

ESKIMO MAPS FROM THE
CANADIAN EASTERN ARCTIC

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ABSTRACT

This thesis attempts an analysis of the significant characteristics of maps drawn by Eskimo. It considers descriptions of native mapping, as well as published charts, with a view to establishing the authentic nature of this aspect of Eskimo culture.

Correspondences between the sizes of manuscript charts and their published versions are difficult to establish, and only rarely can accurate scales be ascribed to the maps. However, all are small in scale, covering enormous areas of Arctic territory and lacking the intricacies of large scale presentation.

Comparison of the native charts with those produced by survey reveals that the former use scales and foci which differ from one area to another as the aboriginal draughtsman presents a subjective impression of areas he has visited. The subjective nature of the works reveals significant facets of the spatial relationships in the Eskimo's life and imagery.

The generally accurate nature of the chartings can be explained by both an awareness of environment and a desire to communicate territorial knowledge to fellow Eskimo. Although the maps serve only to illustrate verbal accounts of routes and areas, they convey an illuminating image of the Eskimo's ideas of territorial relationships.

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CHAPTER I

INTRODUCTION

This study attempts to analyse maps of the Canadian Arctic drawn by Eskimo. As the examples used were taken from published works they concern areas and tribes located in the more intensively investigated Arctic, east of Coronation Gulf. However, characteristics of Alaskan and Greenlandic native mapping have also been considered where relevant. Most of the maps examined were produced by tribes occupying coastal locations, while the few available examples by inland tribes come from the Caribou Eskimo of Keewatin District. The distinction between maps produced by inland and coastal tribes was made because the groups differ in cartographic representation, and it is not intended to imply an economic division.¹ General statements in the study apply to both sets of charts, while differences are examined in the chapter on "Content and Style."

Although only published charts were available for examination, reference has been made to accounts of the important ephemeral works drawn by Eskimo for others of their tribes. As untutored aborigines are a feature of the past, all the examples used are primarily historical documents, being largely collected in two

¹The economic dichotomy of inland and coastal tribes has been successfully opposed by W.E. Taylor, "An archeological overview of Eskimo Economy," in Eskimo of the Canadian Arctic, ed. by V.F. Valentine and F.G. Vallee, Carleton Library Number 41 (Toronto: McClelland and Stewart Ltd., 1968), pp. 9-11.

periods: that of the nineteenth century British Admiralty searches for Sir John Franklin, and the more recent Thule anthropological expeditions of the 1920s and 1930s. The almost exclusive use of eastern examples (see fig. 24) is largely explained by their availability, for they represent the intensive study and collection carried out in the eastern approaches and highlight the absence of historical investigation in the more remote and inaccessible western area.

No study has been discovered which deals exclusively with aboriginal charts of the Eastern Arctic, though several of the early explorers commented upon the occurrence of map drawing among the natives.² The only writings devoted to Eskimo maps have been short articles; one was a very general and abbreviated piece by Bagrow,³ while the other dealt with more modern charts from the Western Arctic.⁴ Several cartographic works deal in part with primitive maps and mention those produced in the Arctic, but few use specific examples.⁵

²Vilhjalmur Stefansson, and R.J. Flaherty, in Erwin Raisz, General Cartography (New York: McGraw Hill Book Co., 1938), p. 8.

³L. Bagrow, "Eskimo Maps," Imago Mundi, V (1948), pp. 92-94.

⁴R.F. Spencer, "Map making of the North Alaskan Eskimo," Proceedings of the Minnesota Academy of Science, XXIII (1955), pp. 46-50.

⁵G.R. Crone, Maps and their Makers (London: Hutchinson, 1953), p. 15. ; R.V. Tooley, Maps and Map-makers (London: Batsford, 1949), p. 1. ; Raisz, General Cartography, p. 8.

Although even institutions like the Encyclopaedia Britannica⁶ comment on the accuracy of the Eskimo maps, no work has been discovered which analyzes Eskimo maps from the Canadian Eastern Arctic. As a consequence this thesis has entailed the first collection of as many published copies of charts as were available. It is the belief of the author that few printed maps have escaped his attention, although this complacency should be tempered by the possible existence of unpublished charts in various artifact collections.

The study is divided into chapters dealing with the various qualities of Eskimo map drawing. The media used in the charts are described and the scale, shape, content, and the style of the maps are analyzed. An attempt is made to suggest reasons for specific Eskimo cartographic characteristics, including the native ability to draw reasonably accurate maps of vast areas of Arctic terrain. In each of these sections the published works of both coastal and inland tribes are examined. Since the coastal tribes are more numerous and a greater number of their charts has been published, they are used as the main source of illustration.

A basic problem in the study was deciding what constituted an "Eskimo map." The qualification that it should be the work of an untutored native with a minimum of direction from the non-aboriginal collector was fairly easily enforced, since

⁶"Map," Encyclopaedia Britannica, 1963, XIV, 845.

infringements were generally reported in the accompanying accounts and appear non-native in design. There were, however, varying degrees of Occidental influence in the Eastern Arctic where many of the examples of native mapping were produced. Apart from the Eskimo's obscure links with the Greenland colonists or Vinland voyagers, they were subject to increasing inroads from western whaling fleets from the seventeenth century onwards.⁷ The plenitude of maps collected in the Canadian Eastern Arctic illustrates the amount of contact with investigating officers and scientists who visited that area from the first decades of the nineteenth century. Some subjectivity must be introduced in deciding on the aboriginal quality of the works, particularly the later examples, but the characteristics of the well-authenticated "primitive" maps provide clear guide-lines.

Defining "a map" was somewhat more difficult since it was necessary to delineate a specific body of works of areal representation, and yet exclude sketches which were merely pictorial impressions of territorial relationships. Several of the sketches, while being three-dimensional, portray little more than a scene of hunters and their prey in the manner of numerous

⁷Details of the British whaling fleets off Greenland and in Davis Strait show the increasing contact. In 1752 there were 40 vessels, 1753 -- 49 vessels, 1754 -- 67, 1755 -- 82, 1756 -- 83 vessels. An Act of Parliament was required to regulate such fishing by 1786; W. Scoresby, The northern Whale-fishery (London: The Religious Tract Society, 1849), p. 26.

primitive tribes and palaeolithic artists. For the purpose of this work the writer has chosen to include only material which has as its subject a portrayal of the physical features of an area. A delineation in terms of content may not be appropriate for every geographic situation and, in view of the range of material, it must be partly subjective. In terms of "primitive" mapping, however, it serves as a necessary division between abstract designs, pictographs or hunting scenes, and the body of areal representations which may be reasonably known as charts.

CHAPTER II

MEDIA

The body of charts can be divided into two main sections: firstly those drawn by Eskimo for the education of other Eskimo, and secondly those done by Eskimo for the use and enlightenment of white men. The latter were usually drawn at the insistence of Europeans in general, and anthropologists in particular. The two types of maps have differing aims and were generally fashioned from different media.

The maps produced by Inuit (as Eskimo style themselves) for others of their race are the more primitive and unsophisticated in execution and are usually the more ephemeral. They consist of simple representations of areas visited or known by the artist and were created for the instruction of his fellow Eskimo. Such maps were usually drawn in outline upon sand or snow, using a stick or fragment of bone to mark the surface of the medium. Boas writes,

As their knowledge of all the directions is very detailed and they are skilled draftsmen they can draw very good charts. If a man intends to visit a country little known to him, he has a map drawn in the snow by some one well acquainted there and these maps are so good that every point can be recognised. Their way of drawing is first to mark some points the relative position of which are well known.¹

¹Franz Boas, The Central Eskimo, Sixth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution (Washington, D.C.: Government Printing Office, 1888), pp. 643-44.

The application is elucidated by Spencer, who comments:

The maps were used when travel directions and instructions were given from one person to another. If a man were about to travel to an area which he had not previously visited, he made a point of discussing his plans with another who had been there. The latter would then draw a map in the sand or snow and explain the most desirable travel route and the natural landmarks which were of aid in finding one's way. The map was thus drawn during the course of explanation.²

In certain cases this drawing technique was elaborated upon and some attempt was made to produce a relief model by indicating topographic features, not merely by line-work, but also by the use of piles of sand, snow and stones to represent mountains, ridges and valleys. Historical evidence of such activity is forthcoming from Huish's account of the travels of Captain Beechey along the coast of Bering Strait in 1826, when the following incident took place:

On the first visit to this party, they constructed a chart of the coast upon the sand, of which, however, Captain Beechey at first took very little notice. They, however, renewed their labour and performed their work upon the sandy beach in a very ingenious and intelligible manner. The coast line was first marked out with a stick, and the distances regulated by the day's journey. The hills and ranges of mountains were next shown by elevations of sand or stone, and the islands represented by heaps of pebbles, their proportions being duly attended to. As the work proceeded, some of the bystanders occasionally suggested alterations, and Captain Beechey removed one of the Diomed Islands, which was misplaced. This was at first objected to by the hydrographer, but one of the party recollecting that the islands were seen in one from Cape Prince of Wales, confirmed its new position and made the mistake quite evident to the others, who were much surprised that Captain Beechey should have any knowledge of the subject. When

²R.F. Spencer, "Map making of the North Alaskan Eskimo," Proceedings of the Minnesota Academy of Science, XXIII (1955), 46.

the mountains and islands were erected, the villages and fishing stations were marked by a number of sticks placed upright, in imitation of those, which are put up on the coast, wherever these people fix their abode. In time, a complete hydrographical plan was drawn from Point Darby to Cape Krusenstern.³

A more modern account of such relief mapping in the Western Arctic is provided in Spencer's article, which comments that the narrator would pile snow or sand in ridges to indicate the surface features of the tundra, would hollow out sections for lakes, and would smooth out beach and ocean areas. Further, he would draw in the water courses and lakes and show some care in designating portages.⁴ Obviously, such chartings and models were not intended to serve as portable navigation aids in the sense of a "portolan" chart. They were representations of environmental knowledge of an area unknown to the observer, who presumably attempted to remember the image produced before him, and to assimilate its details and impact into his navigational skills. There are no instances of such charts being drawn with the intention of their being used directly while navigating. This would, in any case, have been impossible with media such as large models and sand or snow gravings. No attempt at drawing upon skins has been discovered or reported. The utility of skin maps could only have been rivalled by the dissemination of wooden charts.

³Robert Huish, A narrative of the voyages and travels of Captain Beechey . . . to the Pacific and Behring's Straits; performed in the years 1825, 26, 27 and 28 (London: W. Wright, 1836), p. 397.

⁴Spencer, "Map making of the North Alaskan Eskimo," p. 46.

Unfortunately no examples of carved charts exist for the Canadian Arctic, although their existence can perhaps be theorised from the wooden charts found among the Angmagsalik Eskimo of Eastern Greenland. These people made linear coastal charts which were carved to show indentations and coastal topography including portages across headlands. One example represents an offshore island chain and forms part of the collection named after Captain Gustav Holm who obtained the exhibits in 1884-85. The entire collection, currently housed in the Ethnographic Department of the National Museum in Copenhagen, consists of three linear coastal representations, and also a bas relief wood carving of a considerable area of coastline. Holm was the first European to travel along this portion of the east coast, so any criticisms⁵

⁵M. Hansen-Blangsted, Compte rendu des seances de la Societe de Geographie (Paris: Societe de Geographie, 1886), pp. 162-63. Hansen-Blangsted believes that the authenticity of the charts as Eskimo artifacts is questionable. He considers them to be the work of a more advanced intelligence than is usually found among "primitives" and consequently attributes the carvings to the influence of shipwrecked European sailors. This theory is not backed by any evidence greater than supposition. His argument is demonstrably weak, since it consists, in great measure, of the belief that such map-making would require instruction, great patience, and would need a specific goal which could not normally be attributed to Eskimo. He writes:

"Pour découper du bois dans le but de représenter une côte et les îles avoisinantes, il faut une intelligence plus développée que celle qu'on trouve ordinairement chez les sauvages. Il faut un certain degré d'instruction, une grande patience, enfin un travail de longue haleine, exécuté dans un but raisonné qu'on ne peut supposer chez des Esquimaux. Celui qui a exécuté ce travail devait avoir dessiné la carte d'une manière quelconque avant de commencer à travailler le bois avec des instruments

of the authenticity of the carvings as Eskimo work can be largely discounted. Such charts would have proved particularly useful in small boat navigation, and had added advantages in terms of durability, for they could be used in all weathers and would not suffer from damp or frost; indeed, they would float readily if accidentally dropped from a kayak. Perhaps their greatest advantage over a drawn map is their truly three-dimensional nature, a visual advantage which would count for much in any attempt at navigation or location finding, particularly as cartographic proficiency may have been a fairly restricted art. Few examples have been encountered where such carved sections were mounted upon a stretched seal-skin base to give a wider impression of spatial interrelationships.⁶ The size of such carvings and the stretched base skin would seem to preclude direct utilisation when travelling. These constructions may have been intended to serve solely as decorations. Certainly some of the carved charts were intended only as artistic expression. Spencer cites this usage among the North Alaskans:

In a few instances, men skilled at such cartography would carve a map of the local area as a decorative device on a piece of ivory, on the lid of a work box, or simply on a walrus tusk. This, however, served no practical purposes

défectueux."

The presence of other maps, suitably authenticated, belies his proposition that the Angmagsalik Eskimo could not possess the necessary skill. The patience of the Eskimo can be verified by any study of their hunting behaviour. European influence is not necessary for the production of these charts and there is no real reason to suppose that they are anything but the spontaneous development of an indigenous culture.

⁶Erwin Raisz, Principles of Cartography (New York: McGraw-Hill Book Co., 1962), p. 3.

beyond pure decoration, although they were accurate representations of the home area.⁷

Because of the impermanence of most of their media, the study of charts designed for use by other Eskimo is limited to investigating early accounts of Inuit communicating their special knowledge to their fellows. The surviving artifacts are perhaps decorative; this is suggested by their very preservation in a nomadic culture in which few practical goods have any lasting value and are rapidly broken or abandoned.⁸

The remaining maps, of which over fifty have been published, have survived because they have been drawn for, and collected by, Westerners. Such maps, though they form the bulk of the surviving Eskimo representations of their environment, must be approached with caution for they were produced by selected individuals for representatives of a strange culture. In some of the maps the particular Eskimo may have attempted to reproduce his own environment in terms of the mode of representation suggested to him by the outsider. Certainly in terms of media, the use of pencil, charcoal, or ink upon parchment and paper was foreign to the Eskimo. But leaving this divergence aside, the line drawings which were produced, in many cases when the "primitive" was little influenced by the collector, cannot have

⁷ Spencer, "Map making of the North Alaskan Eskimo," p. 47.

⁸ W.E. Ekblaw, "The material response of the Polar Eskimo to their far Arctic Environment," Annals of the Association of American Geographers, XVII (1927), 157.

been so dissimilar from the line-drawings in wood, sand and snow. The only extraneous influence which may have been introduced was perhaps the promptings of the strangers toward the elaboration of particular sections of coastline, and the presence of Western charts which the Inuit were sometimes shown and asked to improve upon. The presence of published charts cannot be held to be too inhibiting, however, if the drawing of spatial representations is accepted as being a pre-existing aspect of Eskimo culture.

CHAPTER III

SCALE AND SHAPE

There is considerable variation in the scales employed in the published examples of Eskimo charts. This results in part from the dimensional alterations required for publication. Some of the charts were published at half their original size, while Captain Parry recounts that the chart drawn by a female cartographer (fig. 1b) was done on ten or twelve pieces of paper the size of the printed map.¹ The detailed indications of changes in size are exceptions, however, for in most cases the published maps provide no information as to the size of the originals.

The orthodox cartographic concept of scale is not particularly useful when applied to the maps drawn by Eskimo. The only measures used in the charts are the extremely variable units of the day's sledging or sailing, which provide scant distance markers on the few routeways that cross the areas delineated in the maps. Without surveyed co-ordinates the charts are prone to internal differences in scale, depending upon the significance and recall of particular camp-sites and landforms. In this way individual maps may vary, as does one example (fig. 2b) from a scale of about 1: 2,000,000 in one section of the chart, to a scale of about 1: 10,000,000 in another.

¹Captain W.E. Parry, Journal of a second voyage for the discovery of a North-West Passage from the Atlantic to the Pacific; performed in the years 1821-22-23, in His Majesty's ships Fury and Hecla (London: John Murray, 1824), II, 196.

The best known places are usually reproduced in detail and, as a result, sometimes appear out of all proportion in the finished work. The map of the Melville Peninsula area (fig. 2b) shows this effect. Drawn by an individual familiar with Lyon Inlet,² the islands most distant from this area are drawn in an outline which is not particularly accurate and are disproportionately small, while local areas and other distinctive parts are enlarged by the inclusion of detail. Around Lyon Inlet the coastal features are portrayed and elaborated. The point (number 3 on the reproduction of the native map) is enlarged out of all proportion, but its shape remains fairly accurate, as can be judged from another surveyed map (fig. 7a). Farther up the peninsula the promontories like Cape Wilson and Point Elizabeth are extended as representing notable and probably stormy headlands encountered in the course of coastal navigation. A similar distortion occurs to the peninsulas south of Igloolik, which is in turn greatly enlarged, being an Eskimo settlement and a focus for crossing Fury and Hecla Strait. There is a reduction in scale and accompanying distortion of all areas north of foci like Igloolik, Maxwell Bay, Jens Munk and Koch Islands. On this map Bylot Island is reduced to the same size as Winter Island which is, in reality, much smaller. (Such

²The detailed map of Lyon Inlet (fig. 7b) was drawn by the same cartographer.

comments are intended as an analysis of biases of the draughtsman rather than an attempt to disparage the achievement in producing a tolerable reproduction of over 150,000 square miles of Arctic territory.)

The enlargement of relevant foci is present in the mapping by both coastal and inland draughtsmen. Not all native maps illustrate this effect, however, for the chart of Southampton Island (fig. 3b), shows another influence. The fairly accurate delineation of the South Bay area must be partly due to the fact that: "Now, except for an occasional camp . . . , all Eskimo camps both summer and winter, are situated in South Bay between Ruin Point and Native Point."³ Another area represented quite accurately is Duke of York Bay, which was " . . . at one time a regular camping ground, is still an excellent hunting district, but is now considered too far from the trading post, and is therefore rarely visited."⁴ From adequate knowledge of certain areas of the island, the territory between these two main bays is well reproduced with its physical features being emphasised. Such a distance, more than 100 miles, can be covered in under

³Descriptions of the island written shortly after the map was drawn provide relevant information; T.H. Manning, "Remarks on the physiography, Eskimo, and mammals of Southampton Island," Canadian Geographical Journal, XXIV (January, 1942), 25. This information is corroborated in J.B. Bird, Southampton Island, Department of Mines and Technical Surveys, Geographical Branch, Memoir 1 (Ottawa: Queen's Printer, 1953), p. 51.

⁴Manning, "Southampton Island," p. 25.

two days in spring,⁵ and with such intimate links a greater degree of accuracy can be introduced into the mapping of their territorial relationship. It is the less well travelled areas, the shores of Roes Welcome, and of Foxe Channel " . . . where seals appear scarce and lack of bay ice in winter makes hunting difficult"⁶ which are less accurately represented, although the distortion of these coasts is not particularly great. Both are slightly reduced in proportion to the rest of the island, along with White and Coats Islands. The more frequented areas of Bell Peninsula and the shores of Fisher Strait are correspondingly enlarged. Thus on this particular map of Southampton Island the well-known and well-travelled areas are fairly accurately reproduced in outline and in relative position, though they are occasionally enlarged, while the less frequented shores tend to be reduced in extent.

The variation in representation of local areas, showing them at a larger scale, or more accurately than less travelled areas, occurs almost entirely as a result of differences in the draughtsman's knowledge of the route or area. The enlarged

⁵E.S. Carpenter, "Space concepts of the Aivilik Eskimos," Explorations, V (1955), 132.

⁶Manning, "Southampton Island," p. 25.; and supported by Bird who wrote that the worst ice conditions from the Eskimo point of view were to be found along the Foxe Channel coast, where no landfast ice develops and leads frequently open in winter. The ice on this coast is extremely hummocky, making travel by dog-team almost impossible; Bird, Southampton Island, p. 60.

sections of some charts are those parts around camp-sites or trading posts which were known in detail, or the surrounds of natural phenomena remarkable enough to be memorable. Others were good hunting grounds (like the Bell Peninsula on the map of Southampton Island, fig. 3b),⁷ enlarged because they were regarded favourably and probably because they were visited fairly frequently. Time was spent there in the chase and hence the area was quite well known, a prerequisite for successful hunting.

Scales vary within certain limits, for no examples have been found of charts which could be classified as plans or large scale works. All the maps discovered are small in scale. The largest scale which has been employed is just under 1: 1,000,000 in such charts as those of Southampton Island (fig. 3b) and Lyon Inlet (fig. 4b). These can only be thought of as being large scale when compared with charts like the one drawn by Amou of his life's navigations (fig. 5b), where the largest scale employed is about 1: 12,000,000. Even in the cases of internal variation the largest scales used are rarely below 1: 1,000,000.

⁷Bird writes that according to Mathiassen, the neck of land joining the main island to the Bell Peninsula was the finest caribou ground on the island. He relates how the animals summer on Bell Peninsula. Another source of game was the polar bears on the tip of the peninsula and along its east coast; Bird, Southampton Island, pp. 61-62.

The charts remain small scale primarily because of the vast areas encompassed within their simple outlines. Over such distances distortions are readily apparent. In some cases, features such as gulfs, inlets, and estuaries are badly represented by being exaggerated both in width and extent. Figure 6b illustrates these discrepancies in Bathurst Inlet. Here the inner part of the inlet is broadened considerably, with its small bays and islands enlarged. Bird says that this part of the inlet has " . . . a favored sea ice regime for the Western Arctic, and local boat travel can often start a month before ships can enter the north end of the inlet from other points along the coast."⁸ The increased navigational activity in this area must have found expression in the mapping enlargement. Another more recent focus in that same area has been the presence of a trading post (near the point marked 12 on the copy of the Eskimo chart fig. 6b) which has encouraged further settlement in what was always a favourite area. The southern part of the inlet was an even more choice locality, having relatively warm summers,⁹ and was important in the past, since it " . . . remains the best caribou hunting area at certain times of the year."¹⁰ A particular focus in this area was the

⁸J. B. Bird & M. B. Bird, Bathurst Inlet, Northwest Territories, Department of Mines and Technical Surveys, Geographical Branch, Memoir 7 (Ottawa: Queen's Printer, 1961), p. 45.

⁹Ibid., p. 9.

¹⁰Ibid., p. 55.

old trading post site near the mouth of the river flowing into the inlet's southernmost reaches. This area has been greatly enlarged on the Eskimo map for the area was ". . . known to be a favored hunting ground for Eskimos from within the inlet and from farther south."¹¹ The river which joins the inlet at this point was significant since it forms part of the route which was taken to the Thelon River lakes for the purposes of trading.¹² This map, like so many of the others, clearly shows the exaggerations which are introduced into native mapping when reproducing familiar areas of resource and settlement.

The amount of knowledge possessed of localities was certainly influential upon accuracy in mapping. This is particularly apparent in some of the coastal charts in which the width of peninsulas is often falsely represented. In these cases the coastal focus of travel was significant, for only the outlines of the promontories were known to those following kayak, umiak, and sea ice sled routes. Although the coastline is drawn with skill and care in such charts (each island and turn of the coast being represented and elaborated in great detail), the interior dimensions of peninsulas not used for hunting or travelling were not presented with the same degree of accuracy.

¹¹ Bird and Bird, Bathurst Inlet, p. 56.

¹² Ibid., p. 52.

Many, like the chart of part of the Melville Peninsula (fig. 7b), are drawn as being much narrower than they really are, and are even increased in length because of the elaboration necessary to depict an intricate coastline. This peninsula between Repulse Bay and Lyon Inlet must have been travelled around quite frequently, rather than portaged. The suggestion that it was not portaged is supported by one of Parry's maps (fig. 8b) which shows a route marked following the littoral around the peninsula rather than across it.

Comparison of figures 9b and 9c reveals that although there is broad agreement between them in detailed delineation of the coastline (i.e. similar representation of the west coast of Frobisher Bay and of the major fjords and indentations on its east coast, along with comparable presentation of the fjords¹³ and indentations on both sides of Cumberland Sound), the two charts do not agree as to the width of the Hall Peninsula which is central to both charts. It is significant that the broadest presentation of this peninsula occurs on the chart showing portages, a fact which illustrates an earlier postulate that the image of the width of peninsulas was often dependent on the

¹³The fjords are of significance in navigation since these are ice-free before the rest of the sound; G. Anders, ed., The East Coast of Baffin Island: an area economic Survey (Ottawa: Industrial Division, Department of Indian Affairs and Northern Development, 1967), p. 13.

arduous nature of the portaging involved. Clearly, any portages across peninsulas in this fjord country must have been quite arduous, as the Hall Peninsula itself rises to over 2,000 feet above sea level.¹⁴ The fjords and river valleys used for portages provide important access routes into the interior and form vital links between Eskimo communities on Cumberland Sound and Frobisher Bay,¹⁵ and so must have been used fairly frequently.

The general uniformity in smallness of scale may in part be due to a division of representation on the part of the Eskimo in which drawings and sculptures are used in delineating more local subjects whereas maps are accepted for portraying larger and more distant areas. Even the media employed for chartings which were subsequently published must have had some impact. Smallness of scale was encouraged by the restrictions of paper dimensions, a limitation not encountered in gravings on expanses of snow and ice. Yet another variable to consider is the fact that scale may have been influenced by the focus of attention of the collector. Particular sections of coastline or river may have been enlarged to elucidate points of enquiry. The sailing captains were certainly more interested in the broader geographical relationships of islands, gulfs and peninsulas

¹⁴Anders, The East Coast of Baffin Island, p. 20.

¹⁵Ibid., p. 25.

than in the delineation of smaller areas which could have no bearing in the quest for the Northwest Passage or the search for possible survivors of Sir John Franklin's party.

The units used by the Eskimo in estimating and representing distance are, as for other aborigines, a result of the fusion of distance and the time taken in travelling such distances.¹⁶ This practical amalgam creates problems for the interpretation of the charts but is thoroughly understandable. The unit of the daily trek or sail, with the nightly camp-sites marked, features in many of the maps and is illustrated by figures 1b and 8b which show the routes around Repulse Bay. The daily travel distance serves as the people's linear measurement and can be fully appreciated by them, if not by outsiders.¹⁷ Its

¹⁶ Vilhjalmur Stefansson in E. Raisz, General Cartography (New York: McGraw-Hill Book Co., 1938), p. 8.

¹⁷ For an account of the problem: ". . . great caution is requisite in judging of the information these people give of the distances from one place to another, as expressed by the number of seeniks (sleeps) or days' journeys, to which in other countries a definite value is affixed. No two Esquimaux will give the same account in this respect, though each is equally desirous of furnishing correct information; for besides their deficiency as arithmeticians, . . . each individual forms his idea of the distance, according to the season of the year, and consequently the mode of travelling in which his own journey has been performed. Instances of this kind will be observed in the charts of the Esquimaux, in which they not only differ from each other in this respect, but the same individual differs from himself at different times." Parry, Journal of a second Voyage, II, 251.

basis lies in the non-homogeneous nature of the terrain which is travelled and in the seasonal conditions of travel. Certain sections of route and certain areas take longer to negotiate than others and these areas of difficulty become magnified in representation because of the time and energy expended in traversing them. The areas of easy travel are similarly reduced in proportion to their reality for they possess no time-consuming hazards or hardships.

The variability of distance due to time taken in traversing certain sections of route is graphically portrayed in figure 9b. Here the width of Baffin Island is considerably reduced since it can be crossed in three days, while a portage from Lyon Inlet is expanded out of all proportion since fifteen "sleeps" are required to reach the coast.

The variations in scale which are attributable to time-consuming conditions and remembered details can also be seen in the map (fig. 10b) of a Caribou Eskimo's sledge journey from Hikoligjuaq (Lake Yathkyed) to Churchill. The exact route taken cannot be followed on the surveyed chart (fig. 10a) but it at least gives an impression of the terrain and features portrayed by the Eskimo. There is a small scale presentation of much of the route, while areas around camp-sites are enlarged. The home lake shore in particular is emphasised by

an increase in scale, while Churchill is represented in virtual plan form. The enlargements of scale on the native map around Hikoligjuaq and Churchill can be seen by comparing the two sketches.

Further variation in distance in Eskimo terms comes from the changes in climatic conditions. In winter, and especially in the long days of early spring, hard snow permits good sledging when great distances can be covered quickly. Later, melting inhibits movement by land and the broken sea ice limits boat travel. The disappearance of the sea ice heralds the short season of sea travel, a maritime emphasis reinforced by the usual preference for sea ice sledging in winter. Carpenter has illustrated some of the local factors determining travel-time and distance: when the severity of the wind temporarily isolates a camp, or when a settlement not easily reached by sea ice in winter is rarely visited, for the tops of gravel ridges tend to chip ice from sled runners. There are even diurnal variations in ease of transportation for the salt on the sea ice in early spring wears ice from the sled runners, a handicap which lessens after dusk.¹⁸

Unfortunately the seasonal variations in distance cannot be measured directly from the charts. The maps were not drawn to show conditions of travelling at various times of the year,

¹⁸Carpenter, "Space concepts of the Aivilik Eskimos," p. 132.

but were drawn to show the days' travel on particular journeys or the average time expended in crossing an area. More accurate seasonal charts could no doubt have been produced, but these were not sought by the collectors, who include scant evidence to show what season is represented. (An exception is Captain Parry who includes details of seasonal travel on a couple of charts, figures 1b and 8b.) Most of the fairly detailed maps represent different areas and consequently there can be little or no seasonal comparison of cartographic features. However, the evidence showing the impermanence and fluid nature of distance in Eskimo concept does in some measure explain the fluidity of scale which is encountered in the charts.

CHAPTER IV
CONTENT AND STYLE

An Eskimo's best cartography is likely to be centred upon an area he knows well. As was discussed in the previous chapter, the significance of various foci can generally be deduced from the manner in which they are enlarged in comparison to less well-known localities. Of equal significance are the features which are represented and the manner in which they are portrayed. All are natural features: rivers, lakes, coastline, cliffs or mountains. There is no attempt made to represent in pictographic form any human activities or settlements. The only non-natural features are the routes of travel which appear on some maps. Occasionally the villages or nightly camp-sites on such routes are indicated, though these are never represented by anything more elaborate than a dot or cross. The charts remain simple because of their restricted purpose. Except when drawn at the instigation of outsiders, they were not produced as attempts at complete delineation of a section of country, but were intended to indicate routes through areas not known by the stranger. As a consequence of this orientation, not all the territorial knowledge possessed by the Eskimo was presented, but only those landscape features which could aid navigation. This in part accounts for the austere nature of the whole body of chartings.

Both inland and coastal tribes used maps to indicate routes. The differing focus of attention between these two sets of charts results in general from the different landscape features which each used as primary aids in navigation.

The charts drawn on paper use simple line-work to portray the natural features used as landmarks along route-ways. The coastal tribes devote most attention to an accurate delineation of the coastline which is represented by a single unbroken line. As the charts serve as a "coastal waters pilot," the coastline is represented in considerable detail. Complete illustration of its intricacies of form is more important than any exactitude in either bearing or distance for the coast was generally closely followed by this "truly littoral people."¹ Although some of the coastal charts delineate interior sections of peninsulas and islands (for example figs. 7b and 11b), most aim to convey an essentially littoral representation in the manner of figures 12b and 13b.

In these various ways the coastal charts reflect the significance of the coastline in the lives of the maritime bands. Knowledge is the crucial factor in all these areal representations. The coastline is emphasised because it generally provides the easiest travelling routes in both summer and winter. As a

¹ Sir John Richardson, Arctic searching Expedition . . . (London: Longman, Brown, Green, and Longmans, 1851), I, 341.

consequence the narrow littoral is best known and best drawn, and accurate delineation only extends as far inland as the routes allow. This factor explains the poor representation afforded rivers in these charts. The only ones shown are those whose valleys are followed by portages across headlands and peninsulas, and for the others only their estuaries are shown, principally as an aid to seaborne navigation.

This lack of attention to riverine elements is in no way reflected in the charts from the inland Eskimo. Their environment is accurately represented in their attempts to depict the Barren Grounds, which Rasmussen described as:

" . . . a net of small watercourses which wound their way between large and small lakes and made it difficult to keep the set course. The very gneiss hills resembled each other, . . .",²

a monotonous landscape of few distinct features or unique reference points, and as such it is presented in the published maps (figs. 14b, 15b, 16b). The rivers are clearly the most important element in dividing the land, and consequently form the cartographic reference points. Their nature is also adequately presented; the extent of lakes, shallows and rapids were mapped in a way which fits Birket-Smith's description of this hydrographic system, with the Kazan as: " . . . a genuine

²K. Rasmussen, Intellectual culture of the Caribou Eskimos, Report of the Fifth Thule Expedition, VII, ii (Copenhagen: Gyldendalske Boghandel, 1930), p. 26..

Barren Grounds river, with large broads connected by short, swift channels."³

Though the Caribou's maps are often of a slightly larger scale than those of the coastal dwellers, any differences in symbolisation are due more to their differing subject matter than to the slightly more restricted scale of movements of the former group of map makers. Rivers, in particular, stand out in the inland works, taking the place of importance assumed by the coastline on the maps of the coastal tribes. Such is their parallel importance in the life of the inland Eskimo. The rivers, like the coasts of the maritimers, serve as hunting grounds, as constant reference points, as aids and obstacles to travel, and form part of the dichotomy between aquatic and terrestrial sections of the environment. On the inland maps they are often represented by double lines, while the coastal Eskimo always present rivers as a single line. This variation graphically illustrates the different approaches to this particular facet of the environment and its utilisation. The inland Eskimo are more intimately aware of the rivers; they serve as broad obstacles in time of flood. Their tendency to limit movement is emphasised inland where there can be no recourse to the sea for travelling. The coastal Eskimo uses his rivers as reference

³K. Birket-Smith, Geographical notes on the Barren Grounds, Report of the Fifth Thule Expedition, I, iv (Copenhagen: Gyldendalske Boghandel, 1933), p. 115.

points for aiding movement in coastal waters, hence the single line indicates their position rather than their utility or width. Inland, the exaggerations and use of double lines for symbolising rivers result partly from the hunting technique and the settlement patterns of the Caribou Eskimo. The fact that caribou are hunted, often from kayaks but sometimes from ravines in the banks, as they cross the rivers on their annual migrations, lends the deer crossing points a significance only rivalled elsewhere by the best hunting grounds along the coasts. The gathering of the deer and their subsequent slaughter provides the focus for distortion in maps (figs. 14b, 15b). The crossing points are particularly emphasised, and the stretches of river on which the kills generally take place are lengthened and broadened when represented, as well as being given a general east-west trend because of the importance, to both men and deer, of the rivers which lie directly across the path of the migrating caribou:

It is the wanderings of the caribou that principally determine the distribution of the settlements. The big caribou crossing-places act like magnets on the population. This brings the west-to-east parts of the river courses into prominence, because they lie across the path of the caribou trek, as is shown by the crossing places on the lower Kazan River, which are vital to the existence of the Harvaqtormiut.⁴ (fig. 14b)

⁴K. Birket-Smith, The Caribou Eskimos; material and social life and their cultural Position, Report of the Fifth Thule Expedition, V, i (Copenhagen: Gyldendalske Boghandel, 1929), p. 72.

Thus, in both the maps of the Caribou and coastal Eskimo, simple line-work is used to portray the significant natural features. Generally, an unbroken line is used to represent coastline or river bank, and this is backed in appropriate places by hachuring to denote the presence of cliffs or mountain sides.⁵ The representation of relief is absent from many of the maps but its occasional presence is significant in so far as it records another variable facet of the landscape important for navigation. In some of the maps attempts are made to more accurately depict the intricacies of relief by varying both the length of the hachure strokes and their direction. This pictorial effect is encountered in charts like figure 17b. In this area the use of extensive hachuring is quite surprising since relief on the west coast of the bay and at its head is not particularly prominent,⁶ so the lines may have been introduced merely to emphasise the trending of land, coast and rivers. The

⁵Native hachuring appears on few of the early charts and its later general adoption may be in part a result of European influence, either by instruction or by acquaintance with the explorers' own charts. The maps collected by Captain W.E. Parry in 1822 (figs. 1b & 13b) lack hachuring along part of their coasts and the hachure-work which is present seems, by the regular length and frequency of the strokes, to have been produced by mechanical means, probably at the engravers. The chart brought back by Sir John Ross in 1835 (fig. 18b) is totally devoid of relief representation and its sea shading must have been introduced by the engraver.

⁶M. Dunbar and K.R. Greenaway, Arctic Canada from the Air, Defence Research Board (Ottawa: Queen's Printer, 1956), p. 65.

area where relief is of much greater significance is in the mountain and fjord country along the east coast of Baffin Island. Here the hachuring employed corresponds in large measure with reality. Figure 19b in particular shows many similarities with the relief representation of the surveyed chart (fig. 19a). Areas around Totnes Road, Exeter Sound and Touak Fjord are hachured to about the same extent in both charts. The absence of hachuring just south of Touak Fjord is noticeable on both maps. This whole area has particularly cliffed coasts (some cliffs over 1,400 feet in height)⁷ and along most of the coast the land rises quite suddenly to over 3,000 feet above sea level.⁸ The hachuring on figure 19b largely follows that used on the surveyed chart. The chief source of inaccuracy on the native map is in the presentation of the south-easterly promontory, but lack of knowledge about this area can be explained from the portage route shown on the chart. Figure 20b shows an area just a little farther down the coast, in Cumberland Sound. The same cliffed coastline is present here, though not as impressive as in the last map area.⁹ Again the native map corresponds quite closely to the area of hachuring depicted in the survey chart

⁷Dunbar and Greenaway, Arctic Canada from the Air, p. 137.

⁸Loc. cit.

⁹Loc. cit.

(fig. 20a). Of significance in these particular maps are the areas with very little hachuring which occur in both charts along central areas of the west coast of the sound. Along the east coast the native map has hachures about as extensively as does the surveyed chart.¹⁰ The extensive native hachuring at the head of the sound occupies an area which rises steeply from sea level for over 1,000 feet.¹¹ Both these native maps correspond remarkably well with the surveyed charts and adequately characterise an area in which: ". . . many fjords and islands . . . give rise to long stretches of complex coastline backed by high mountains."¹²

The Caribou Eskimo inhabit an area of much gentler relief: ". . . probably the flattest and most monotonous part of the Canadian Shield. The terrain is rolling and even, with more drift cover and fewer outcrops of bedrock than is common on the Shield."¹³ Consequently relief representation is much less prominent on their charts, though it occurs on almost all of the maps. Attempts are made to represent isolated hills

¹⁰Here fjords form an "apron of the Penny Highlands" with elevations up to 2,500 to 3,000 feet. The main valleys are U-shaped, occupied by fjords, while vertical cliffs rise over 2,000 feet from sea level and are modified only by the irregular occurrence of scree slopes; G. Anders, ed., The East Coast of Baffin Island: an area economic Survey (Ottawa: Industrial Division, Department of Indian Affairs and Northern Development, 1967), p. 25.

¹¹Ibid., p. 20.

¹²Loc. cit.

¹³Dunbar and Greenaway, Arctic Canada from the Air, p. 46.

with a simple form of hachure-work (figs. 14b and 16b) and some are indicated by means of a single dot. On a few of the charts more extensive "ranges" are symbolised by masses of jagged and confused scribbling like that employed in figure 15b. This may be due to a lack of detailed knowledge of the features or a lack of interest in them. The features may also be thought of as barriers to movement, and certainly their representation suggests that this is so. But much of this relief is too slight to be represented on the surveyed map and so can hardly form an extensive barrier. Probably the scribbling is an attempt at portraying slight relief. The symbolism used in the Caribou maps is not particularly complex in any respect, portraying rivers, lakes and hills in a manner in no way as sophisticated as that used in some of the coastal works. This contrast is reflected in many other aspects of their cultures.

Few of the maps produced by either inland or coastal bands are detailed. The coastal works use a single line to represent coastline, and achieve a fair degree of accuracy. The inland tribes attempt a simple delineation of rivers by line-work with less measure of success. The use of a single line is appropriate since, in all the charts it marks the border between known and unknown territory over wide areas delineated by the Eskimo, for "Primitive man lives in a world which has a spatial

unknown, a dread frontier populated by the heated imagination."¹⁴
The inland Eskimo represents hydrographic features and the more noticeable characteristics of landform shapes. The coastal Eskimo were familiar with the seaward aspect of much of the Arctic territory and hence their maps show an awareness of indentations, cliffs and islands, with portages across blustery headlands magnified as a consequence of the hardship and delay encountered in crossing them. The stark outline which most of the charts convey seems appropriate in this harsh environment. Its restricted nature fittingly marks the boundary between known and unknown areas. This contrast is reinforced visually and can be traced into antiquity. The questioned theory of Eskimo genesis as an inland people who later moved to a coastal location¹⁵ would, if true, mean that the people were presented with a new visual environment, an alien world which must have had considerable impact upon their perceptual schema.

The maps existed purely as practical guides and do not seem to have become a stylised art form. Compared with more scientific map-making the Eskimo charts appear bare and unprepossessing. They consist of simple, unadorned and accurate

¹⁴K.E. Boulding, The image: knowledge in life and Society, Ann Arbor Paperbacks (Ann Arbor, Michigan: University of Michigan Press, 1961), p. 66.

¹⁵Hypotheses on Eskimo origins are summarised in: W.E. Taylor, "An archeological overview of Eskimo Economy," in Eskimo of the Canadian Arctic, ed. by V.F. Valentine and F.G. Vallee, The Carleton Library No. 41 (Toronto: McClelland and Stewart Ltd., 1968), pp. 4-9.

line-work, and the absence of colour, despite its availability,¹⁶ makes them seem drab. (None of the maps contains any colouring despite the use of ochre for staining objects such as ivory line-work and wolverine skins, reported from places as separate as Labrador¹⁷ and Horton River.¹⁸)

The black and white representation of locational stimuli like the outlines of arctic landforms seems fitting to the dichotomous scheme of life of the maritime and inland people whose world is filled by the opposite realities of long nights and days, winter and summer, land and sea, snow and rock. The monochrome reinforces the seasonal patterns of life. There is no attempt, as in some primitive art, to fill all the available space. Between the thin line-work large extents remain empty. The maps do not carry words or pictographs so considerable areas are left blank. They were entirely utilitarian in purpose, without decoration or embellishment to the maps themselves, or to their surrounds. The enlargement of the hunting domain seems to spring from the draughtsman's acquaintance with these areas,

¹⁶For an account of the colours available to the Eskimo, and the modes of preparation, see: E.W. Nelson, The Eskimo about Bering Strait, Eighteenth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution (Washington, D.C.: Government Printing Office, 1899), p. 190.

¹⁷E.W. Hawkes, The Labrador Eskimo, Department of Mines, Geological Survey, Memoir 91, Anthropology Series 14 (Ottawa: Government Printing Bureau, 1916), p. 100.

¹⁸V. Stefansson, The Stefansson-Anderson Arctic Expedition, Anthropological Papers of the American Museum of Natural History, XIV, i (New York: By Order of the Trustees, 1914), p. 354.

rather than from any deliberate attempt to invoke sympathetic magic. The representations of such areas carry no pictographs or abstractions of spirits, and consequently there is no evidence that mapping was held to give magical powers over areas or to influence hunting success. Equally there is no evidence to suggest that certain localities were omitted from maps for religious reasons, or that mapping might be thought of as being offensive to territorial spirits. Though there are the enlargements which unintentionally show good hunting areas, there are almost no technical maps, i.e. those which purport to show items of special significance. One of the few such examples found is figure 21b, which shows trout fishing places as well as caribou crossing places by marking them with dots or circles. The sophisticated nature of the map, as well as its late date, being one of the maps drawn for the Thule Expedition, suggest that its orientation is not entirely native. Another work purports to show the distribution of musk-oxen,¹⁹ but such specialised maps seem to be of doubtful origin and of little real significance when compared with the numbers of charts which exist simply to show the routes used by inland and coastal tribes.

The charts are not generally orientated in any specific

¹⁹Map found by Wissner, mentioned in: H. de Hutorowicz, "Maps of primitive Peoples," American Geographical Society Bulletin, XLIII (1911), 679.

direction. The Eskimo lacked the compass which, as the explorers found out, is anyway made useless by the proximity of the magnetic pole. Consequently there was no north-south alignment of the charts (see figs. 12b and 16b), although this was occasionally attempted by some of the sailing captains. Parry had one of his informants "box the compass" in an attempt to secure a more accurate relationship between the bearings of sections of the coast which had been drawn for him.²⁰ In this he was fairly successful, for in time his hydrographers:

" . . . on sitting down to mark a chart, invariably commenced by making four dots on the paper, and pointing them out as the positions by which the trending of the coast was to be regulated."²¹

While there came to be some awareness of the cardinal points, they do not feature in the natural preparation of charts.

Little evidence can be found for any alignment corresponding to prevailing wind directions, though this was occasionally used in the naming of tribes and territories.²² Most of the direction

²⁰ Captain W.E. Parry, Journal of a second voyage for the discovery of a North-West Passage from the Atlantic to the Pacific; performed in the years 1821-22-23, in His Majesty's ships Fury and Hecla (London: John Murray, 1824), II, 197.

²¹ Captain G.F. Lyon, The private journal of Captain G.F. Lyon of H.M.S. Hecla, during the recent voyage of discovery under Captain Parry (London: John Murray, 1824), p. 160.

²² Franz Boas, The Central Eskimo, Sixth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution (Washington, D.C.: Government Printing Office, 1888), p. 424.

points used were local in character and varied along sections of the coast:

The cardinal points idea seems to be absent. There are words currently translated as 'north, east wind,' etc., but I fail to see they have any, but a local relation to our ideas that correspond to these words. Their real meaning is 'landward', 'seaward', 'up the coast', 'down the coast', etc. Thus the word 'nigirk' means southeast wind at Point Tangent twenty miles east of Point Barrow, northeast wind at Cape Smythe or Wainwright, south wind in Greenland and north wind at various points on Bering Strait.²³

Generally the charts were drawn, as befits their practical base, from the home port or camp in the usual direction of travel, the cartographer merely choosing a convenient alignment to suit the restrictions of his medium. A good example of this approach can be found in Parry's account of the work done by a female cartographer who:

. . . continued the outline, making the land trend as we supposed to the northeastward, and giving the names of the principal places as she proceeded. The scale being large, it was necessary when she came to the end of one piece of paper to tack on another, till at length she had filled ten or twelve sheets, and had completely lost sight of Winter Island . . . at the other end of the table.²⁴

The free expression implicit in such charting allowed the artist to sketch his view of the environment or route in a natural manner, and thus he was freed from the inhibitions attending the artificial restraints encountered in regular

²³Stefansson, The Stefansson-Anderson Arctic Expedition, pp. 219-20.

²⁴Parry, Journal of a second Voyage, II, 196.

cartography. The draughtsman could present a complete picture of his territory, complementing his drawing with verbal instructions, descriptions and advice.

CHAPTER V

MAPPING PROFICIENCY

The published examples of Eskimo cartography display a phenomenal amount of accurate spatial representation and locational awareness for works created by a "primitive" people. The generally outstanding quality of the published works probably reflects selectivity on the part of various authors in reproducing only those maps which were judged to be of superior quality. Even so, the available examples indicate that these supposed "primitives," or at least certain members of the groups, were able to envisage, and produce, reasonably accurate outlines of the lands known by them without the need for any training or the use of survey instruments. Certainly the anthropologists and explorers who first commented upon this particular skill were convinced that some of the Inuit possessed greater degrees of the faculty than others of their race, and consequently the number of artists engaged to draw maps was not particularly large. (The reports total about fifty accounts of different Eskimo drawing maps, though not all these works have been published.) The differences in quality among the various maps may reveal some of the bases of Eskimo cartographic skill.

Among "primitive" peoples, map drawing is frequently limited to select elements of the population, like navigators

or tribal chiefs, who possess both the knowledge and the requisite social approval to enable them to produce images of their part of the world.¹ No such restrictions seem evident in Eskimo society, where all ages and both sexes have attempted mapping. The results have varied greatly in accuracy, but the best products seem dependent only upon the drawing ability and intelligence of the artist. Of course, certain men were pointed out to the early explorers as being well travelled and good hydrographers,² but among these mobile people the delineation of territory could not be shrouded in the mystique given to it in some other areas. Maps have been produced by all those old enough to recall travelling, and some of the best small scale charts were produced by women. Spencer states that in Alaska only men drew charts.³ If this is correct it can only be a local tradition, for farther east many of the best maps were proudly drawn by women. Iligliuk drew charts for Parry at Winter Island in 1822,⁴ another female, Tiriksiu, drew one for Ross during

¹Kevin Lynch, The image of the City, M.I.T. Press Paperback (Cambridge, Mass.: Massachusetts Institute of Technology Press, 1964), p. 134.

²Sir John Ross, Narrative of a second voyage in search of a North-West Passage . . . (London: A.W. Webster, 1835), p. 255.

³R.F. Spencer, "Map making of the North Alaskan Eskimo," Proceedings of the Minnesota Academy of Science, XXIII (1955), 47.

⁴Captain W.E. Parry, Journal of a second voyage for the discovery of a North-West Passage from the Atlantic to the Pacific; . . . (London: John Murray, 1824), II, 185.

his second voyage,⁵ while another old lady ". . . 'conned' the Fox up Pond's Inlet as if she had been a certified pilot from the Trinity House, . . . "⁶ Several other instances are reported of female draughtsmanship and in every case the final product has received high praise, often presenting, as in Ross' example, further knowledge than that represented by her male compatriots. There were thus no social sanctions against women "showing off" some of their environmental knowledge. The presence of women in the body of cartographers is important since their skills and awareness could not have been acquired solely during the hunt. They must have developed largely upon seasonal movements for trade or new camp sites.

The numerous accounts of Eskimo travelling abilities and the examples in map form of their extensive territorial knowledge clearly reveal their basic environmental awareness. The Inuit are generally predisposed towards accurate cartography for they are aided by a ready perception of local features, coupled with an extensive knowledge and awareness of their surroundings. Some of the maps which have been used in this work were compiled by taking sightings of directions and territorial relationships

⁵Ross, Narrative of a second Voyage, p. 261.

⁶C.R. Markham, "Papers on the Greenland Eskimos," in A selection of papers on Arctic geography and Ethnology (London: John Murray for the Royal Geographical Society, 1875), p. 184.

from high ground.⁷ Such "surveying" was a part of Eskimo life, as elevated observation was practised during hunting expeditions both to reconnoitre the ground and spy out game.

Many of the explorers expressed their opinions on the requirements for good cartography. Most came to the conclusion that there was necessarily a linkage between drawing ability, the appreciation of perspective, and good mapping. Experts have clashed, however, over the extent of the inherent artistic ability of the Eskimo, some claiming that there was a propensity for accurate representation. Others, like Jenness, who gave out pencil and paper for drawing after observing the Copper Eskimo sketching outlines in the hard snow with knives, observed that their work was indifferent:

. . . with no more dexterity than we expect from a 2 or 3 year-old child, and the results were not dissimilar. Their drawings of animals such as the caribou, every part of whose anatomy was as familiar to them as their own, were even cruder; and how a map could indicate the geographical features of a country seemed beyond their comprehension. Evidently the sketching of scenes, like writing, was a totally new concept to them.⁸

Certainly some draughting skill must have been required to produce the maps, as well as an awareness of the environment in two-dimensional terms. Not all the navigation experts could

⁷ Franz Boas, The Central Eskimo, Sixth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution (Washington, D.C.: Government Printing Office, 1888), pp. 643-44.

⁸ D. Jenness, Material culture of the Copper Eskimo, Report of the Canadian Arctic Expedition, XVI (Ottawa: King's Printer, 1946), p. 146.

use the drawing medium either. Parry provides one example, the native Toolemak:

He and his companions came on board the 'Fury', when I employed him for a couple of hours in drawing a chart of the strait. Toolemak, though a sensible and intelligent man, we soon found to be no draughtsman, so that his performance in this way, if taken alone, was not a very intelligible delineation of the coast. By dint however of a great deal of talking on his part, and some exercise of patience on ours, we at length obtained a copious verbal illustration of his sketch, . . .⁹

There were other poor cartographers, as figure 22 illustrates.

This item was collected during the Franklin searches and represents a Wainwright Inlet Eskimo's concepts of the eastward continuation of the coastline beyond Point Barrow. The artist was evidently as much without graphic ability as the native described by Parry for none of its features can be located in reality.

Despite such individuals there is a generally pervasive feature of accuracy about the cartographic works. A characteristic of the mapping is the rarity of mistaking sections of coast for islands, and islands for peninsulas, an aspect which caused the European explorers much more difficulty.¹⁰ Although the outline of the coasts, or of rivers, is not always correct in its bearing or its relative proportion, the distinctive features of the landscape are accurately recorded. As Stefansson wrote:

⁹Parry, Journal of a second Voyage, II, 303.

¹⁰Examples are given in: Captain C.F. Hall, Life with the Esquimaux: . . . (London: Sampson, Low, Son and Marston, 1865), p. 104.; and in J.B. Bird, Southampton Island, Department of Mines and Technical Surveys, Geographical Branch, Memoir 1 (Ottawa: Queen's Printer, 1953), p. 4.

"They are more likely to have the right number of curves in a river and the right shape of the curves than the proper distance scale."¹¹ The accuracy of presentation can only have resulted, amongst coastal people, from local knowledge gained in navigation at ice-free seasons and from sledding on sea ice in winter.

Another advantage possessed by native cartographers was an awareness of local physical aids to orientation, and hence indirectly to mapping. They were much more aware of the physical features which could be used for direction finding, particularly inland, and used them frequently in travelling across what appeared to outsiders as a monotonous white landscape. The snow itself was an aid, for the ice crystals aligned themselves according to the direction of the fairly constant prevailing wind. Freuchen writes of using these 'sastrugi', ". . . snow crystals on the ice which the wind arranged in stripes pointing in its direction. Since the southwest is by far the dominant wind in all of Western Greenland, it was no problem finding one's direction when sastrugi were present."¹²

Even glacial action lent itself to direction finding, for in Labrador, where three-fourths of the more elevated regions are bare rock, Turner writes: "The northern extremity

¹¹V. Stefansson, in E. Raisz, General Cartography (New York: McGraw Hill Book Co., 1938), p. 8.

¹²Peter Freuchen, Book of the Eskimos (Cleveland: World Publishing Co., 1961), p. 51.

of all the ridges and spurs indicate that the glacial sheet moved to the north-northwest, for these portions of the rocks are so jagged and sharp edged as to appear to have been broken out but yesterday."¹³ Thus the paths of the ice sheets with their resultant striae form a direction indicator, even on bare rock, over considerable expanses of terrain.

The more vegetated areas provide other clues for orientation. Though the tundra appears treeless and undifferentiated over vast stretches, yet it differs markedly from place to place. One of the unique features of Arctic vegetation is its extreme variability from one small area to the next, its micro-habitats. These can have an influence as direction aids, for there is " . . . a virtual absence of higher plants and the abundance of persistent snow patches on north facing slopes."¹⁴

Another locational aid presents a general picture of the environment almost in map form. This is the phenomenon of sky reflection, when the clouds mirror the underlying surface of ice or water. Stefansson indicates its usefulness:

When clouds of a uniform color hang low there is reflected in them a map of the earth below them. Snow-free land and open water are shown in black on the clouds; the pure white

¹³L.M. Turner, Ethnology of the Ungava District, Hudson Bay Territory, Eleventh Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution (Washington, D.C.: Government Printing Office, 1894), p. 169.

¹⁴N. Polunin, Introduction to plant geography and some related Sciences (New York: McGraw-Hill Book Co., 1960), p. 381.

sea ice appears in white, and land covered with snow soiled by blown sand, etc., is reflected darker than the sea but lighter than snowless land. This sky map is of the greatest use to sledge travellers always, and especially in crossing wide bays from headland to headland; where the landmarks themselves are below the horizon their position is accurately indicated by their reflection in the clouds.¹⁵

The sky-map was encountered by all the early explorers, many of whom found it a considerable aid to navigation.¹⁶

The expert Eskimo navigator achieves a synthesis of these, and other directional stimuli provided by his environment, and is so proficient at such orientation that it becomes almost second nature to him:

Travelling in their own country they almost unconsciously absorb innumerable impressions which serve to guide them. The white man who is not so accustomed to noticing these small differences in the appearance of a monotonous undulating tundra or the direction of the drift of snow over the ice, seems to be witnessing the functioning of a sixth sense, but can of course train himself to do the same.¹⁷

The fact that the Eskimo are nomads, encourages and accentuates awareness of location. They are travellers in a harsh environment where survival depends very largely upon ability to find shelter or food. Everyday life continued under this regime of vital landfalls, when either camps, food caches,

¹⁵V. Stefansson, My life with the Eskimo, Collier Books (New York: Collier Books, 1962), footnote to p. 298.

¹⁶There are references to "water skies" and other phenomena associated with the sky-map in most of the Arctic naval journals. It was reported by Captains Ross, Armstrong, and many more.

¹⁷K. Birket-Smith, The Eskimos (London: Methuen, 1959), p. 49.

or points of resource like sea-bird nesting cliffs, were essential to continued existence. Movement placed the individual in a precarious and exposed position when orientation to landmarks assumed a very real importance. To some extent the environment was an aid to the Eskimo. In addition to the directional clues recounted earlier, he lived in a stark landscape which was only recently de-glaciated. The severe and uncompromising landforms of many areas were distinctive enough to be memorable and were rapidly assimilated into his navigational skills, forming vital locational impulses which served to orient moving people. Where these distinctive landforms were not present, piles of stones, the "inuk", were built and these dot the otherwise monotonous landscape of areas like the Barren Grounds. The presence of a distinctive landscape has further impact as most of the native movements took place within a prescribed area, that of the territory traversed in seasonal hunting. Not that there was any sort of developed feeling of territorial possession, however, for:

The Eskimo do not have any strict divisions of hunting territory, . . . Most of the hunting is done on the sea, which is free to everyone. The same condition applies to the vast interior, where the Eskimo hunt for deer in the autumn and spring.

The idea of restricting the pursuit of game is repugnant to the Eskimo, who hold that food belongs to everyone.¹⁸

¹⁸E.W. Hawkes, The Labrador Eskimo, Department of Mines, Geological Survey, Memoir 91, Anthropology Series 14 (Ottawa: Government Printing Bureau, 1916), p. 25.; confirmed in: K. Birket-Smith, The Chugach Eskimo (Copenhagen: Nationalmuseets Publikationsfond, 1953), p. 193.

It was simply that some areas were customarily hunted, but were accepted as open hunting grounds by the individuals of the tribe whose activities were generally centred on these expanses.

More distant travel was also somewhat prescribed, for the seasonal traffic in order to trade usually followed traditional routes. Families often covered vast distances to obtain simple necessities like soapstone, driftwood, or copper, when these were not available in the home area.¹⁹ The actual amount of trade has perhaps been underestimated for there was a considerable intercourse between the different groups across the entire Arctic.²⁰ As a consequence of this trade, sections of coast became known by the repetition of encountering the same succession of features, season after season. Small wonder that one of Hall's Aivilik informants could sketch the coast from the Churchill River to Lancaster Sound, a range of nearly 1,000 miles.²¹ (fig. 5b) Constant repetition was not strictly necessary for adequate cartography; once attuned to registering the location of particular

¹⁹Trading for necessary goods occurs in most areas: K. Birket-Smith, Ethnographical collections from the Northwest Passage, Report of the Fifth Thule Expedition, VI, ii (Copenhagen: Gyldendalske Boghandel, 1945), p. 10.; D. Jenness, The life of the Copper Eskimos, Canadian Arctic Expedition, XII (Ottawa: Government Printing Bureau, 1922), p. 19.; R.F. Spencer, The North Alaskan Eskimo; a study in ecology and Society, Bureau of American Ethnology, Bulletin 171 (Washington, D.C.: Government Printing Office, 1959), p. 198.

²⁰Birket-Smith, The Eskimos, p. 147.

²¹Loc. cit.

features and being aware of the vital necessity of knowing one's orientation at all times, cartographic and verbal descriptions could be given for areas visited once, or only occasionally.

The Eskimo were trained from childhood to acquire an extended knowledge of their country and learned while accompanying their parents on their seasonal trips. Relying for navigation on memory alone, ". . . they must be observant and carefully mark the surroundings from all the views afforded. The faculty of memory is thus cultivated to an astonishing degree, and seldom fails, even in the most severe weather, to insure safety for the individual."²² With necessity for precise navigation so impressed upon them, the recalling of travel routes for others intending to journey in similar directions, presented few difficulties for experienced travellers. Perhaps it was the impact of distinctive landform features and the awareness of a need for ready orientation which played a more important role in the graphic representation of navigational skills than the mere repetition of familiar landscape features.

With so few native maps consigned to any lasting medium the faculty of memory needed to be cultivated. An advantage in remembering details from the more remarkable facets of the landscape was the Eskimo love of place-names. The presence

²²Turner, Ethnology of the Ungava District, p. 202.

of distinctive landforms meant that there was an extensive topographic nomenclature. Virtually every feature had its own place-name and spirit; they were thus individual for particular reasons and hence all the more memorable and useful as navigation guides and reference points. Eskimo have long demonstrated an obsession with names, for these give identity to persons and objects. They attempted to learn the names of the early exploring parties and knew the names of many of the whaling skippers and crews.²³ The landscape of any area, even those parts not intensively settled, carried a fairly extensive set of place-names²⁴ (for example see the area of figure 23 with its emphasis on coastal names). Most tribes had their own name systems, which were known locally, and were given to features for historic reasons or descriptive purposes. Some recorded memorable events, like "aklaktok", the place where a brown bear was killed; while others were more practical, describing resource, as does "okshoktuovuak", the place where seal blubber was obtained; or "utkusivik", the place for lamps. Some were purely descriptive, "imnalugyuat", the big cliff; or "hagavaktok", a cascade.²⁵ All were of chiefly

²³Captain F.L. McClintock, The voyage of the Fox in the Arctic Seas; . . . (London: John Murray, 1859), p. 154.

²⁴N.M. Holmer, "The native place names of Arctic America," Names, XV (September, 1967), pp. 182-96.

²⁵K.G. Chipman and J.R. Cox, Geographical notes on the Arctic coast of Canada, Report of the Canadian Arctic Expedition, Vol. XI, Part B, translations by D. Jenness (Ottawa: Government Printing Bureau, 1924), p. 37.

local significance and their nature reflects this. Many names were repeated all along the Arctic coast and in Greenland; which had its own "big rivers" or "round hills". Names for large geographical units were lacking in these purely tribal systems.²⁶ Similarly each people had their own names which they felt were appropriate for their neighbours, who were; "Itivimiut", dwellers on the other side;²⁷ or "Suhinimiut", those from the sunny side.²⁸

Within the local area the topographic names were useful for navigational purposes. Rasmussen described the Caribou names as being " . . . as a rule characteristic and informative names, the result being that to one who was familiar with these names it was not so difficult to find the way."²⁹ Freuchen also found the exact topographic descriptions an aid in wayfaring.³⁰

The facility for naming was useful in the development of cartographic ability among the Inuit. The names became focal points in the organised directional schema made available to

²⁶The Aleutian natives have no name for their chain of islands for they do not see the chain as an entity, but see each island as a separate entity; Lynch, The image of the City, p. 132.

²⁷Hawkes, The Labrador Eskimo, p. 23.

²⁸Turner, Ethnology of the Ungava District, p. 176.

²⁹K. Rasmussen, Intellectual culture of the Caribou Eskimos, Report of the Fifth Thule Expedition, VII, ii (Copenhagen: Gyldendalske Boghandel, 1930), p. 26.

³⁰Freuchen, Book of the Eskimos, pp. 62-3.

the individual. A nominal realism in which the name is part of the essence of the object³¹ helped in creating a "mental map," the "schema of reference points for orientation."³² Thus the extensive place-name systems were the precursors of mapping, for the verbal representation of topography is less demanding than a visual representation which necessitates a greater use of unfamiliar symbolism.

The strong linkage between place-naming and the charts can thus be established. Indeed the charts must have been created to serve largely as vehicles for place-names, though these were never inscribed upon them, except in the case of a few late examples like those collected by the Thule Expedition. The map served as a mnemonic device during the relating of stories or the description of intended routes, for the outline drawn in the sand or snow was unimportant when compared with the names and stories given as various locations were reached in the drawing process. The progressive drawing of the map recalled the features in the mind of the narrator, and the naming fixed them in the memory of his observer.

The basis of Eskimo navigational skills lies within the

³¹J. Piaget, The child's conception of the World, trans. by Joan and Andrew Tomlinson (New York: Harcourt, Brace and Co. Inc., 1929), pp. 61-87.

³²A.I. Hallowell, Culture and Experience (Philadelphia: University of Pennsylvania Press, 1955), pp. 92-3.

areas of human response to environmental stimuli. Naming and mapping are the end products of such a reaction. The Arctic landscape provides a plenitude of notable features and these were fixed in the memory by the custom of naming and by mapping. The good mapping carried out by women and adolescents indicates that locational knowledge and awareness was not particularly restricted, but was diffused through all who shared the nomadic life. Though good hunters and experienced travellers were generally expert at mapping,³³ the knowledge did not come solely from hunting expeditions, but partly from family movement across the desolate landscape where orientation was a constant necessity and where all landmarks assumed a vital importance.

Mapping had a base in the social life of this nomadic people. The seasonal migrations meant that the Inuit grouped for winter, and spread across their territory during the summer; "One season dispersed into small bands that seek their sustenance on the land by hunting and fishing, at another they are assembled into large communities on the sea-ice and live by sealing."³⁴ The winter conclave was a time for communicating one's own travels and discoveries, for the inland people as much as for

³³T. Mathiassen, Material culture of the Iglulik Eskimos, Report of the Fifth Thule Expedition, VI, i (Copenhagen: Gyldendalske Boghandel, 1928), p. 97.

³⁴Jenness, The life of the Copper Eskimos, p. 143.

the coastal tribes: "The habitation is most permanent and concentrated in the autumn, when the camps of the Eskimos lie near to the crossing places of the caribou, and in the winter, when they only reluctantly journey away from the autumn meat caches" ³⁵ Thus the seasonal regime encouraged the diffusion of territorial knowledge, and mapping was a supplementary medium used by the Eskimo for the communication of such knowledge.

³⁵K. Birket-Smith, The Caribou Eskimos; material and social life and their cultural Position, Report of the Fifth Thule Expedition, V, i (Copenhagen: Gyldendalske Boghandel, 1929), p. 71.

CHAPTER VI

CONCLUSION

Eskimo maps communicate only part of the territorial knowledge of the Inuit. They are simple and unadorned drawings which seek to represent sufficient memorable features of landscape as to make a route navigable by one who has never journeyed that way before. The maps possess unique characteristics of scale, content, and style, and were executed upon distinctive media prior to the coming of the Europeans. Although deficient as pleasing charts, they serve as practical accompaniments to an extremely colourful and diverting verbal account. The stories implicit in most of the place-names and the appropriate naming of landforms in Arctic territory reveal the maps to be merely part of the process of communicating territorial knowledge.

The maps are generally limited to portraying areas which were visited by the draughtsman, but such a restriction does not impose a severe handicap on the amount of territory which can be represented. The maps by Ivaluardjuk and Armou (figures 2b and 5b) provide good examples of the area which could be covered by individuals. The widespread use of mapping among the Eskimo reflects not only their territorial knowledge, but also the frequency of travelling. Their great mobility in

part explains why they are prepared to accept cartography when more sedentary peoples are not prepared for its inherent quick diminishing of distance.¹ Cartography is apparently an indigenous element of Eskimo culture, an essential adjunct to the nomadic way of life.

¹Marshall McLuhan, Understanding media: the extensions of Man, Signet Books (New York: The New American Library, Inc., 1964), pp. 145-46.

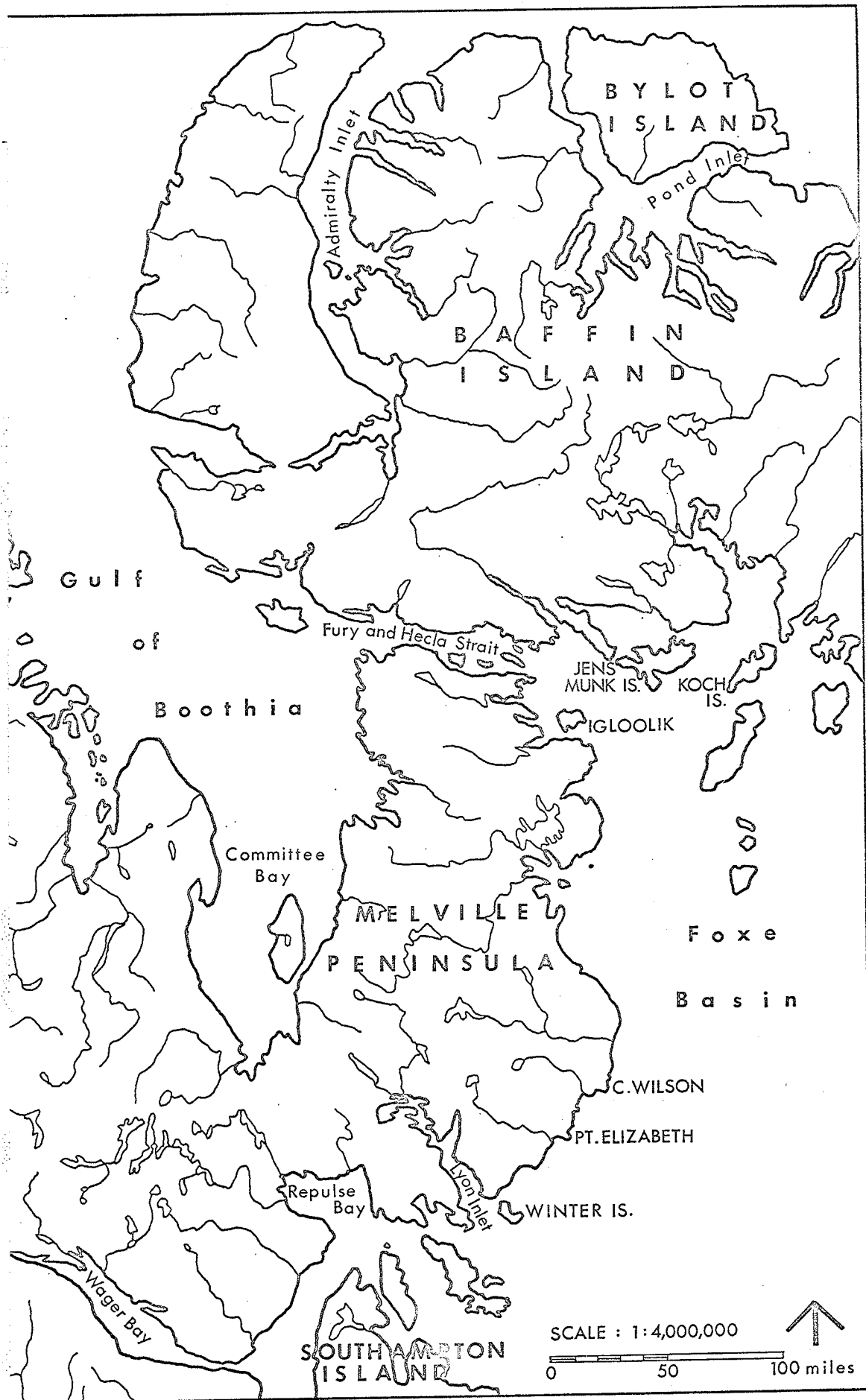


Fig. 1a.--Survey map of Melville Peninsula and Baffin Island

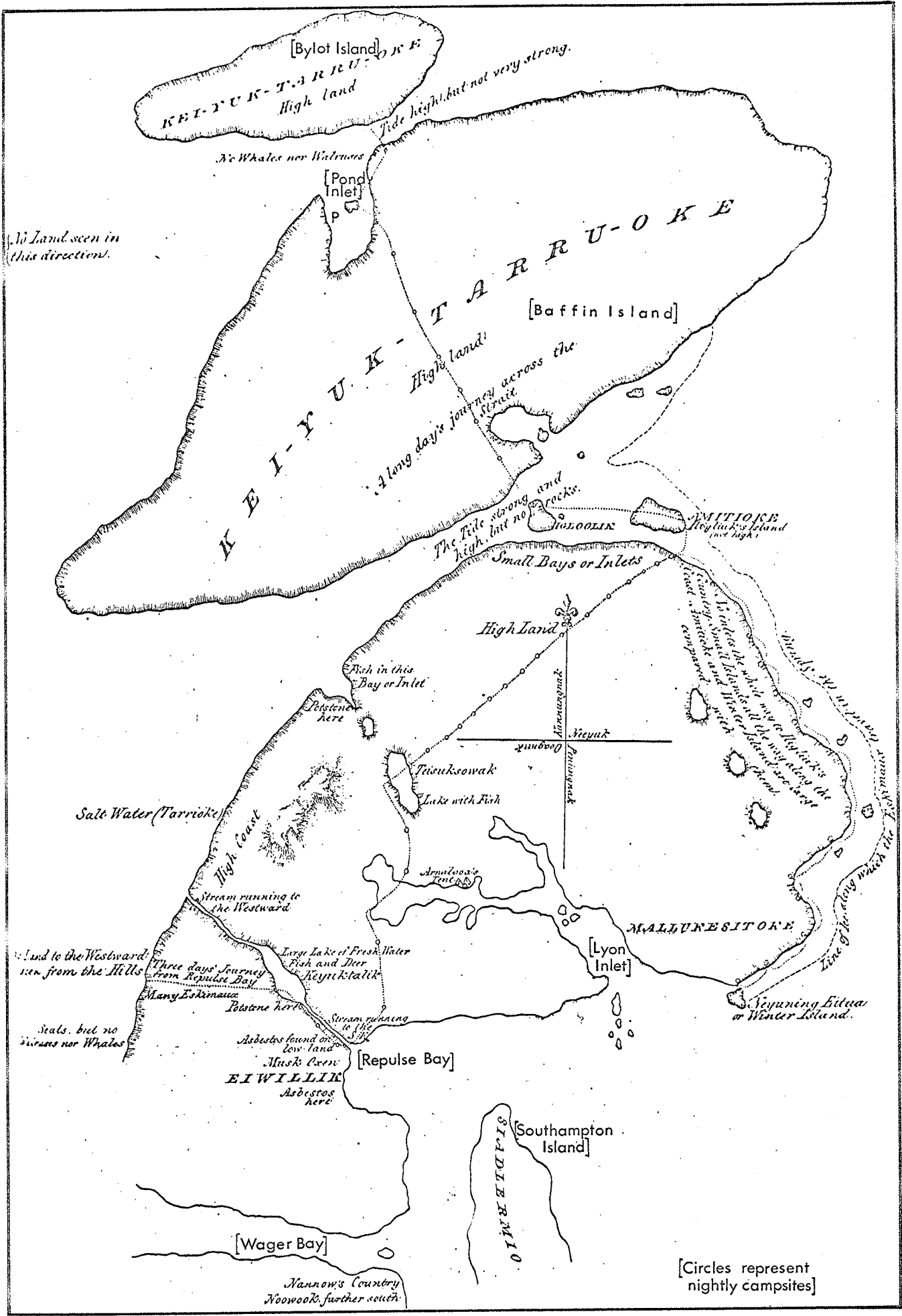


Fig. 1b.--Eskimo map of Melville Peninsula and Baffin Island

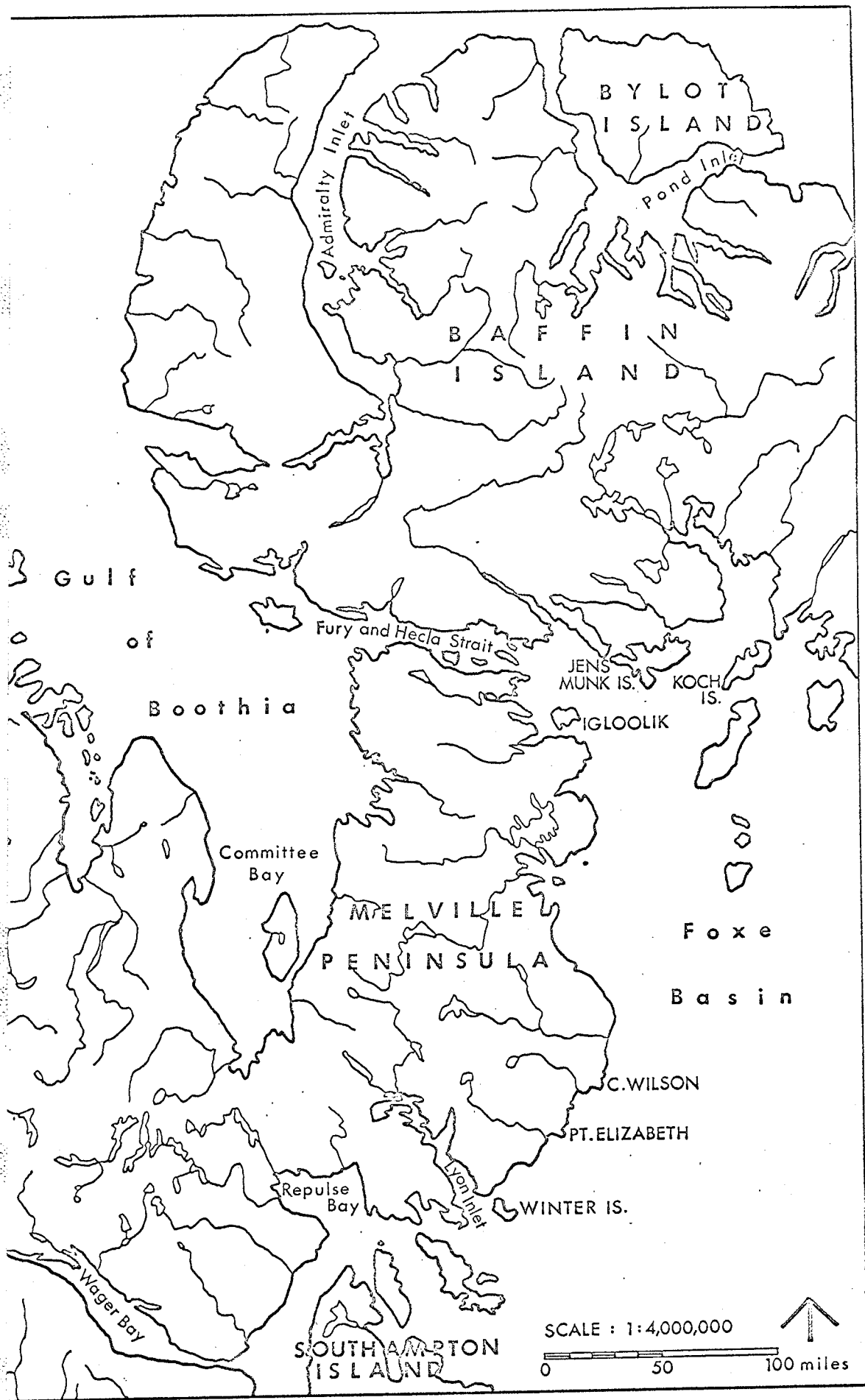


Fig. 2a.—Survey map of Melville Peninsula and Baffin Island

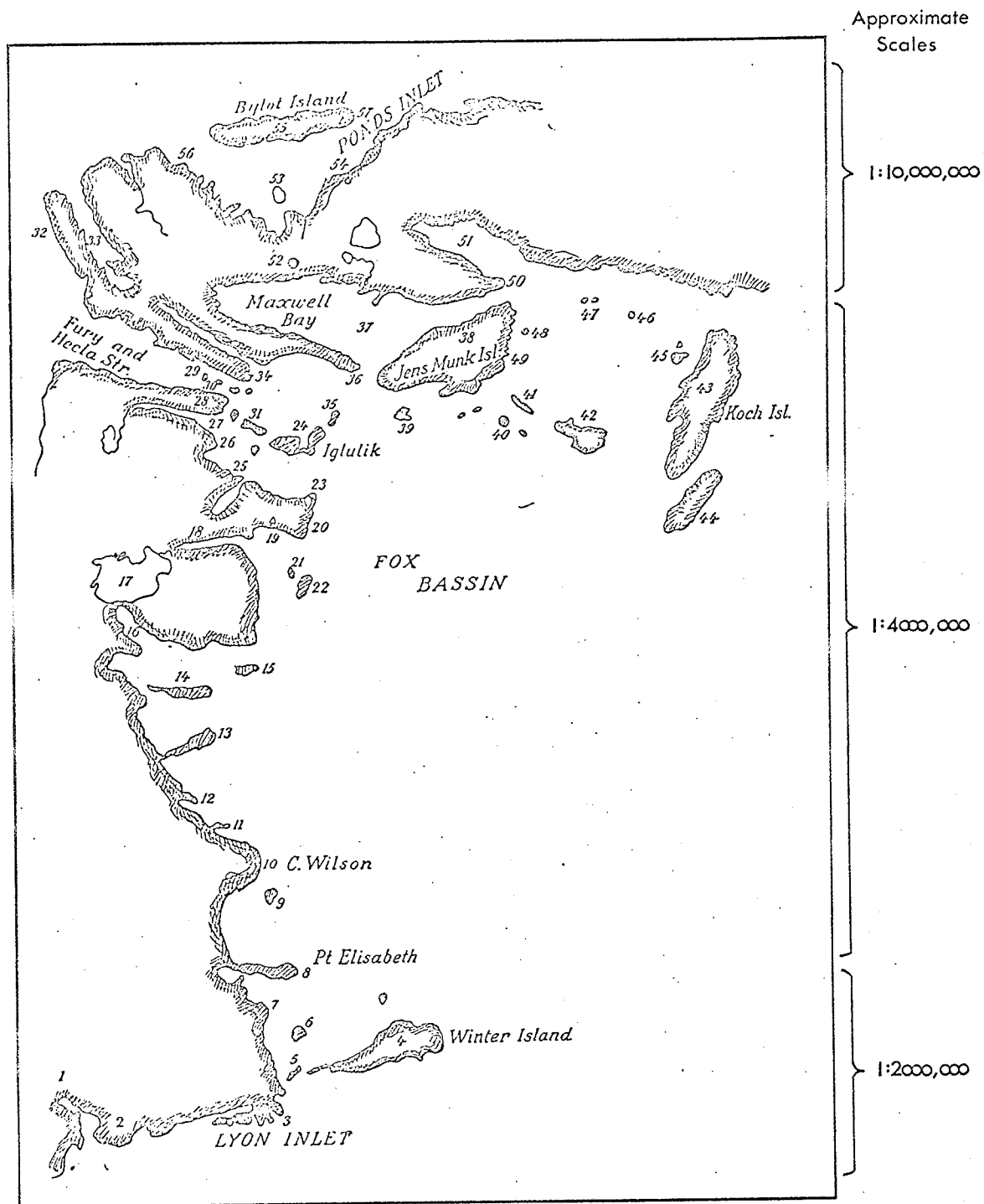


Fig. 2b.—Eskimo map of Melville Peninsula and Baffin Island



Fig. 3a.--Survey map of Southampton Island

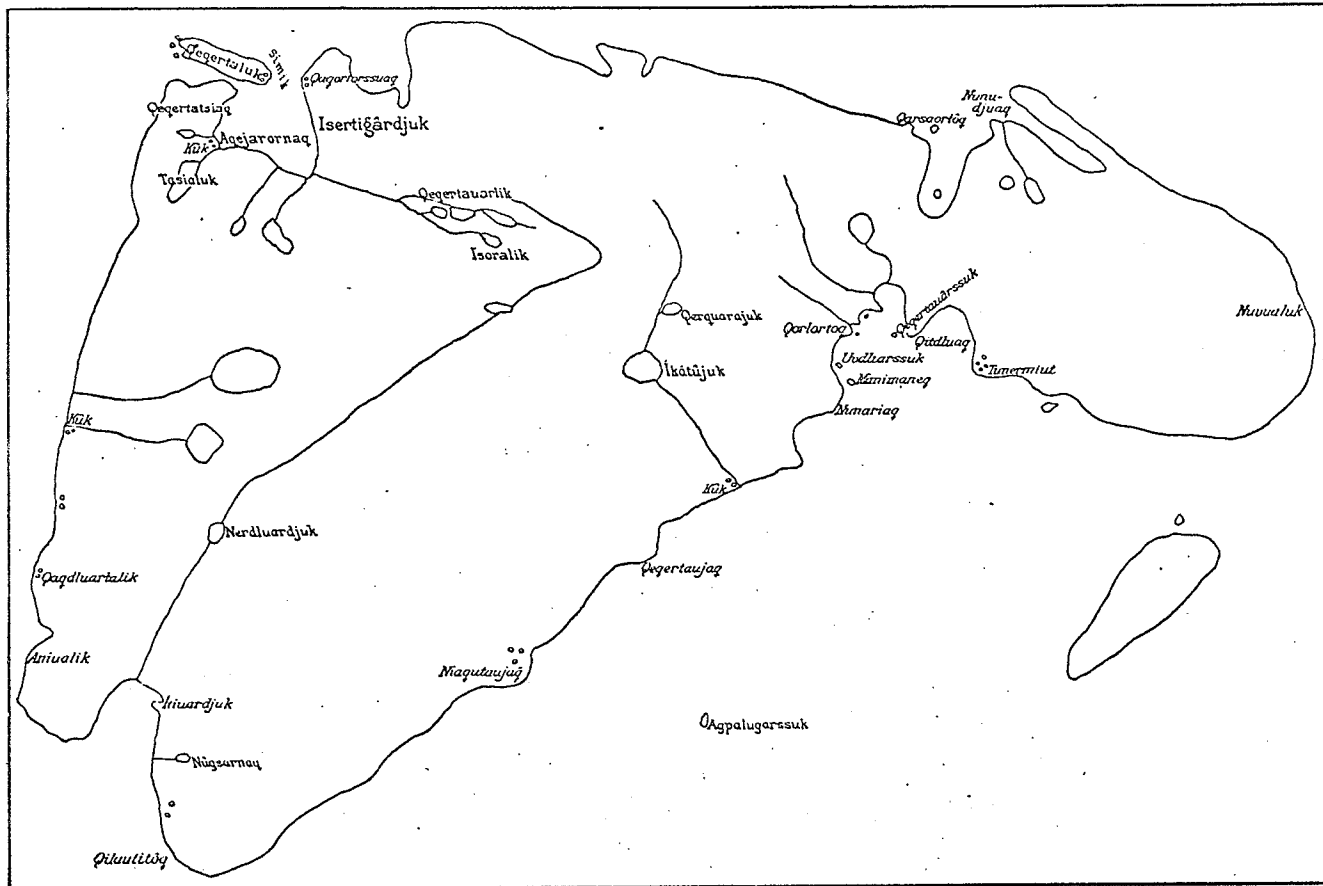


Fig. 3b.---Eskimo map of Southampton Island

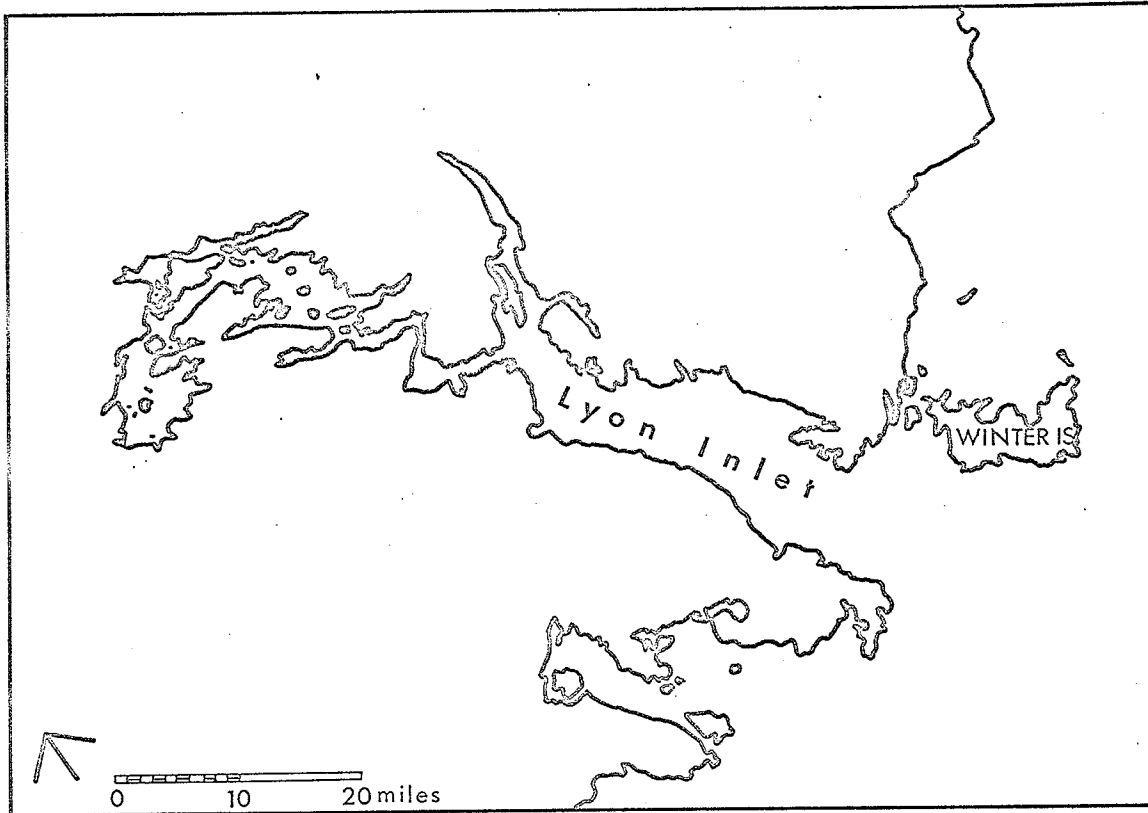


Fig. 4a.--Survey map of Lyon Inlet

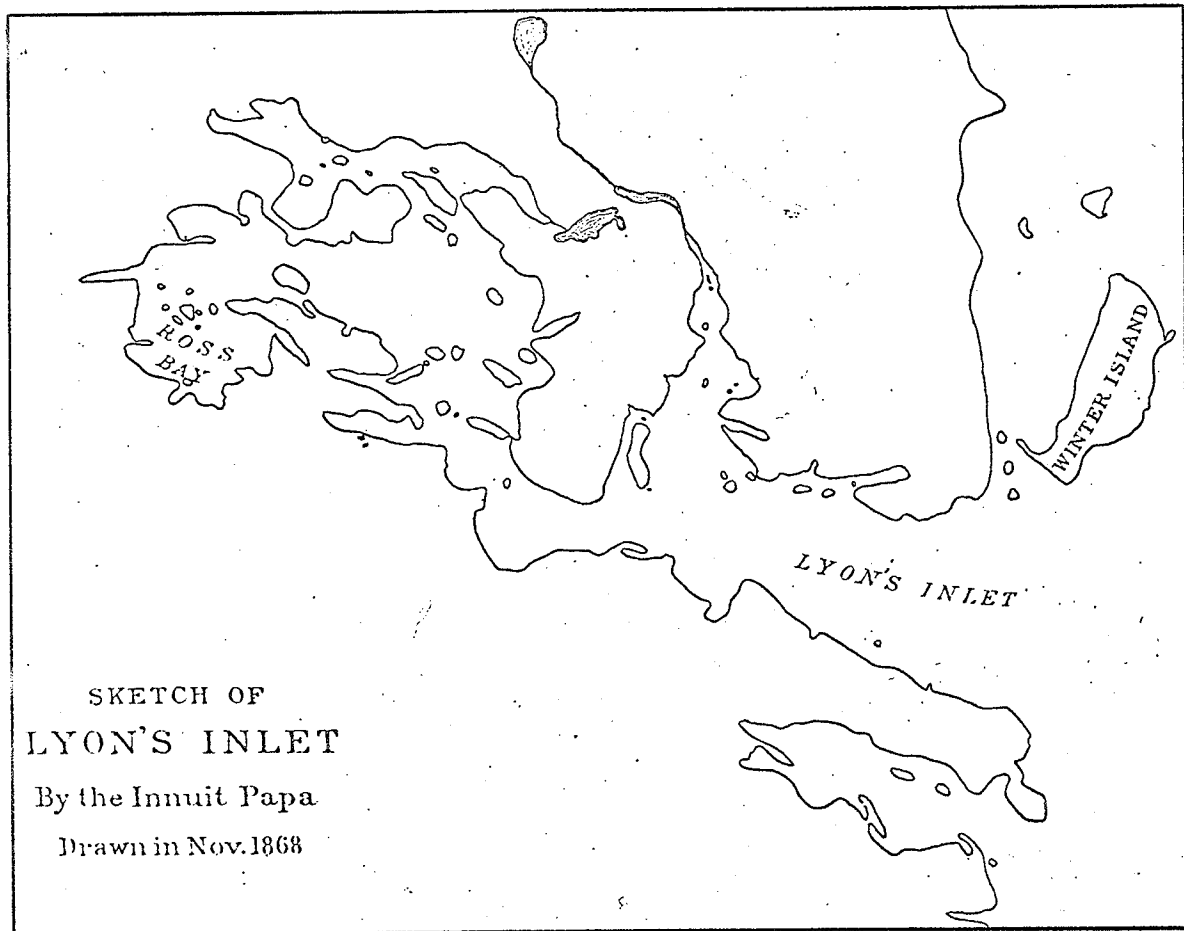


Fig. 4b.--Eskimo map of Lyon Inlet

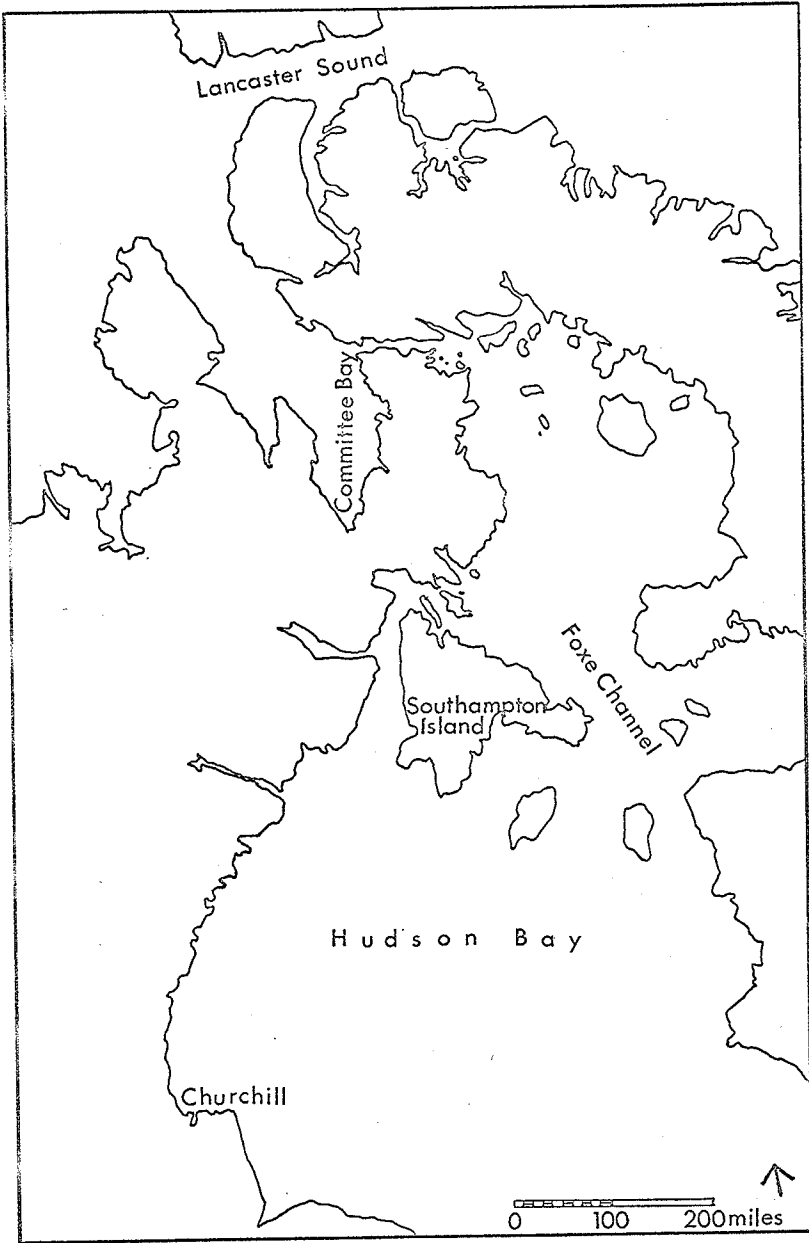


Fig. 5a.--Survey map of Hudson Bay and Baffin Island.

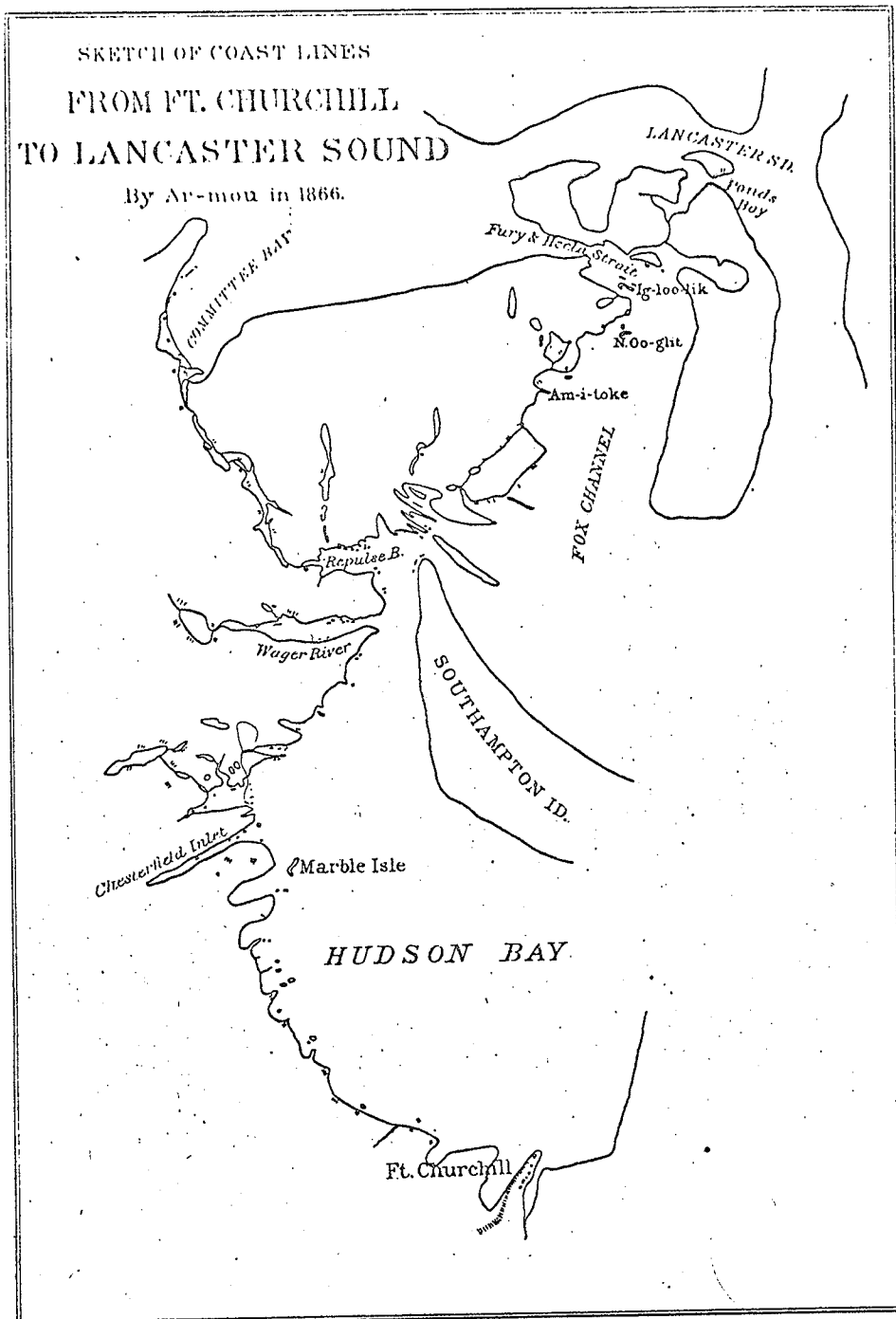


Fig. 5b.—Eskimo map of coasts from Churchill to Lancaster Sound

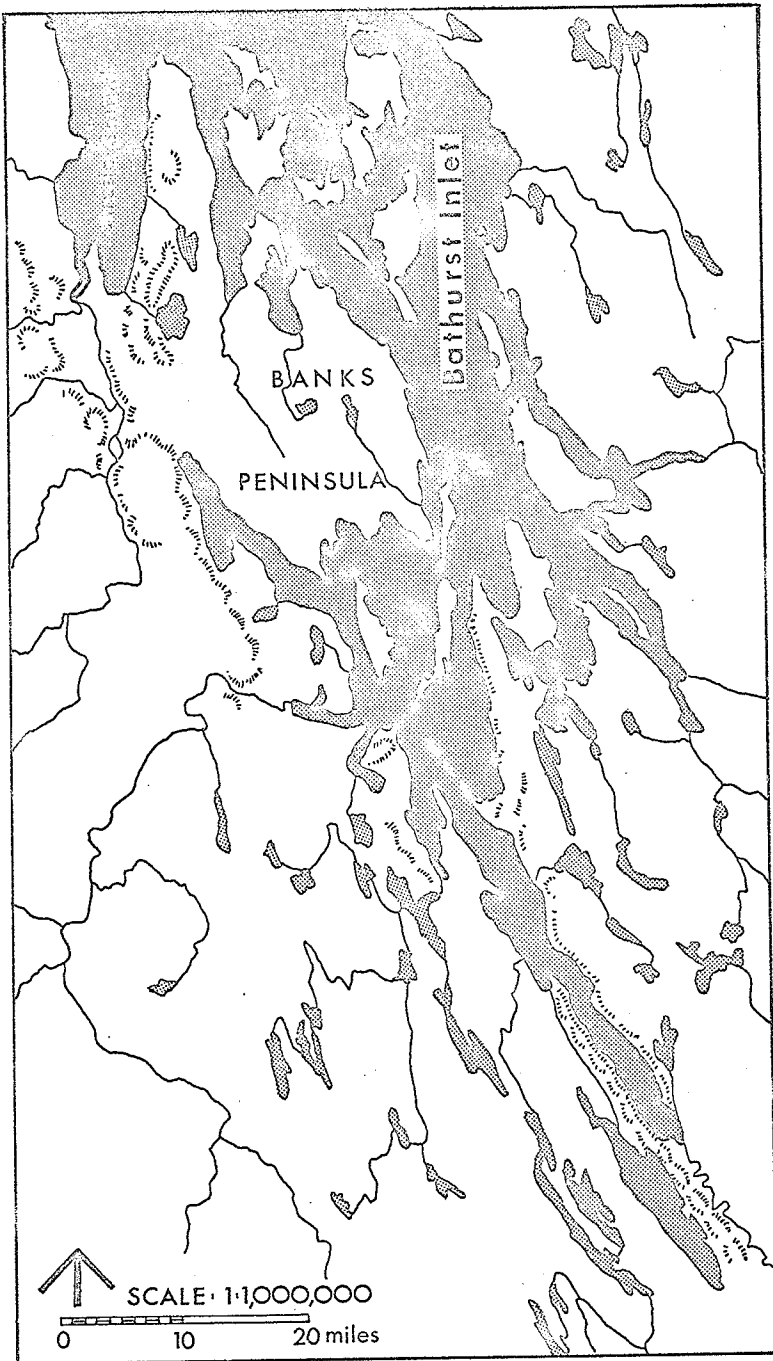


Fig. 6a.--Survey map of Bathurst Inlet

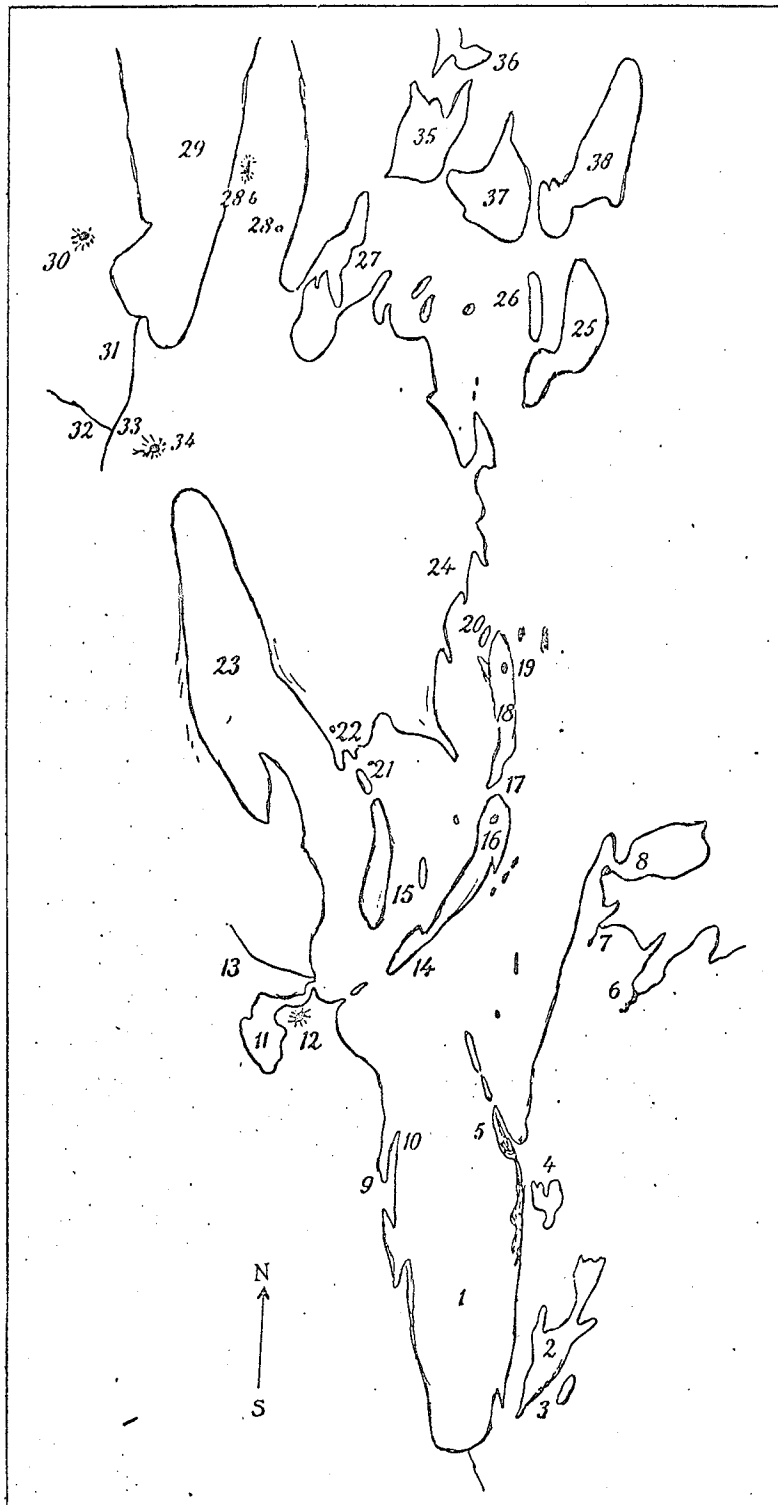
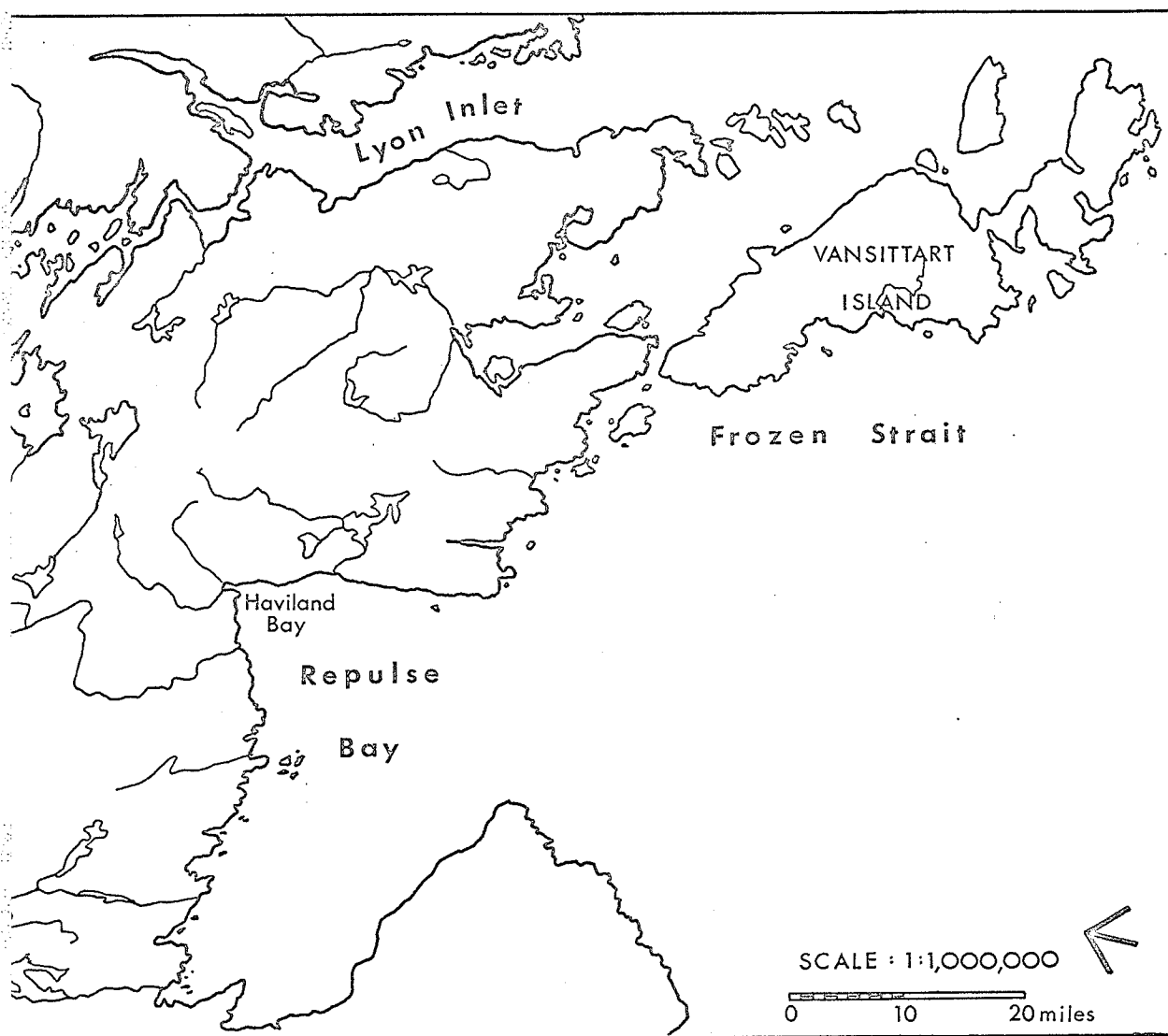


Fig. 6b.--Eskimo map of Bathurst Inlet.



g. 7a.—Survey map of coastal areas between Lyon Inlet and Repulse Bay

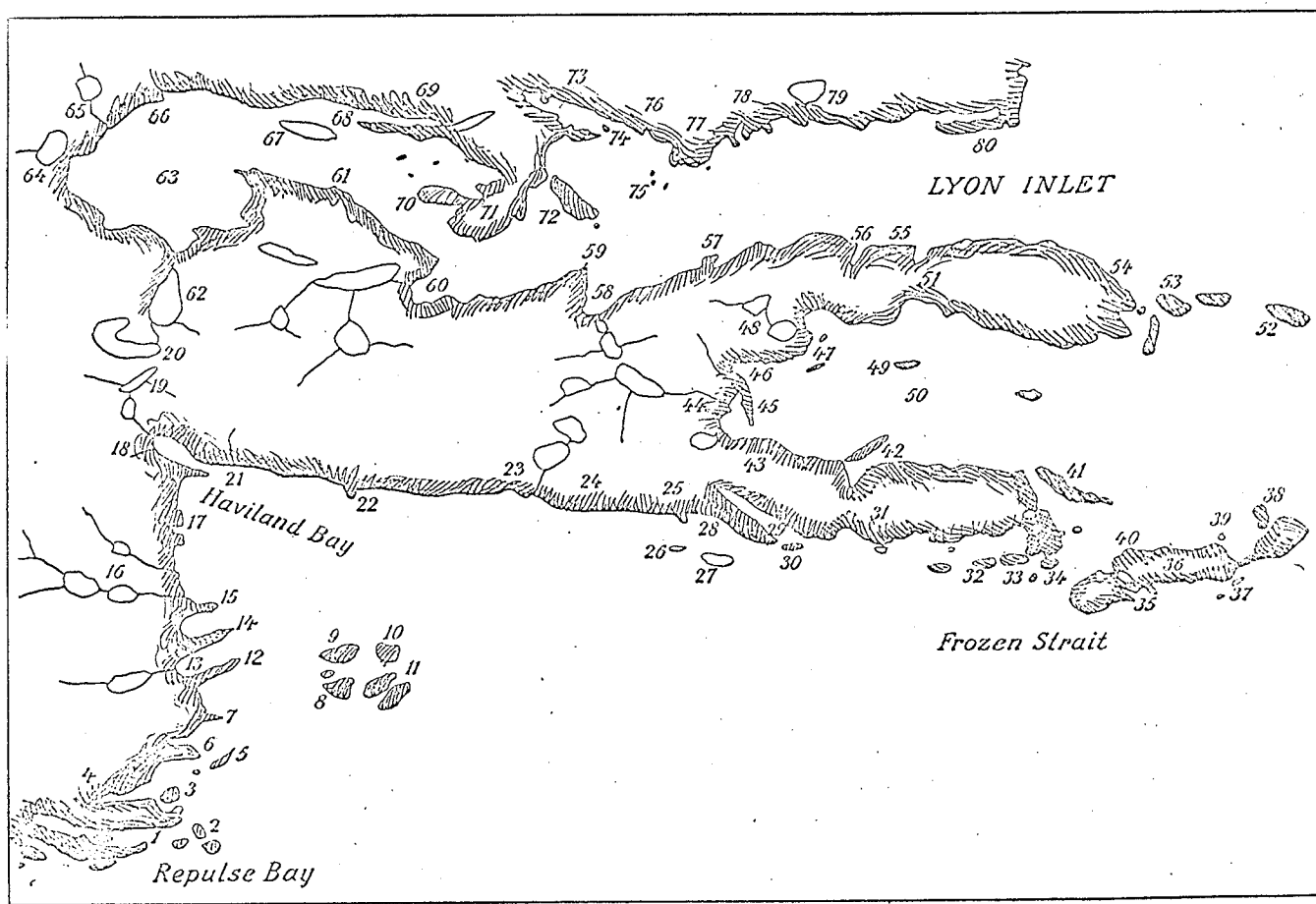


Fig. 7b.--Eskimo map of coastal areas between Lyon Inlet and Repulse Bay

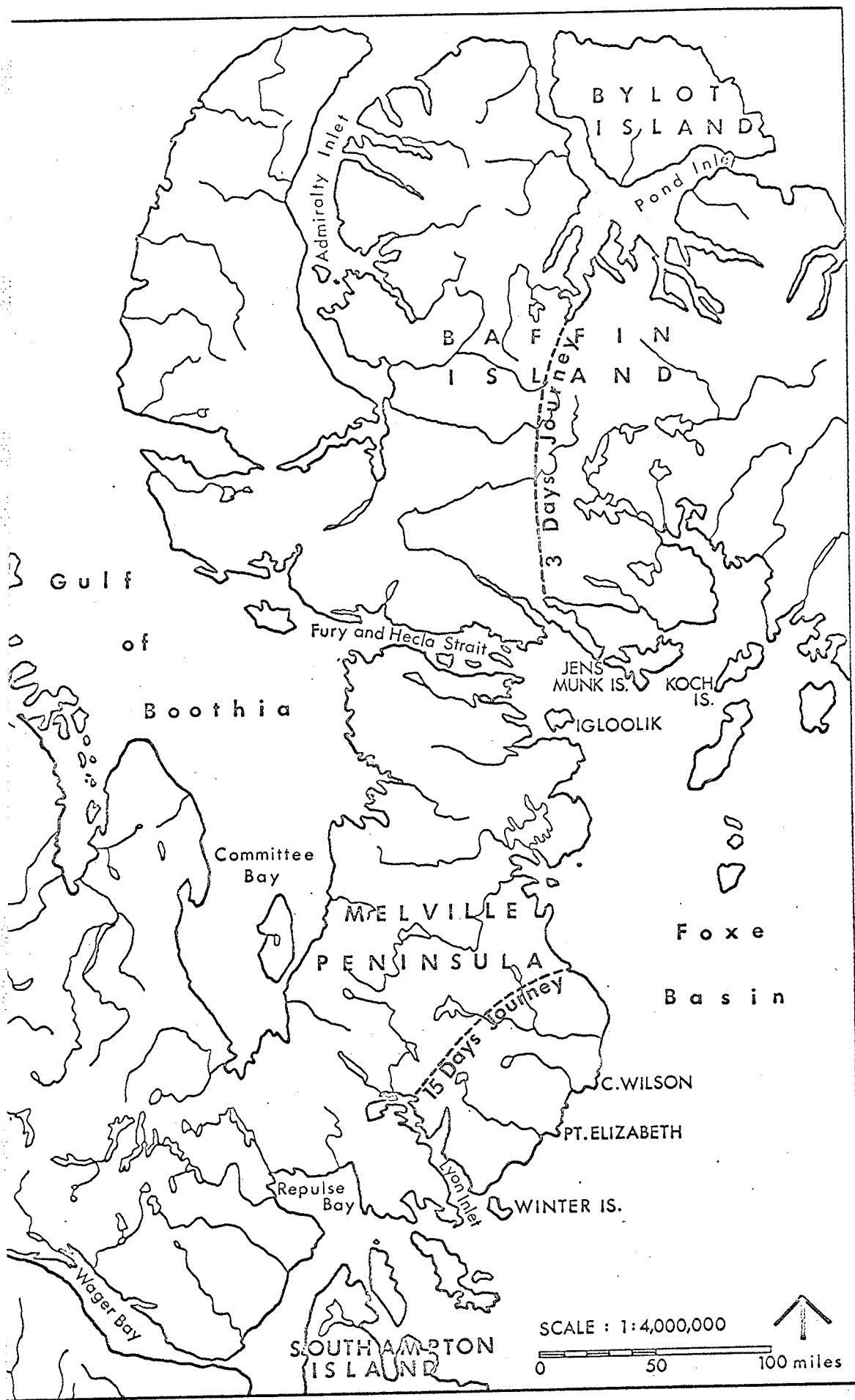


Fig. 8a.—Survey map of Melville Peninsula and Baffin Island

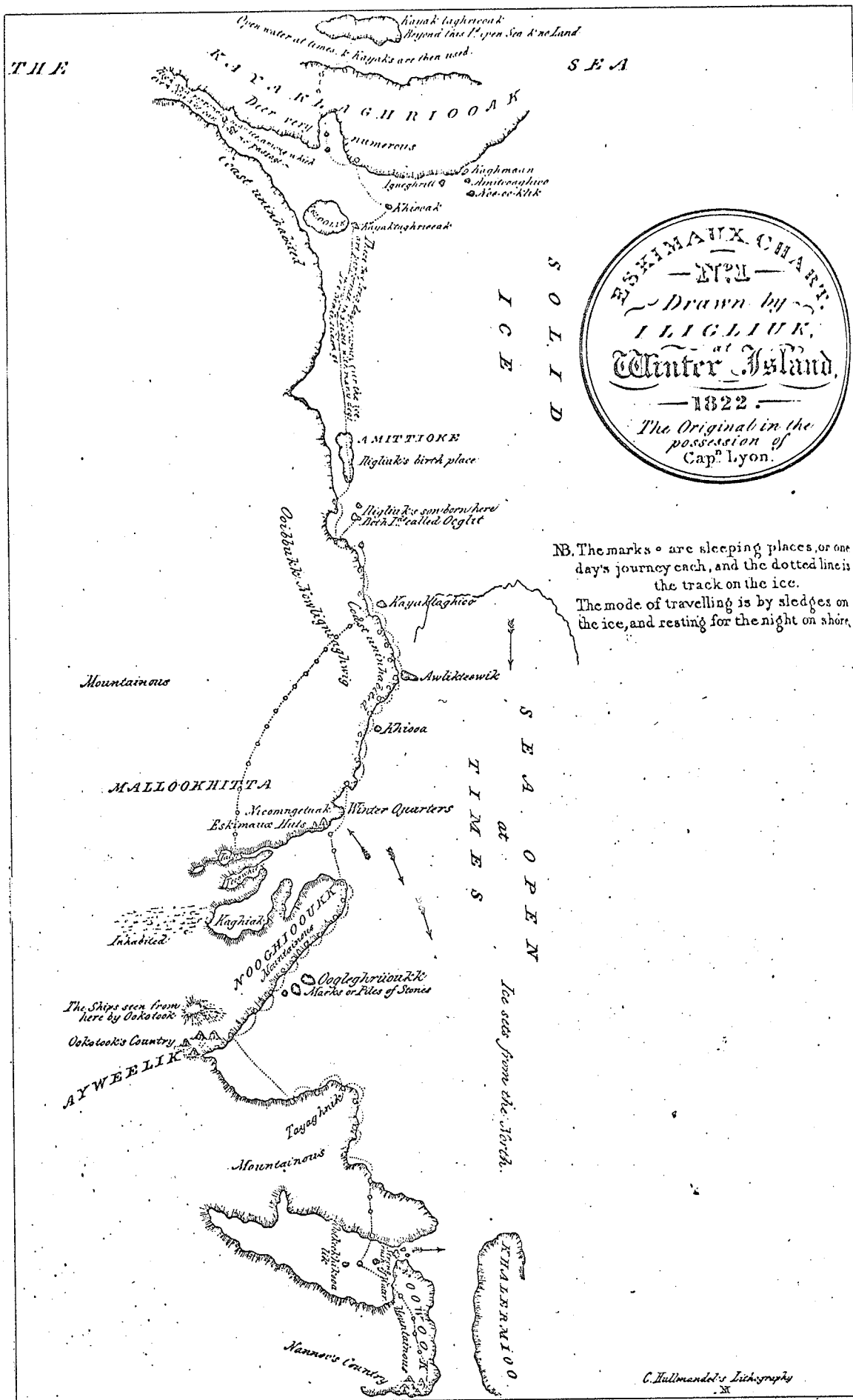


Fig. 8b.--Eskimo map of Melville Peninsula and Baffin Island

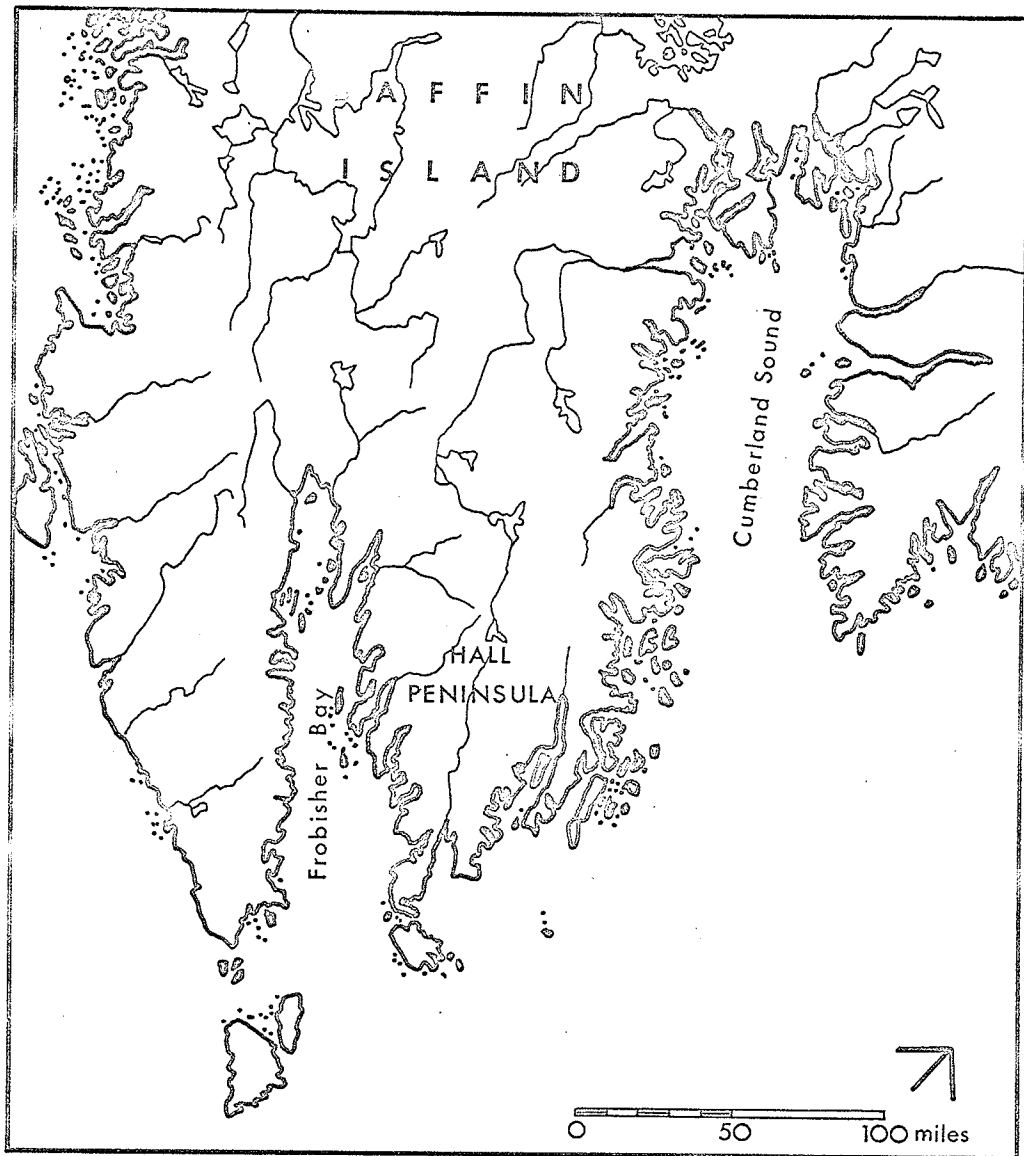


Fig. 9a.—Survey map of Frobisher Bay and Cumberland Sound

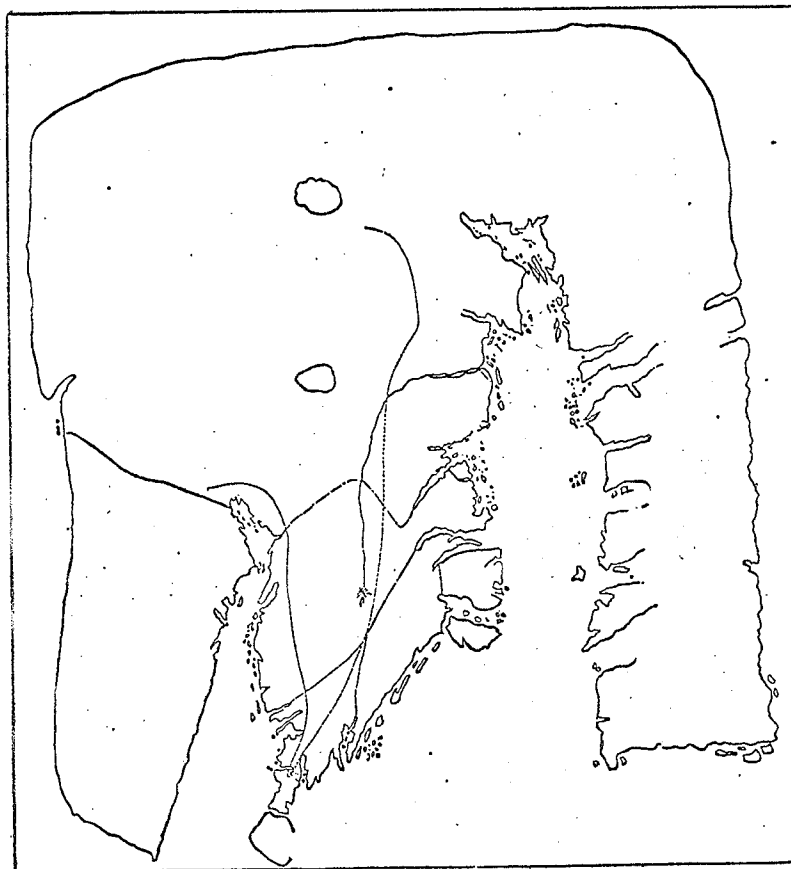


Fig. 9b.--Eskimo map of Frobisher Bay and Cumberland Sound

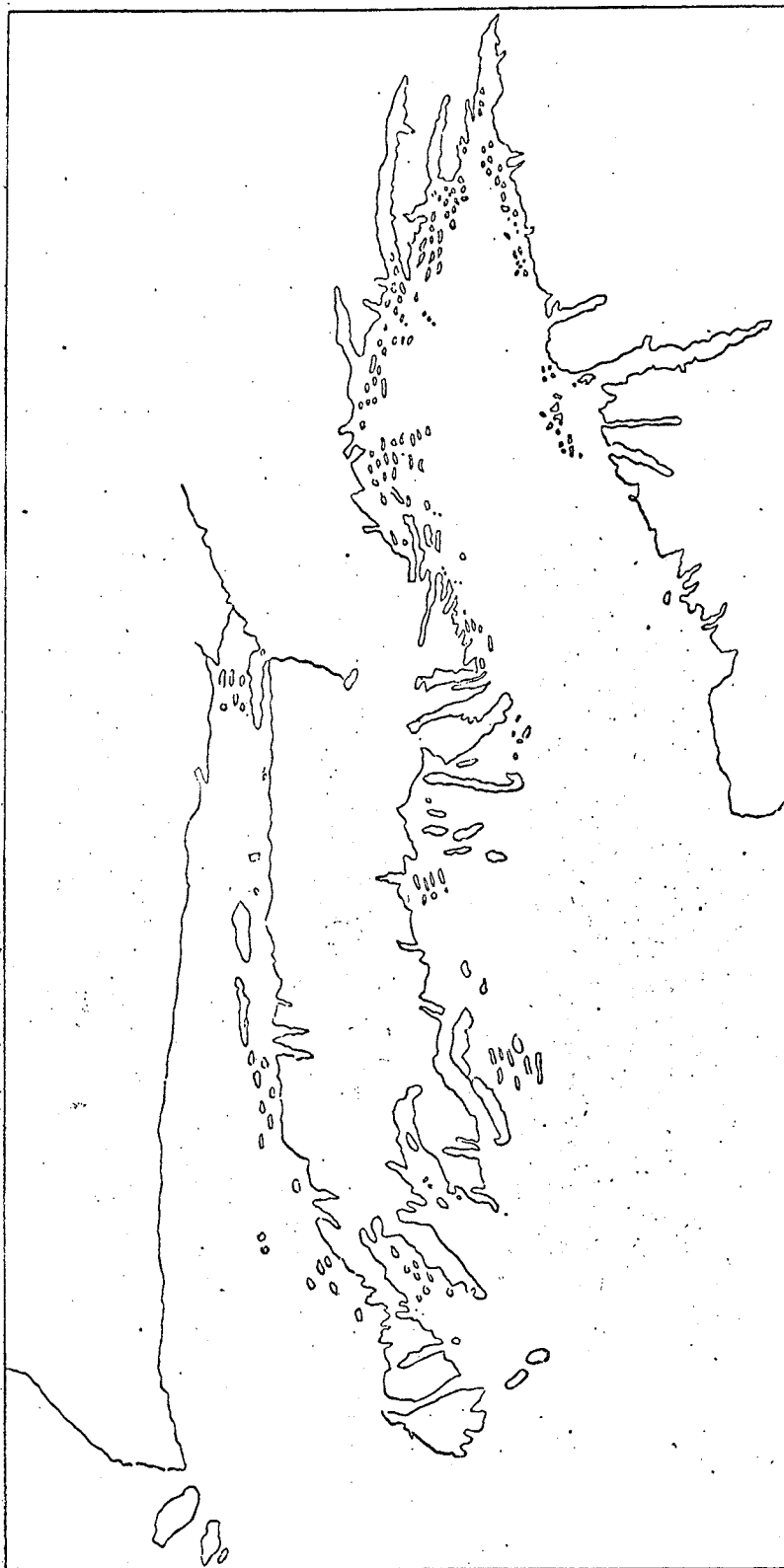


Fig. 9c.--Eskimo map of Frobisher Bay and Cumberland Sound

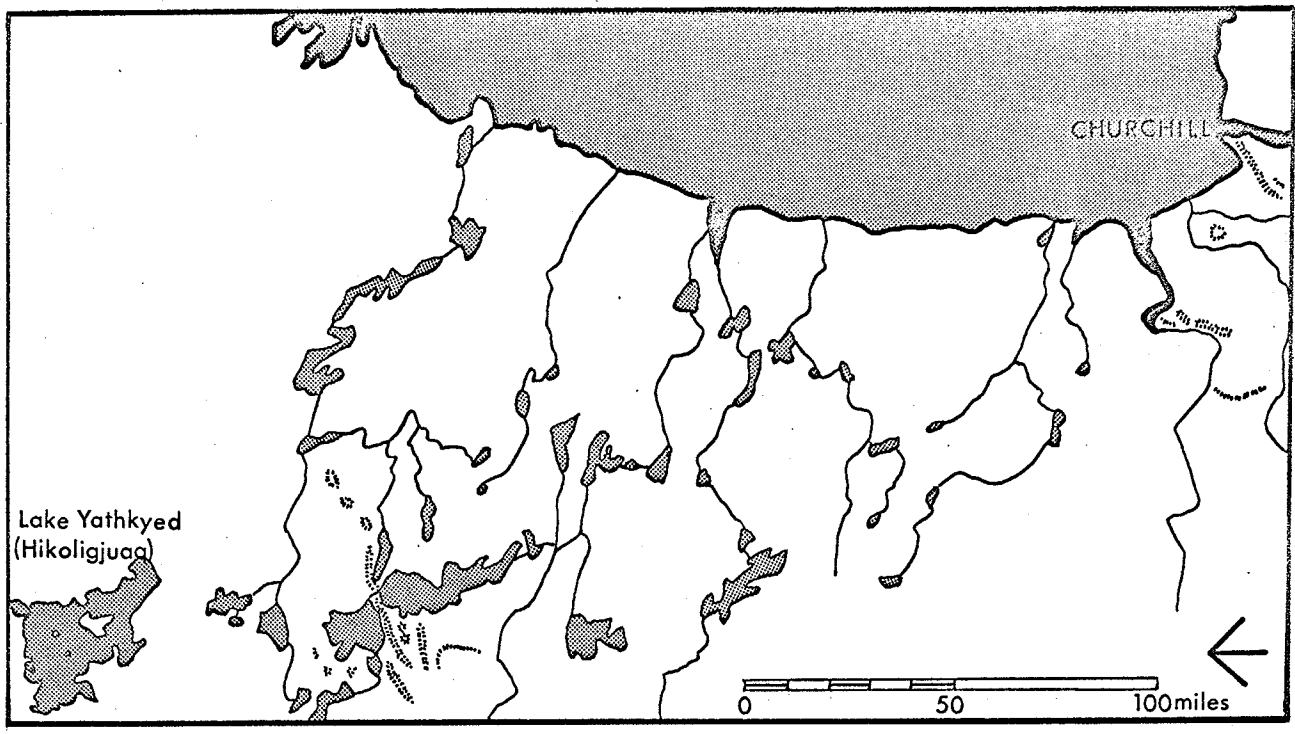


Fig. 10a.—Survey map of area between Lake Yathkyed and Churchill

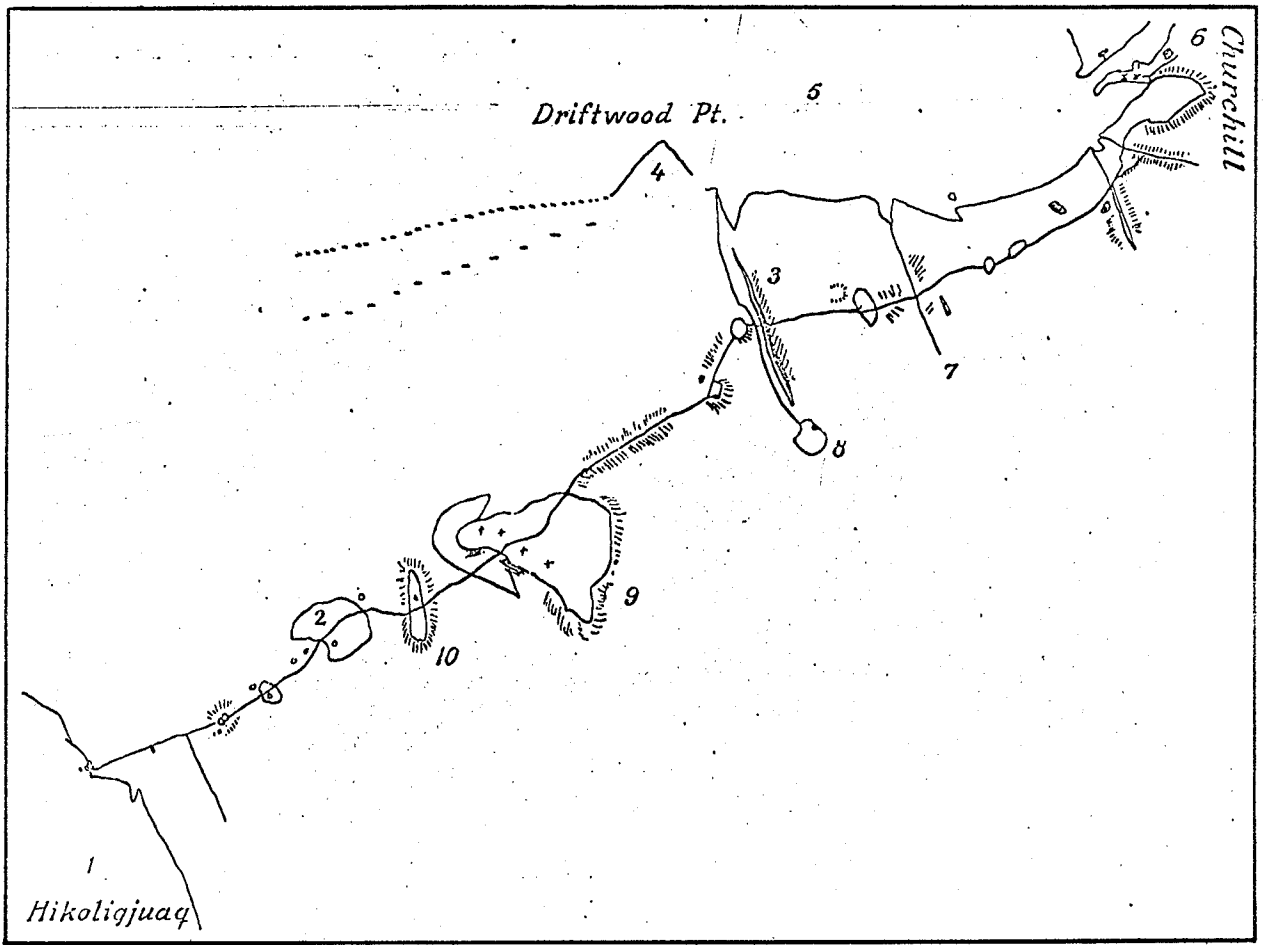


Fig. 10b.—Eskimo map of sledge route between Lake Yathkyed and Churchill

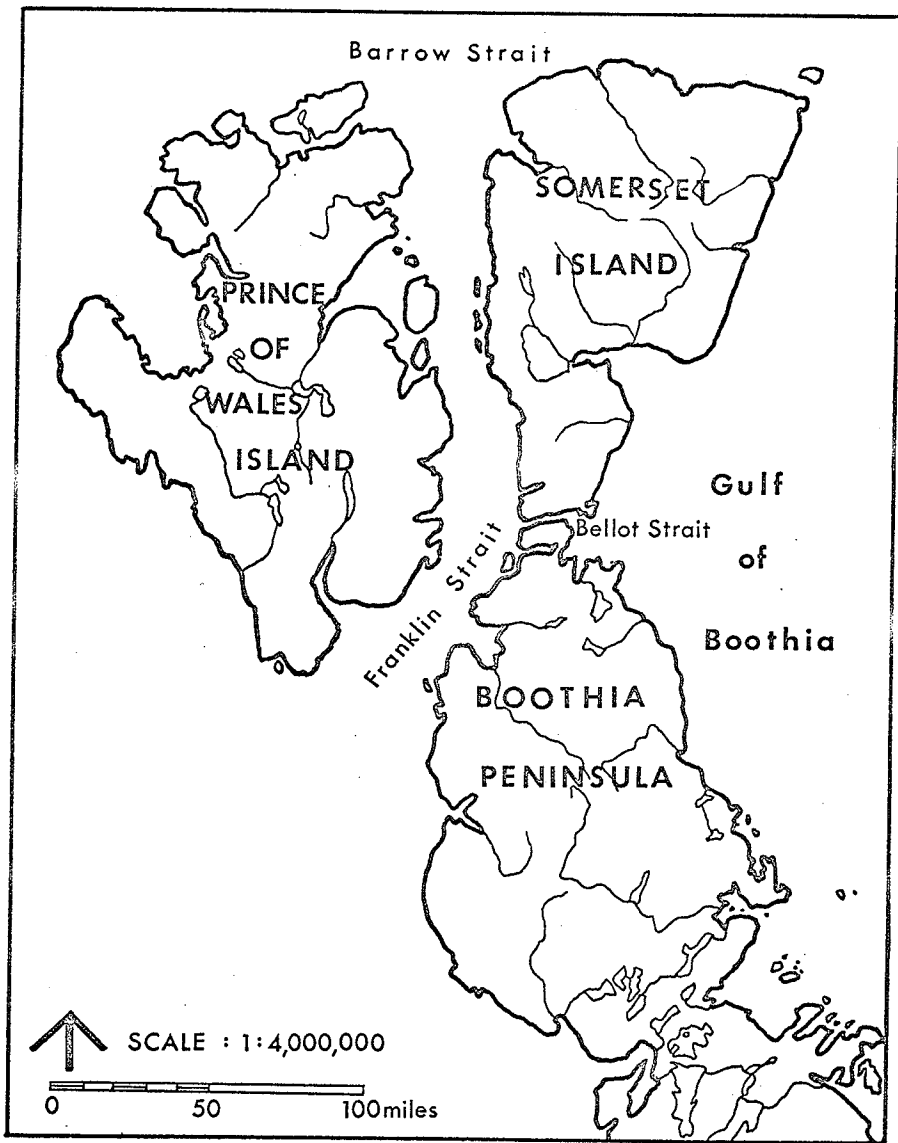


Fig. 11a.--Survey map of Boothia Peninsula, Somerset Island and Prince of Wales Island

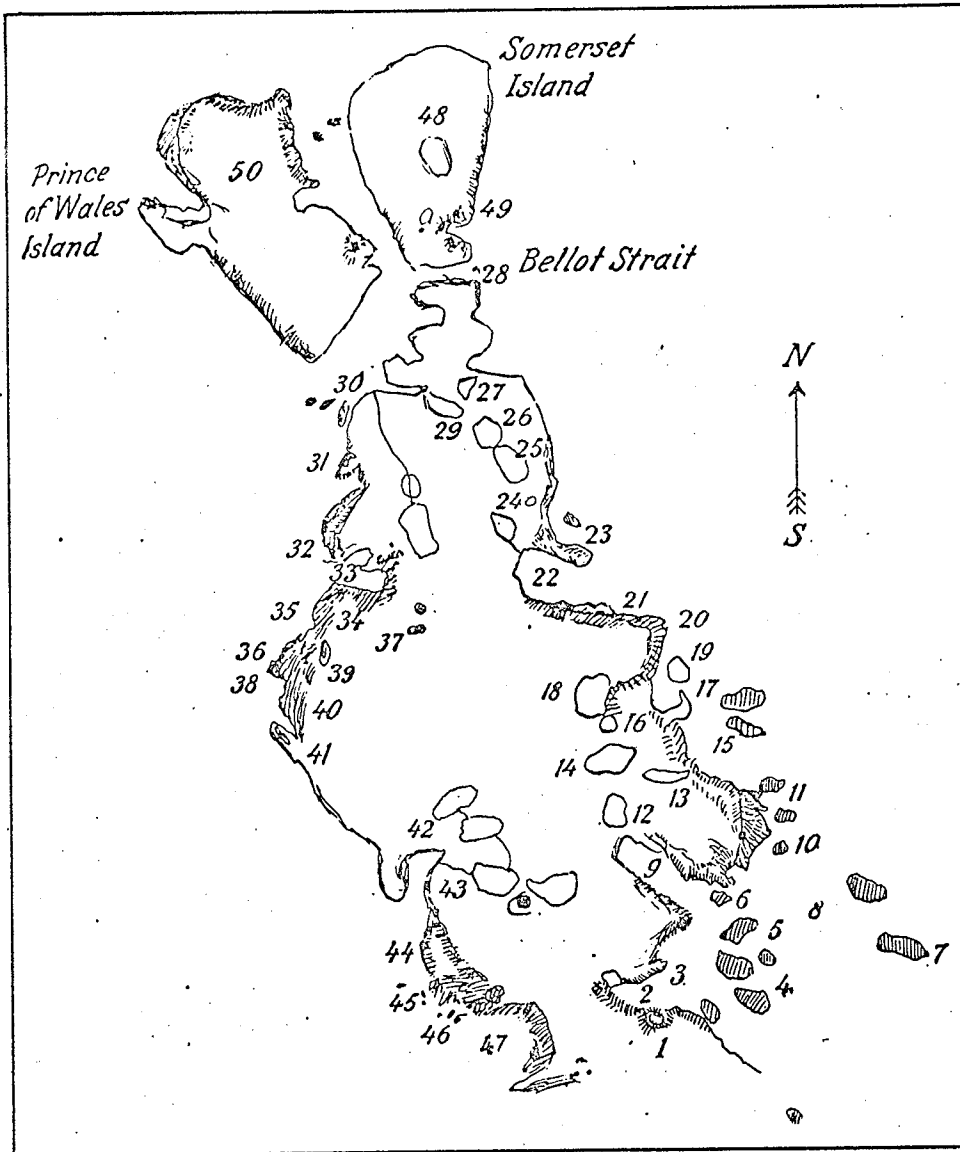


Fig. 11b.--Eskimo map of Boothia Peninsula, Somerset Island and Prince of Wales Island

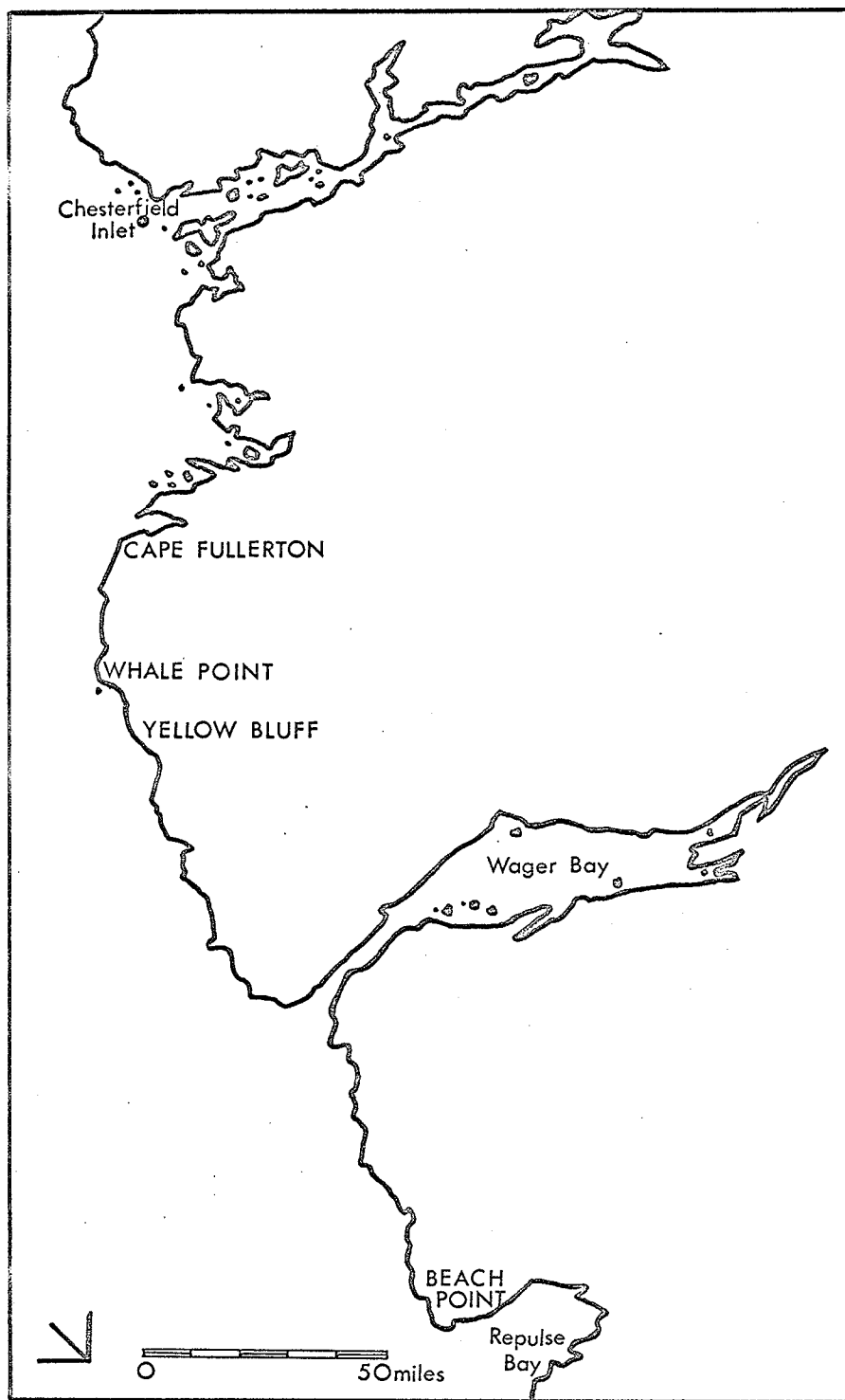


Fig. 12a.—Survey map of west coast of Roes Welcome

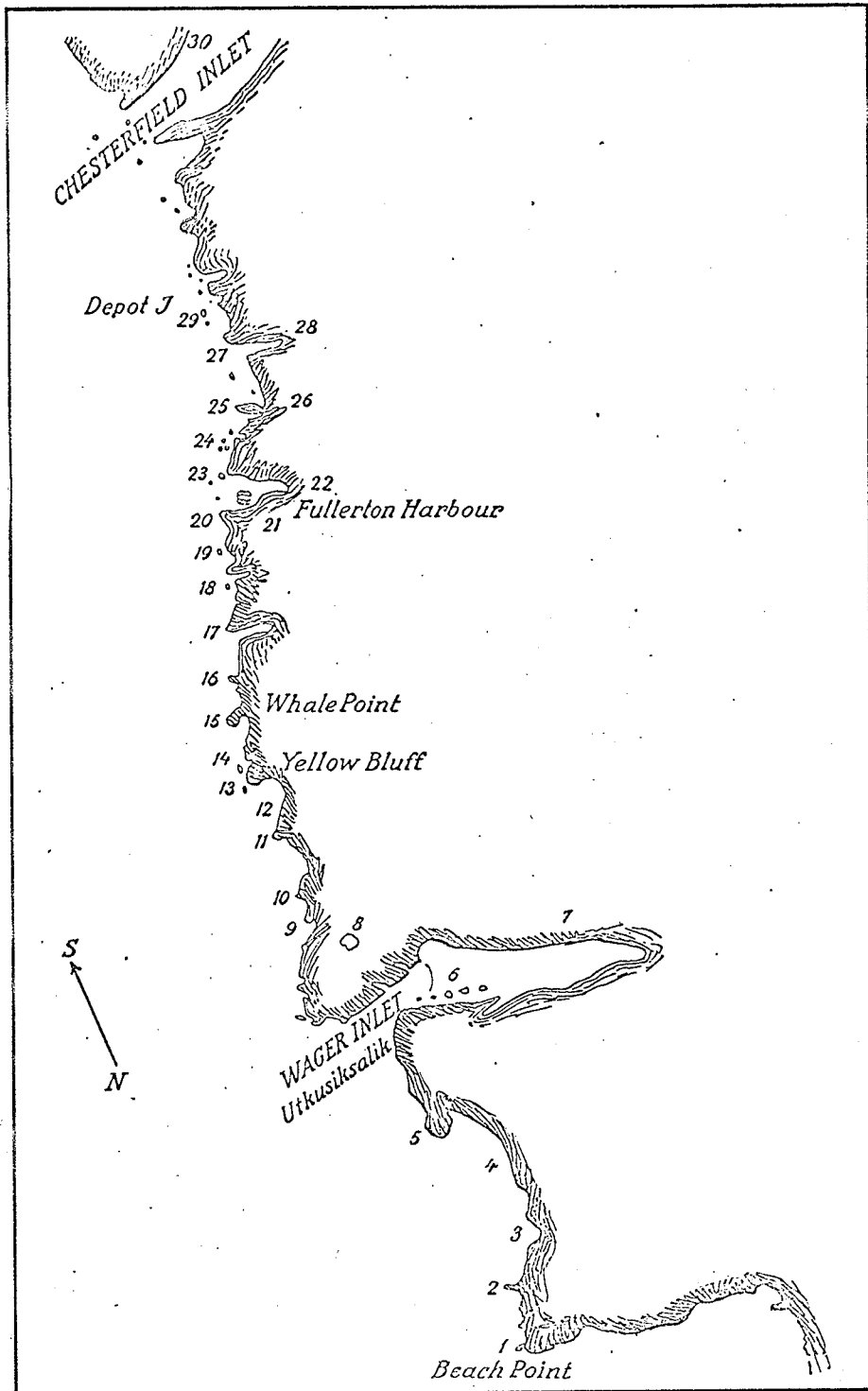


Fig. 12b.--Eskimo map of west coast of Roes Welcome

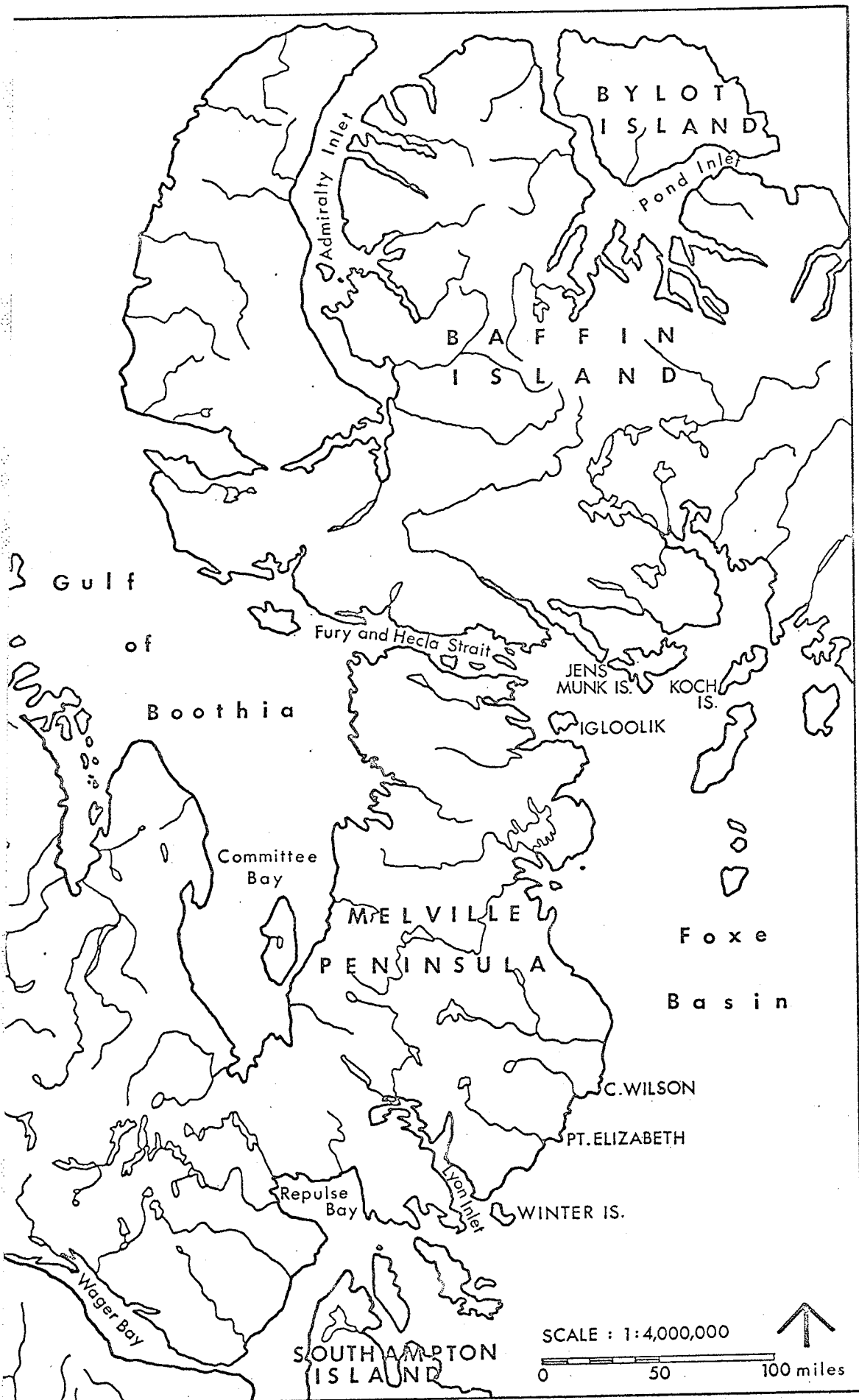


Fig. 13a.—Survey map of Melville Peninsula and Baffin Island

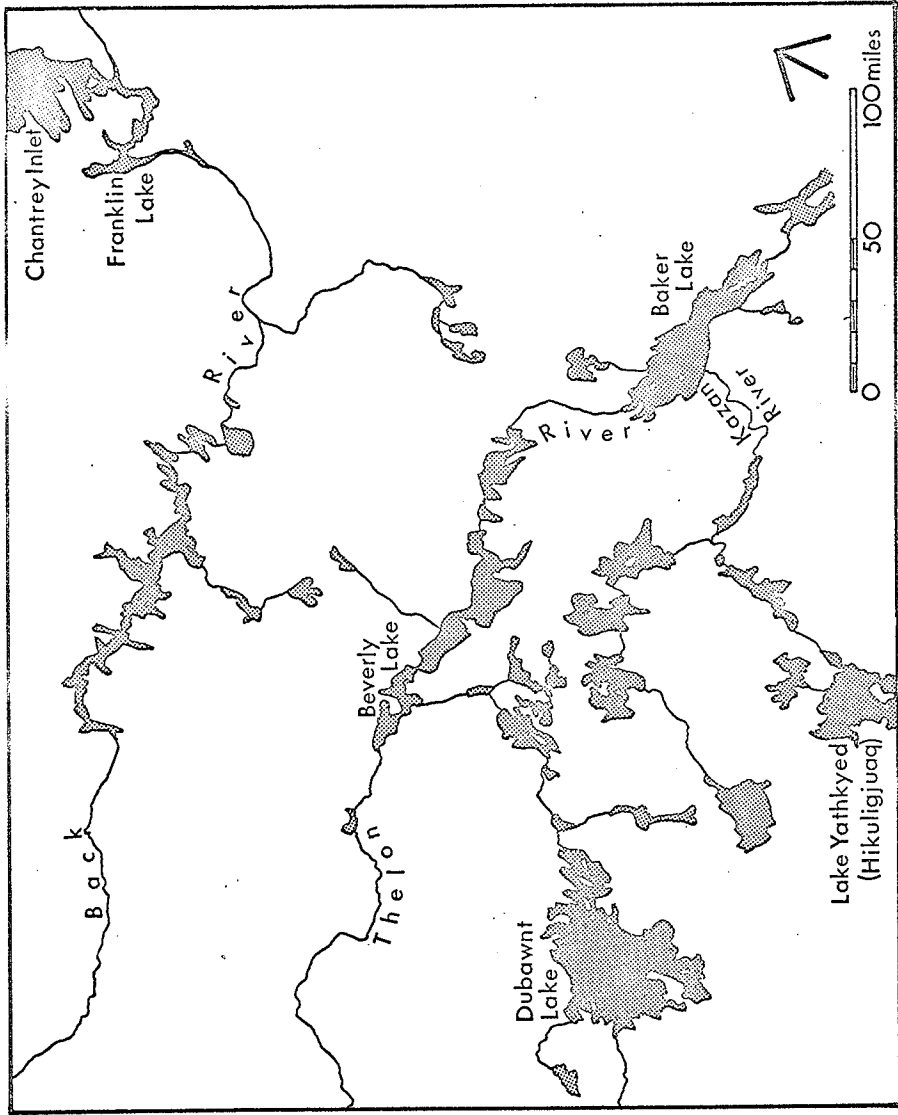


Fig. 14a.--Survey map of Thelon River area

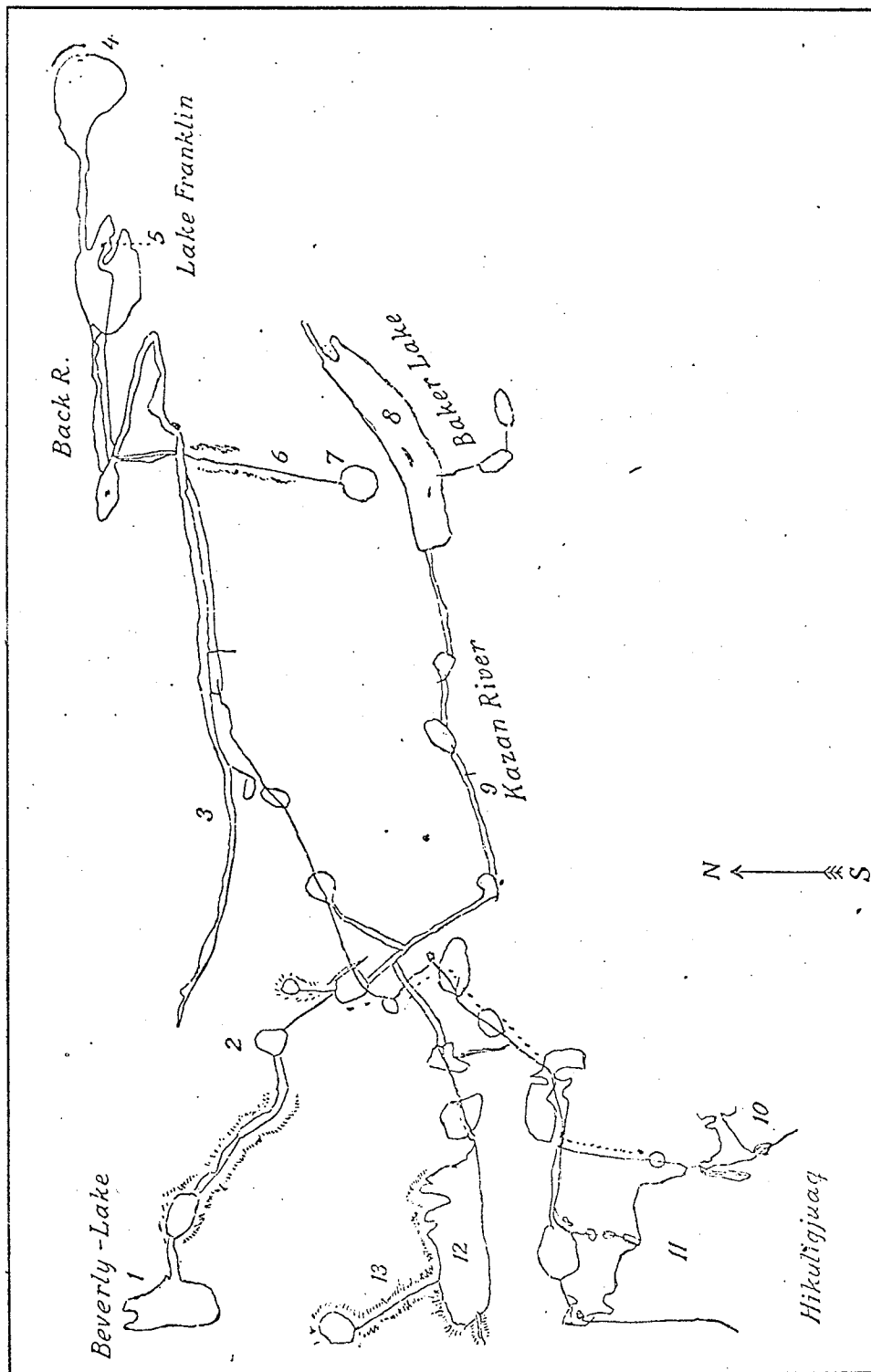


Fig. 14b.---Eskimo map of Thelon River area

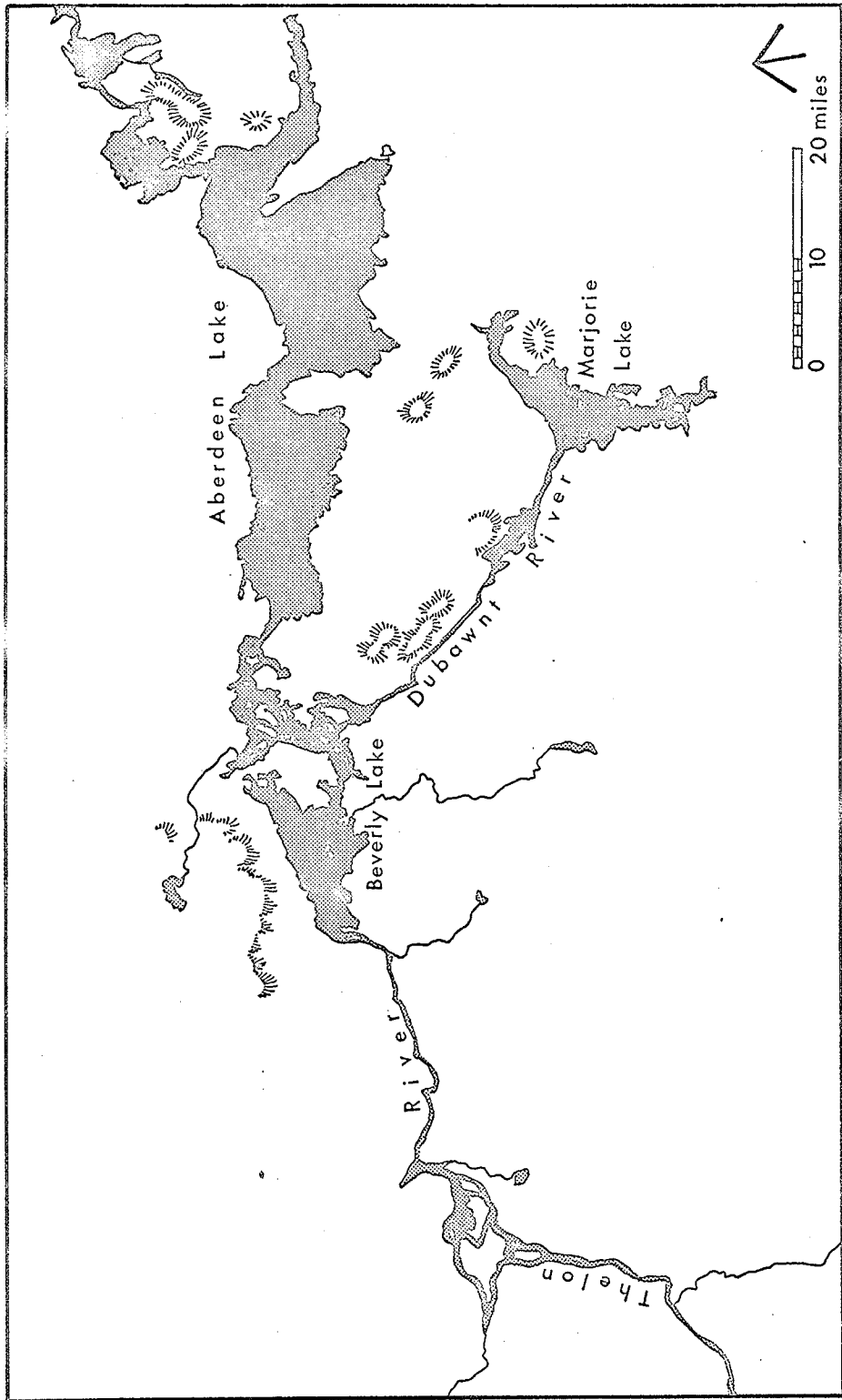


Fig. 15a.---Survey map of Beverly Lake area

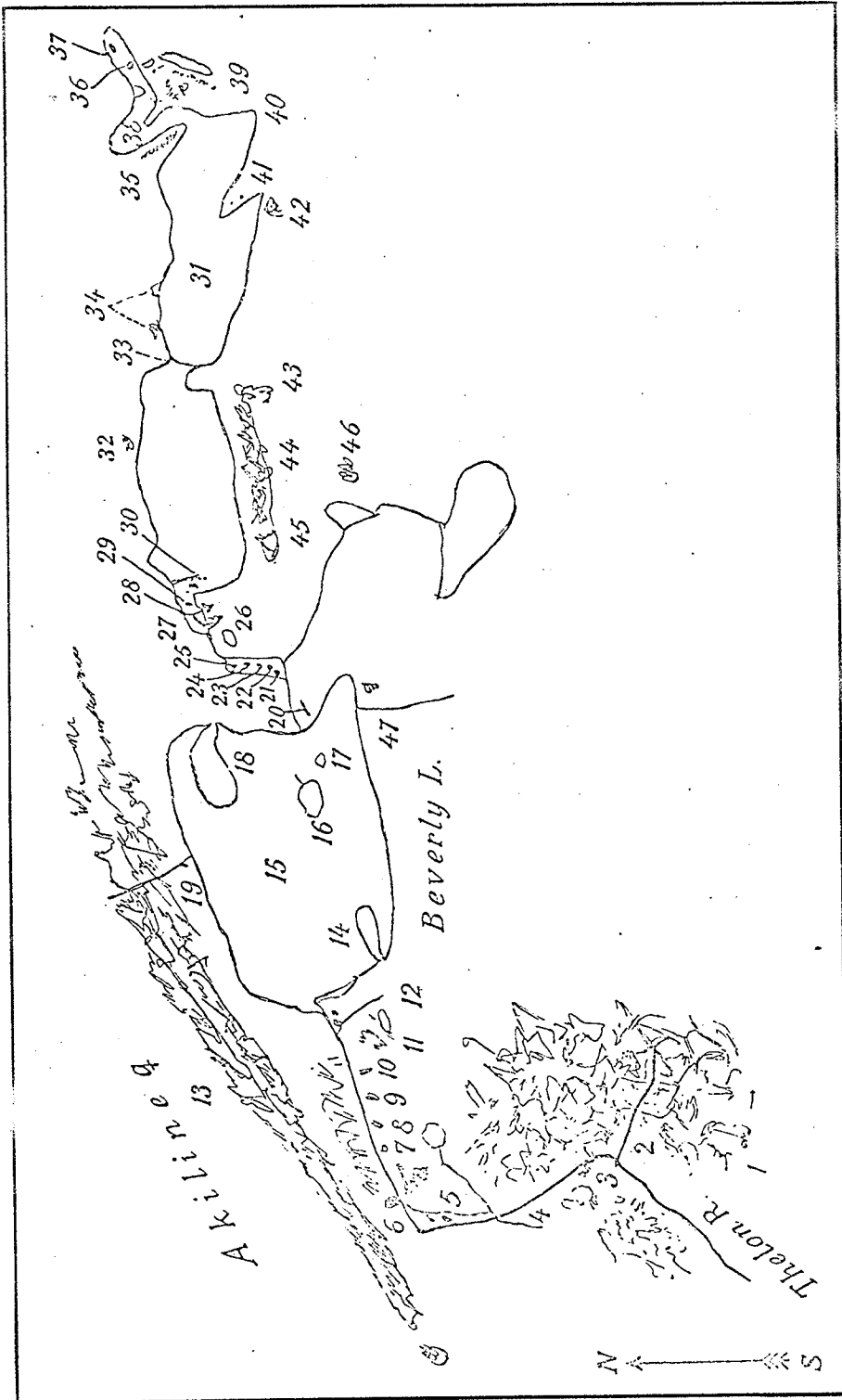


Fig. 15b.--Eskimo map of Beverly Lake area

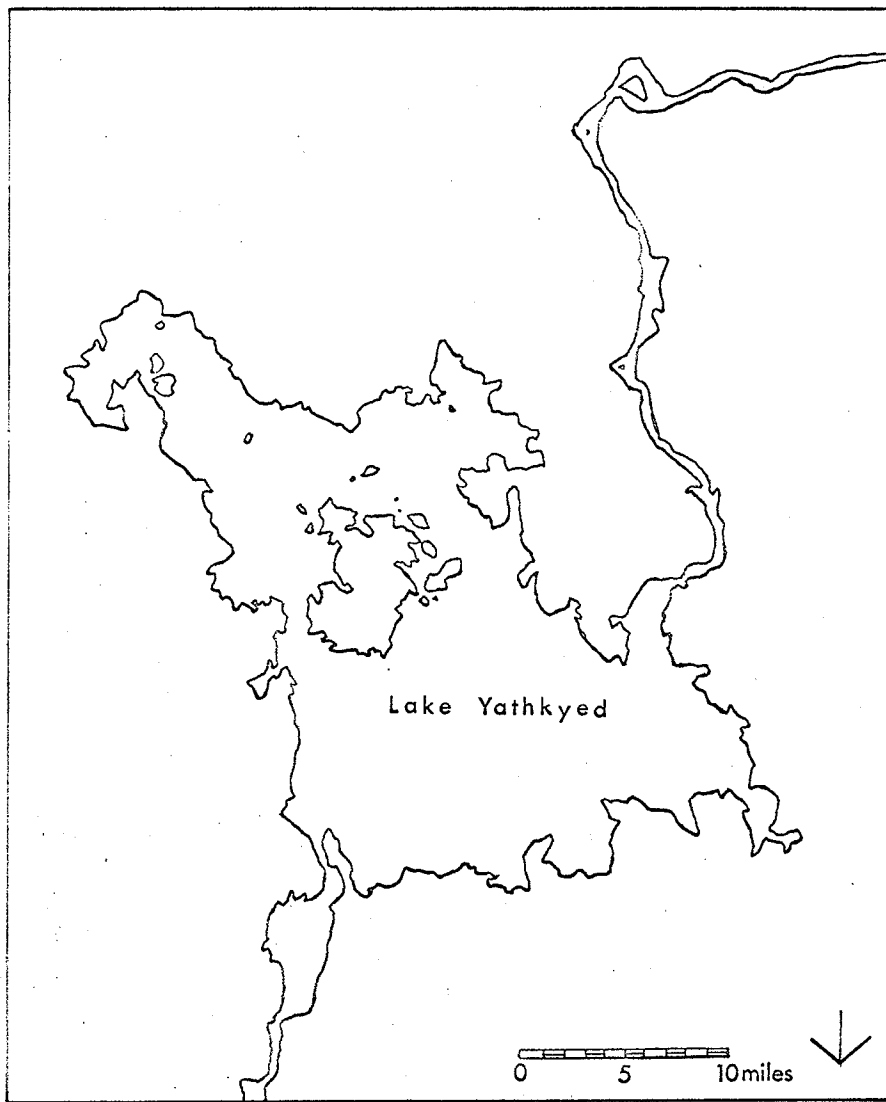


Fig. 16a.--Survey map of Lake Yathkyed and Kazan River

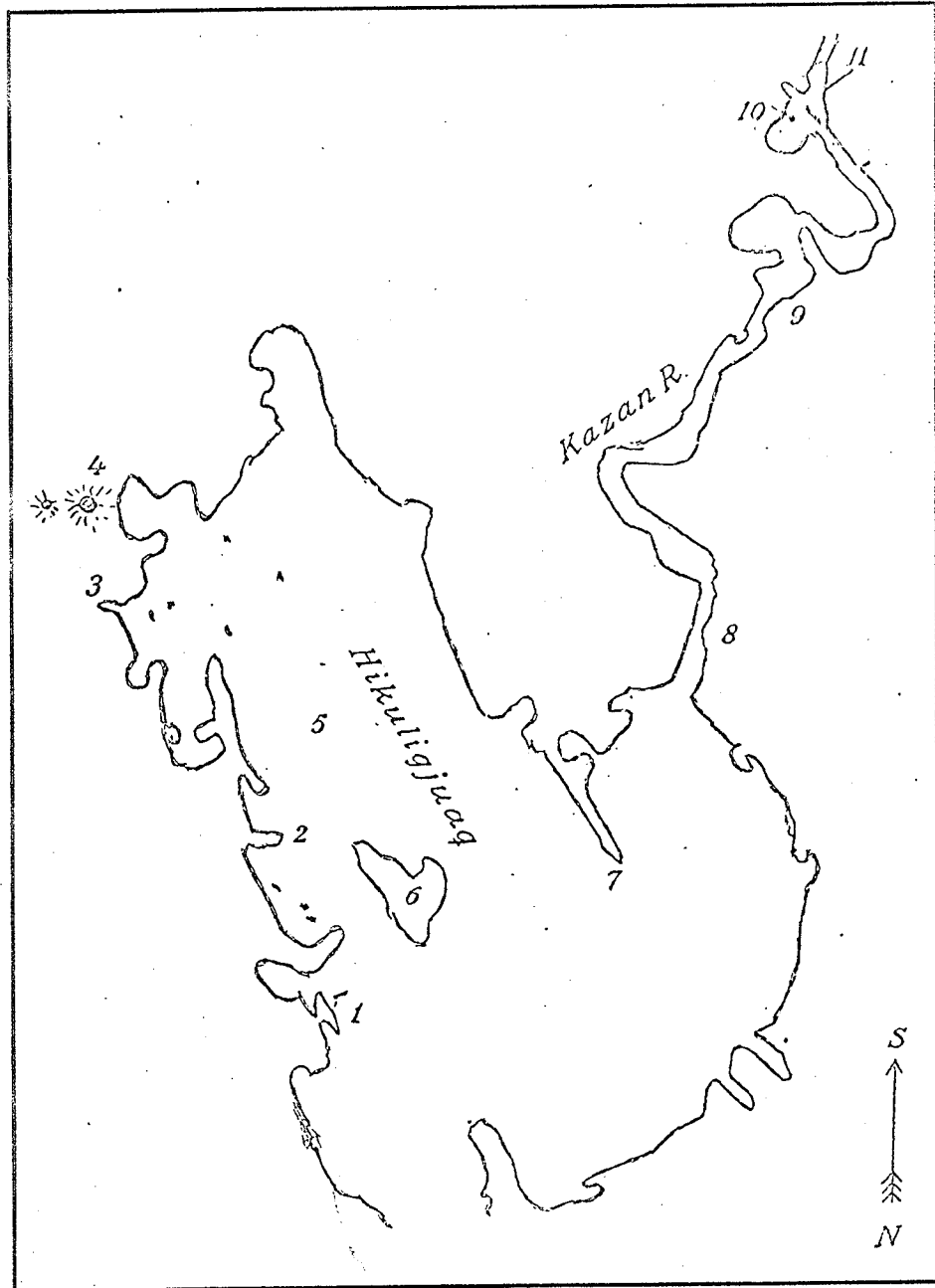


Fig. 16b.--Eskimo map of Lake Yathkyed and Kazan River

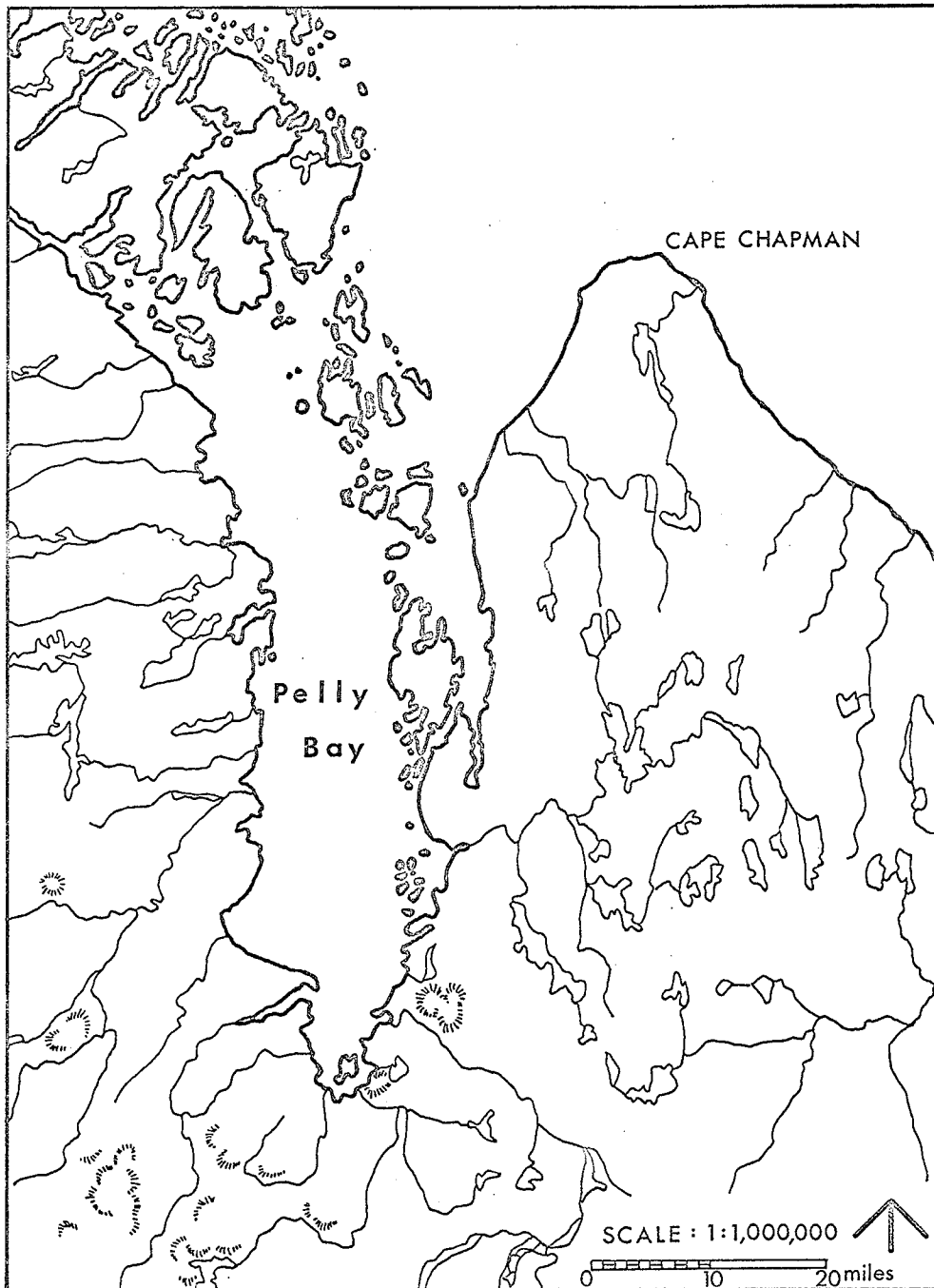


Fig. 17a.—Survey map of Pelly Bay

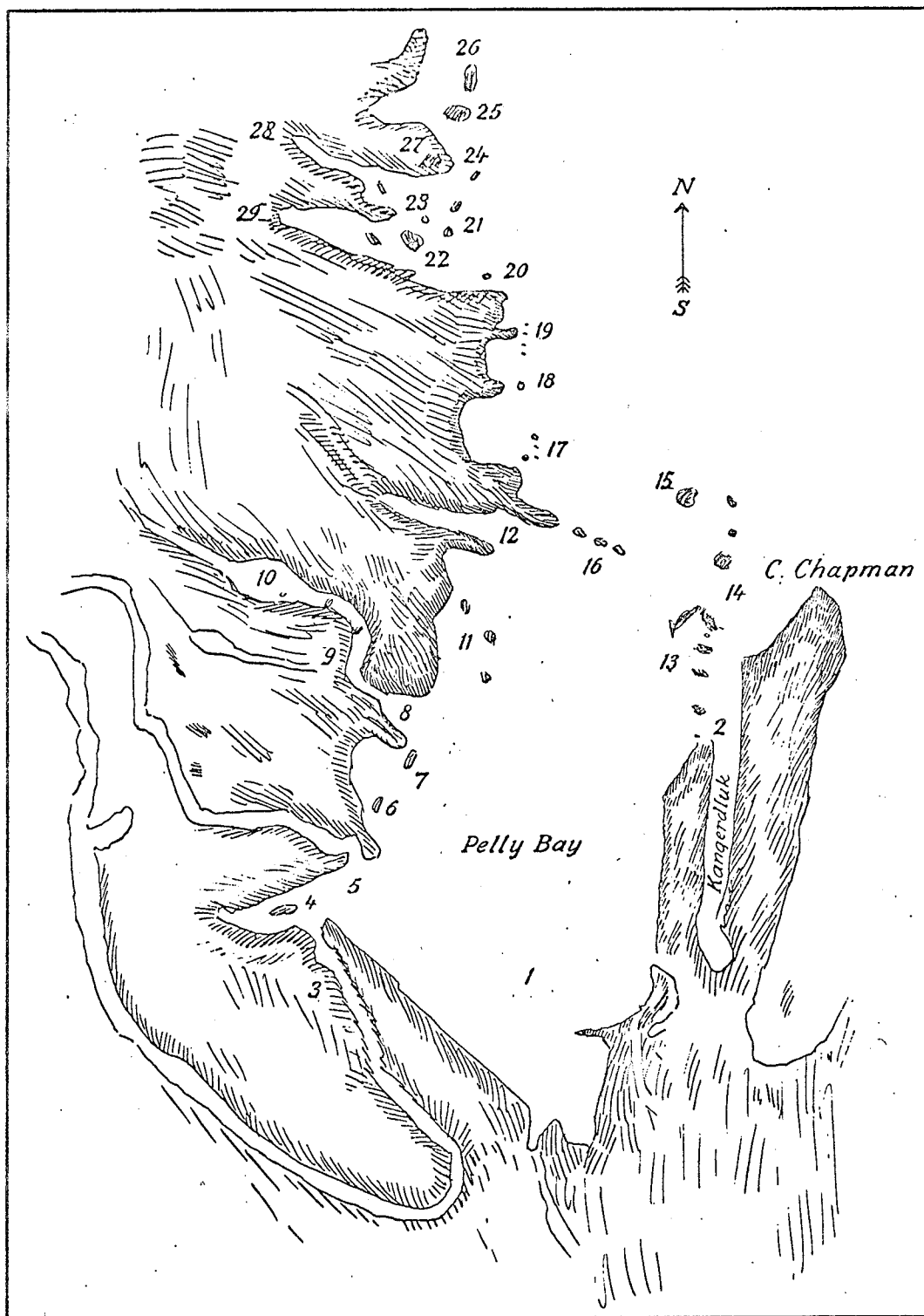


Fig. 17b.--Eskimo map of Pelly Bay

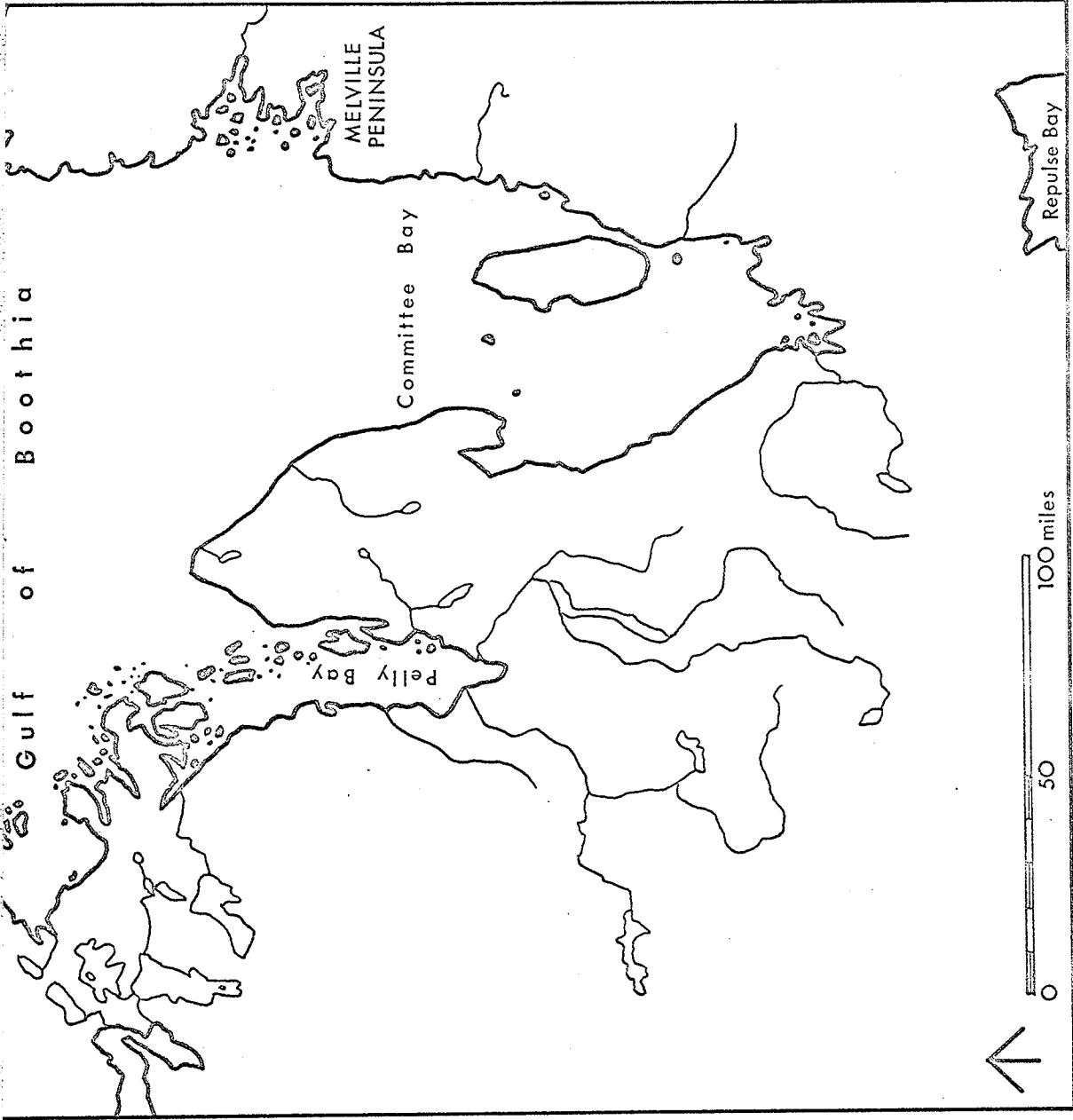


Fig. 18a.--Survey map of Gulf of Boothia

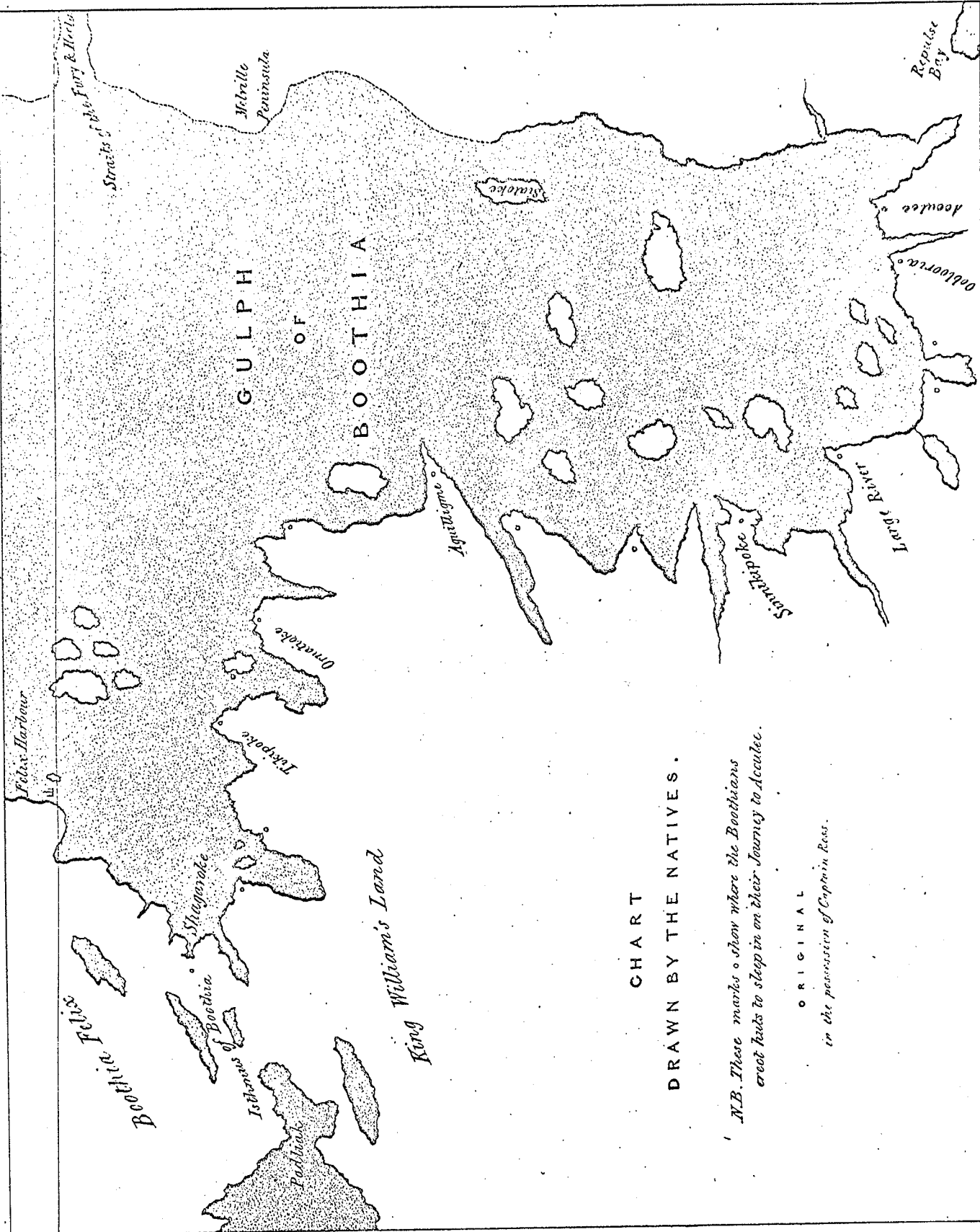


Fig. 18b.--Eskimo map of Gulf of Boothia

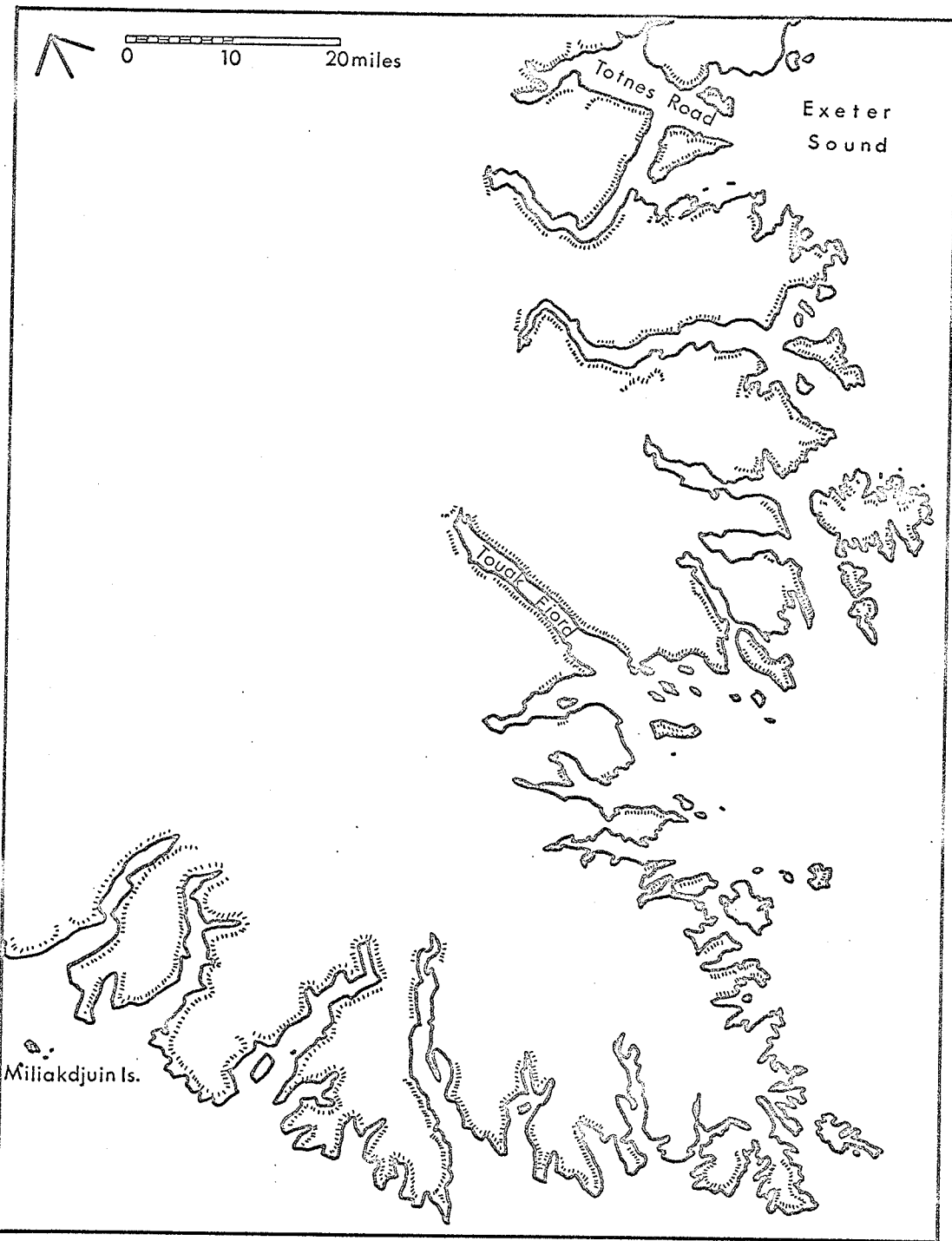


Fig. 19a.—Survey map of section of east coast of Baffin Island

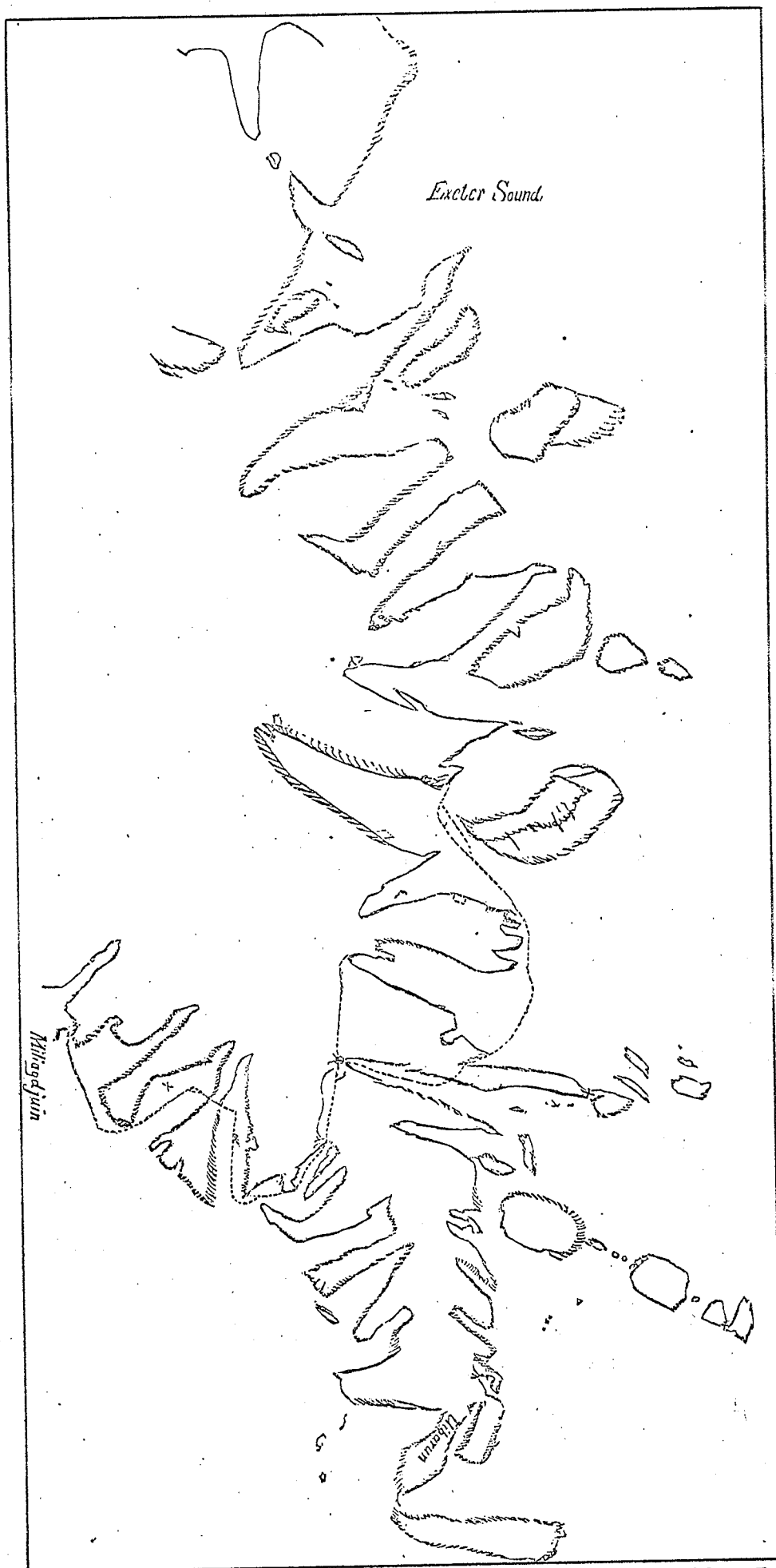


Fig. 19b.--Eskimo map of section of east coast of Baffin Island.

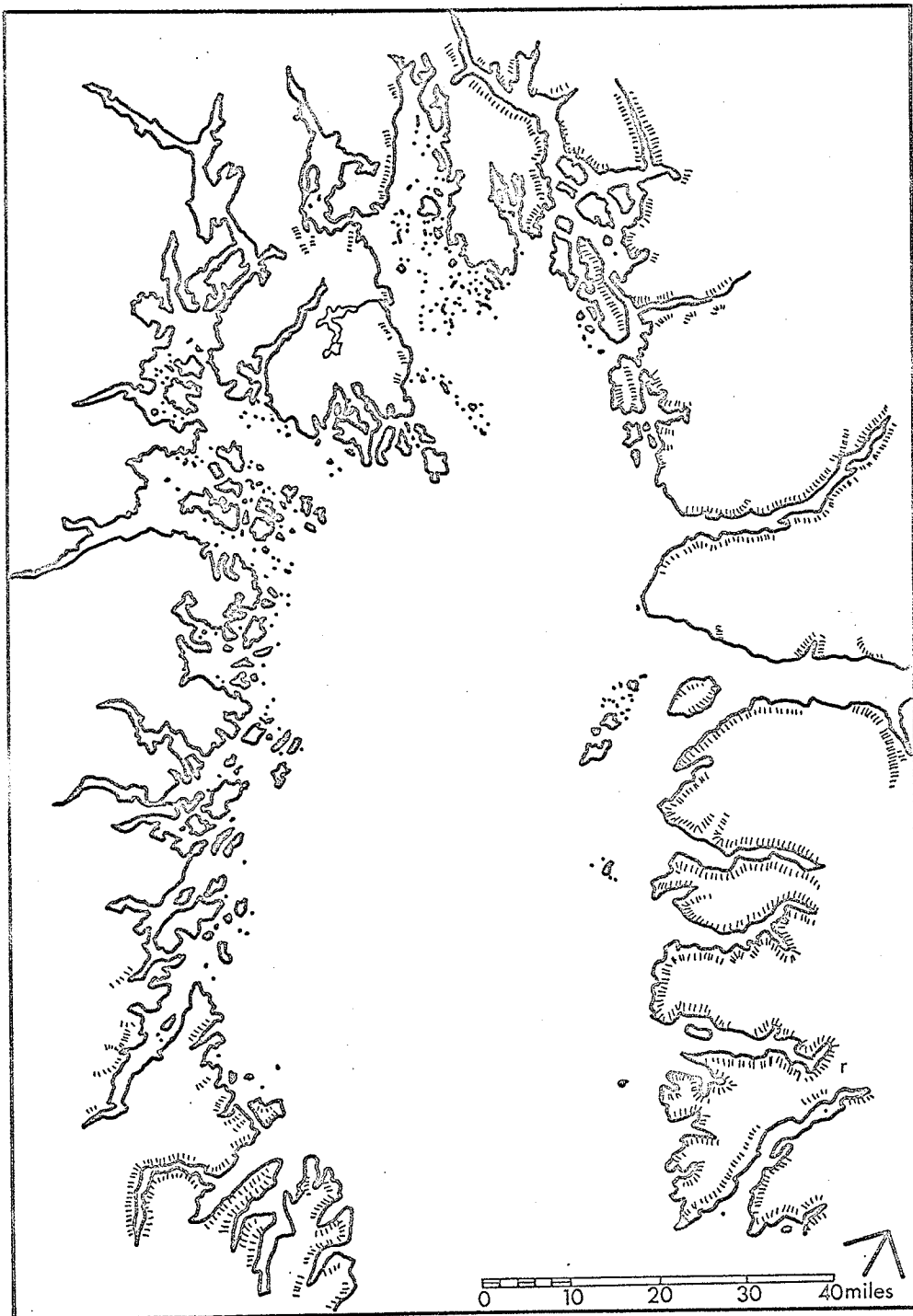


Fig. 20a.--Survey map of Cumberland Sound



Fig. 20b.--Eskimo map of Cumberland Sound

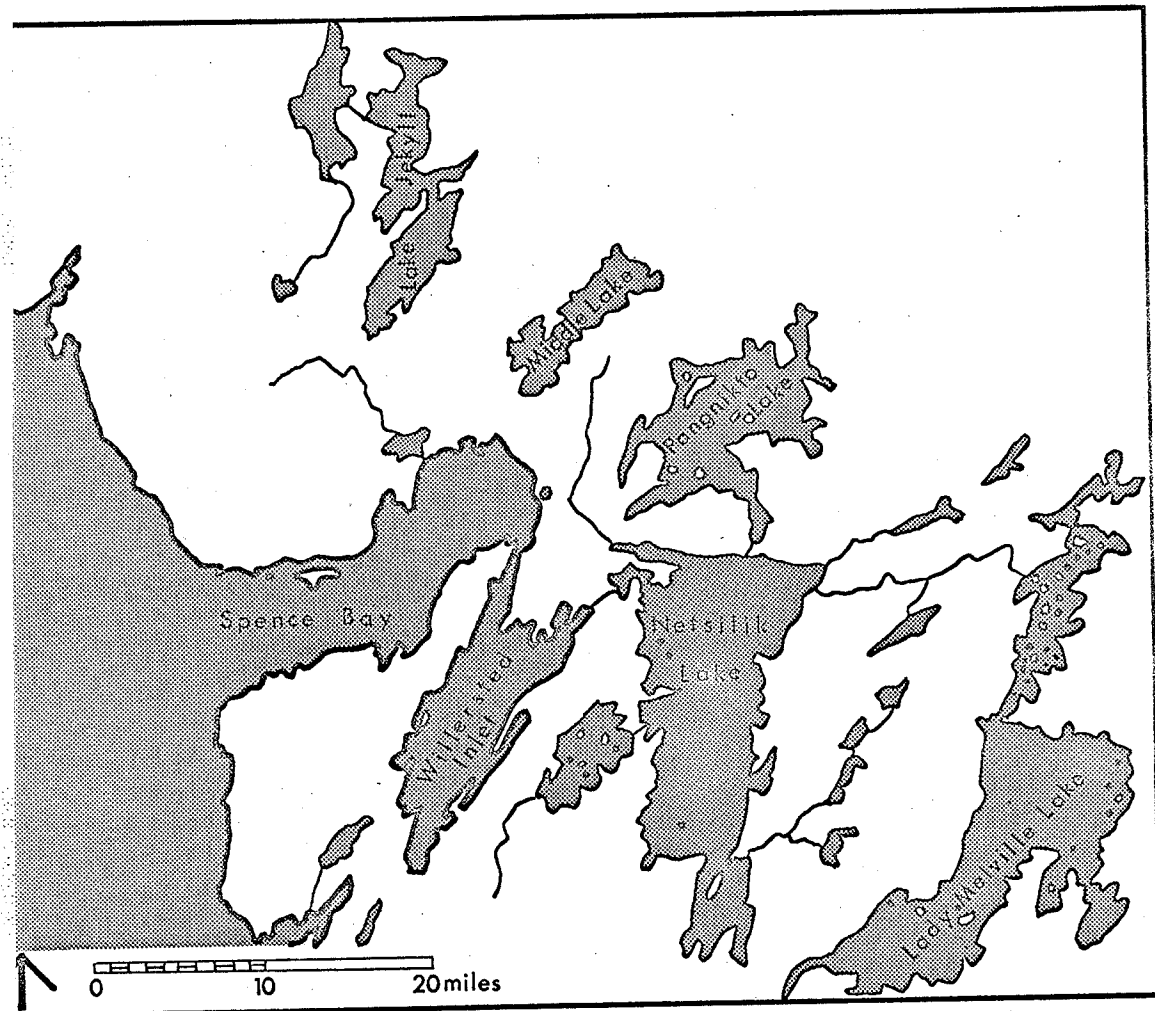


Fig. 21a.—Survey map of western part of Boothia Isthmus

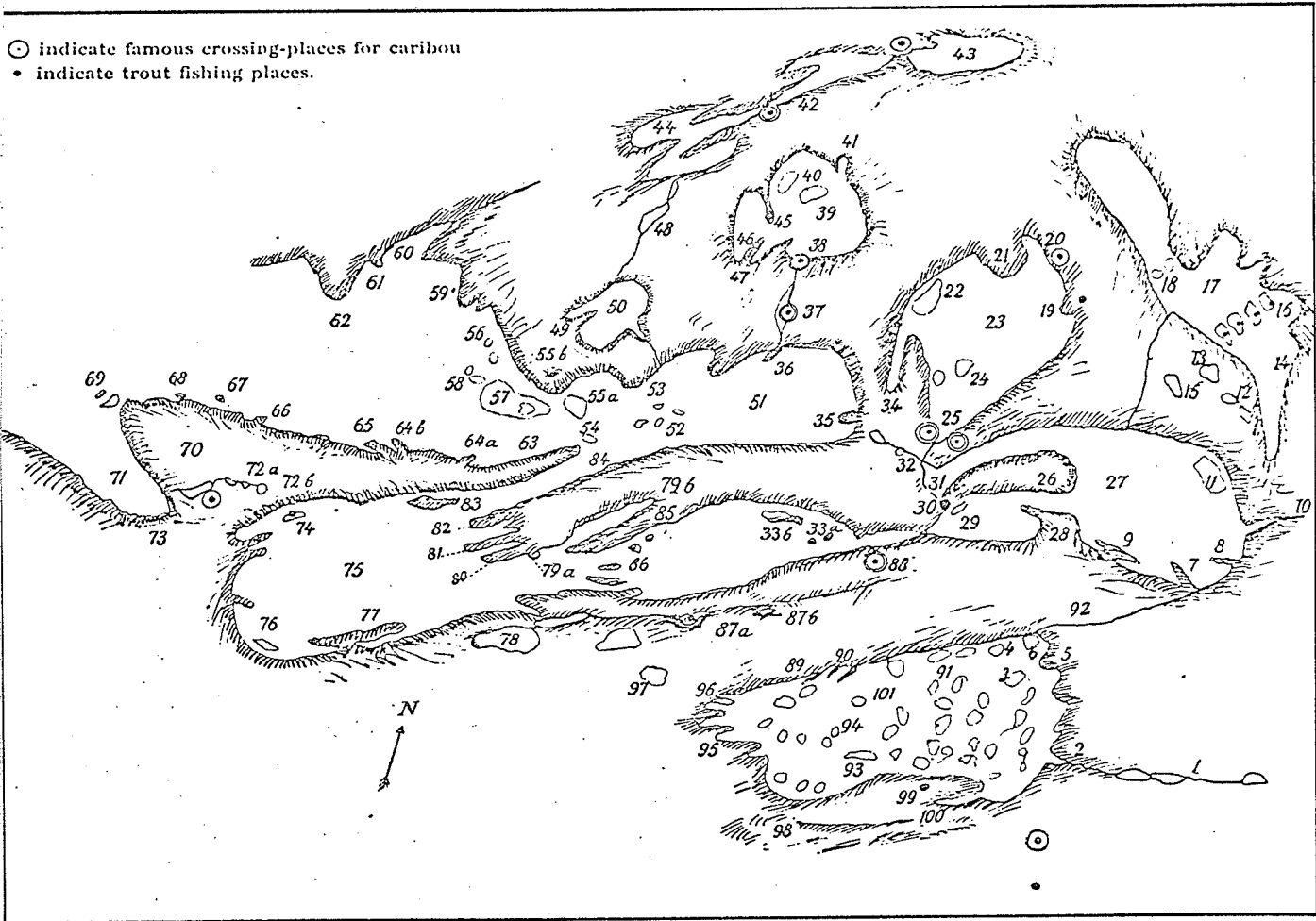


Fig. 21b.--Eskimo map of western part of Boothia Isthmus

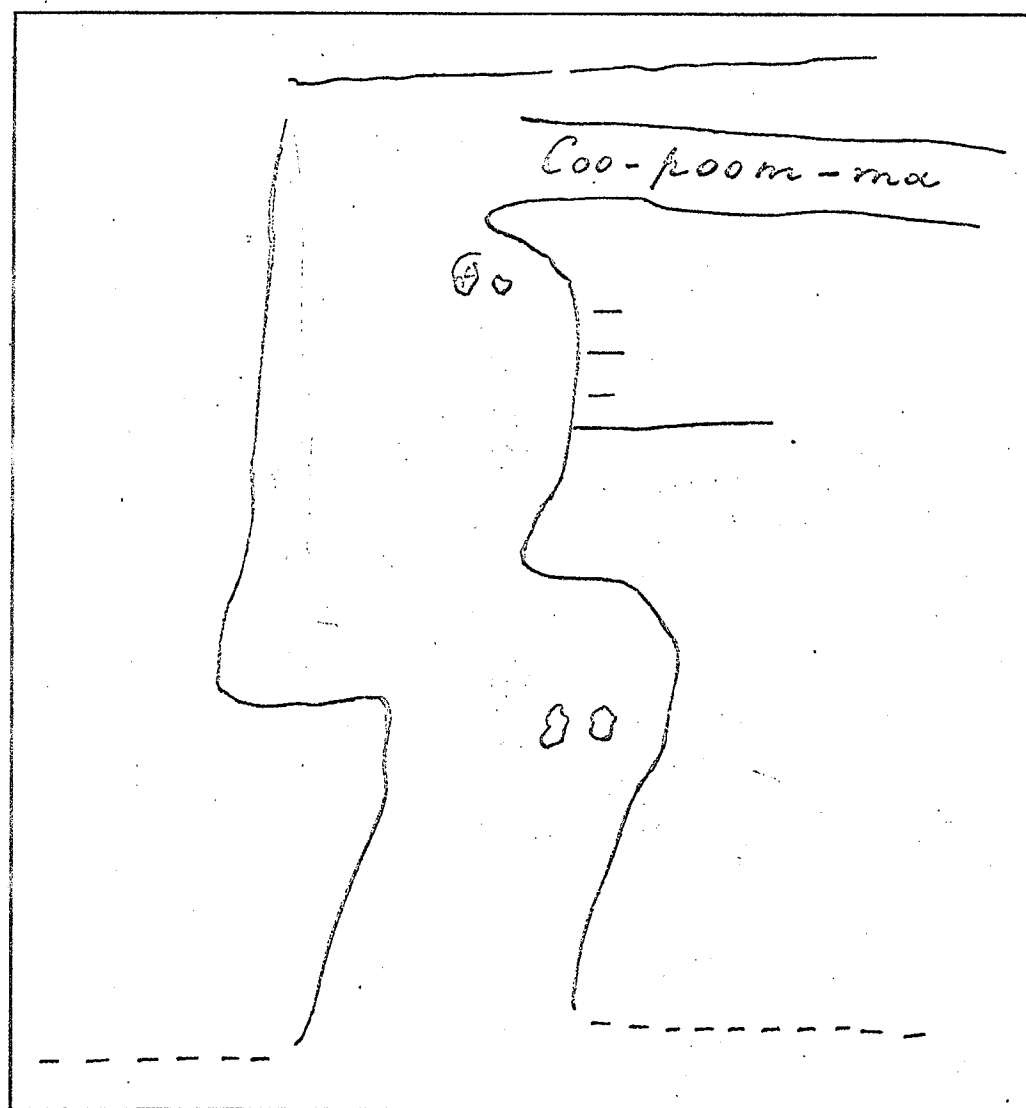


Fig. 22.--Eskimo map from Wainwright Inlet

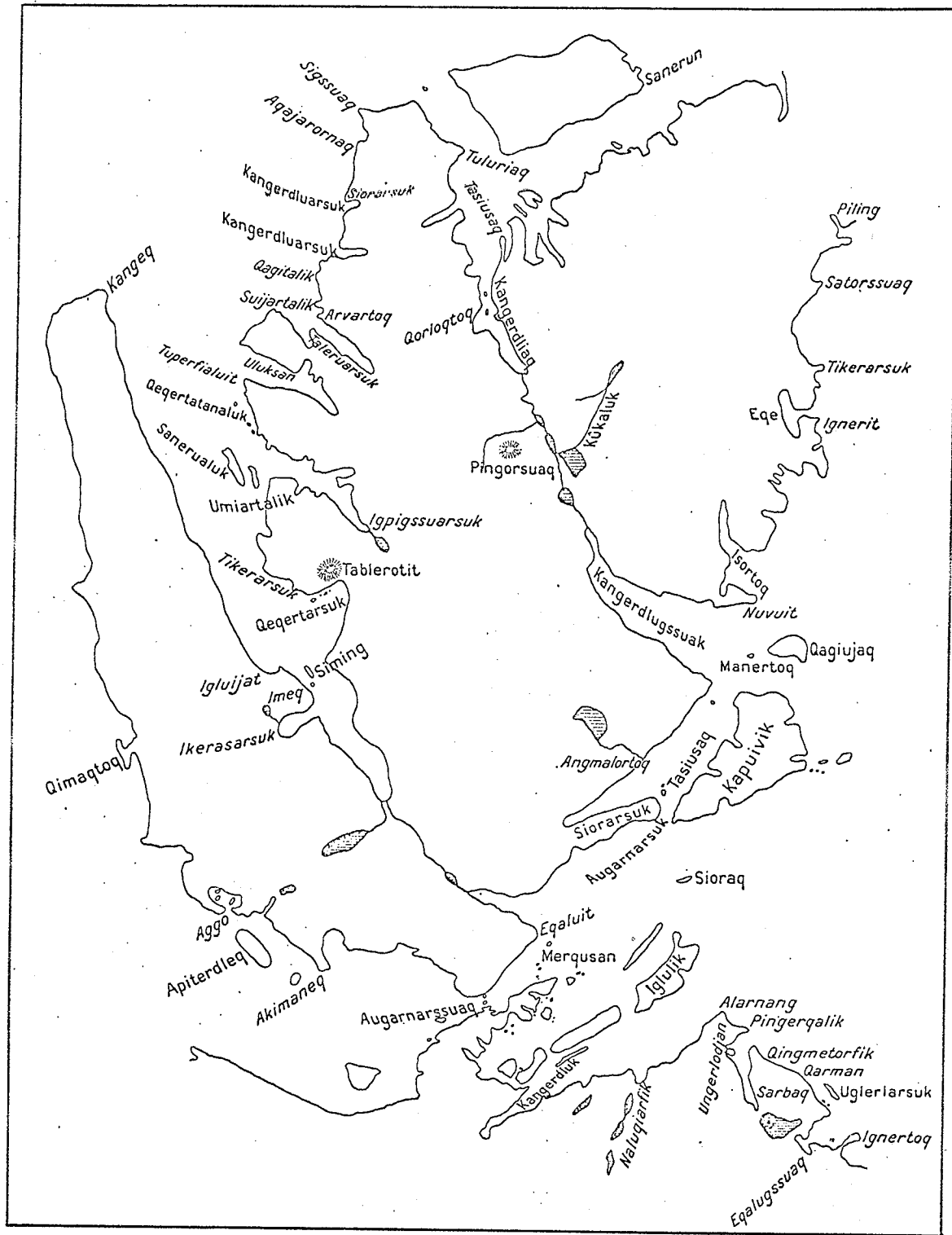


Fig. 23.--Eskimo map of Cockburn Land

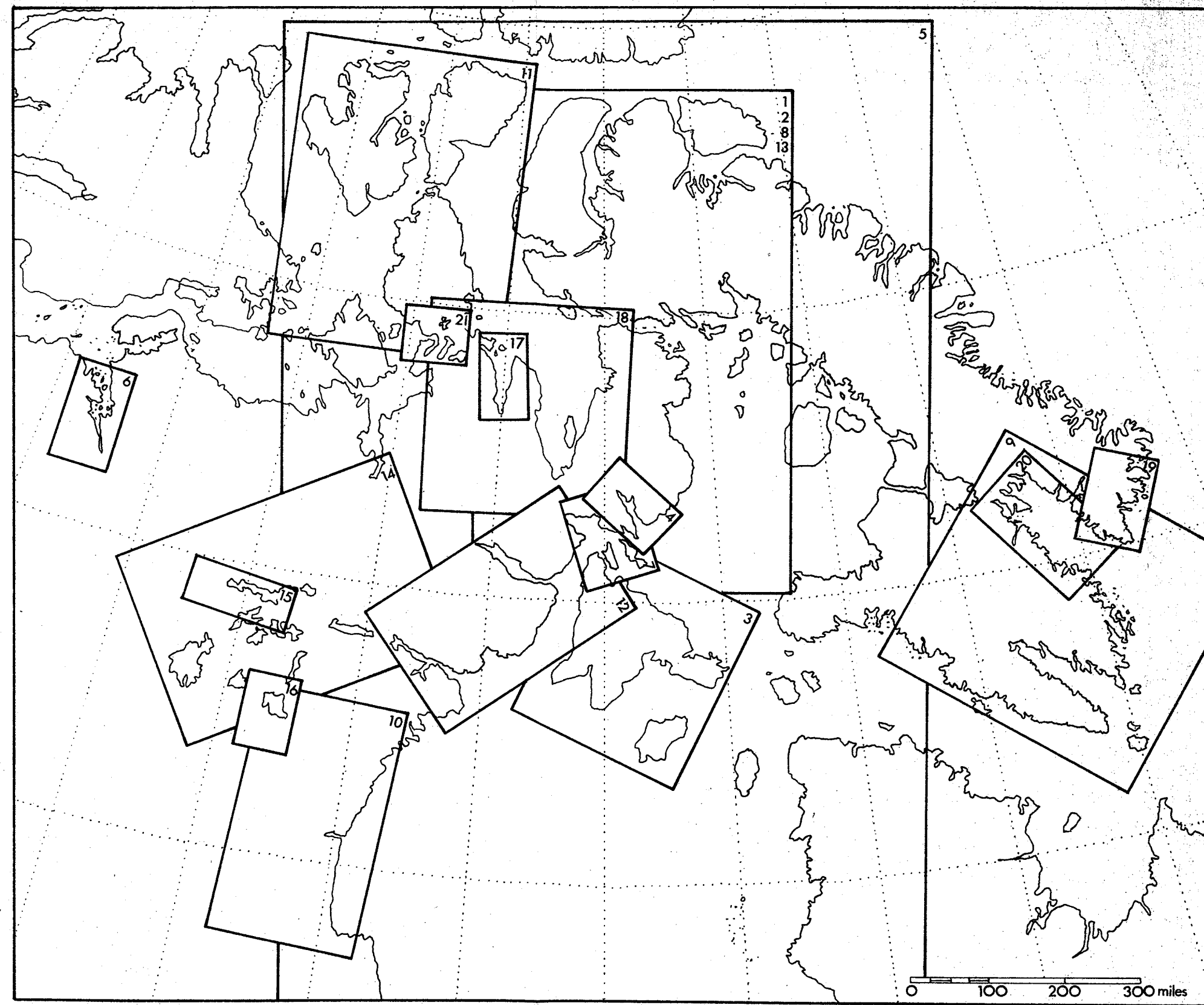


Fig. 24.-- Areas covered by survey maps reproduced

Figure numbers given in top right corner

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APPENDIX A

Published copies of maps drawn by Eskimo

Boas, Franz. The Central Eskimo. Sixth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution. Washington, D.C.: Government Printing Office, 1888.

Plate IV, facing page 643,
"Cumberland Peninsula, drawn by Aranin, a Saumingmio."

Fig. 543, page 644,
"Cumberland Sound and Frobisher Bay, drawn by Itu, a Nugumio."

Fig. 544, page 645,
"Cumberland Sound and Frobisher Bay, drawn by Sunapignang, an Oqomio."

Fig. 545, page 646,
"Cumberland Sound, drawn by Itu, a Nugumio."

Fig. 546, page 647,
"Peninsula of Qivitung, drawn by Angutuqdjuaq, a Padlimio."

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Fig. 4, page 440,
"Facsimile of a map of the Belcher Islands by Wetalltok, an Eskimo."

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Accounts and Papers: Vol. XLI, No. 2124, 1856, "Further
papers relative to the recent Arctic expedition in search
of Sir John Franklin, and the crews of Her Majesty's ships
Erebus and Terror."

Page 189,

"Outline of a river to the eastward of Point Barrow indicating
the burial place of some white men, reported by the natives
to have been killed there. Traced from an original drawing
of a Wainwright-Inlet Esquimaux."

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Page 105,

"Esquimaux chart No. 1 drawn by Koojesse at Rescue Harbor,
1860 for C.F. Hall."

Page 537,

"Esquimaux chart, No. II. Drawn by Kooperneung (Charley)
while we were at Cape True, August, 1862."

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Charles F. Hall Edited by J.E. Nourse. Washington,
D.C.: Government Printing Office, 1879.

Page 225,

"Sketch of coast lines from Ft. Churchill to Lancaster
Sound by Ar-mou in 1866."

Page 278,

Sketch of Repulse Bay by Oulea.

Page 351,

"Sketch of Murray Maxwell Inlet. Drawn by Nood-loo, a
native of Igloolik. May 11th 1868."

Page 354,

"Sketch of N.E. Coast of Fox Channel. By the Inuit
Oong-er-luk. Drawn May 23rd 1868."

Page 356,

"Sketch of Admiralty Inlet. By Oong-er-luk. Drawn May 23rd
1868."

Page 364,

"Sketch of Lyon's Inlet. By the Inuit Papa. Drawn in
Nov. 1868."

Page 370,
 "Sketch of Ponds Bay by the Innuited Papa. Drawn in Jan. 1869."

Page 398,
 "Sketch of King Williams Land by the Innuited In-nook-poo-zhu-jook in 1869."

Markham, C.R. "Papers on the Greenland Eskimos." A selection of papers on Arctic geography and Ethnology. London: John Murray for the Royal Geographical Society, 1875.

Facing page 184,
 "Chart of coast from Cape York to Smith Channel. Drawn by Kalliherua, (alias Erasmus York)."

Mathiassen, Therkel. Contributions to the physiography of Southampton Island. Report of the Fifth Thule Expedition, Vol. I, Part ii. Copenhagen: Gyldendalske Boghandel, 1931.

Fig. 1, page 11,
 "Map of Southampton Island, drawn by the Eskimo Autdlanaq."

Fig. 2, page 12,
 "Map of White Island drawn by the Eskimo Autdlanaq."

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Plate II,
 "Eskimo map of Cockburn Land."

. Material culture of the Iglulik Eskimos. Report of the Fifth Thule Expedition, Vol. VI, Part i. Copenhagen: Gyldendalske Boghandel, 1928.

Fig. 58, page 98,
 "Eskimo map, from Lyon Inlet to Ponds Inlet; drawn by Ivaluartjuk."

Parry, Captain W.E. Journal of a second voyage for the discovery of a North-West Passage Vol. II. London: John Murray, 1824.

Facing page 197,
 "Eskimaux chart. No. 1. Drawn by Iligliuk at Winter Island,
 1822."

Facing page 198,
 "Eskimaux chart No. 2. The shaded parts drawn by Iligliuk
 at Winter Island 1822."

Facing page 252,
 "Eskimaux chart No. 3. The shaded parts drawn by Ewerat,
 at Winter Island 1822."

Rasmussen, K.J.V. Iglulik and Caribou Eskimo Texts. Report of the
 Fifth Thule Expedition, Vol. VII, Part iii. Copenhagen:
 Gyldendalske Boghandel, 1930.

Sketch map I, facing page 90,
 "The west coast of Roe's Welcome, from Beach Point to Chester-
 field Inlet. Drawn by Usugtaq. The coastline is shown from
 north to south."

Sketch map II, facing page 92,
 "The coast stretch between Lyon Inlet and Repulse Bay.
 Drawn by Ivaluardjuk. Looking from south to north"

Sketch map III, facing page 98,
 "The coast from Lyon Inlet as far as Ponds Inlet. Drawn by
 Ivaluardjuk. Looking from south to north."

Sketch map IV, facing page 146,
 "Lake Hikoligjuaq (Indian: Lake Yathkyed). Drawn by Utahania.
 The region looking from north to south."

Sketch map V, facing page 148,
 "Hikoligjuaq and its nearest surroundings. Drawn by Puker'luk.
 Looking from north to south."

Sketch map VI, facing page 148,
 "Kazan River from Baker Lake to Nahiktartorvik and Qamanerup
 kua to Iglorjualik, with Taherjuaq and Tahilugjuaq. Drawn by
 Puker'luk. Looking from south to north."

Sketch map VII, facing page 152,
 "Kazan River from Nahiktartorvik to Baker Lake. Drawn by
 Qijoqut. Looking from south to north."

Sketch map VIII, facing page 154,
 "Akilineq and Thelon River with environs. Drawn by Puker'luk.
 Looking from south to north."

Sketch map IX, facing page 156,
 "Lake Hikoligjuaq and environs. Drawn by Igjugarjuk. Looking
 from south to north."

Sketch map X, facing page 158,
 "Lower Kazan River, Baker Lake and Lower Back River. Drawn
 by Igjugarjuk. Looking almost from south to north."

Sketch map XI, facing page 160,
 "Igjugarjuk's sledge route from Hikoligjuaq to Churchill.
 Drawn by himself. Seen approximately from north-west to
 south-east."

Rasmussen, K.J.V. The Netsilik Eskimos: social life and spiritual
 Culture. Report of the Fifth Thule Expedition, Vol. VIII,
 Parts i & ii. Copenhagen: Gyldendalske Boghandel, 1931.

Sketch map I, facing page 92,
 "The western part of Boothia Isthmus including Tasiussaq
 and the region round Willerstedt Lake. Drawn by Qaqortingneq.
 Looking from south to north."

Sketch map II, facing page 98,
 "Willerstedt Lake and its environs. Drawn by Qaqortingneq.
 Looking almost from south to north."

Sketch map III, facing page 100,
 "Survey map of King William's Land. Drawn by Qaqortingneq.
 Looking from south to north."

Sketch map IV, facing page 102, (European base sketch)
 "Tracing of Godfred Hansen's map of King William's Land and
 environs; various details, lakes, etc. and Eskimo place-
 names inserted by Qaqortingneq. Looking from south to north."

Sketch map V, facing page 106,
 "The Netsilingmiut hunting grounds in the area from Boothia
 Isthmus over to Boothia Felix to North Somerset and Prince
 of Wales Island via Bellot Strait. Drawn by Itqilik of
 Eqornangerfik. Looking from south to north."

Sketch map VI, facing page 108,
 "The principal localities in the region of Lord Mayor Bay and the eastern part of Boothia Isthmus as far as the extreme westerly stretches of Tigdluarfik Lake. Drawn by Iksivalitaq. Looking almost from south to north."

Sketch map VII, facing page 112,
 "Pelly Bay and its environs. Drawn by Paglak. Looking from south to north."

Sketch map VIII, facing page 112,
 "Survey of the stretch from the head of Lyon Inlet at Fox Channel to Sherman Inlet at Queen Maud's Sea. Drawn by Sigsaq. Looking from south-east to north-west."

Facing page 299,
 "Survey map of Adelaide Peninsula, with King William's Land on the north."

Sketch map I, facing page 478,
 "The area inhabited by the Utkuhikjalingmiut comprising the region from Baker Lake to King William Land and Adelaide Peninsula including Sherman Inlet. Looking approximately from south to north. Drawn by Qablunaq."

Sketch map II, facing page 480,
 "Survey map of the stretch from Baker Lake over Back River, Adelaide Peninsula, Queen Maud's Sea to Victoria Land. Looking from south to north. Drawn by Ipuitsoq."

Rasmussen, K.J.V. Intellectual culture of the Copper Eskimo.
 Report of the Fifth Thule Expedition, Vol. IX. Copenhagen: Gyldendalske Boghandel, 1932.

Sketch map I, facing page 86,
 "The region north of Bathurst Inlet; from Kent Peninsula to the west. Looking almost from south to north. Drawn by Netsit."

Sketch map II, facing page 88,
 "Bathurst Inlet. Looking from south to north. Drawn by Netsit."

Ross, Captain John. Narrative of a second voyage in search of a North-West Passage London: A.W. Webster, 1835.

Facing page 262,
"Chart drawn by the natives."

Speck, F.G. "Eskimo collection from Baffin Land and Ellesmere Land." Indian Notes, I (1924).

Plate VI,
"Chart of the country south and west of Ponds Inlet,
drawn by Nookudla."

Sutton, G.M. "The exploration of Southampton Island, Hudson Bay." Memoirs of the Carnegie Museum, Vol XII, Part i. (March, 1932).

Fig. I, page 45,
"First sketch of outline of Southampton Island drawn in pencil by Tommy Bruce, an Aivilik Eskimo."

Fig. II, page 46,
"Second sketch of Southampton Island drawn by Tommy Bruce, some localities designated by the author."

APPENDIX B

Properties of the survey charts used

Most of the survey maps used in this thesis as accurate counterparts of the Eskimo drawings were produced by the Canadian Department of Mines and Technical Surveys, Surveys and Mapping Branch. Their 1: 4,000,000 scale Northwest Territories and Yukon Territory, and the 1: 1,000,000 series of World aeronautical Charts, are based on the Lambert Conical Projection. The 1: 4,000,000 scale map uses a Lambert Conical Projection with rectified meridians and standard parallels of 64 degrees and 88 degrees, while the aeronautical series uses the Lambert Conformal Conic Projection with various standard parallels for different latitudes. The choice of appropriate parallels allows the charts to remain fairly accurate in terms of shape, area and bearing, even in high latitudes. The use of the Lambert Conformal Conic Projection with two standard parallels, means that the scale of the projection remains constant along each parallel but varies along the meridian, while the conformal (or orthomorphic) projection allows small areas to be represented without too great a measure of distortion.¹ Most of the areas of comparison are not particularly extensive, so these projections are not inappropriate in terms of comparison with Eskimo maps which were more concerned with representation of features as they were encountered successively on journeys, than with accurate delineation

¹C.H. Deetz and O.S. Adams, Elements of map Projection, U.S. Department of Commerce, Coast and Geodetic Survey, Special Publication No. 68 (5th ed.; Washington, D.C., U.S. Government Printing Office, 1945), pp. 198-203.

of shape or bearing. The Surveys and Mapping Branch charts are the best large scale maps available for use in this area. Their modifications make them suitable for use at high latitudes.

The other projections used (in figures 5a and 24) are respectively, a Zenithal Equal-area Projection, and a Modified Conical Orthomorphic Projection which has maximum scale errors of 10% for the Arctic regions. Neither of these charts is used for detailed comparison with Eskimo charts. In the survey charts the distortions are generally minimal and of no significance in terms of their use in this thesis.

IN THE NAME OF GOD, THE MOST MERCIFUL AND COMPASSIONATE