

energy programmes of their own, and especially of those nations with potential, but as yet unproven or undeveloped radioactive mineral resources. Such nations are faced with the question of how much external help they should seek or accept.

As I said a few moments ago, the great advances in atomic energy have been the work of many men from many lands. International co-operation is essential to its rapid and successful application to meet the needs of mankind. It should also be remembered that co-operation implies an arrangement which works to the advantage of all participants. Above all, co-operation is not a synonym for charity.

It is with this thought in mind that I suggest that the Canadian atomic energy programme merits attention. For it is our belief that we have demonstrated that it is possible to work in association with two great powers in this field, and yet establish and develop an independent national programme which in quality, if not in size, is unsurpassed.

Nuclear research in Canada had its origin over fifty years ago when Ernest Rutherford, working in collaboration with Frederick Soddy at McGill University announced in 1902 the results of his investigation of the nature of radioactivity, but it was only during the second world war that Canada first became an active participant with the United States and the United Kingdom in a programme aimed at possible practical applications of atomic energy. During the war, of course, efforts were directed primarily toward the development of the atomic bomb, but even at that time the possible application of this tremendous energy source to peaceful purposes was in the minds of all concerned, and it was clear that much of the research on atomic weapons could in due course be put to effective use in pacific projects.

The Canadian contribution during the war which was of most immediate value was, of course, the supply of uranium ore. But the research facilities provided by Canada not only for its own scientists but also for those from the United Kingdom, France and other European countries, made an important contribution to the wartime development programme.

Since the end of the war, Canada has carried out a very active programme to find and develop sources of supply of uranium, and by the end of 1957 uranium production in Canada will be over twelve times as great as it was at the end of the second world war. The annual gross income from that production will be approximately one hundred million dollars, and it will rank in fourth place in the gross dollar value of our metal production.

Canada's first mine producing radioactive ore was discovered on the shores of Great Bear Lake in the North-west Territories in 1930 and went into production in 1933. The ore was taken to a refinery which was built at Port Hope, Ontario, and the first ounce of radium for medical purposes was produced in 1936. In spite of the fact that the mine was nearly a thousand miles north of Edmonton and only about twenty-five miles from the Arctic circle, the radium produced from its ore forced a reduction in the world price. The mine at that time was operated by a private company which was forced to halt its operations in 1940 owing to the dislocation of radium markets. In 1942 the mine was quietly re-opened to provide the uranium needed for the atomic bomb programme and shortly afterward it