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Science Critics*

Scientific problems should be presented to the general public from several points of view. Factual knowledge must, of course, be communicated through articles, books, lectures, and exhibits in terms that are meaningful for the nonscientist yet do not distort the truth. Great progress has been made in such popularization of science during the past decades; the Pacific Science Center in Seattle is a notable example of achievement in this direction.

It is essential also that scientists discuss more thoroughly in public the implications of their findings with regard not only to the practical applications of science but also to its influence on the concepts of man's place in the order of things. The philosophical and social uncertainties that are emerging from scientific progress must be emphasized just as much as the prospects of technological breakthroughs. Science and the technologies derived from it will increasingly create economic, educational, and ethical problems for which our communities can make responsible choices only if steps are taken to increase general scientific awareness. A few organizations, such as Scientists' Institute for Public Information, have begun developing a public forum for the social implications of science, but much more will have to be done before the relation between science and society can develop on a basis of mutual understanding.

Most importantly, perhaps, public discussions of the sociology of science should reach into the organization of the scientific enterprise itself. The congressional hearings, in the Senate and in the House, have made clear that new social techniques must be developed to determine more rationally the relative amount of support for free basic research, mission-oriented research, and applied research. There is no doubt, furthermore, that certain fields of science are neglected even though their exploration would be of benefit to human understanding and welfare. For a balanced and orderly development of knowledge, it is essential that the public be given the opportunity to participate in the formulation of the overall strategy of scientific research.

All important human activities have given rise to a highly sophisticated profession concerned with the criticism of their values, achievements, trends, and potentialities. The professional critics of art, music, literature, economics, government, and so on play an essential and creative role even when they do not themselves contribute directly to the fields of activity they evaluate. Science would certainly benefit from the kind of evaluation that professional critics give to other human activities. Whether scientific criticism should develop from within the community of experimental scientists or outside of it remains a moot question. But what is certain is that the higher criticism of science cannot have much vitality without public participation.

A society that blindly accepts the decisions of experts is a sick society. The time has come when we must produce, alongside specialists, another class of scholars and citizens who have broad familiarity with the facts, methods, and objectives of science and thus are capable of making judgments about scientific policies. As Warren Weaver has repeatedly emphasized, persons who work at the interface of science and society have become essential because almost everything that happens in society is influenced by science.—RENÉ DUBOS, *Rockefeller University*

* From the response by Dr. Dubos to the first public announcement that he had been named winner of the 1966 Arches of Science Award of the Pacific Science Center. The award was presented in Seattle on 19 October.