

**Mr. Richmond:** Particularly. This makes it, of course, very difficult to be price competitive with these engines assuming that other things are equal.

**The Chairman:** Could you describe the differential or quantify it?

**Mr. Richmond:** In the case of one product in the U.K. it is a hundred per cent quantum right now. There is a reason for that. They have an in-country use for the engine. They are funding an airplane to use that engine as well and it will be used in a military application. The engines are really insensitive in the sense as to whether they are military or commercial in this power class. So they will, in fact, have a competitive product fully funded on the market in the next year and a half. In the United States it is a different situation. There is really no direct funding of commercial products, as you are probably aware. But the companies on the other hand enjoy a very large degree of military programs and, of course, there is a spill-over. There is a similar version of the engine competitive with ours which has been funded and there are families of engines in and around the power class which are under contract to the U.S. military. So that there is a continual interrelation of osmosis effect here on both overhead assistance and technology assistance that spills out from these programs.

**Mr. Golden:** Not only military, of course, but now NASA fully funded plus profit.

**Senator Robichaud:** Mr. Chairman, we have had evidence that there is no doubt that United Aircraft of Canada as a result of their innovation program have contributed largely in assisting Canada's balance of payments. This is particularly due to their large percentage of export. Can a company such as United Aircraft continue successfully to innovate regardless of development in other segments of the Canadian industry? For example, the materials industry? In other words, what other industrial sectors should receive encouragement to development in order to protect the development within United Aircraft?

**Mr. Richmond:** I would like to answer that in two parts. Firstly, I would like to reiterate what I was trying to make clear earlier, that there seems to be plenty of opportunity for these products, or variations of the products, or similar products of a more advanced nature. We have plenty of opportunities to

sell in this market. It is a question of whether we can afford to continue to develop them at a sufficient rate, you might say, to attract business at the particular time it is there.

The second part of the question I would like Mr. Smith to answer, who runs our engineering organization.

**Mr. Smith:** The material area is one of the benefits of having a corporate parent. We have been able to get from our parent material knowledge as required, really, for the projects we have been on. We have planned and we do plan to continue to use that knowledge because it is available to us. We have specialized in our own research in terms of developing the aerodynamics of small scale components. We are now in a position to trade technology with our parent. This material question happens to be one where we do not anticipate doing any work, we do not anticipate needing to do work. The general answer to the question is that as far as small engines at United Aircraft are concerned we have in-house or in-incorporation those researches going forward that are necessary for the next product.

**Mr. Golden:** What you also need for a successful exporting engine industry is a very good support industry, sub-contract, components, accessories. Mr. Taylor there can comment on that perhaps.

**Mr. D. R. Taylor, President, Aviation Electric Limited:** Mr. Chairman, I think this is an important point, because we all look upon these so-called large companies or prime contractors within the industry, which are relatively few in number, for the survival of the smaller companies in the industry which form a greater number of companies although smaller in total percentage of industry. Success stories like the PT-6 and the De Havilland Twin Otter are vital to the survival of many of the smaller companies who are active in the support accessories that go on to these prime products. Engines need pumps, fuel controls, ignition systems. Airplanes need electrical systems, hydraulic systems, wheels, brakes and under-carriages, and so on. Again it is the same type of technology. In this end of the business we need research and development. We must keep abreast of this state of the art. When the engine manufacturer comes along with his next generation of engine, or next sophistication, the accessory people must be in a position to respond. The saying is that the key to success is what the prime contractor is able to do.