

the surface of the ponds and occupies the shallower parts of them, and it is this fresh water which evaporates in the summer, thus leaving the deeper and more concentrated saline layers as practically the only water to freeze at the close of the summer. Like all water areas in the north, the first free water on the ice in the spring owes its origin to melted snow from the surrounding slopes and not to the melting of the pond ice. The pond ice melts later under the combined

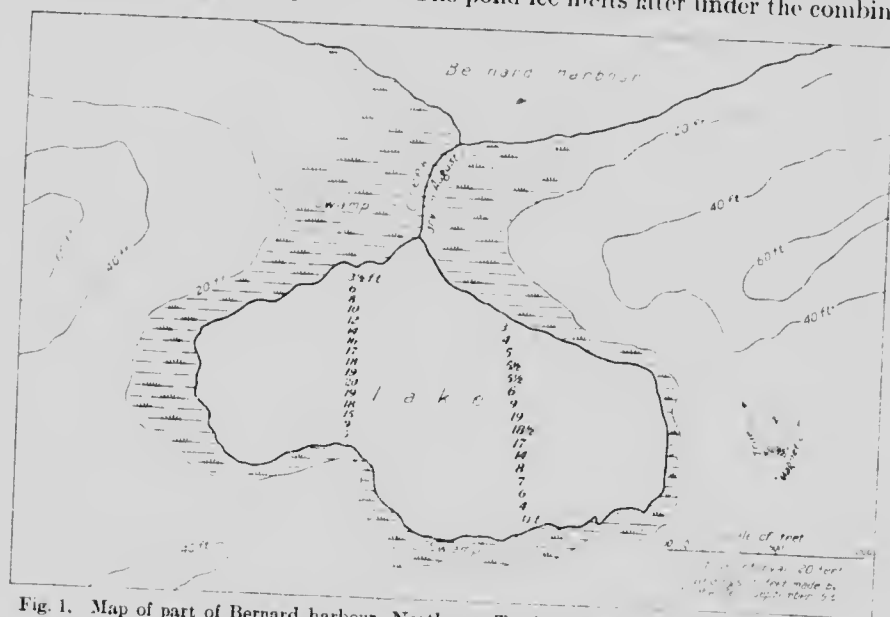


Fig. 1. Map of part of Bernard harbour, Northwest Territories, showing the big lake and its outlet to the sea. Survey by K. G. Chipman and J. R. Cox.

action of the sun's rays and the erosion of the overlying fresh water. In the brackish ponds under consideration there is little or no circulation of the water except during the influx of the freshly melted water from outside sources, but during May and early June, when this influx occurs, the deeper part which contains the more saline and heavier water is one mass of ice and its subsequent melting is a gradual process. By the time the conditions are favourable (no ice) for a thorough mixing of the water layers in the pond, there is no influx of freshly melted water and, therefore, no circulation in the pond. Consequently, the heavier and more saline layers continue to be the deeper layers during the summer, whilst the lighter and freshwater surface layers are subject to rapid evaporation. The fresh water having evaporated during the summer, the first ice formed at the beginning of the winter is brackish. The deeper and more saline water freezes only as the temperature lowers with the advance of winter.

The brackish ponds just described both have an algal flora which, excluding diatoms, is decidedly freshwater in character. The diatoms, which are plentiful, include both freshwater and marine forms. Certain species of *Pediastrum* and *Cosmarium* are very numerous in both ponds. These genera are typically freshwater, marine or brackish forms being unknown.

From the condition of the specimens examined, I have no hesitation in stating that most of them were in a healthy condition when collected. Only a few individuals from bottom deposits gave the impression that they must have been dead before they were preserved. Healthy specimens were collected from water which was distinctly brackish when tasted. The freshwater algae found in these ponds are listed below: