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From the Bizarre—Some Progress

Donald Oken's criticism of Pauling's article "Orthomolecular psychiatry" (Letters, 14 June) might have been more to the point had he recalled the always amusing concept that major advances and breakthroughs are almost *always* the contributions of individuals outside the discipline in question. His label of Pauling's work as "wild speculation" to me is the highest of praise—it would seem at this point that psychiatrists (and the National Institute of Mental Health) would welcome weird guesses on etiological factors in mental disease from *anyone*.

Oken's criticism is, of course, worthy of consideration—and my personal model of mental disease does not agree with Pauling's . . . but perhaps if the NIMH would greet every bizarre idea with enthusiasm, some progress might be made.

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Scrutiny by an Outsider

Social science cannot claim to have established many "laws," but here is a proposition that might be a possibility: all groups resist objective ("scientific") scrutiny by outsiders. I think that McClure, in his review of Daniel Greenberg's book *The Politics of Pure Science* (17 May, p. 752) provides an illustration of this possible law. Even scientists as a group often resist objective scrutiny by outsiders, in this case, Greenberg. He has simply tried to show that scientists, like all other groups, have a set of values and an associated set of ideologies that justify their activities. There is nothing wrong with ideologies; they are functional and essential in social systems. But sometimes they overstate their case, just because the values they justify are so strongly held. At times ideologies not only do not recognize the importance of other values, but even brush them aside. In some instances, Greenberg is telling us, the ideology of "pure science" has done just this. Fundamental as it is to our society and our values, "pure science" is not everything. There are other values, and these must have their place in our society and they must be able to compete with the ideology of "pure science" in our political process. "Pure

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science," Greenberg is saying, must learn to adjust itself, in some measure and certainly not without limit, to these other social values and ideologies. If it does, it will be better able to realize its own values in the greatest possible measure. And if it does not, it runs the danger of being at least temporarily brushed aside by other overstated values. Science in general and *Science* in particular are much in debt to Greenberg for his news reports, and now for this book. I hope McClure's resistance is not widespread in the community of science.

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Irradiated Foods Warning

The action of the Food and Drug Administration in withholding approval from irradiated foods in programs of the Atomic Energy Commission and the U.S. Army is reasonable and should be welcomed by consumers and toxicologists (12 July, p. 146). Irradiation of organic materials induces formation of poorly characterized radiomimetic compounds, including epoxides, lactones, quinones, peroxides, and hydroxyalkylperoxides (1). Such compounds are carcinogenic and mutagenic (2). So-called, lifelong feeding studies with irradiated foods, commencing conventionally in adult life, may not be sensitive enough to reveal low carcinogenic hazards. Yet, as can be seen in a recent bibliography on "Wholesomeness of irradiated foods" (3) and elsewhere, there are no published data on actual lifelong feeding studies, commencing in infancy, with extracts of irradiated foods, nor are there any data on mutagenicity tests in mammals, with either irradiated whole foods or extracts. In these circumstances, the FDA does well in reconsidering the already approved petition for bacon.

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Investment of Public Funds: What Are the Returns?

I have read with interest and concern the Harris-Wolfle editorial "The paradox of science in the universities" (19 July, p. 223). My concern is best illustrated by two consecutive sentences.

We recognize its [science's] contributions to economic growth, national security, health, and general well-being. At the same time, we are bombarded with questions and statements such as: "Is science misshaping the world?" "There is danger in growing technology." "Science, the pursuit of truth, is in trouble."

Frankly, those are not the questions or statements I hear most frequently, except, perhaps, for the last one. Rather, I hear asked over and over again, "What have we got for our enormous investment of public funds in science over the past 15 years?" It's a simple, and perhaps simple-minded, question, but until the science community either tries to answer it or demonstrates why it cannot be answered, science, the pursuit of truth, will continue to be in trouble. In the face of overwhelming demands on public funds occasioned by our domestic and overseas problems, a mere assertion, with no attempt at documentation, that "we," the scientists, "recognize its contributions to economic growth, national security, health, and general well-being" is likely to be unheard.

Congressmen are laymen who are charged with the heavy responsibility of determining national priorities. Every 2 (or 6) years they have to convince other laymen, their constituents, that they have discharged that responsibility wisely. If science is to receive a larger share of limited federal resources, our legislators need help in understanding, and then explaining, what has been and can be achieved through such an investment. I sense little distrust in Congress of the dangers of technology. But I sense declining conviction that science, as it is now constituted, can provide solutions to our problems. As a nonscientist I am convinced that, somehow, science can make a better case for itself.

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