

advice so that they may plan wisely for future economic and industrial development. I have little doubt that the investment Canada has made in its atomic energy programme will be repaid many times over in the next few years. The returns on investments in space research are less easy to forecast.

These programmes are fantastically costly, and the annual expenditures in the United States on scientific research, technological development, instruments, guidance and tracking systems, fuels and a host of other intricate and specialized items of the space cost in the billions of dollars.

Benefits from Satellites

What are the potentially assured results? Perhaps the first practical benefit will be a great improvement in our knowledge of weather and the techniques of forecasting. There are indications that a fairly modest system of meteorological satellites would provide increased warning of major storms, which could annually diminish property damage by millions.

There are possibilities in the field of navigation also, especially all-weather navigation. Satellites may in time help to ease the growing problem of traffic in communications. We may even hope that by the use of space satellites, a solution may be found to the problems of international inspection under a disarmament agreement.

The scientists of the world are probing further into the secrets of nature. The engineers have provided them with the tools which enable studies of the cosmos to be made, which only a few years ago could have been no more than a dream. Not only will it shortly be possible to view the universe without the distortions caused by the earth's atmosphere; it already is possible to study the fundamental particles of the cosmic and solar radiations before they are affected by our atmosphere.

He would be a bold man who would venture to forecast which might be the practical applications of the extensions of fundamental knowledge which research into space is bringing. One thing, however, can be said and that is that interest in the phenomena of space is universal. It is unthinkable that knowledge of the cosmos should be concealed or exploited for narrow nationalistic reasons. We must strive, therefore, for the development of effective co-operation between governments and nations in the exploration of space. We have before us the inspiring tradition of the scientific fraternity which has consistently recognized that co-operation between the scientists of different nations is an imperative necessity.