In the Maritime Regional Laboratory one of the more important investigations in progress concerns the industrial use of the seaweeds found in abundance along the east coast which are of great economic significance.

In medical research, there is the closest integration of the Council's fellowship and medical research program with similar programs of the Defence Research Board, the National Cancer Institute, the Canadian Arthritis and Rheumatism Society, and the Federal Departments of National Health and Welfare and of Veterans Affairs.

The research picture in Canada is encouraging. At every level—the universities, industry, government departments, and in the institutions including the National Research Council which are devoted exclusively to research—satisfactory progress is being made and high standards of work are being maintained.

Section 2.—Research in the Atomic Field*

Atomic energy research in Canada had its origin over 50 years ago when Ernest Rutherford came to this country as Macdonald Professor of Physics at McGill University. There, in collaboration with F. Soddy, he announced in 1902 the results of his investigation of the nature of radioactivity, which had been discovered in 1898 by Henri Becquerel. Rutherford determined the fundamental laws governing spontaneous disintegration of radioactive materials. He went on, both in Canada and England, to make further discoveries of great importance in the development of atomic energy.

Fundamental research into the structure of the atom continued in many countries on a relatively small though fruitful scale over the ensuing years until the first recognition of nuclear fission was announced in Germany by Hahn and Strassman on Jan. 6, 1939. Soon it was discovered that when a neutron split a uranium-235 atom, not only was a remarkable quantity of energy released, but also additional neutrons were given off. This suggested the possibility of creating a chain reaction that would proceed so quickly that a new and tremendously powerful explosive would be available for military use.

The onslaught of World War II eight months later at first pushed into the background interest in harnessing the vast energy now recognized to be contained within the nucleus. But when scientists drew to the attention of their respective governments the possible military application of atomic energy, development work was accelerated.

In Canada, first investigation of the possibility of releasing a large quantity of energy from uranium took place in 1940 at the National Research Council. Dr. George C. Laurence directed an experiment with a bin of coke and uranium. The bin was lined with paraffin wax and filled with ten tons of calcined petroleum coke in which were embedded uniformly spaced packages of uranium oxide. The purpose of the experiment was to determine, by measuring the behaviour of neutrons within this material, whether a large amount of energy could be released if the neutrons were moderated (slowed down by the carbon in the coke) sufficiently to create a chain reaction, and what quantity of material would be needed for this purpose.

While the experiments continued at the National Research Council, progress in the United States toward achieving a chain reaction moved quickly and on Dec. 2, 1942, the first nuclear chain reaction to be initiated by man began a controlled

* Prepared by Clyde Kennedy, Public Relations Officer, Atomic Energy of Canada, Limited, Chalk River, Ont.