

Dr. TUKEY. Well, the question of manpower is extremely serious across the whole field. But I think it is clear that there are intersectorial problems of such importance that putting some of the effort there instead of other useful and important places would be recognized as good thinking.

Mr. DADDARIO. And your point, then, is that although something needs to be done, you believe that there has developed a willingness to work so that we need not be as much concerned as some of us apparently are. Must we stimulate activity in this direction? Are you optimistic that concern has developed to the point where people do want to work in this field?

Dr. TUKEY. Let me be more precise. At the technical level, I don't know of any indication that there is not or has not been willingness. Clearly the PSAC panel felt need for stimulating activity in this area because it made a number of recommendations. We did not recommend, and I would not myself feel that management reorganizations are the way to get at this problem at the moment. I think we can stimulate intersectorial activities within the present organizational framework.

Mr. MOSHER. Can I ask for a more precise definition of intersectorial activity?

Dr. TUKEY. My impression in your panel report was that this was meant to apply to air, water, and land pollution as major sectors, and I was responding to the question in these terms.

Mr. DADDARIO. That's a correct assumption.

Dr. TUKEY. Fine.

Turning next to questions 36 to 38 from paragraph D(5):

What is required for ecology, as a science, to guide the stewardship of our environment? To what extent can ecological manipulation achieve a scientific and engineering basis? How can the value to society of our industrial economy be properly equated in ecological management?

Ecology needs more research, much of it applied to harder problems. This means more manpower—some trained in the most modern ecology, some trained in the wide variety of interacting fields, all willing to enter into collaborative work.

This will require more money, both for training and for research support, and more public emphasis on the problems toward whose solution we all need progress.

Ecology is often complex as are so many other scientific and technical fields. There is no indication that ecological problems cannot be understood. Quite the contrary. Accordingly, the question must be how fast will we develop a scientific and engineering basis for more ecological manipulation? As of today, we can clearly speed this process greatly by putting in much more effort—there are plenty of problems ready for effective attack.

The third question of D(5) with the sudden shift to "ecological management" and a special place for "our industrial economy" rather baffles me. There seems to be an undertone that the sorts of modifications in products, processes, and locations that the people may come to find worthwhile in order to restore and preserve the quality of our common environment are likely in some unspecified way to destroy our