

Editorial

ON THE RIGHT

The author of the guest editorial appearing in the right hand column of this page this month, Group Captain Charles B. Limbrick, CD, AFCAI, writes with some authority on his subject. In the several years prior to his recent retirement from the RCAF he served variously as Director of Guided Missiles and Special Weapons, and Director of Radio Warfare. He was responsible for the organization and installation of major Canadian radar facilities during and after World War II, and he initiated the Air Force Guided missile program.

IROQUOIS ACHIEVEMENT

In recent years Canadian firms have been making quite a name for themselves in the international aviation field. Sales of aircraft and engines — large numbers of both types of equipment being of native design, as well as manufacture — in the highly competitive foreign markets, have grown far beyond token numbers. Now, the crowning achievement: the sale by a Canadian firm to a U.S. firm of a license to build a product that is Canadian from conception. The Canadian firm — Orenda Engines Ltd.; The U.S. customer — Curtiss-Wright Corporation. The product — Orenda's heap big engine, the Iroquois. That the product concerned should be from such a technically complex field as turbo-jet design; that the customer should be, in a sense, a competitor (and one which has far greater design, development and financial resources at its command than the seller) makes this achievement on the part of Orenda Engines even more admirable. This is the ultimate proof that Canadian design capabilities in technical fields are the equal of any in the world.

SATELLITES AND MISSILES by G/C C. B. Limbrick, CD, AFCAI

Since the Russians have launched their world satellite questions have been asked concerning the military significance of this remarkable achievement. Strangely enough, there seems to be more excitement aroused over the satellite project than at the announcement by the Russians that they had successfully fired an ICBM. On the other hand, statements have been made — by experts — that the satellite had little or no military value.

Perhaps it would be useful to examine some of the characteristics of the ICBM and also the possible relationship between it and world satellites.

Countermeasure: First let me point out that the amazingly successful use of *radiating* electronic devices during most of the last war has been drastically limited by the development of powerful electronic countermeasures. The cold fact is that any radiating electronic device can be detected and to a greater or lesser degree countermeasured or made useless to perform its function.

The success of military operations is almost completely dependent on radiating electronic equipment. Radar, communications, navigation, guidance of certain missiles, control of aircraft . . . all employ radiating equipment and are therefore subject to interference.

The ICBM could be launched and controlled throughout its flight from take-off to target with non-radiating devices. It might be found more convenient and more accurate to have a very short duration of radiating signals at the commencement of flight. Such transmissions would be difficult to countermeasure.

Now let us look at the defence. To the best of my knowledge the only way to detect and track an ICBM would be by devices that radiate. Obviously such installations can be located, and should suitable equipment be developed, countermeasured. Here then we have the uncomfortable situation of a quiet enemy and a noisy defence; i.e., the attacker is not vulnerable to electronic interference and the defence is.

How does the satellite affect this situation? In many ways, I believe. The operation of a man-launched satellite will give the Russians the first authentic information of the launch, flight and control problems in outer space. New data on items such as temperature, pressure, functioning of electronic devices, mathematical computation, stabilization, power requirements and last but not least — confidence — will be of tremendous value in the development and operation of ICBM's. However, there is another possibility, the use of satellites as vehicles to carry equipment to countermeasure our ICBM detection and anti-missile control systems. There are many problems to solve before this is possible; perhaps the Russians have some of them beaten. The facts are that a satellite has been launched and that it does radiate energy, therefore is conceivable that satellites could be used to confuse the noisy defence whilst the silent ICBM is making an attack.

Non-Fiction: It is also possible to conceive of a gradual building up of a large number of satellites, all making precise orbits on different courses and at varying altitudes. These fleets of satellites could be under radio control and used either to drop weapons or to carry out large-scale countermeasures.

My suggestion is that if we are to survive in our way of life that we must make every possible effort in the application of science and invention to defence, and that we must close the gap between military requirements and delivery of the equipment.