

philosophical tradition and he figured if all these forces are merely manifestations of some kind of basic force, then they ought to be transmutable; all you had to do was find the right conditions and then turn electricity into magnetism.

Here was a different interpretation of precisely the same experimental facts; there was no factual difference. But, because one person had a different view of what these facts really meant, he looked for something that the other group never looked for. Michael Faraday spent his entire career by saying he wanted to complete the circle. His whole experimental life was spent trying to turn one force of nature into another. He succeeded. His only failure was that he could not turn gravity into electricity or vice versa. That was the thing that motivated him.

This is what I mean by the personal vision of what reality is. This vision of forces is opposed to the particulate vision of the orthodox physicist. These are the interpretations which end up, I think, as being extremely fruitful in the history of science.

QUESTION: Dr. Williams, we read that many people in the scientific community are concerned with the amount of money the Federal Government is cranking into science--certainly to make a living that way--and this is probably dangerous to science. Would you comment on that aspect of it, and particularly what can the Government do to increase the output of science without killing science?

DR. WILLIAMS: Let me answer the second one first; the Williams plan which I give unsolicited to anybody. Let us leave out the laboratories and talk about the universities. The Williams plan is, whenever the Government gives a grant to the agencies or a specific research project at a university, it gives the university a matching grant with no strings attached. I say this because, increasingly, and people fight against it, but you cannot help it--increasingly, the direction of science is being changed by the grants. There is a new order, and there is going to be a new industry, I am sure, of people who will make out grant applications. Because, an awful lot depends on how you make it out. But this does not necessarily mean that the best scientists are getting the grants.

A man will say, "The AEC lets me do what I want." But he also knows what the AEC wants, and this is going to influence his own