challenged. We are "behind." It isn't clear just what this statement means, or whether the serious versions of its possible meanings are in fact true. But there is no denying the general concern, and the almost frantic determination to "do something about it."

The concern and the determination are, we believe, justified. But it is imperative that we sort out our ideas, brush off as superficial certain

spectacular but minor items, and try to see our problem in its true dimensions.

Not long after the discovery of fission, we began to sense the fact that man's impending control of atomic and nuclear power made possible, and indeed made inevitable, the beginning of a new age. As the still more vast potentialities of fusion were made available for destructive purposes, and as it became clear that these incredible forces would presently be tamed for nonmilitary use, the magnitude of our break with the past became visibly greater and greater.

We are just beginning to see that even these advances, tremendous as they are, constitute the signal, rather than the substance, of what is to come. Our successful probing into the nucleus of the atom is but an example of the clear fact that science is entering a new and accelerated stage of advancement, which will give to man the possibility of control over his environment, over himself, and over his destiny, which we have as yet only vaguely sensed. By probing the atom, man is exploding into the universe. With prospects that are--just as they were in the case of nuclear energy--both marvelous and frightening, we are on the threshold of an equally revolutionary probing of the cell and of the mind.

Man is breaking with the past, its limitations and its safeguards. The price^z is greater than ever before--so are the risks. The question is not, "Do we like this?" The question is, "What role do the people of the United States wish to play in the drama of the future?" We cannot hide. We must not relax. How can we play a noble part?

What concerns us here is far and away larger than any question about a satellite, or even about a battery of long-range guided missiles, although

these dramatic devices have precipitated discussion, and have produced a readiness to consider drastic action.

We are in fact saying that man is on the very edge of a new relation to the atom, to the cell, to himself, and to the universe in which he is set. Many forces have been active, but clearly it is science which has been chiefly instrumental in bringing about this new relation. The new relation will place new demands on all man's resources--especially on his capacity to handle this new power with restraint and decency.

This scientific revolution will totally dwarf the industrial revolution and the other historical instances of great social change. It will be more compelling, and will pose more urgent problems, due both to the pace and the magnitude of the changes which now impend.

What faces man is not, in any restricted sense, a scientific problem. Scientific issues are vitally and almost universally involved. The special knowledge of the scientist is necessary, to be sure; but that knowledge would be powerless or dangerous if it were not effectively pooled with the contributions of social scientists, humanists, statesmen, and philosophers and brought to the service of all segments of our society.

What on earth--excuse us, it is difficult to adjust--what in the universe ought we to do? The scientists certainly have no arrogant illusion that they have the answers. But they do want to help. At the very least, they have the duty of briefing their colleagues in other fields. They are, moreover, convinced that the time is overripe for a more understanding collaboration between their special profession and the rest of society.

Because it is urgent for scientists to organize their own thinking about the problems raised in the preceding paragraphs, and urgent for

society to understand those problems and their implications, the Council (the legislative body) of the American Association for the Advancement of Science decided that the Association should convene a special meeting, widely representative of all fields of science, to consider certain definite and pressing aspects of the current problems. For obvious practical reasons, the discussion will be largely restricted to actual proposals for increasing support for science and improving education. The meeting will be held in Washington, D. C., on March 15-17.

The Terms of Reference for This Meeting

It seems useful to set down, as briefly as possible, the terms of reference for this meeting.

1) Scientists are citizens. As the latter they have the right to hold and express opinions on any subjects. Their views on nonscientific subjects should receive whatever attention and respect they merit because of their inherent reasonableness, evidence of relevant knowledge, and general usefulness. The views of a scientist on nonscientific subjects should neither suffer nor profit from the fact that the speaker or writer is a scientist.

2) Scientists, besides being citizens, are also scientists. As such they have special knowledge, special experience, and special concerns-- just as is true of all other segments of our society. It is therefore proper and desirable that scientists speak as scientists, just as it is proper and desirable that humanists speak as humanists, farmers as farmers, preachers as preachers, etc.

3) Science stands, at present, in specially important relation to

defense and to our capacity to maintain the high level of national activity which is essential to our economic and social welfare.

4) Most of the actual decisions affecting science (for new laws, new regulations, new agencies, new financing) will be made by persons or groups not primarily trained in science.

5) It therefore seems sensible to explore ways in which scientists, as such, can draw on their special experience and knowledge to furnish advice, in the hope that their advice will be helpful to the various agencies of decision and will thus serve the common good. Conversely, scientists should inform themselves concerning some of the nonscientific factors which also affect the relevant decisions.

6) It must not be expected that there is such a thing as SCIENCE-- a vast, impersonal, ever wise, ever certain entity that speaks with a single voice. It is not possible to consult SCIENCE. All we can do is to consult scientists. And these, as we said, turn out to be individual persons, with differing social views, differing areas of special interest and knowledge within science, differing convictions as to the relation of science to other aspects of life, etc.

7) Thus complete unanimity must not be expected from a group of scientists. But it would be disastrous to be misled, by healthy diversity, into thinking that there are not basic scientific matters on which there is general agreement.

8) It is not the purpose of this meeting to consider all aspects of science in its relation to government and society. It is the purpose to consider certain central problems--problems relative to which practical decisions are necessary--which concern education (science education in

its relation to all education), the organization and administration of the nation's scientific effort, the support for research, and communication of scientific information; and to find out, from a large representative group of scientists, what they believe concerning the basic principles which should guide action in these areas.

Meeting Plans

Plans for the meeting are being made by a committee consisting of Warren Weaver, chairman, Barry Commoner, T. Keith Glennan, Paul M. Gross, Mark H. Ingraham, and Donald G. Marquis, with Detlev W. Bronk and Alan T. Waterman as consultants and Wallace R. Brode and Dael Wolfle, ex officio.

In order to have a group large enough to be broadly representative, yet small enough to be able to engage in the discussions and work that will be necessary, the committee has decided that the number of working participants should be limited to approximately 100. Participants will be chosen primarily from panels of names recommended by the Association's sections. Each section has been invited to nominate 10 to 15, or more, names. Each of the Association's 279 affiliated societies has been invited to suggest names to the appropriate section.

In addition to the participants selected from the section lists, the committee plans to invite a small number of scholars from other fields, representatives of the public, and scientists who will serve as discussion leaders. The total group will be so selected as to provide broad scientific, institutional, and geographic representation.

Discussion during the meeting will be centered on five topics:

- 1) The organization and administration of the nation's scientific effort

- 2) Support for research
- 3) Communication of scientific findings and communication among scientists
- 4) Selection, guidance, and assistance of students
- 5) Improvement of teaching and education

Background papers on each of these topics will be supplied to the participants in advance of the meeting so that all will have a common knowledge of the relevant statistical or other information, proposals that are currently being made, and judgments concerning those proposals.

With the preceding portions of this paper providing a general framework of thinking, and with the five background papers providing starting points for discussion, the committee plans to spend most of the conference time in discussions. After an initial plenary session, the conference will divide into discussion groups to take up the five topics listed above. After the discussion groups report to the conference as a whole, there will be further time for general discussion.

It is likely that a number of organizations will wish to send observers to the meeting. Within space limitations, observers will be welcome, but advance permission will be required. An announcement of the meeting published in Science (7 February 1958) invited any scientific or educational institution or organization that wishes to send an observer to write to the Association, requesting permission and giving the proposed observer's name.

It should be clear that a conference organized as this one is will not in any formal sense represent the Association's affiliated societies or sections, or even all members of the Association. The conclusions and

recommendations arrived at by the group will represent the combined judgment of a broadly representative group of scientists who are aware of the rapid development that science is undergoing and of the technological, economic, educational, and social effects of such rapid scientific advance, and who have thoughtfully considered the implications of these changes for the support of science and the improvement of education.

The conclusions and recommendations of the conference will be made available to the press and released for publication at the conclusion of the meeting.