

[English]

**The Chairman:** Before any further questions are asked I think Dr. Gauvin has expressed a wish to say a few words and to comment on a question which was raised a few moments ago.

**Dr. Gauvin:** Thank you very much, Mr. Chairman: I would like, if I am allowed, to present a few comments pertaining partly to Senator MacKenzie's question, but also with your permission I believe that my comments would cut across many of the questions that have been asked by the senators, particularly in this morning's session, but also this afternoon.

These questions, gentlemen, show I think to me at least the concern of this sub-committee with applied research and industrial research.

Now, there is a difference between the two; applied research, as you all know, has very real technical, and to a certain extent, economic objectives; whereas industrial research has of course, the very same objectives, with the additional important ingredients of free concepts, rewards and consequences which are usually absent from applied research. These consequences, of course, are far more than financial consequences, but are social consequences as well.

Now, the question specifically in which of course the senators appear to be interested is the role and importance of applied and industrial research in Canada, and more particularly the role that NRC is playing in the sponsoring and development of industrial research in Canada.

Now, Senator Lang has touched at some length on this question and has requested our President, Dr. Schneider, to present some case histories on the ideas initially developed at the National Research Council which were presented to industry, further developed at the pilot plant stage presumably, and successfully exploited commercially.

This is obviously one of the important functions of NRC; we all agree that it is. It is almost an obvious role that NRC can play, but I submit that because of the chain of many links that leads from a question, usually you know that a research project starts not with an idea, but with the question; the idea, the fundamental work that is required to back up this idea and slowly through the various stages of bench scale work, technical

analysis, computational methods of trial, then the economic factors begin, market analysis.

Then the big decision: Are we or are we not going to spend \$2 million for this pilot plant? Finally, the last problem, where are we going to find a hundred million dollars to build a commercial plant.

Every one of those links is involved and I submit that NRC is not only a provider of ideas, but provides assistance and facilities in many of the links and this is to my mind as an industrialist charged with the direction of an industrial lab., those services, this kind of assistance is immeasurable. It is unfortunately intangible in value, but I can vouch from personal experience that I have used virtually every one and I have a long list of these services.

I don't know if it is permissible, Mr. Chairman, to quote from personal experience but, for example, the special emission spectro-specialized analog computers which NRC possesses, numerical analysis, special analysis, for example, the special emission spectro-scope that is practically unavailable in the rest of Canada, the techniques that enable the process to become commercial, like the fluidized-bed technique developed by Dr. Gishlet, the spherical agglomeration which is being developed now by Dr. Puddington, which is not commercial yet, but we are quite aware of it and I assure you we are using it.

Of course, the library information service available is invaluable to us; systems analysis; contract research is another service which had been touched upon by Dr. Tupper already; consulting services; advice; and all the supporting services are of tremendous importance to industry.

Now, I would like to give you another specific example, this one arising from the division of building research of which I happen to be the Chairman of the Advisory Committee.

Sometimes usefulness to an entire industry does not result from an idea, but ten years ago the division was approached, again a question, how should snow loads on roofs be calculated? Well, that was ten years ago; the answer was empirical; because of catastrophic failures and very expensive lawsuits the construction people were grossly exaggerating the calculation of the engineering load.

Sixty-six actual sites were selected and over a period of five years results began to come in; correlations were established,