

Mr. VIVIAN. Do you require authority or is authority automatically implied?

Dr. HIBBARD. Our solicitor has advised us that we do require authority. There are bills pending in both Houses of Congress now which if they are passed and signed into law will give the Secretary of Interior authority to contract for research in those programs which have been authorized by statute. This will help us no end if we can get this authority.

Mr. VIVIAN. Would you be so kind as to identify these bills?

Dr. HIBBARD. Yes. They are H.R. 15316 and S. 3460.

Mr. VIVIAN. Thank you.

Dr. HIBBARD. You are welcome.

Mr. MOSHER. Do you think it is possible that industry associations can be used to pool efforts and benefits?

Dr. HIBBARD. I will discuss that later in the testimony. We do have some joint venture research contracts with industrial associations where we both contribute use of equipment. These have been very useful and fruitful, particularly where we have identified a new area of technology which we would like to transplant into industrial practice. A joint venture effort of this sort is a very effective method of transferring technology from a Federal research laboratory to industrial technology.

Mr. MOSHER. You will be discussing this later?

Dr. HIBBARD. Yes.

With respect to question B(6), we believe that the opportunities are unlimited for approaching a recycle type of industrial society, one in which materials are used over and over again. This is a very challenging area and should involve again, a systems approach, such that a material and its use in a device are designed, not only for its primary function but also for optimum recovery, recycling and reuse.

We believe for example, that one can design alloys in such a way that they will have the same kinds of strength characteristics and yet not contain those kinds of alloying additions which are difficult to remove during the recycling process.

We believe that one can design various components, say of an automobile, so that they could be readily disassembled in the scrap yards and separated for reuse as scrap. In fact, we have a study aimed at this kind of approach to the problem. We think it is very promising and in the long run it is going to be the long-range solution.

With respect to question C(1) regarding the funding of, the balance between short-term and long-range problems, many of the problems concerned with pollution abatement have social connotations and tend to obscure definitive answers as to the comparative merits of short- or long-range remedies through research. It should be remembered that the time required for basic research necessary to the successful use of technology is often a 5 to 10 or 15 year span. Thus, if one is to start from a basic research approach, the start must be made well in advance of the need for solution to the problem.

For example, we recognized and started to work on the junk automobile problem 7 years ago when we noticed the metallurgical changes which were going to result from the use of the basic oxygen furnaces and the use of hot metal instead of scrap. We are now ready to build