

It is hard for some of us to get over this idea, but there are so many attractive fields. If you consider a boy at the beginning of his life who can work with Dr. Pickering (Jet Propulsion Laboratory) and design spacecraft for flights to Mars or Venus, while an alternative is to clean up the pollution problems from a powerplant, for example. The latter may be a very noble enterprise, but it doesn't appeal to the boy.

Now, money speaks a good deal and we must have the support of these fellows to want to go into such a field.

Mr. BELL. Thank you, Dr. Haagen-Smit.

I have one other question I would like to ask you.

Should the Federal funding of technological development stop at the proof-of-principle stage, or extend on to hardware prototypes and to demonstrations, and so forth? Where do you think the Federal Government's role should extend to in this particular area?

Dr. HAAGEN-SMIT. I don't believe that this answer can be given quite one way or the other. Let me give an example.

The Bureau of Mines has for many, many years done research on shale. After all, shale is not as valuable as coal, but we have lots of it; so a great deal of research went on, basic research. They also had pilot plants, because nobody else wanted to do it.

Now, if we leave this to the coal people, maybe something like that wouldn't happen.

I believe that in the automobile field, for example, some competition wouldn't hurt the automobile industry. I think that the work which is going on, for example, at UCLA, and at some of the oil companies on reducing oxides of nitrogen and also hydrocarbons is good. It was very good when outside agencies, the muffler makers, began to produce mufflers. By the time it was set to be put on a car, we suddenly found there were some other solutions, too.

I think we should always be in a position to have the funds and knowledge with which to cope with such a situation. So my answer is that there should be a certain competency in the Government organizations and at the universities to do certain things.

Mr. BELL. In other words, you do feel as far as the Federal and local governments and universities and industry, there should be some cost sharing in this program, too? I am talking about for research contracts.

Dr. HAAGEN-SMIT. The Federal Government, of course, should provide support as well as State governments. There is no reason why the industry couldn't support research, and they do, as a matter of fact.

There are brains in the university which may not be available to the industry, which may not be better but do represent different approaches. Some of the people in mathematics, physics, or chemistry might do better in the university atmosphere, and to draw upon their talents funds should be supplied.

Mr. BELL. Of course, we all recognize the difficulty in industry and in other areas, too. It is an additional cost to industry, basically, and I suppose from that standpoint you could say it would be necessary for some kind of cost sharing and participation of governmental organizations until we can get over the difficulties of the extra cost involved.

Dr. HAAGEN-SMIT. There is a certain extra cost involved, yes; but on the other hand, there are some advantages to be gained, too. So I don't feel too sad about the—