LETTERS

Handler's "Dissent" Explained

It has been reported that "Handler dissents on NSF budget" (16 Apr., p. 247). And, indeed, I did make known my very serious concerns. But the report also contained some unfortunate inaccuracies.

1) I said that the House committees which relate to National Science Foundation affairs had expressed misgivings concerning the inauguration of Interdisciplinary Research Relevant to Problems of our Society. I did not, as you indicated, relate misgivings on the part of the National Science Board.

2) You stated that I reiterated my fears that too much emphasis on applied research might turn NSF into a "job shop," whereas I said that, although such concern might justifiably be felt, Leland Haworth and I had promised that we would be conscious of this danger and not permit it to happen. Nor do William McElroy or Herbert Carter so intend.

3) My concern is not that "too much applied research will erode the country's basic research capability." That erosion, if it continues, will reflect failure to adequately support basic research; education in science at the undergraduate, graduate, and postdoctoral levels; and the institutions in which these occur.

My "dissent," then, consisted in making it clear that not only is the increment in support of basic research proposed for fiscal year 1972 seriously inadequate, it is to be accomplished by drastic reduction of NSF's educational and institutional support programs, a process which began with substantial reduction in the funding of fellowship and traineeship support in fiscal 1971.

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Boston's Sufferance of Sulfur Dioxide

In their report on the effects of sulfur dioxide emissions from power plants (29 Jan., p. 381) Golden and Mongan argue that large point sources contribute only small amounts to the annual average SO_2 dosage received in urban areas. They conclude that power plants are likely to cause relatively uniform "background" pollution over a wide area and that this background pollution will be within the limits of standards for air quality set by most communities. On the basis of our own extensive analysis of several power plants in and near Boston we take exception to these conclusions.

Our calculations (employing the model suggested by the Department of Health, Education, and Welfare in *Workbook of Atmospheric Dispersion Estimates*) were performed in preparation for a recent public hearing at which our local utility sought a variance from the state's low-sulfur requirement on precisely the grounds presented in the report. The utility claimed that it contributed no more than 10 percent to the *average annual dosage* received anywhere in the Boston area. While this statement may be correct, we believe it is misleading. One knows that the plume from a large point source typically affects a relatively small (though perhaps densely populated) area at any one time, a behavior verified by experience and our own mathematical modeling. During the time of exposure, however, the affected area is being subjected to very high levels of pollution, levels which *by themselves* far exceed the state's recently adopted 1-hour standard. For a variety of reasons (changes in wind direction, reduced generating loads at night, changes in atmospheric stability, and so forth), the average of these intense exposures over the period of a year gives a total annual dose at a given point which may indeed be only 10 percent of the total accumulated exposure from all sources. This is no guarantee, however, that damage to public health and welfare is not being incurred through these short-duration episodes. Indeed, many persons who live in areas in Boston affected in this way attended the public hearing and offered dramatic testimony that they were being subjected to undue hardship. The pitting of automobiles and the destruction of clothing by "acid smut" from power plants were described by local residents in very strong terms.

These physical losses could likely be reduced in direct proportion to the sulfur content of the fuel burned by the utility. Health damage during such episodes is difficult to document, but a prudent public health policy would assume that it occurs unless it can be shown otherwise. The emphasis on annual average concentrations from large power plants obviously fails to pre-