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A Crisis of Crises

In his perceptive and disturbing article (*Science*, 28 November) Dr. John Platt has identified a possibly tragic outcome for the human race, one that could mature during the remainder of this century unless forthright action is taken soon. By presenting the case in probabilistic terms, by invoking the notion of a "half-life"—one that is uncomfortably shortened when various potential crises are considered together—we are left with a sense of inevitability and a question of whether it may be too late for science to contribute solutions. Thus the threat of nuclear escalation can only be solved by men of goodwill and by arrangements that would avoid overreaction to accidents. But it is the character of the problems themselves that places a new kind of responsibility on science.

The most serious problems listed present a common feature: they will be settled principally by political decision, by economic choice, and by the education of people. If such solutions are to be truly effective, however, they must be buttressed by sound knowledge and understanding. It is precisely at this point that the problems that confront us today differ from those that led to the massive scientific efforts during and following World War II. Thirty years ago much of the basic science was available and was used to devise urgently needed technologies; today, much of the requisite knowledge simply does not exist. We know far too little about the interactions that occur within any ecological system. We do not really understand the dynamics of our environment or the effects of technology upon it. We know little about the more subtle effects of pollution. We cannot predict with confidence the behavior of individuals nor that of social groups and institutions. We are not in a position to assess adequately the relative costs and benefits to society of any technology or any course of action. The special crisis that confronts us, as scientists, and that confronts our political leaders, who need and who must support our efforts, is thus one of perspective. We must devote a large share of our work to developing the kind of scientific base that is so desperately needed by mankind today.

In responding to this challenge there are two directions that support of science must take. First, it is of the greatest importance that the nation maintain its strong base of fundamental science. And here the criterion of choice for support must remain one of scientific opportunity uncovered by scientists during the course of their work. Our basic scientific knowledge and understanding form the ultimate source of all that science can contribute to society, and the National Science Foundation must continue to assume increasing leadership in supporting such fundamental investigation.

Second, and this is a new, albeit supplemental, direction for the National Science Foundation, we must devote ever growing effort to the study of the types of problems that Dr. Platt has summarized so well. These problems have a distinctive character. They are essentially multidisciplinary and require the contributions of specialists of many kinds in cooperative endeavors to seek new kinds of solutions. They may also require the formation of new types of research centers and institutes. Here too the National Science Foundation must take the initiative in sponsoring this type of activity.

The time may well be short and the need is certainly great, but so also is the opportunity to put the enormous scientific and technical strength of America to work on helping to shape a constructive and rewarding future for all of us.

—W. D. McELROY, *Director, National Science Foundation*