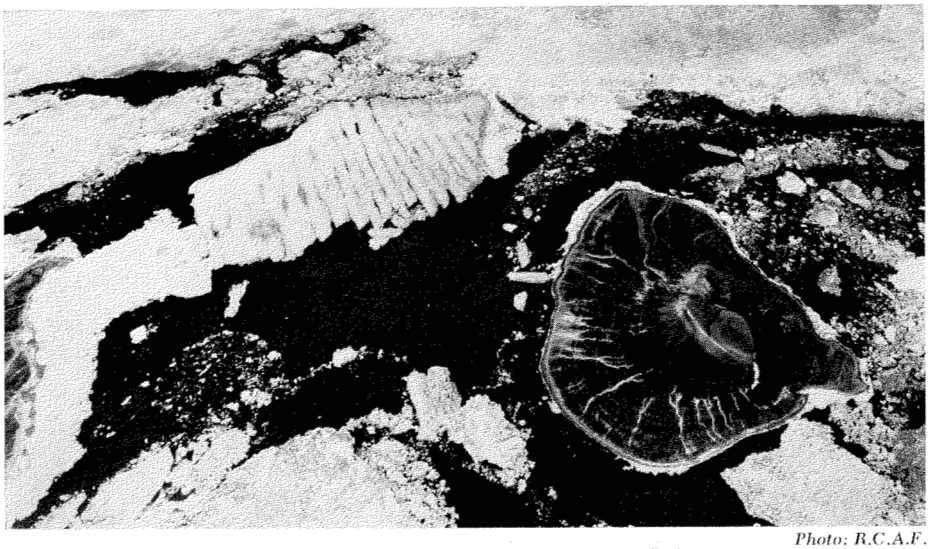

Photo: R.C.A.F.

Fig. 1. Disintegrating ice island off Exmouth Island, Norwegian Bay.

FURTHER NOTES ON ICE ISLANDS IN THE CANADIAN ARCTIC

As part of a study of the distribution of sea ice in the Canadian Arctic[1], an intensive survey has recently been made of all available air photographs taken during the summers of 1947–52[2]. The papers on "Arctic ice islands" published in the July number of *Arctic* (Vol. 5, pp. 67–103) had anticipated that future surveys would discover ice islands not then recorded. Thirty-one new ones have now been noted and their locations are indicated on Fig. 3—a revised version of the original map. Most of them are small, some being only about ¼ or ½ mile square. The largest, approximately 7 miles long by 6 miles wide, was photographed in June 1948 in M'Clintock Channel off the west coast of Victoria Island. It has proved, however, to be merely the replotting of an island noted previously but wrongly located (at 82°54N., 104°30W. instead of at 72°54N., 104°30W.) as the result of a misreading of poorly-written coordinates on the back of the photograph. As a large ice island had been reported near the former position, no error was suspected.

Figure 3 shows that the general distribution of ice islands remains much the same as originally mapped although the recent observations have extended their range to include the following five areas, one of which reaches south to the coasts of the mainland:

(1) *Axel Heiberg* (*west coast*): several islands, mostly small. Two islands (or bergs) in Strand Fiord have not been shown on the map as they appear to be of local origin and have probably come from the large tidewater glacier on the north shore of this inlet. They may be compared with the Greely Fiord bergs mentioned in *Arctic* (Vol. 5, pp. 81–2).

(2) *Norwegian Bay*: two islands. Figure 1 shows that the one off Exmouth Island is in an advanced stage of disintegration.

(3) *M'Clintock Channel*: one large island and several small ones located off the coast of Victoria Island.

(4) *Queen Maud Gulf*: two small islands off the mainland coast.

(5) *Prince Patrick Island* (*west coast*): one small island off Lands End.

[1]See note p. 195.

[2]This survey was made by Miss Mary C. V. Douglas and Miss Jane McCarthy of the Defence Research Board, Canada.

In three areas the persistence of ice cover over a number of years became evident from the survey. The ice island noted off Otto Fiord in August 1948 is now known to have been in the same position in July 1947. It thus presumably entered Nansen Sound some time in 1946 at the latest. All ice floes in the area retained their respective positions, indicating that the island was not grounded but that the ice in this part of Nansen Sound had not broken up during these years.

Ice islands which were observed on the U.S.A.F. survey photographs in 1948 off the west coast of Axel Heiberg were still in their same positions in 1950. Two of these islands were located in 1946 in Sverdrup Channel, one on either side of the boundary line between the moving pack of the Polar Basin and the ice of the channel. In 1950 the island on the channel side was still in its same position, but the one on the northern side of the boundary had moved off, presumably to drift westward with the prevailing current. The shape of this island suggests it may be one of the two seen to the north of Isachsen Peninsula in 1950, but this cannot be definitely determined from the photographs.

In August 1947 an ice island was seen between Amund Ringnes and Haig-Thomas islands. The only open water in the area was a narrow shore lead which barely reached its extreme tip. In August 1950 the ice island was in the same position, surrounded by the same floes. The latter had now been considerably smoothed by surface melting, but the ice island appeared to be unchanged except that the tip had broken off along one of the surface furrows and had drifted a short distance towards the Amund Ringnes coast.

The existence of a northward drift along the west coast of Boothia Peninsula is suggested by the fact that the ice island observed in Peel Sound, north of Bellot Strait in 1950 is now known to have been some 50 miles to the south in Wrottesley Inlet in 1949.

In the course of the survey, two unexplained land-ice features were noted in the interior of Ellesmere Island. The first was a narrow "lake", bounded at each end by a glacier, which lies approximately 15 miles up the valley leading to the

Photo: R.C.A.F.

Fig. 2. Head of the western arm of M'Clintock Bay, Ellesmere Island, showing the roll ice merging with that of the bay-head glacier. The outline of what appears to have been the tongue of a glacier which has now retreated, is seen in the right centre of the photograph.

Fig. 3. Ice islands noted on air photographs in the Canadian Archipelago. The new islands are shown in red. The areas of the ice islands are not correct for scale, but do give their approximate relative sizes.

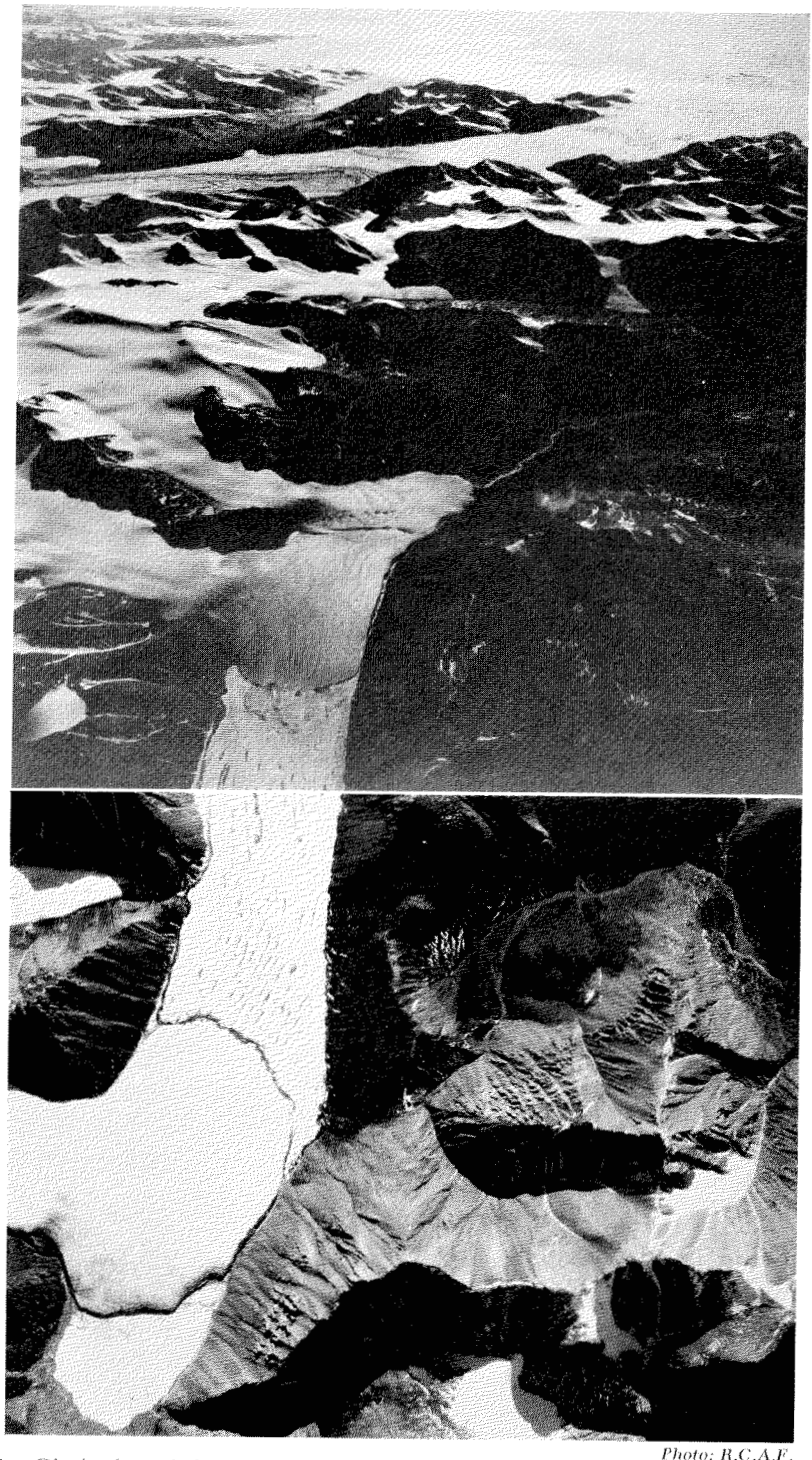

Photo: R.C.A.F.

Fig. 4. Glacier-bounded "lake", in the valley leading to Ayles Bay, Ellesmere Island. Yelverton Bay is seen in the distance.

Photo: R.C.A.F.

Fig. 5. "Lakes" on an ice field in central Ellesmere Island. The surface markings resemble those along certain stretches of the north Ellesmere Ice Shelf.

southeast arm of Ayles Bay (Fig. 4). The surface pattern is similar to that of the Ellesmere Ice Shelf and the direction of the undulations appears unrelated to pressure from the glaciers at either end. No explanation can be advanced from present evidence but the possibility that this is a fragment of relic ice, overridden by present-day glaciers, is suggested by the conditions observed on an arm of M'Clintock Bay some 30 miles to the north (Fig. 2). Here, at the south end of the bay, the roll ice merges with the outflow from an active glacier, while farther north a dark outline suggests the moraine left by a small valley glacier, which must at one time have advanced over the older ice and then withdrawn without modifying the surface to any appreciable extent.

The second inland feature is the group of "lakes" lying just east of the great Chapman Glacier on the ice field between Hare and Tanquary fiords (Fig. 5). The surface pattern of these bears some resemblance to that of the Ellesmere Ice Shelf.

Another interesting ice feature was noted in the 1952 photographs of Talbot Inlet on the east coast of Ellesmere Island. Here a very small stretch of what appeared to be shelf ice was located in the triangle between two large glaciers and an offshore island. The surface markings in this area are similar to those seen in some of the smaller bays along the north Ellesmere coast.

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