

ARCTIC TRIALS FOR GIANT 'COPTER

A helicopter that has been used by the United States to fly troops and munitions into Vietnam and has been the subject of Department of Transport trials in the Arctic was demonstrated recently at Uplands Airport, Ottawa.

The helicopter, the S-64 *Skycrane*, is manufactured by Sikorsky Aircraft of Connecticut. The S-64's cockpit bubble, unlike that of the conventional helicopter, is only a small part of the whole vehicle, which is 88½ feet long.

During the trials carried out by the Department, two remote Eskimo settlements were re-supplied with building and other materials in a ship-to-shore airlift operation. More than 1.8 million pounds of supplies, including a complete prefabricated house and material for a six-room addition to a school, were unloaded from a ship by the big helicopter and placed on shore at Cape Dorset and Coral Harbour in Baffin Island.

According to John Stewart of the Department's marine operations planning, the trials have shown that the S-64 *Skycrane* is the most economic method of delivering containerized and uncontainerized cargo from ship to shore. "This method not only saves time but reduces damage in the transporting of materials and supplies," says Mr. Stewart.

Barges are the usual means of unloading the ships at the villages in the Arctic, where there are no harbors or piers. The barges can operate only at high tide and in calm seas. While the areas at which the barges can unload are limited, the *Skycrane* was able to place the loads at the point of their use or nearby. The barge operation can take days, or even several weeks, longer than the method employing the *Skycrane*.

Damage to cargoes in the barge operation can range as high as 25 to 35 per cent, whereas damage was less than two per cent in the *Skycrane* operation.

A total of 238 sorties was flown in the Department's northern operation.

HOT WATER FREEZES FASTER

Three hundred and fifty years ago, Sir Francis Bacon wrote in *Novum Organum*: "Water slightly warm is more easily frozen than quite cold." Here was a challenge to the scientists, for the statement seemed to affront not only scientific law but common sense itself. Yet scientists did nothing to prove or disprove Bacon's statement — they simply refused to consider it.

Dr. George S. Kell, a chemist with the National Research Council of Canada, has for the first time proved scientifically that an open bucket of hot water freezes faster than a bucket of cold water. His research involved a computer calculation based on simple thermodynamic principles and outdoor experiments during the winter.

NATURE OF EXPERIMENT

Dr. Kell, of the High Pressure Section of NRC's Division of Chemistry, found that, if the buckets were covered, cooling took place as described by Sir Isaac Newton's law of cooling — the cooler of the two buckets would remain the cooler until the water in it froze. If, however, the buckets were not covered evaporation played a major role in the freezing of the one containing hot water. So much of the hot water evaporated that this more than compensated for the greater temperature range it had to cover before freezing. In short, there was less water to freeze in the hot bucket and it cooled and froze faster.

Dr. Kell's experiments show that, as water cools from 100 degrees centigrade to zero, some 16 per cent of it evaporates. Another 10 per cent vaporizes as the liquid turns to ice. In other words, if 100 pounds of boiling water is poured in a large wooden tray, more than 25 pounds of it will evaporate before it freezes.

He also found that, when the temperature of the cold environment is 20 degrees Fahrenheit, very hot water can freeze about 10 percent faster than an equal volume of water starting at room temperature. Water also takes the longest time to freeze when it starts at 73 degrees Fahrenheit.

KELSEY COMMEMORATIVE STAMP

The three-hundredth anniversary of the birth of Henry Kelsey, the first explorer of Canada's Western plains, will be commemorated by a six-cent stamp the Canada Post Office will release on April 15.



Kelsey, who was apprenticed to the Hudson's Bay Company in 1684, explored the Canadian West in the quest for new avenues of trade, living and travelling for 40 years with native Indian tribes.

It was not until about 200 years after his death that his account of his journeys, which described the features of the land in great detail, was discovered in the library of Dobb's Castle in Ireland. With the discovery of these manuscripts in 1926, the validity of Kelsey's claims as an explorer was confirmed.

The new stamp, designed by Dennis Burton of Toronto, is red, blue, yellow and dark-brown and measures 40 mm. by 24 mm. Thirty-four million are being printed by the British American Bank Note Company of Ottawa.