

It is natural that you in the aircraft industry, spending most of your waking hours thinking of aeroplanes, may think of an interceptor fighter by itself as being a weapon for defence against an attack by manned bombers. It is, in fact, only one part of an extremely complex weapons system, which to be at all effective, must include such vital elements as the ground radar early warning and detection system -- 3,000 miles of it across the Far North, the Mid-Canada Line radar chain, the ground environment for control and data-processing necessary to place the fighter in a position to intercept the enemy; all of the essential split-second communication links between these lines; the integrated electronic fire control, navigation and communications equipment installed within the aircraft, finally the guided missile with which the aeroplane is equipped.

It takes little imagination to see why it takes so many years for a weapons system to be researched, developed and built, and it is easy to understand why still later research and development may cast a long shadow of obsolescence ahead of it.

In short, the problem of long lead time has never been more crucial. Expensive projects become fruitless if they cannot be carried out rapidly.

In one of our applied research labs there hangs a sign which reads, "If it works, it's obsolete". While, hopefully, that isn't often true at the applied research stage, it tends to become progressively more true as further years of development and production mount up.

This points up the need for maintaining a continuous momentum of research even though the later use of it may not carry through to production.

Perhaps the solution is to design the research and development program in such a way that successive projects will overlap in time, but not necessarily implying that they will all be carried through to production. Such a system would, however, keep our knowledge up to date and would enable us to produce a given type of weapons system in perhaps half the time required if we wait for complete production of one before beginning on another.

Now I would like to say a few words about the status of aeronautical research in Canada, with respect to its application to defence problems.

As Canadians, we can take considerable pride in the fact that, since 1945, some 25 types of aircraft have been produced in Canada, almost half of them of native design. But we cannot feel so happy about research for which our resources are relatively meagre. There are