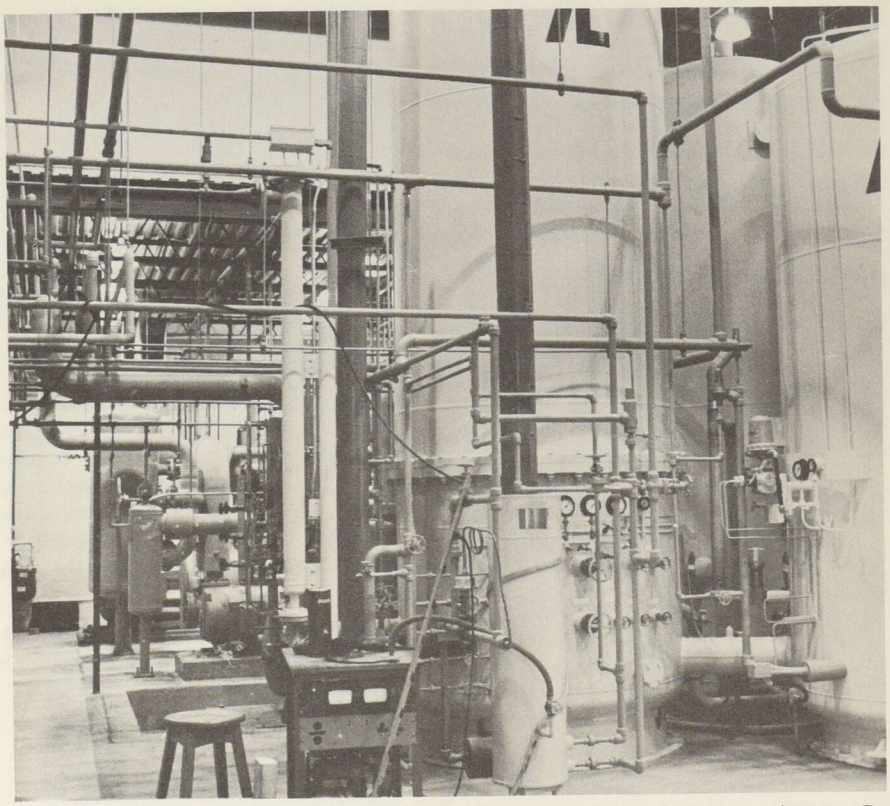

View of part of the cryogenic system developed by Canadian Liquid Air Limited which is capable of producing temperatures close to absolute zero.

Une partie du système cryogénique. Cet immense système de réfrigération, mis au point par la Canadian Liquid Air Ltée, peut produire des températures tout près du zéro absolu.

many millions of dollars. Low temperature magnets require much less power, and thus require much less money to build and operate.

Dr. Stevenson reduced capital costs tenfold by designing an extensive cryogenic system for cooling the magets to very low temperature. This permitted a huge saving of electrical power due to the phenomenon of superconductivity, and to the lowering of electrical resistance of pure metals at very low temperatures.

The huge refrigeration system produces liquid helium and cold helium gas and reduces temperatures of materials being studied close to absolute zero which is minus 459 degrees Fahrenheit.

Dr. Stevenson says that at these low temperatures the electrical resistance of metals decreases dramatically. The resistance of some alloys, such as niobium-tin, becomes zero.

"We know that a magnetic field changes the energy content of substances," he says. "When the field is strong enough this change can be of the order of magnitude of some of the interactions between atoms. If the interactions can be changed in this way by external means we can make detailed studies and deductions about the nature of the interactions."

The new laboratory will be an invaluable modern tool for research in solid state physics. About half the operating time will be made available to individuals or organizations outside the university without charge other than for the costs of consumable supplies.

Dr. Stevenson was asked whether research in the laboratory would lead to practical applications.

"We hope so," he said. "The knowledge produced by an individual or by a group is likely to be incomplete and diffuse, but in general any contribution to the growth of knowledge is of practical value and we certainly would like to contribute.

"On a more immediate level, the techniques used in building these magnets may be quite useful," he said. "The cryogenic system is the largest in Canada and one of the largest in the world. It was developed and built by a Canadian company, and we hope that the experience will give them an advantage in a technical market that will grow over the years.

"Another Canadian company produced the superconducting solenoid, and we hope that this will have a similar effect. The experience gained in operating large electrical equipment at low temperatures should be of value to the electrical industry. There has never been an installation like this, and we are trying to make available to industry every technique we use."