TECHNOLOGICAL AND SPATIAL ADAPTATION IN THE NEWFOUNDLAND SEAL FISHERY DURING THE NINETEENTH CENTURY

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by

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ABSTRACT

The Newfoundland seal fishery is an example of the exploitation of a biotic resource by man. In systems of this nature there are usually three components: the human element, the environmental setting and the resource itself. As the environment remained relatively constant throughout the nineteenth century the alterations that occurred in the original interrelationship established between these three elements could only have been initiated in the human component or in the resource.

The renewability of the seal herds was essential to the continuance of the industry. Prior to the introduction of larger sailing vessels towards the end of the eighteenth century the Newfoundland seal fishery had been basically a landsman and small craft operation. The size of the sealing fleet and the number of personnel involved in the venture continued to increase throughout the first sixty years of the nineteenth century. Although there was a corresponding increase in the annual seal catch there was, after the early 1840s, an overall decline in the number of seals killed each year. It appears, therefore, that the sailing vessels had enabled the participants to over-exploit the resource to the detriment of the long-term prospects of the industry.

This trend was reversed by the introduction of steam-powered vessels in 1863, enabling the human effort to become more efficient. This revitalization of the industry, however, was short-lived due to an apparent further downward readjustment in the seal stocks. In this instance it appears as if the introduction of more efficient technology was less effective in the long run than the less efficient technology it replaced, for when its full potential was realized the ability of the resource to renew itself was even further reduced.

This new technology was vastly superior to the level of technology represented by the sailing vessels and consequently, entirely new methods and strategies were developed in the hunt which enabled the participants to optimise the advantages which the steamers offered. Subsequently, the character of the Newfoundland seal fishery was completely changed in terms of the on-ice activities, the average size of sealing crews, the total number of participants, the areas of the island represented by the owners, outfitters, masters and sealers, and also in the sharing arrangements between the companies, captains and ordinary sealers.

PREFACE

The Newfoundland seal fishery is an example of the exploitation of a biotic resource by man. In systems of this nature there are usually three components: the human element, the environmental setting and the resource itself. As the environment remained relatively constant throughout the nineteenth century, the period of this study, the alterations that occurred in the original interrelationships established between these three elements could only have been initiated in the human component or in the resource.

The renewability of the seal herds was essential to the continuance of the industry. Although the number of sealing vessels increased there was an overall decline in the number of seals killed each year after the early 1840s. It appears, therefore, that the sailing vessels had enabled the participants to overexploit the resource to the detriment of the industry. Steam-powered vessels were used for the first time in 1863 and the human effort subsequently became more efficient. This was reflected in the increased catches per vessel. This revitalization of the industry, however, was short lived due to a further downward readjustment in the seal stocks. In this case it appears as if the introduction of more efficient

technology was less effective in the long run than the less efficient technology it replaced, for when its full potential was realized the ability of the resource to renew itself was even further reduced. The rapidity with which the steamers were accepted by the industry, and the rate at which the sailing vessels were phased out, were not related to the mechanical efficiency of the steamers entirely. It was, at least partially, also a reflection of the general malaise which had gradually affected the industry throughout the first half of the nineteenth century.

The new technology was vastly superior to the level of technology represented by the sailing vessels. As a result, entirely new methods and strategies had to be developed in order to optimumly utilize the advantages which the steamers offered. Consequently, the character of the venture was completely changed in terms of the on-ice activities, the average size of sealing crews, the total number of participants, the areas of the island represented by the owners, outfitters, masters and sealers, and also in the sharing arrangements between the companies, captains and ordinary sealers.

The purpose of this research was to investigate and analyse the influence of changing technology on the interrelationships which had

been established between man, environment, and resource during the first half of the nineteenth century. In the first instance it is concerned with an investigation into the character of the sailing vessel seal fishery, followed by an examination of the infusion of new technology in 1863 and how it differed from that used previously. The steam-vessel sealing venture is then presented in similar detail to facilitate comparison and contrast between the two periods.

In the discussion Chapter I gives an historical account of the Newfoundland seal fishery in order to put the operation conducted in the nineteenth century in its proper context. Chapter II discusses the nature of the resource which each spring causes the seal herds to be located in areas that are accessible to man, while Chapter III presents the components of the natural environment and how they have been a major influence on the success or failure of the venture each year. Chapter IV details the characteristics of the sailing vessels and the adaptations and techniques used to facilitate navigation in ice. This period is then compared to the steamer operation, with the differences between the two analysed in terms of the steamers being instrumental in bringing about major changes in the industry. Chapter V discusses the on-ice operation as conducted by the crews of the sailing vessels and introduces the new strategies and techniques employed

by the masters of the sealing steamers in order to optimumly utilize their advantages. The effects of this new technology are reviewed in Chapters VI and VII which are concerned with the changes that occurred in the on-board accommodations and fare of the men; the changing distribution of income; and the development of new spatial patterns in terms of areas participating in the industry.

Previous investigations and research into the Newfoundland seal fishery can be classified under three general categories: 1) scientific interest; 2) reports compiled by actual participants; and 3) general information. The more notable scientific publications are provided by Russian, Norwegian and Canadian biologists and are the primary sources used in Chapter II. The two major publications in the second category are G.A. England's Vikings of the Ice (1924) and W.H. Greene's The Wooden Walls Among the Ice Floes (1933). While these provide informative accounts of the overall nature of the industry they are very general in nature and are primarily concerned with the role of the individual sealers for a time period considerably later than that encompassed by this study. There are several less lengthy reports by actual observers. Of these, J.B. Jukes' account of his 1840 sealing voyage, recorded in volume one of Excursions in and About Newfoundland (1842), was particularly valuable in providing information on the sailing vessel operation.

Lt. William Maxwell's report to the Hydrographer of the Admiralty, concerning his sealing voyage aboard the S.S. Bear in the spring of 1874, was similarly beneficial in the information it provided for the early steamer period. The topic with which this study is concerned has not received detailed attention in the general histories of Newfoundland. Consequently, in category three, Levi Chafe's Sealing Book (1924) stands out as being of singular importance amongst the profusion of assorted publications inspired by the interest that is annually generated by the sailing of the Newfoundland sealing fleet each spring. It has provided much of the statistical information contained in this study.

A great deal of the information embodied in Chapters IV and V was contributed by informants (Figure 1) who were interviewed during the spring and summer of 1971. Follow-up sessions were continued throughout 1972. A visit to the Gulf of St. Lawrence on the M.V. Lady Johnson (Plate 1) in the spring of 1971, and direct participation as a crew member on the sealing voyage of the M.V. Carino (Plate 2) during the following spring were of immeasurable benefit in permitting me to gain an intimate experience and immediate insight into the overall nature of the sealing operation, as little detail of this was available in the literature.

References to published materials are given in the form (Author/year: page) with full bibliographic reference

Informants

1 Mr. P. O'Reilly – MOBILE
2 Mr. S. Vincent – ST JOHN'S
3 Mr. J. Vey – GRATE'S COVE
4 Mr. W. Short – HANT'S HR
5 Mr. A. Dalton – LITTLE CATALINA
6 Mr. B. Hicks – BONAVISTA
7 Captain C. Rogers – CENTERVILLE
8 Captain L. Kean – WESLEYVILLE
9 Captain A. Perry – NEWTOWN
10 Mr. A. Wellon – LADLE COVE
11 Mr. R. Penton – JOE BATT'S ARM
12 Captain A. Greenham – TWILLINGATE
13 Mr. J. Weir – LITTLE BAY ISLANDS
14 Mr. W. Lewis – FLEUR-DE-LYS
15 Mr. J. Small – WILD COVE
16 Mr. C. Lane – ENGLEE
17 Mr. G. Fitzgerald – CONCHE
18 Mr. D. Fitzpatrick – GOOSE COVE
19 Mr. F. Colbourne – ST ANTHONY
20 Mr. E. Kean – QUIRPOON
21 Mr. H. Warren – COOK'S HR.
22 Mr. P. Cabot – WEST ST MODESTE
23 Mr. A. Noseworthy – LONESOME COVE
24 Mr. T. Hughes – NEW FEROLLE
25 Mr. M. Gould – PORT AU CHOIX

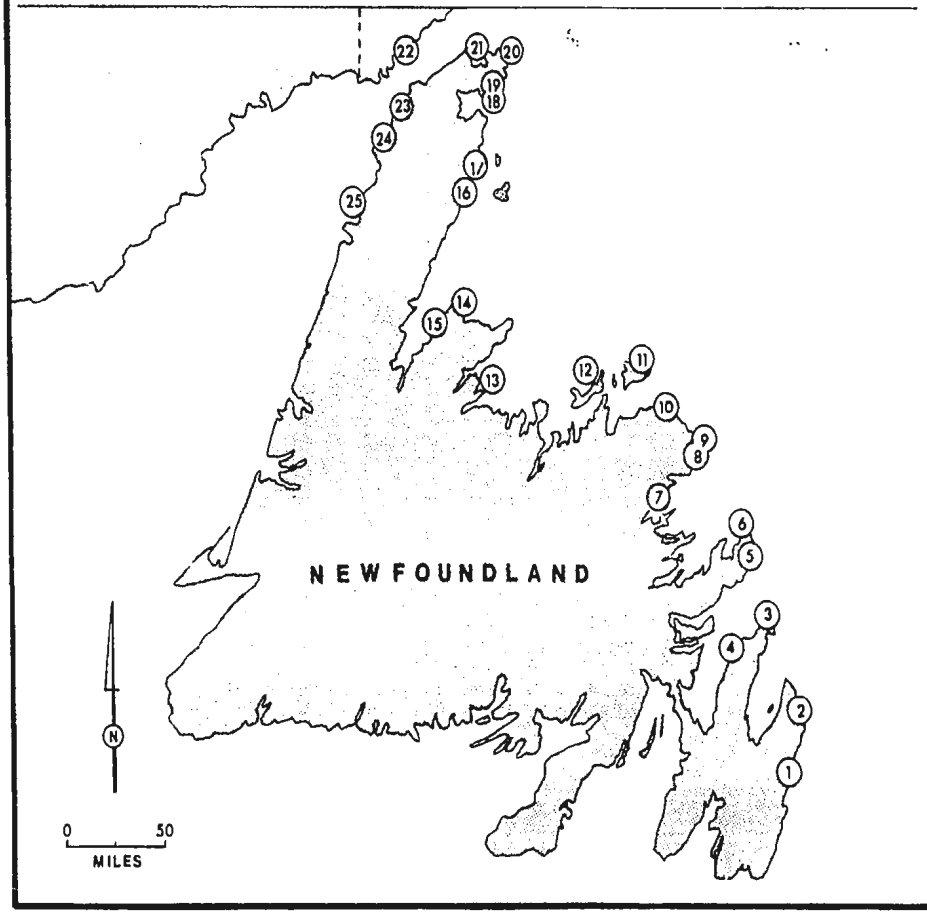
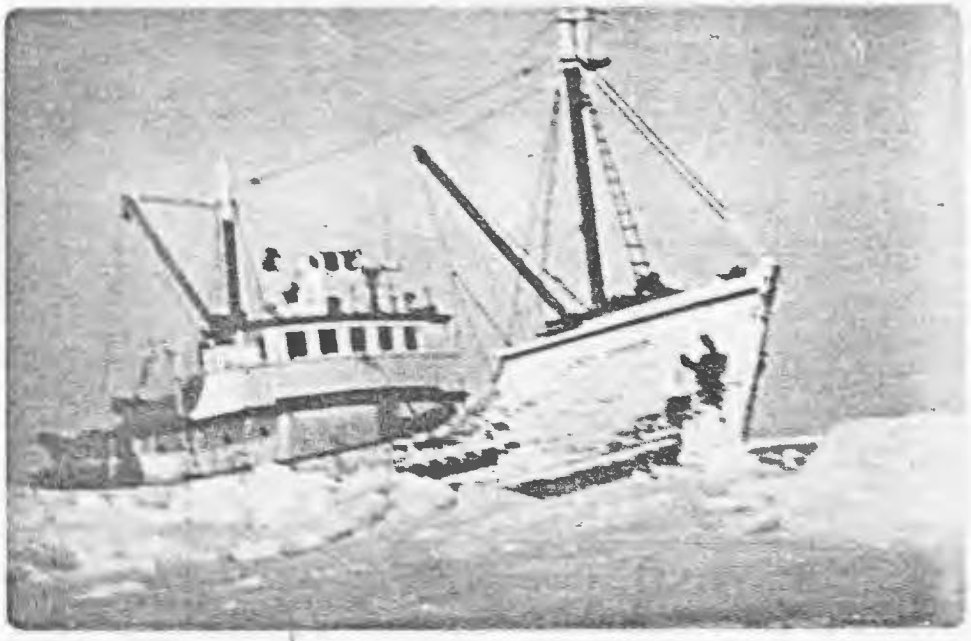


Figure 1



M.V. Lady Johnson

Plate 1

M.V. Carino

Plate 2

at the end. A similar form is used for direct references to informants who supplied valuable information through personal contact. Because all interviews were taped this information is referred to in the form (Name of informant/ year: verbatim).

This study began during January 1971 with examination of the literary sources and the collection of data from archival sources and government departments. Field investigations were made possible during the spring and summer months by a grant from the Institute of Social and Economic Research, Memorial University.

I would like to thank first of all my supervisor, Dr. A.G. Macpherson for his guidance, which has been invaluable to me. I am also indebted to Mr. W.G. Handcock, Department of Geography, Memorial University, whose advice and criticism have been indispensable. I am deeply grateful to Captain Morrisey Johnson, "Jowler", friend, and companion, for the information and assistance provided. I am also gratefully indebted to Mr. B. Niggaard, Carino Company Limited, Halifax; Miss B. Brett, Department of Education, Memorial University; Mr. M. Staveley, Department of Geography, Memorial University; Dr. H. McCutcheon, Department of Geography, Memorial University; Mr. K. Cox, Department of Geography, Memorial University; Mr. M. Lee, Placentia; Captain C. Johnson and Mr. M. Johnson, Little Catalina; Dr. K. Ronald, University of Guelph; Mr. T. Hughes,

Secretary, Ontario Humane Society; Dr. C. Andrews, Department of Biology, Memorial University; Mr. R. Parker, Canadian Broadcasting Company, St. John's; the staff of Memorial University Library; Mrs. M. Farmer, Librarian, College of Fisheries, St. John's; the staff of the Library, Fisheries Research Board of Canada, St. John's; the staff of the Museum of Newfoundland and Labrador, St. John's; Mrs. M. Rose; and to Mr. G. Learning for his contribution to the final preparation of figures in this work.

My study of the Newfoundland seal fishery was facilitated by the kindness, hospitality, and information provided by: Mrs. G. Gill and Captain A. Perry, Newtown; Captain L. Kean, Wesleyville; Captain C. Rogers, Centerville; Mr. H. Penney, Western Bay; Mr. J. Vey, Grate's Cove; Mr. W. Short, Hant's Harbour; Mr. D. Fitzpatrick, Goose Cove; Mr. F. Colbourne, St. Anthony; Mr. E. Kean, Quirpon; Mr. H. Warren, Cook's Harbour; Mr. A. Noseworthy, Lonesome Cove; Mr. G. Fitzgerald, Conche; Mr. C. Lane, Englee; Mr. M. Gould, Port au Choix; Mr. P. Cabot, West St. Modeste; Mr. T. Hughes, New Ferolle; Mr. W. Lewis, Fleur-de-Lys; Mr. J. Small, Wild Cove; Mr. J. Weir, Little Bay Islands; Captain A. Greenham, Twillingate; Mr. R. Penton, Joe Batt's Arm; Mr. A. Dalton, Little Catalina; Mr. B. Hicks, Bonavista; Mr. P. O'Reilly, Mobile; Mr. A. Wellon, Ladle Cove; and Miss A. Kean, Mr. S. Vincent, Mr. S. Barbour, and Mr. A. Fox, St. John's.

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CHAPTER I

THE EVOLUTION OF THE NEWFOUNDLAND SEAL FISHERY

A survey of the evolution of the commercial seal fishery, as prosecuted by large vessels, shows that it can be divided into recognizable periods which had their beginning with the infusion of new technology into the industry. This technology, both by adaptation and invention, produced entirely new orientations in the spatial organization of the venture.

This chapter outlines the historical development of the seal fishery, both as a landsman and as a vessel operation, in order to place the main focus of research - the introduction of steam-powered vessels in 1863 - in proper context.

ORIGIN

The earliest recorded archaeological evidence of the use of seals by peoples indigenous to the northeastern shores of North America dates back at least 4000 years to a culture called the Maritime Archaic Tradition which flourished along the west coast of the Great Northern Peninsula (Tuck 1971:351). Further excavations of the Archaic Indian burial sites at Port au Choix on the Great

Northern Peninsula (Figures 1-1 and 1-2) showed that this area had also been the settlement site of a later Dorset Eskimo group which had also relied heavily on the hunting of seals and other marine mammals in order to survive (Tuck 1970:113).

Accounts of the early Viking voyages to North America about 1000 A.D. do not appear to contain any specific references to seals. The sagas do, however, refer to the fact that the ensuing attempts to settle these new lands were primarily unsuccessful due to the hostility of the "skraeling" aboriginal population (Jones 1964:95). These native peoples were also culturally orientated towards the sea which undoubtedly meant that the seasonal pursuit of the seal herds as they migrated north and south along the coast each year was extremely important.

When John Cabot visited Atlantic Canada in 1497, the native Indian and Eskimo populations were hunting seals in the Gulf of St. Lawrence and on the coast of Labrador. In 1534 Jacques Cartier recorded in his diary that the Indians inhabiting the north shore of the St. Lawrence River visited the coastal areas in the Straits of Belle Isle in order to catch seals (Biggar 1924:23).

One of the more reliable earlier maps illustrating the northeast coast of North America - completed by Samuel de Champlain in 1632 - has a remarkably accurate likeness of a seal located off the east coast of present day Nova

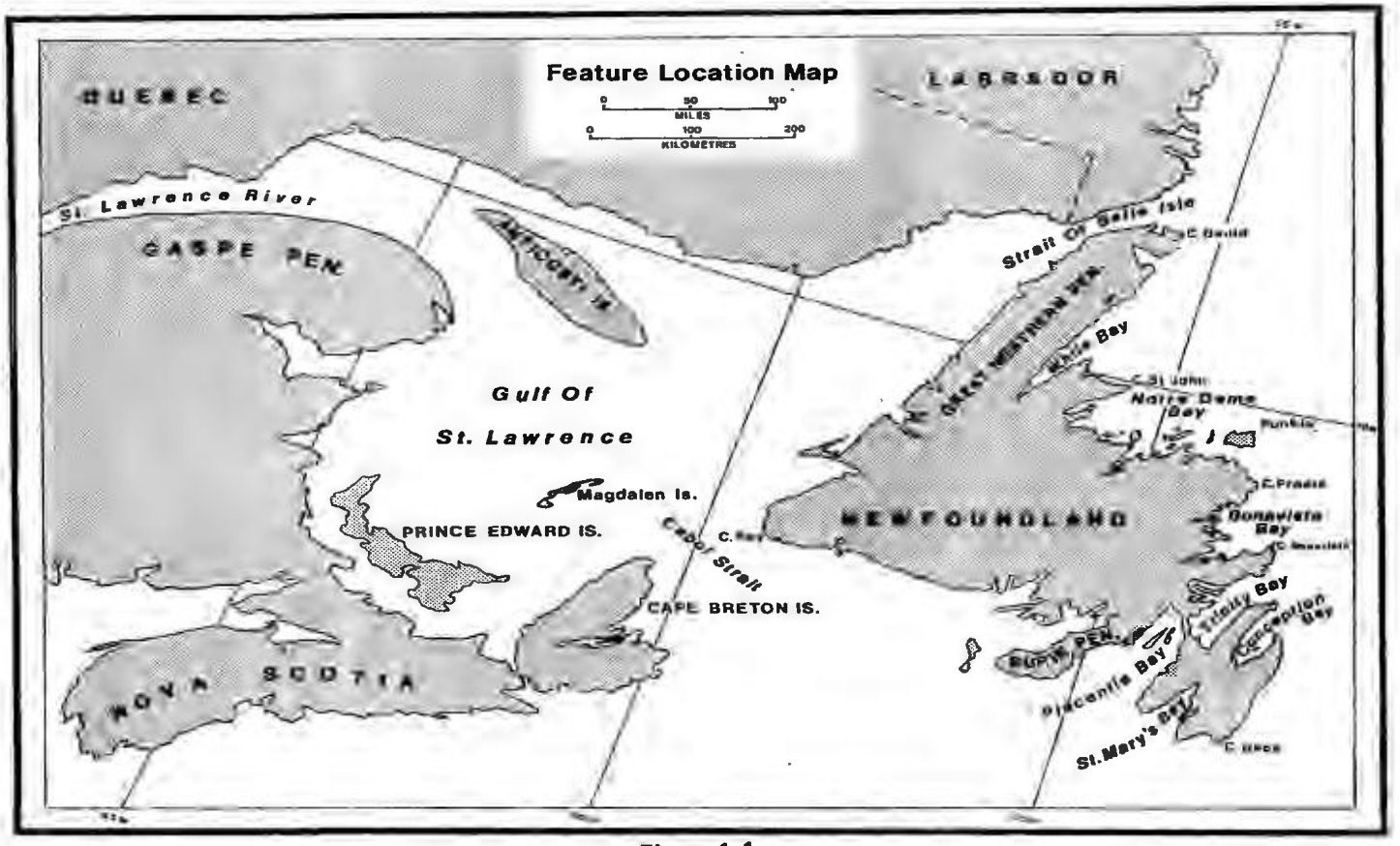

Feature Location Map
0 50 100
MILES
0 100 200
KILOMETRES
QUEBEC
LABRADOR
St. Lawrence River
GASPE PEN.
ANTICOSTI IS.
Strait Of Belle Isle
C. Bauld
GREAT NORTHERN PEN.
White Bay
St. John's
Notre Dame Bay
Gulf Of
St. Lawrence
Magdalen Is.
PRINCE EDWARD IS.
C. Ray
Cabot Strait
CAPE BRETON IS.
NEWFOUNDLAND
C. Freels
Bonavista Bay
Trinity Bay
Conception Bay
BURIN PEN.
Placentia Bay
St. Mary's Bay
C. Race
NOVA SCOTIA

Figure 1-1

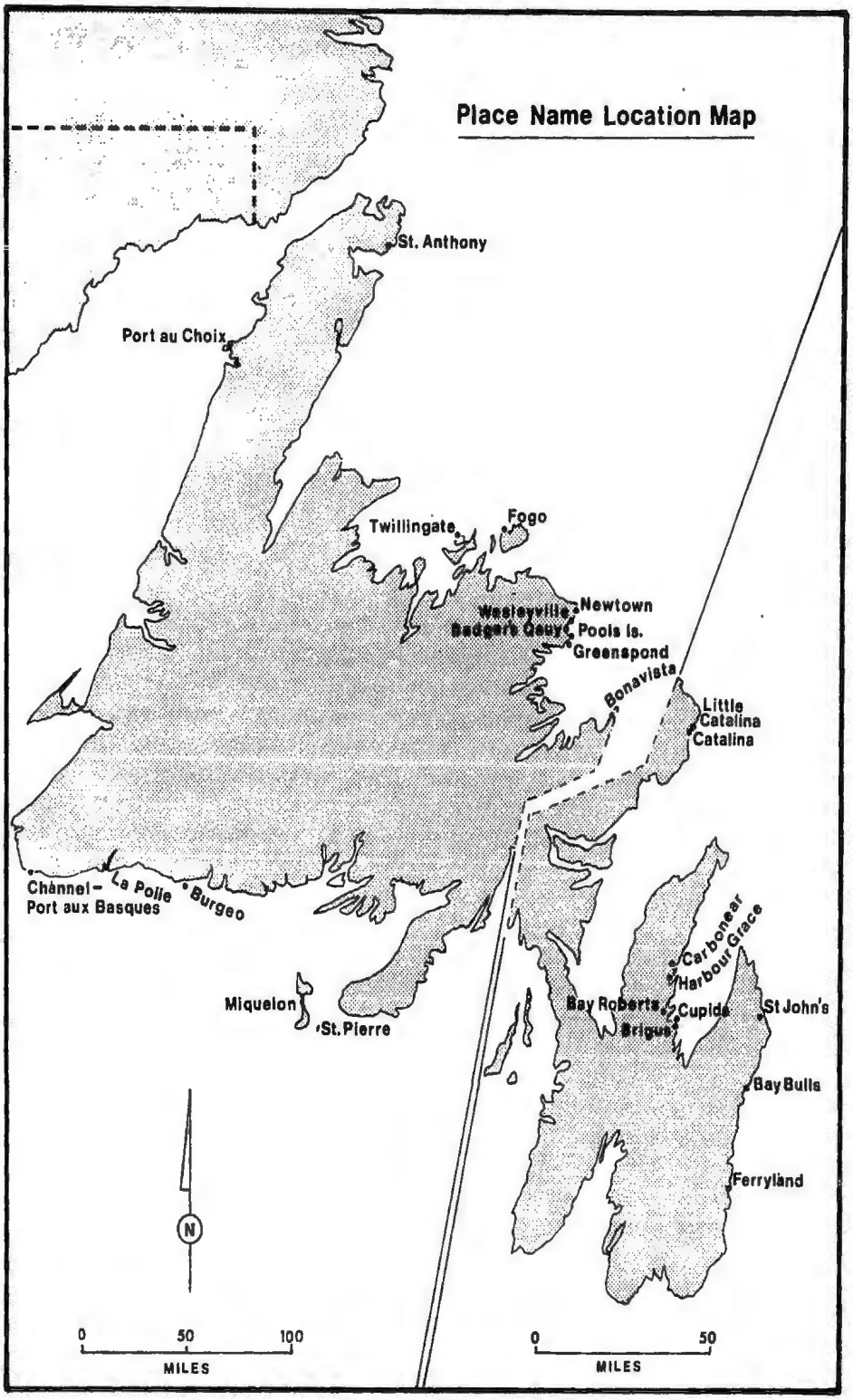

Place Name Location Map
St. Anthony
Port au Choix
Twillingate
Fogo
Wesleyville
Newtown
Badgers Quay
Pools Is.
Greenspond
Bonavista
Little Catalina
Catalina
Channel-Port aux Basques
La Poile
Burgeo
Miquelon
St. Pierre
Carbonear
Harbour Grace
Bay Roberts
Cupids
St John's
Brigus
Bay Bulls
Ferryland
N
0
50
100
MILES
0
50
MILES

Figure 1-2

Scotia (Figure 1-3), which might be indicative of the presence of large seal populations at this early date.

The only European interests participating in the seal fishery throughout the seventeenth century were the "Biscainers" or Spanish Basques who hunted whales, walrus and seals in the Gulf of St. Lawrence and along the southern coast of Labrador (Prowse 1896:186).

By the early eighteenth century the pursuit of this resource had become so important to the growing French population that Bishop Raynal was able to report that "Canadians go to this frozen and almost uninhabitable coast [Labrador] towards the middle of October, and remain there till the beginning of June." (Raynal 1969:252)

On the Island of Newfoundland the residents of Fogo and Twillingate exported seal oil to the value of £12,550 in 1742 (Chafe 1924:18), while in 1771, George Cartwright recorded in his Labrador journal that on Monday, November 25th "The sealers put out two more shoal-nets, and another stopper [trap?]; and brought in forty-six seals." (Cartwright 1792:181)

Throughout the eighteenth and nineteenth centuries much of the northern section of Newfoundland was under limited French jurisdiction (Figure 1-4). French fishing rights in this area acted as a deterrent to English settlement. The monies to be made at sealing, however, did in fact attract English settlement to the extent that the

Champlain's Map Of New France: 1632

Source; Skelton

Figure 3-1

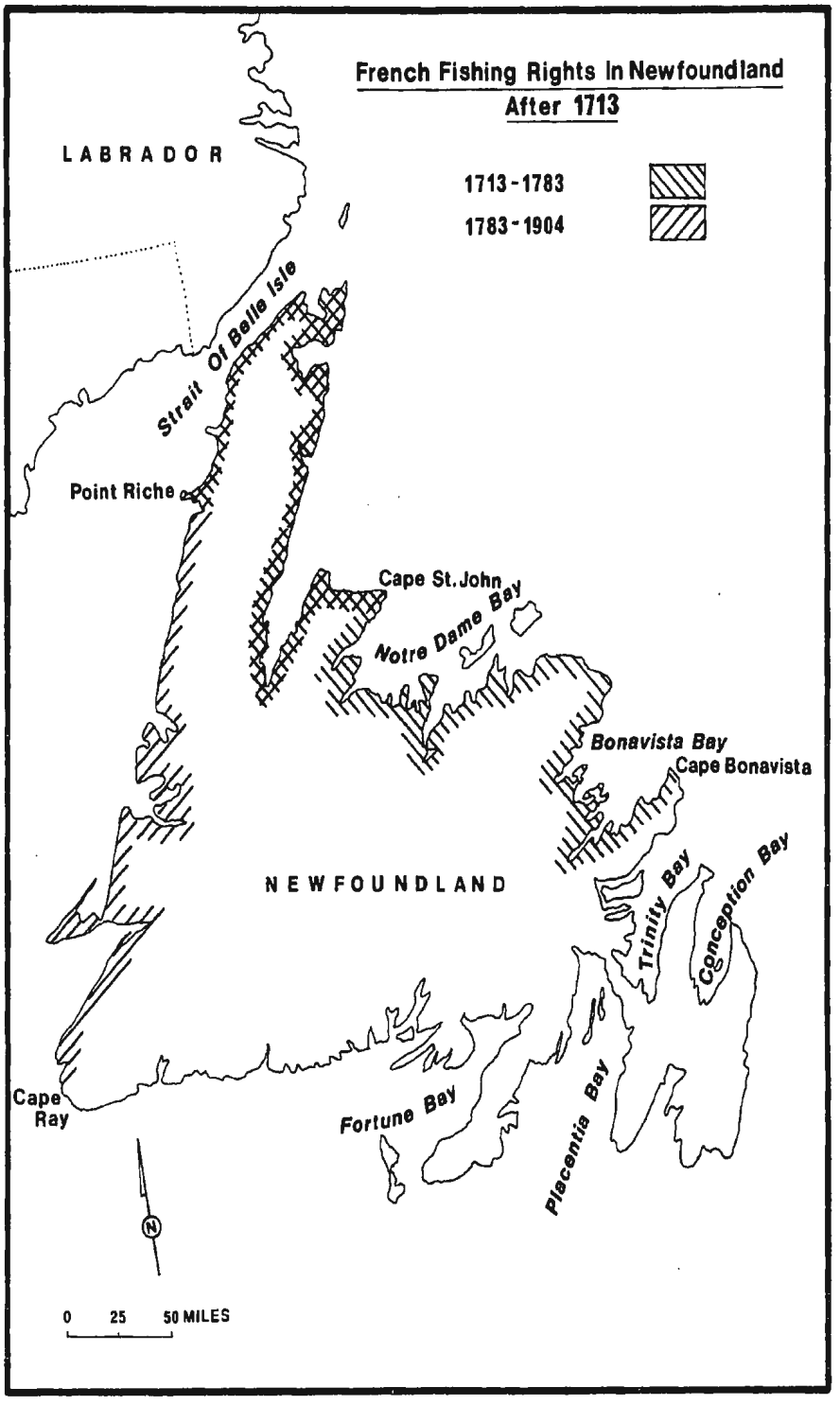

French Fishing Rights In Newfoundland
After 1713
1713-1783
1783-1904
LABRADOR
Strait Of Belle Isle
Point Riche
Cape St. John
Notre Dame Bay
Bonavista Bay
Cape Bonavista
NEWFOUNDLAND
Trinity Bay
Conception Bay
Cape Ray
Fortune Bay
Placentia Bay
N
0 25 50 MILES

Figure 1-4

British authorities were required to enforce the regulations given under treaty. In 1876, for example, Thomas Spelt who had resided for twelve years at Noddy Bay, on the very tip of the Great Northern Peninsula, "for the convenience of furring, and killing seals" was advised to move to another part of the coast beyond the French boundaries (Innis 1954:215). In spite of the French presence during the spring and summer fishing season, the maps presented in Figure 1-5 illustrate that the early seal fishery along the northeast coast of Newfoundland expanded northwards throughout the eighteenth century and was in fact concentrated along the principal migration routes of the harp and hood seals (Head 1971:133).

Joseph Banks, who visited Newfoundland in 1766, noted in his diary that many of the summer fishing crews were left to winter for the express purpose of hunting fur-bearing animals during the fall and winter, and to catch seals when they appeared off the coast in early winter and again in early spring (Lysaght 1971:144-146).

By 1770 the English-settled population along the northeast coast of Newfoundland, south of the French Treaty area, had increased greatly and Fogo, Greenspond, Bonavista and Trinity had become major centers of the Newfoundland seal fishery (Chafe 1924:20). By this date the English settlers were consistently "wintering" in White Bay and along the eastern coast of the Great Northern

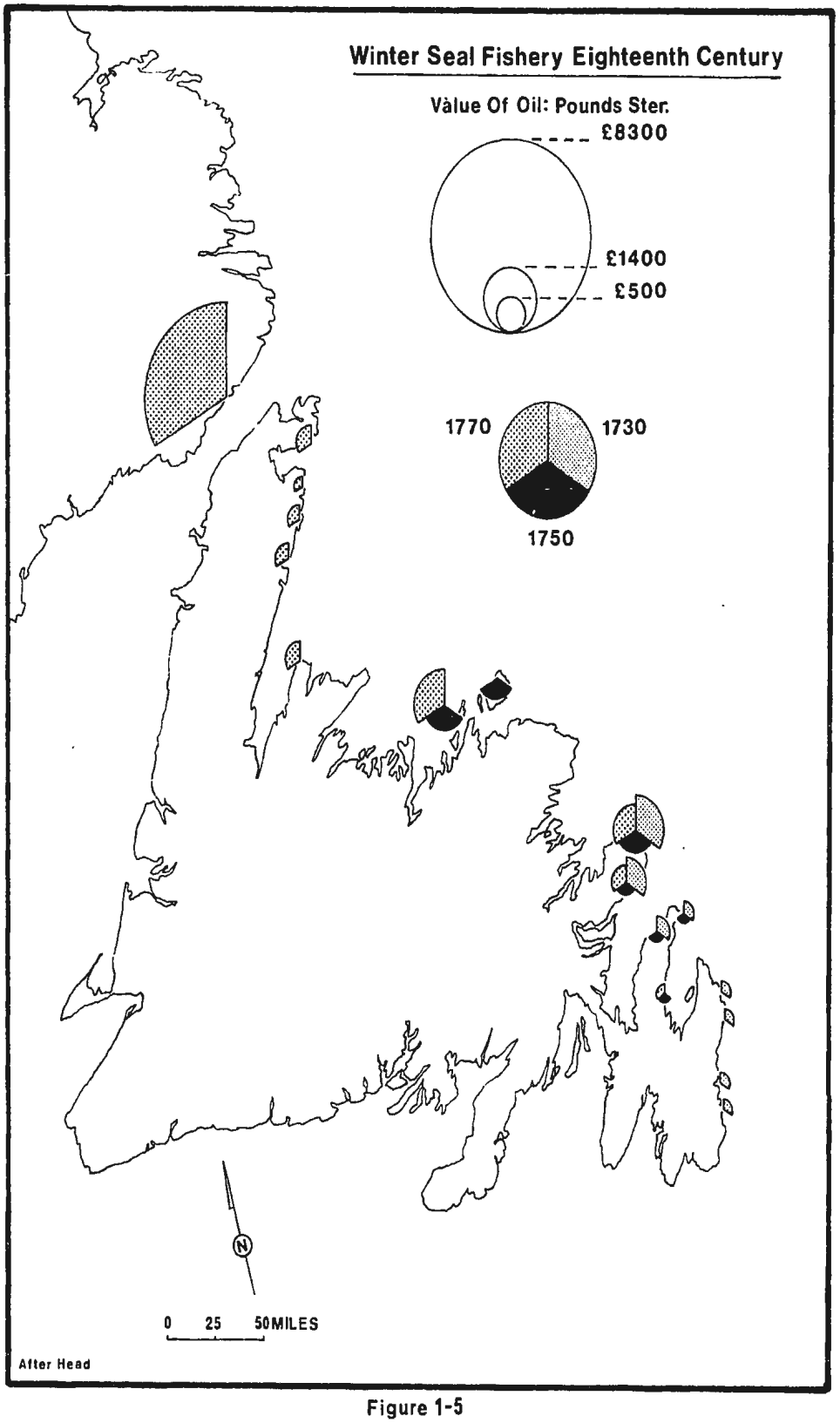
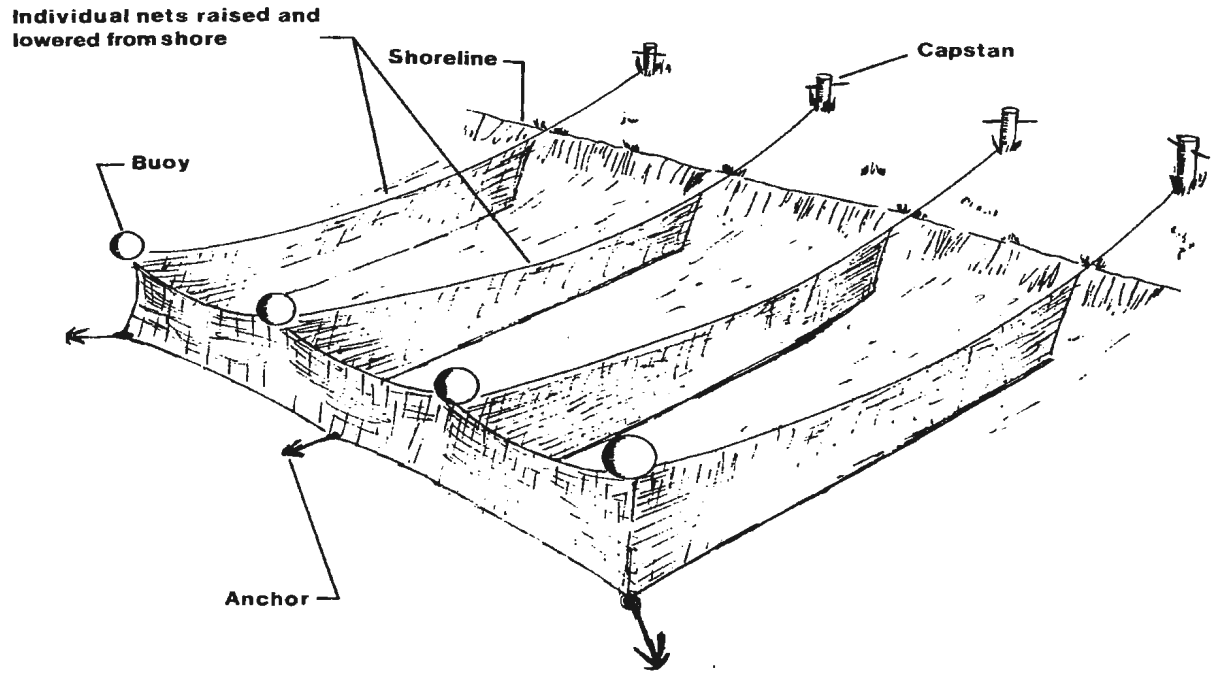

Winter Seal Fishery Eighteenth Century
Value Of Oil: Pounds Ster.
£8300
£1400
£500
1770
1730
1750
N
0 25 50MILES
After Head

Figure 1-5

Peninsula, both of which were part of the French Shore, for the French frequently complained that upon their arrival in the spring they found their fishing stages foul with the stinking refuse of the seals which had been killed during the winter months by the fishermen from the English communities to the south (Head 1971:133). At first these settlers used seal-nets set out from shore and attached to rocks or nearby islands. Later improvements in the strength, and modifications in the size and structure of the nets enabled them to be more strategically located - often in open water. The nets were used during early winter as the seals migrated southwards. The spring capture of newly-born seal pups from the landfast ice, provided the whelping patch was located within walking distance, supplemented the catch from nets.

In 1818 Edward Chappell, Captain of the H.M.S. Rosamond on its patrol of the Labrador summer fishery, wrote a detailed account of how the use of single seal-nets had been modified. The residents on that coast had developed a seal trap (Figure 1-6) which consisted of a fixed outer net running parallel to the shore. Attached to this net were a series of smaller nets which could be raised and lowered from the shore by the use of capstans. The fishermen would then use open boats to funnel the migrating schools of seals into the "frame" where the women, children and older men on shore would ensure their capture

Seal Trap Used On Labrador Coast: 1818



After Chappell

Figure 1-6

by raising the smaller nets. In their endeavors to escape by swimming under the nets the animals became enmeshed and thus drowned as "they have not sagacity or courage enough to leap boldly over the top." (Chappell 1818:199)

During the latter half of the eighteenth century the growing populace also began to use partially decked shallops - thirty to forty-foot vessels which were decked at both ends, thus providing limited sleeping accommodations and protection from the elements for three or four men (Prowse 1896:404) - to catch seals. These vessels enabled the landsmen to venture further from the land in their search for the first-year seals which habitually remain in the coastal areas after the ice has dispersed.

Towards the end of the eighteenth century, then, seals were being captured along the coasts of northeastern Newfoundland and southern Labrador by the use of nets, seal traps, or "frames"; from the ice when conditions were favorable; with small open boats close to the shore; and from larger vessels often out of sight of land.

The first settlements of any appreciable size to be located north of St. John's were situated in Conception Bay. By the end of the eighteenth century men from Carbonear, Harbour Grace, Bay Roberts and Brigus - centres with over 1000 people in 1836 (Population Returns of Newfoundland 1836) but not on the main migratory route of the harp seal - were making voyages to the northern sealing areas. The Rev.

William Wilson wrote that,

> The boats that used to be employed in the hazardous voyage were open fishing-boats; but, in 1793, two small schooners, of about forty-five tons each, were fitted out for the ice, and sailed from St. John's on the first week in April. (Wilson 1866:287)

Further indication of the unlikely nature of these vessels which were the predecessors of the commercial sealing fleet of the nineteenth and twentieth centuries is given in a report written to Governor Waldegrave, from Harbour Grace, in 1795:

> The account of the decked vessels and open boats employed in the seal fishery, I conceive will attract your Excellency's attention, when you consider not only the great advantage of the seal fishery, and the adventurous undertaking in their boats of about thirty or forty tons burthen, manned with from eight to ten hands, who encounter the storms in the months of March and April, thirty or forty leagues from land, which I am convinced makes more and better seamen in one season than the cod fishery does in seven; ... (Pedley 1863:194)

By the year 1800 the large-scale commercial seal fishery as conducted by fleets of larger vessels had begun in earnest. John Bland of Bonavista, in a letter written on September 26th, 1802, to Governor Gambier in reply to a request to supply information regarding the sealing operations on that part of the coast, reported that "This adventurous and perilous pursuit is prosecuted in two different ways - during the winter months by nets, and from March to June in ice-skiffs and decked boats, or schooners." (Prowse 1896:419) He further noted that "The sealing-adventure by large boats, which sail about the

middle of March, has not been general longer than nine years." (Prowse 1896:420)

This, and the reference to the first outfitting of larger sailing vessels for the seal fishery by Rev. Wilson, establishes 1793 as the beginning of the sailing vessel era. At this time the annual catch was only 4,900 seals (Hatton and Harvey 1883:248).

SAILING VESSELS

By the beginning of the nineteenth century the inshore sealing boats had been replaced by small schooners (thirty to forty tons) which usually sailed about the 21st of March to avoid the equinoctial gales, or "St. Patrick's brush." (Wilson 1866:276)

These schooners had been built primarily to participate in the Labrador Cod Fishery which began in 1763 after coastal Labrador had been placed under the jurisdiction of the Governor of Newfoundland (Perlin 1959:27). This summer fishery, however, was rather insignificant until after the Napoleonic wars when the Newfoundland fishermen who had fished on the French Shore during this troubled period were again expelled (Black 1960:268).

Following the landsman operations and the use of small boats or partially decked shallops, the utilization of schooners marks the beginning of a third technological stage in the seal fishery. The sealing fleet, which was to be so drastically altered by the steamer seventy years

later, evolved from this unpretentious beginning. The men who participated in the beginning were occasional sealers. During the summer and fall they fished the bays and harbours along the coasts of Newfoundland and Labrador and only participated in the seal fishery because it provided a potential source of income during the off-season (Innis 1954:410).

A.L. Anspach's account, written during the early 1800s, shows that the headquarters of the seal fishery was now almost entirely concentrated in Conception Bay:

> This plan of a winter fishery appears to have been generally pursued there [Labrador and Northern Newfoundland] until the latter end of the century, when the enterprising and industrious spirit of the inhabitants of Conception-Bay contrived a method to consolidate the interests of both the seal and cod-fisheries, without any prejudice to the latter. (Anspach 1819:415)

The growth and concentration of the spring, or larger vessel seal fishery in the more southerly areas of the island, at the beginning of the nineteenth century, is further illustrated by Figure 1-7.

The success of these two complementary activities appears to have been immediate for by 1825 the number of vessels annually outfitting for the Labrador Cod Fishery was reported to be between sixty and seventy from the port of St. John's alone, while nearly 200 schooners sailed from the various Conception Bay communities (Black 1960: 268). An indication of the increasing importance of the sealing venture to the owner/outfitters of these schooners

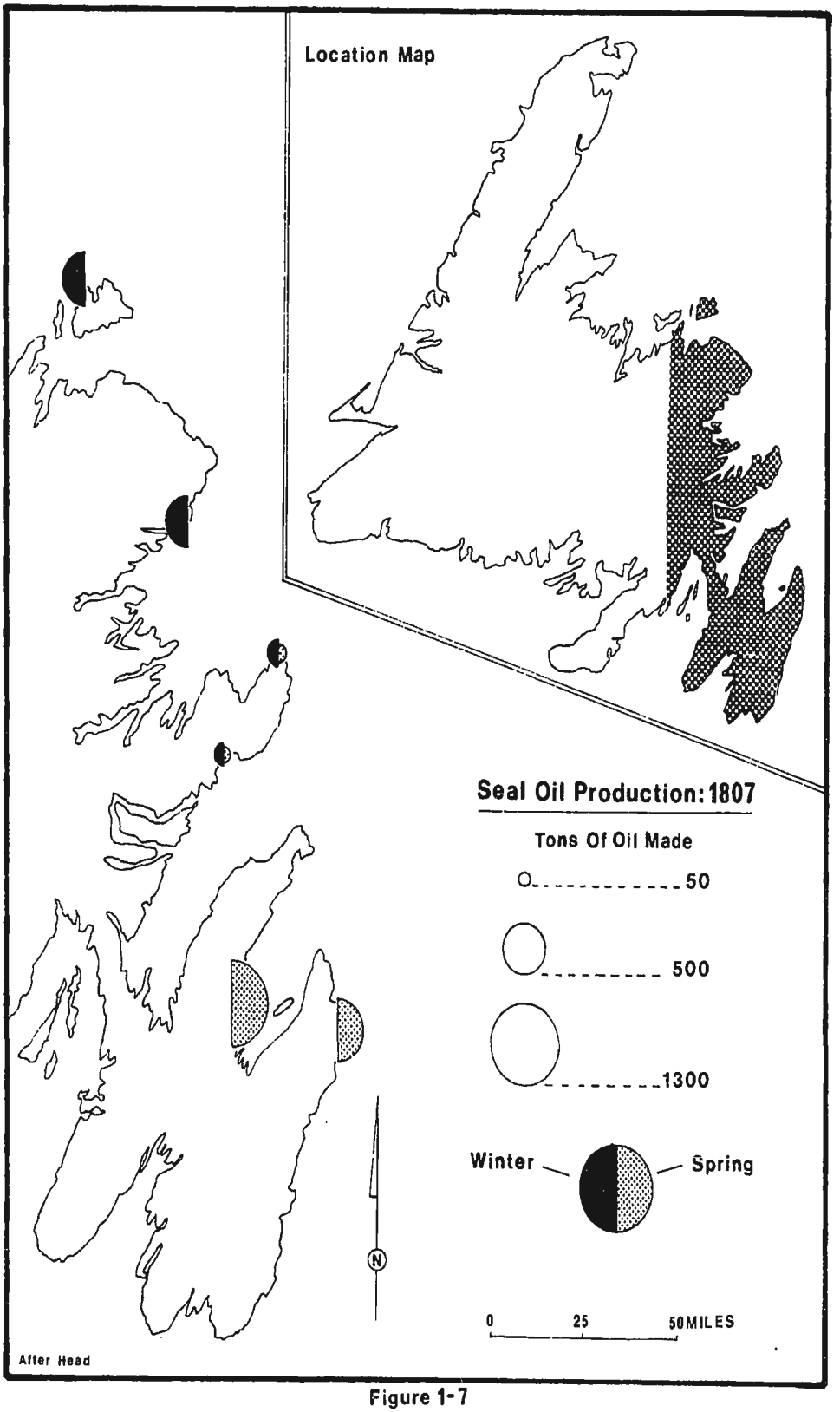

Location Map
Seal Oil Production: 1807
Tons Of Oil Made
0
50
500
1300
Winter
Spring
N
0
25
50 MILES
After Head

Figure 1-7

is shown by the fact that in 1805 only 81,000 skins were exported, while by 1819 this number had increased to 281,000, and reached its highest total ever in 1831 when 687,000 skins were exported (Figure 1-8).

Some indication of the growing importance of the seal fishery to the colony throughout the first half of the nineteenth century is provided by the following extract from the writings of the Rev. W. Wilson. He noted that the sealing vessels averaged from

> ... fifty to one hundred and fifty tons, and [were] manned with crews of from twenty-five to forty men; while the interest of every individual to the north of St. John's, from the richest to the poorest, was to be so interwoven with it, that its prosecution and results should cause more speculation, more anxiety, more excitement and solitude, than perhaps does any single branch of business in any part of the world. (Wilson 1866:276)

More men participated; more vessels sailed; and the greatest number of seals was killed, during the period between 1820 and 1860 than for any other comparable length of time. The climax, in terms of both numbers of men, and vessels, occurred in 1857, just prior to the advent of steam, when over 370 sealing vessels, ranging from 80 to 200 tons burden, sailed. That year 13,600 men killed in excess of 500,000 seals valued at £425,000 (Carroll 1873:7).

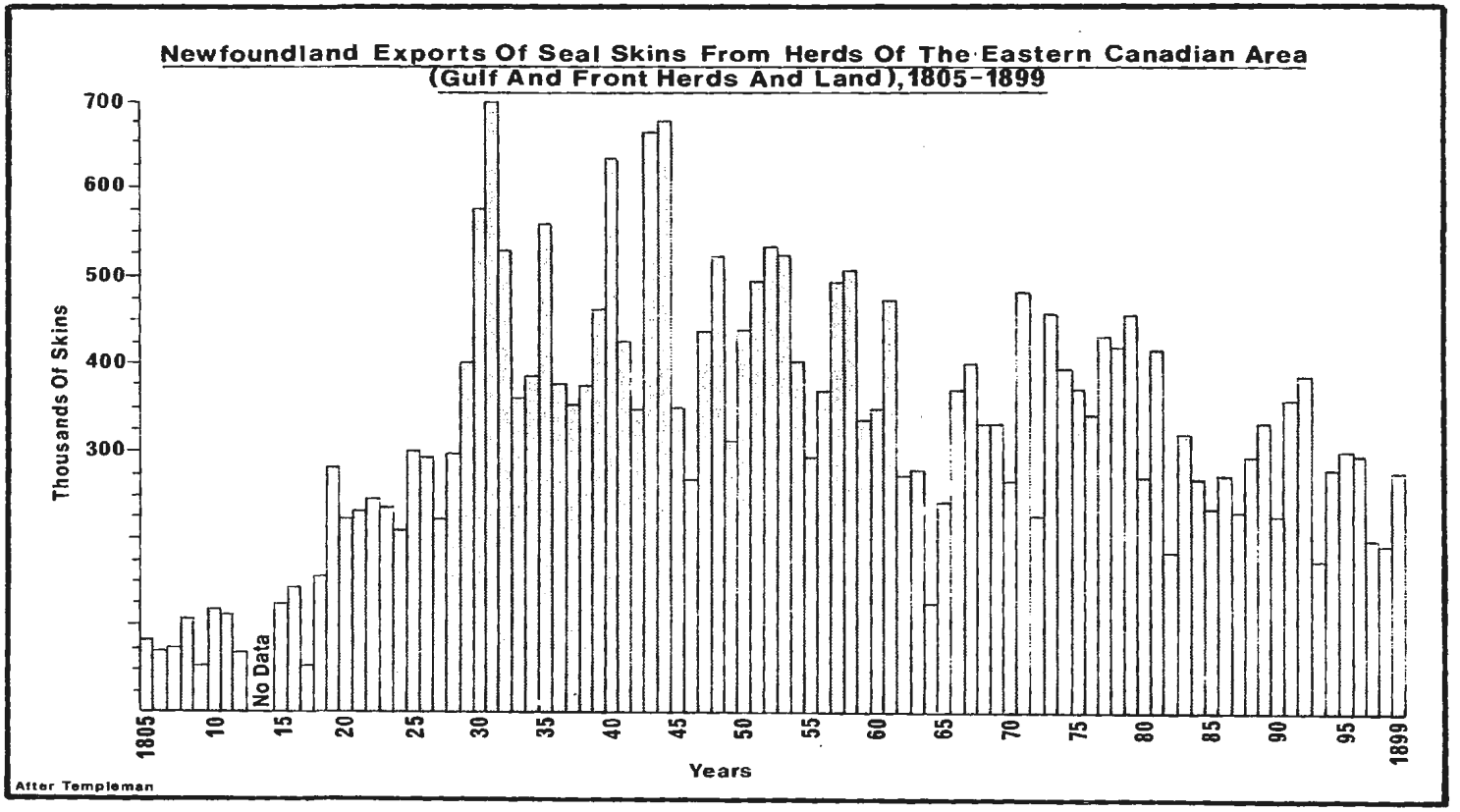

Newfoundland Exports Of Seal Skins From Herds Of The Eastern Canadian Area
(Gulf And Front Herds And Land), 1805-1899
Thousands Of Skins
700
600
500
400
300
No Data
1805
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
1899
Years
After Templeman

Figure 1-8

STEAM-POWERED VESSELS

During the latter half of the nineteenth century the sealing industry began to contract. While this was undoubtedly due in part to a decline in the seal population brought about by the yearly, unregulated killing of large numbers of seals, the major factor appears to be related to the adoption of steam by the larger business firms principally located in St. John's. As a result of the introduction of steamers in 1863 the owners and outfitters of the smaller sailing vessels soon found that they could not compete.

In the early 1800s Scottish whaling vessels from Dundee and Peterhead had begun to kill seals in the waters off the coast of Greenland as a complement to their whaling activities. By the mid-1850s the "Greenland waters were in fact over-fished, too many ships having been engaged, and too many young seals and whales having been taken." (Jones 1969:199)

These Scots had been the first to introduce steam into the sealing industry when they sent screw-propelled steam tenders to accompany their sailing vessels in 1857 (Lubbock 1937:364). In 1859 the very first wooden, auxiliary steam-powered sailing vessel (a barque-rigged screw steamer) was dispatched to the Greenland fishery from Dundee (Lubbock 1937:371).

With the advent of steam power, the Dundee owners began to consider seriously the feasibility of participating in the seal hunt off the northeast coasts of Newfoundland and Labrador. The western ocean passage could be made early in the year with their vessels participating in the Newfoundland seal fishery while enroute to the northwest Atlantic whaling grounds (Lindsay 1911:38). Consequently, in 1862, two Dundee steamers - the S.S. Camperdown and S.S. Polynia - joined the Newfoundland sailing fleet in search of the whelping patches. Although they were unsuccessful, a St. John's editorial shows the concern which their appearance generated locally:

> The experiment of the Steamers from Dundee in our Seal Fishery seems pretty certain to be a decided failure.... But the visit of these steamers, though so far a failure will necessarily awaken public attention to the present condition of our Seal Fishery, and to the means we must pursue if this formerly prolific source of wealth is to be preserved as a valuable item in our resources. (The Newfoundlander, April 3rd, 1862)

In the following year, 1863, Baine, Johnson and Company purchased the steamer Bloodhound and Walter Grieve and Company acquired the S.S. Wolf, thus inaugurating the use of steam in the Newfoundland-based sealing industry (Prowse 1896:493).

Some saw advantages in the steamers, others disadvantages. On the one hand there were those who objected to the fact that the profits would no longer be shared so widely throughout the colony. As Prowse lamented:

"When Mr. Walter Grieve sent the first sealing steamer to the ice it was a poor day for Newfoundland." (Prowse 1896: 453) On the other hand, there were those holding the opposing viewpoint. They saw the innovation as a necessity if the ailing industry were to be revived (Hatton and Harvey 1883:249). For example, Captain Abram Kean, the most successful of all Newfoundland sealing captains, pointed out in 1921, after he had been sealing for more than fifty years, that "the advent of steam in connection with the sealfishery was the saving of the fishery and if it had not been for the introduction of steam the sealfishery for long ago would have become a thing of the past." (Kean 1921:7)

The number of steamers quickly reached its maximum in 1880 and 1881 when twenty-seven vessels sailed from Newfoundland. The fleet never exceeded that number and fluctuated only slightly between those years and World War I.

Largely because of a series of very harsh winters the first steamers did not meet with any real success until the early 1870s. In spite of this their superiority was immediately recognized and the number of sailing vessels was very quickly reduced. The peak year for this period, which encompassed both steamers and sailing vessels, was 1881 when 27 steamers carrying a total of 5,815 men (approximately ninety per cent of the total number) were able to catch 281,949 seals (Chafe 1924:55).

As noted previously, the introduction of steam-powered vessels into the Newfoundland sealing industry had the apparent effect of bringing about a rapid decline in the numbers of vessels and men participating each year, and it also caused a less equitable sharing of profits, in that now only the larger St. John's firms were able to absorb failure in poor years in order to reap the large profits to be made from a "bumper voyage."

STEEL VESSELS

When A.J. Harvey and Company of St. John's sent the S.S. Adventure, a new steel vessel, to the "Front" in 1906, it marked the decline in one stage of the seal fishery and the beginning of another. The steel vessels were larger, stronger and more powerful and had effects on the use of wooden steamers similar to those which steam had on the use of sailing vessels. The concern of those with capital invested in vessels which were very quickly becoming obsolete was not as great, however, for the same companies were replacing the wooden steamers with steel.

The immediate success of the S.S. Adventure - 30,000 seals in the first season (Keir 1962:173) - acted as an incentive for the other firms to add steel vessels to their fleets. Consequently, Chafe was able to note that "From 1906 to 1914 Newfoundland had the finest fleet of Sealers and Ice-Breakers in the world." (Chafe 1924:26)

By 1912 more than a third of the sealing fleet was composed of steel vessels and the average size had increased considerably, with the largest ship, the S.S. Stephano, displacing 2,143 tons.

At the beginning of World War I there were nine steel and ten to twelve wooden steamers in the Newfoundland sealing fleet. During the war, however, the steel vessels were either transferred to war service or sold to Russia as ice-breakers and by the end of the war only the wooden fleet remained.

The relatively low prices paid for seal oil during the post-war years, the risks of an unsuccessful voyage, and the difficulty of finding profitable alternate employment for these vessels after the sealing voyage had been completed, discouraged the major firms from investing new capital to refurnish the fleet with vessels of comparable caliber (Templeman 1966:137).

1920 TO 1945

The size of the sealing fleet throughout the 1920s fluctuated between eight and twelve vessels, until 1929 when world prices for seal oil had improved to the extent that four new powerful steel vessels were added to the fleet. The depression years, however, were particularly harsh in Newfoundland and it was during this period that the total number of sealers participating in the seal hunt

dropped to less than 1000 men for the first time in more than 100 years (Colman 1949:43). The effectiveness of these new steamers, meanwhile, still enabled the sealing fleet to return to port with annual trips averaging well in excess of 100,000 pelts. In 1933, for example, the S.S. Imogene and the S.S. Ungava landed 55,636 and 49,285 pelts respectively (Andrews and Parker 1971:16).

The sealing fleet was again pressed into wartime service with the outbreak of global conflict in 1939. During the war years the number of vessels participating in the hunt was reduced, and in 1943 no vessel ventured in search of the whelping patch. The S.S. Eagle was the only steamer to sail in 1944 and while her catch of 6,697 seals was considered a moderate success, there were no large vessels prosecuting the seal fishery in 1945.

POST-WORLD WAR II

The end of World War II marked the beginning of an entirely new phase. Technology had again caused a modification in the character of the sealing fleet. For the first time motor vessels were employed and four of the five participants made good trips. The price of "fat" had increased over the war years from $1,283.00 per 1000 skins in 1939, to $3,499.00 in 1946 (Colman 1949:45). This, together with the immediate successes of the motor vessels as a result of favorable ice conditions, and a probable

resurgence in the seal population due to the partial cessation of the hunt imposed by the Second World War - only 225,291 pelts were landed between 1940 and 1945 (Andrews and Parker 1971:17) - caused a revitalization of the seal fishery. By 1947 the sealing fleet had increased to two steamers and fifteen motor vessels.

The resurgence in the Newfoundland seal fishery during the post-war period was somewhat restricted by the fact that, for the first time, sustained competition from foreign vessels was being encountered. In 1938 the Norwegians had sent a ship to the "Front" and immediately after the war they had returned with an increased effort. At the same time Canadian interests in Halifax and Quebec began to focus their attention on the sealing operation in the "Gulf." It was primarily this competition from the Norwegian and "mainland" vessels which brought about the gradual withdrawal of Newfoundland entrepreneurs from the seal fishery (Andrews and Parker 1971:18).

In 1969 only one Newfoundland vessel, the Chesley A. Crosbie, sailed to the ice, and in 1970 and 1971 she was joined by the small motor-vessel Lady Johnson sailing out of Catalina. In 1972 not one Newfoundland vessel participated in the seal fishery.

The recommendation proposed in the Interim Report of the Committee on Seals and Sealing that there should be a moratorium on the killing of harp seals for a minimum of

six years, and the concurrence of the Federal Government in Ottawa (News Release, Environment Canada 1972:1) leaves the future of the seal hunt by large vessels very much in doubt.

Offsetting this decline in the vessel operation to some degree has been a corresponding increase in effort on the part of landsmen, to the extent that by the 1960s the landsman catch was often surpassing that of the sealing fleet (Figure 1-9).

The historical development of the Newfoundland sealing industry can thus be seen as one of evolution through several overlapping stages characterized by the acceptance of new technology, adaptation of strategies and techniques, changes in capital investment and ownership, a general reduction in personnel, shifts in the pattern and intensity of regional involvement, and a stage-by-stage reduction in the total catch per year. The overall decline of the industry indicates that the evolution of the venture from 1793 to the present has been a process of imbalance in which new technology and concomitant strategy in the use of capital and personnel have progressively reduced the basic resource upon which the industry depends.

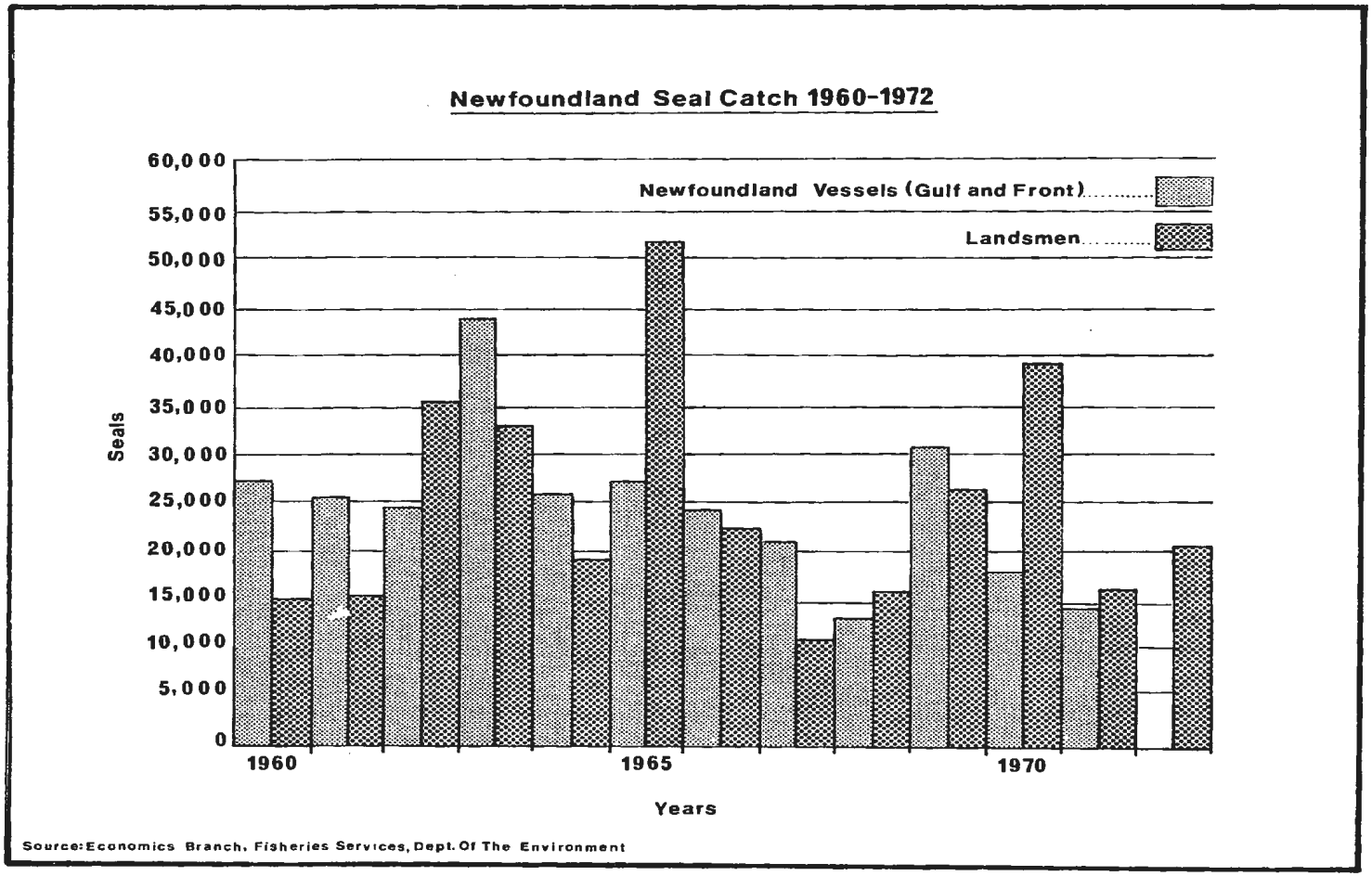

Newfoundland Seal Catch 1960-1972
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Seals
Newfoundland Vessels (Gulf and Front)
Landsmen
1960
1965
1970
Years
Source: Economics Branch, Fisheries Services, Dept. Of The Environment

Figure 1-9

This study focuses upon the first two stages of the large vessel sealing operation with the primary emphasis on the period of overlap between them. The changes that occurred in the industry with the decline of sailing vessels and corresponding expansion of the steam-powered fleet after 1863 offer a dramatic contrast which is particularly illuminating in relating the elements of change to each other.

Every major infusion of technology into this venture has been associated with the sealer's desire to improve his ability to cope with the obstacles he encounters in attempting to gain access to the resource. Before investigating the role of changing technology in the Newfoundland seal fishery, therefore, it is necessary to examine the characteristics of the basic resource and the environment to which it is adapted and into which the sealer must intrude.

CHAPTER II

THE RESOURCE

Not surprisingly, the success and failure, indeed the very nature of the Newfoundland seal fishery, has been strongly influenced by the habits and character of the resource. An understanding of the biological basis of the resource, therefore, is critical to any discussion of the changes that have occurred in the industry. This section provides some general information regarding seals and also more specific details pertaining to the two animals exploited by the hunters in the Northwest Atlantic namely, the harp seal and hood seal. The harp, which has always been the principal objective of the Newfoundland sealing fleet, is considered more extensively than the hood - a species that differs in anatomy and ecology from the former.

SEALS: THEIR TAXONOMY AND PHYSIOLOGY

Seals were formerly classified in the order Carnivora with many land animals, but are now placed in a separate order, Pinnipedia, with sea lions and walruses. Judith E. King writes that "Although they may not have had a common ancestor, all seals, sea lions and walruses are sufficiently like one another, and distinct from other mammals, to be

united in the Order Pinnipedia, equal in rank to the Order Carnivora or Order Rodentia..." (King 1964:7).

Earliest fossil evidence of Pinnipeds in North America date from the Miocene period (Allen 1880:480). Even at this early date, however, they had all of their present day characteristics (King 1964:130).

In all there are thirty-two different species of seals (Figure 2-1) which vary in size from the small ringed seal often less than five feet long, up to the huge elephant seals which may reach twenty feet in length and weigh in excess of four tons. Although they may be found in all oceans their present distribution, in terms of both species and total numbers, shows a concentration in the colder Arctic and Antarctic regions (Backhouse 1969:14).

Excluding the walrus, there are five distinct species of seals inhabiting the Atlantic waters contiguous to northeastern North America. These are Phoca vitalina (Linnaeus, 1758), variously called the harbour, spotted, ranger or common seal; Pusa hispida (Schreber, 1775), the ringed seal or "floe-rat"; Erignathus barbatus (Erxleben, 1777), the bearded seal or "square-flipper"; Cystophora cristata (Erxleben, 1777), the bladder nose, hood, hooded or crested seal; and Pagophilus groenlandicus (Erxleben, 1777), the saddleback, Greenland or harp seal.

The ranger and ringed seals are small inshore animals. The former has a more southerly distribution (Figure 2-2), and often creates problems throughout

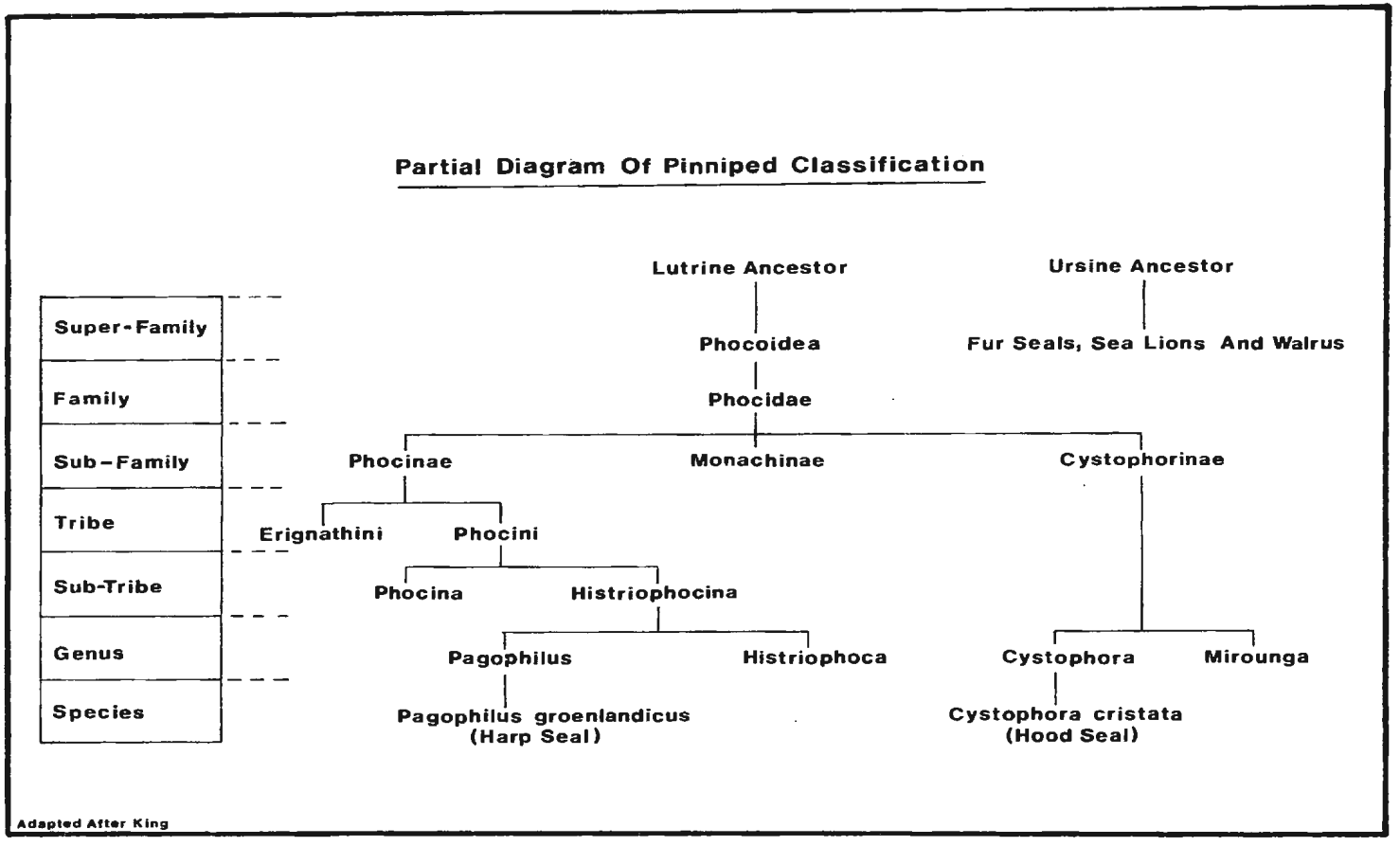

Partial Diagram Of Pinniped Classification
Super-Family
Family
Sub-Family
Tribe
Sub-Tribe
Genus
Species
Lutrine Ancestor
Ursine Ancestor
Phocoidea
Fur Seals, Sea Lions And Walrus
Phocidae
Phocinae
Monachinae
Cystophorinae
Erignathini
Phocini
Phocina
Histriophocina
Pagophilus
Histriophoca
Cystophora
Mirounga
Pagophilus groenlandicus
(Harp Seal)
Cystophora cristata
(Hood Seal)
Adapted After King

Figure 2-1

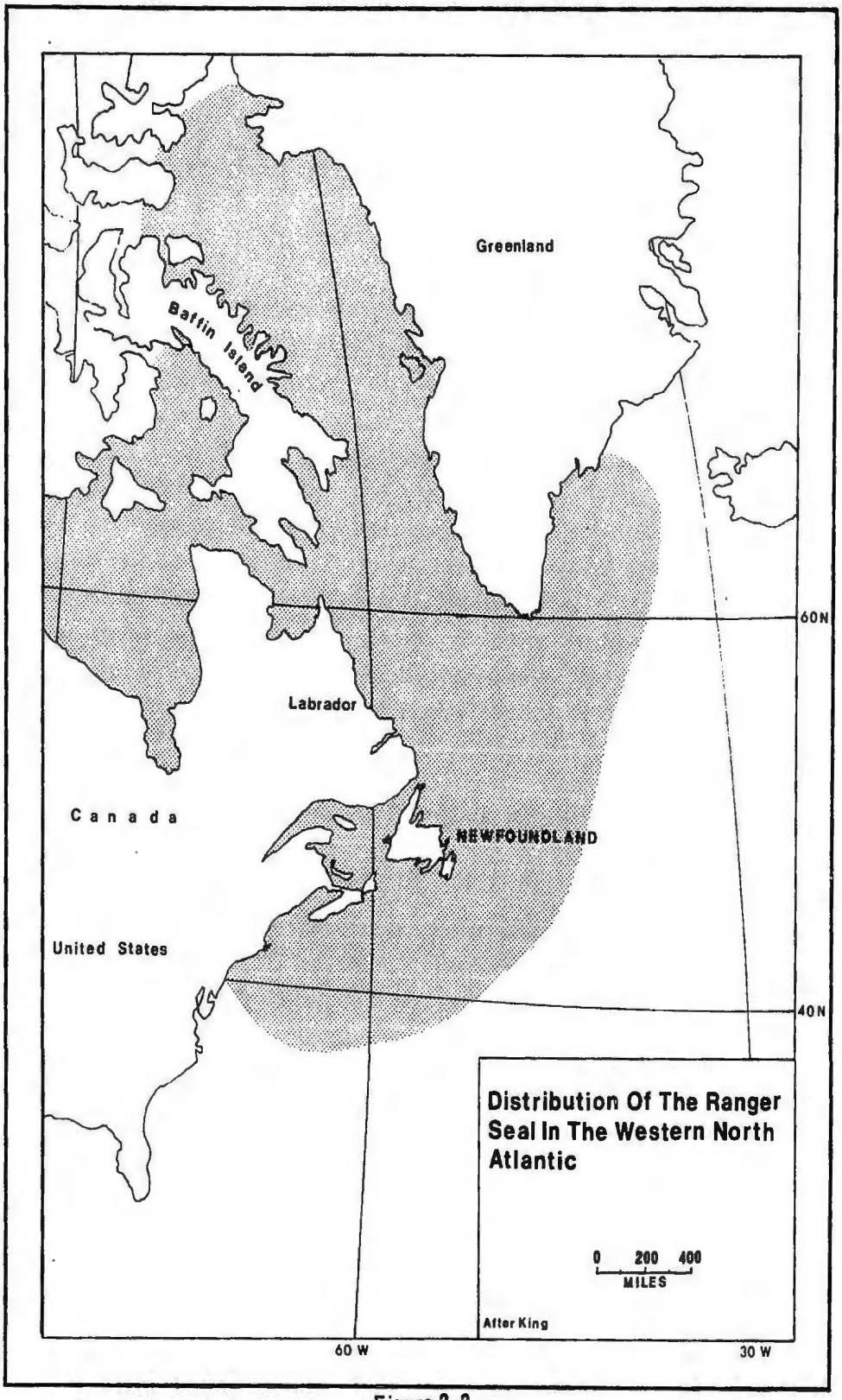

Greenland
Baffin Island
Labrador
Canada
NEWFOUNDLAND
United States
60N
40N
60 W
30 W
Distribution Of The Ranger Seal In The Western North Atlantic
0 200 400
MILES
After King

Figure 2-2

Atlantic Canada for fishermen using salmon nets, while the latter (Figure 2-3) is a mainstay in the economy of Northern Canada's aboriginal population. Because of its large size (500 to 600 pounds) the bearded seal is also hunted by the Canadian Eskimo. Its contribution to their overall economy when compared to the ringed seal is only secondary, however, due to the relative scarcity of this animal.

The economic returns of the Newfoundland sealing fleet have mainly been determined by the availability and accessibility of the remaining two species - the harp and hood seals. The harp, however, has always been considered far more important than the hood. As Andrews writes:

> The Harp Seals ... are the prime object of the hunt since they are congregated and occur in large numbers. Thus, the Hood Seal may be said to be taken incidentally. (Andrews, 1957:67)

The Order Pinnipedia (the fin-footed ones) is divided into three families (Figure 2-1): 1) Otariidea, or 'eared' seals which include the Pribilof, or Alaska fur seal; 2) Obodenidae, or walruses; and 3) Phocidae, the 'earless' or 'hair' seals which are primarily distributed throughout the northern hemisphere (Fisher 1950:1).

The Harp seal (a member of the Phocidae family) was given the name Phoca groenlandica in 1776 by Fabricus. The following year Erxleben, using the same name, described it with a high degree of accuracy for the first time and in 1850 the present generic name Pagophilus (Greek: pagos, ice;

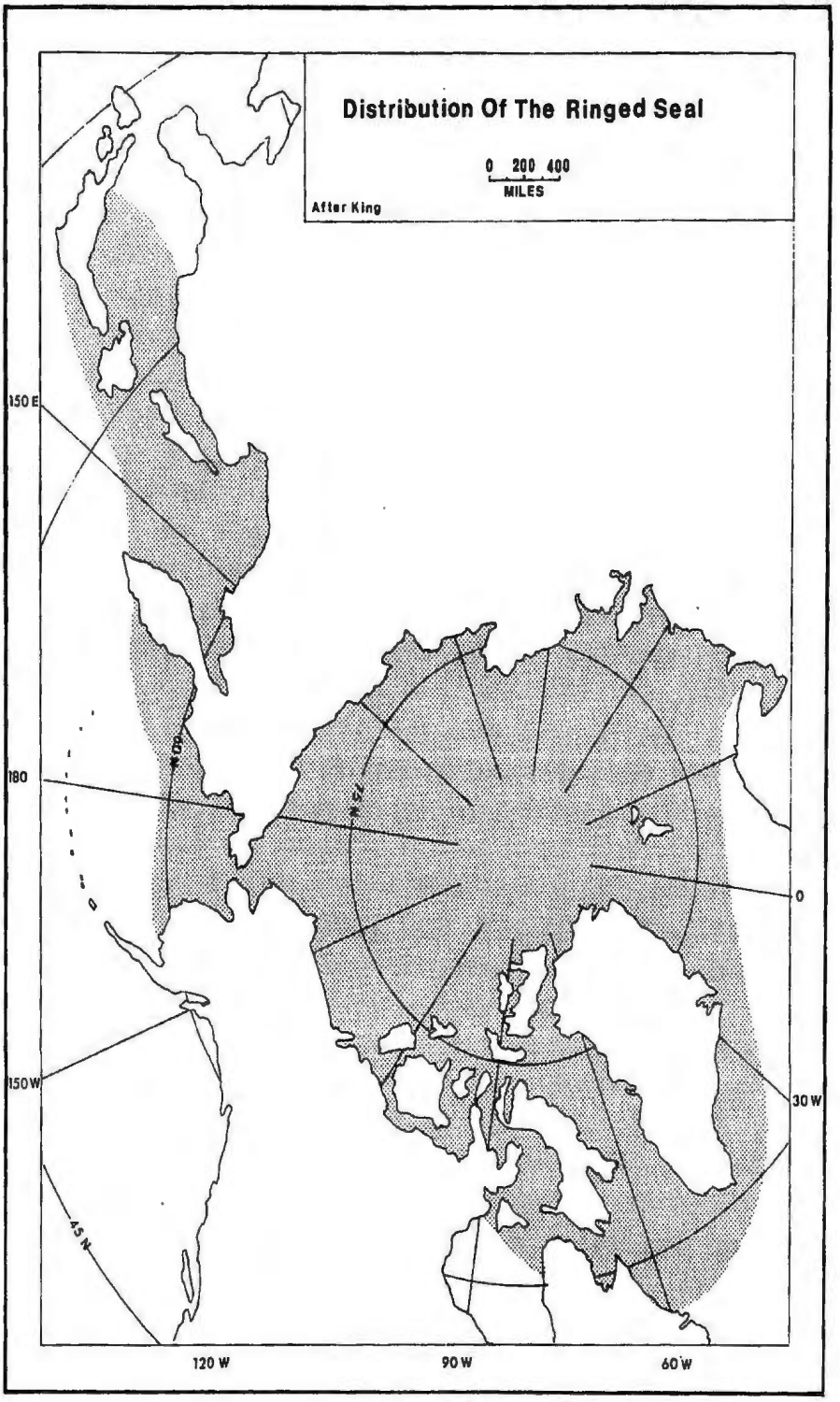

Distribution Of The Ringed Seal
0 200 400
MILES
After King
150 E
180
150 W
120 W
90 W
60 W
30 W
0
75 N
60 N
45 N

Figure 2-3

and philos, lover) was introduced by Gray (Allen 1880:631). This term, therefore, aptly describes the harp seal which is an offshore species remaining in the water throughout its entire lifetime except when it uses the Arctic ice-floes for purposes of whelping, breeding and moulting (Merriam 1884:1227). However, while all seals are highly adapted for life in the water they have not left the land behind so completely as the other aquatic orders of mammals.

Plates 2-1 and 2-2 show that the fusiform body, which has no protuberances to break the even contour, enables the seal to swim swiftly and maneuver effectively (Harrison and King 1965:100). The main propulsive power of the seal is provided by the hind part of the body in that both the rear flippers and lateral swinging motion of the body enable it to achieve short bursts of speed approaching fifteen miles per hour (Harrison and Kooyman 1971:9; King 1964:91). In addition to these visible adaptations to life in the water, Mansfield notes that "the Pinnipeds also have internal adaptations which enable them to swim easily under water and remain submerged for periods as long as twenty minutes in the larger species". (Mansfield 1964:1)

Although this type of information "is relatively scanty except for work done in particular by Dr. Scholander on the Grey Seal and by Professor Harrison on the Common Seal..." (Backhouse 1969:21), recent Canadian research,

Mature Female Harp Seal
Plate 2-1

Mature Female Harp Seal
Plate 2-2

most notably at the University of Guelph under the direction of Dr. K. Ronald (Ronald, et al. 1969; Vallyathan, et al. 1969), support their findings that this aquatic ability is primarily due to changes which occur within the cardio-vascular system (Backhouse 1969:21-28; Harrison and King 1965:129-136). Tests have shown, for example, that the harp seal is able to reduce its heart beat just prior to, and during, a dive: it is able to remain submerged for relatively long periods because only its heart and other vital organs are supplied with blood when it is maneuvring under water. It is evident that this adaptation is related to the fact that harp seals have been taken in nets at depths exceeding 600 feet (King 1964:127).

The seal's body is enclosed in a thick layer of fat which acts as a food reservoir in addition to providing insulation and buoyancy, thus permitting it to maneuver effectively in extremely cold water (Backhouse 1969:23). Although seals vary a great deal in their sensitivity to touch, smell and taste, there is little indication in scientific literature that these senses have evolved to an unusual degree. The seal's sense of sight, both in and out of water, and its sense of hearing, which is its greatest faculty, however, have made the seal a highly efficient predator.

THE HARP SEAL

The harp seal is the most numerous representative of the Order Pinnipedia and ranges throughout the northern periphery of the North Atlantic, reaching from the eastern margins of the Canadian Arctic in the west to the archipelago of Severnaya Zemlya in the east (Figure 2-4). In all there seem to be three distinctive stocks. These breed off the coasts of Newfoundland, Jan Mayen and in the White Sea (Popov 1966:2). There is considerable variation in whelping dates among the three herds (Figure 2-5), with pupping in the northwest Atlantic occurring towards the end of February or during the first week in March (Khuzin 1967:3).

The majority of pregnant females in the western herd swim northward in February to meet the local and Arctic ice drifting south off the coasts of Labrador and Newfoundland, while the females in the smaller "Gulf" herd seek the ice-floes which form in the vicinity of the Magdalen Islands. Because the harp seals are naturally gregarious, and since they give birth at approximately the same time each year, the young are born in close proximity to one another, thus forming huge "patches" often covering several square miles of ice.

The young (Plates 2-3 and 2-4) are known as "whitecoats" because of the presence of a white, downy,

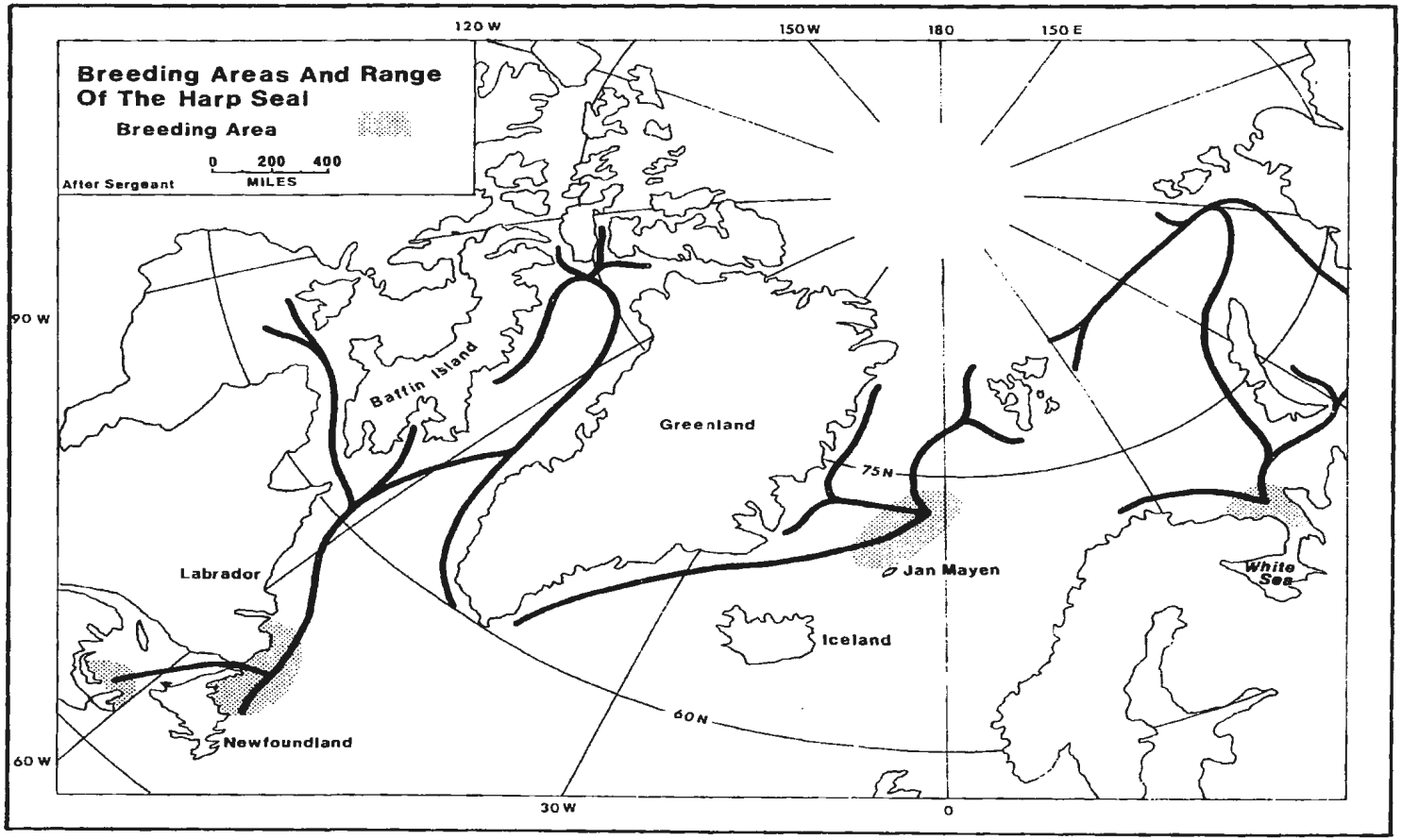
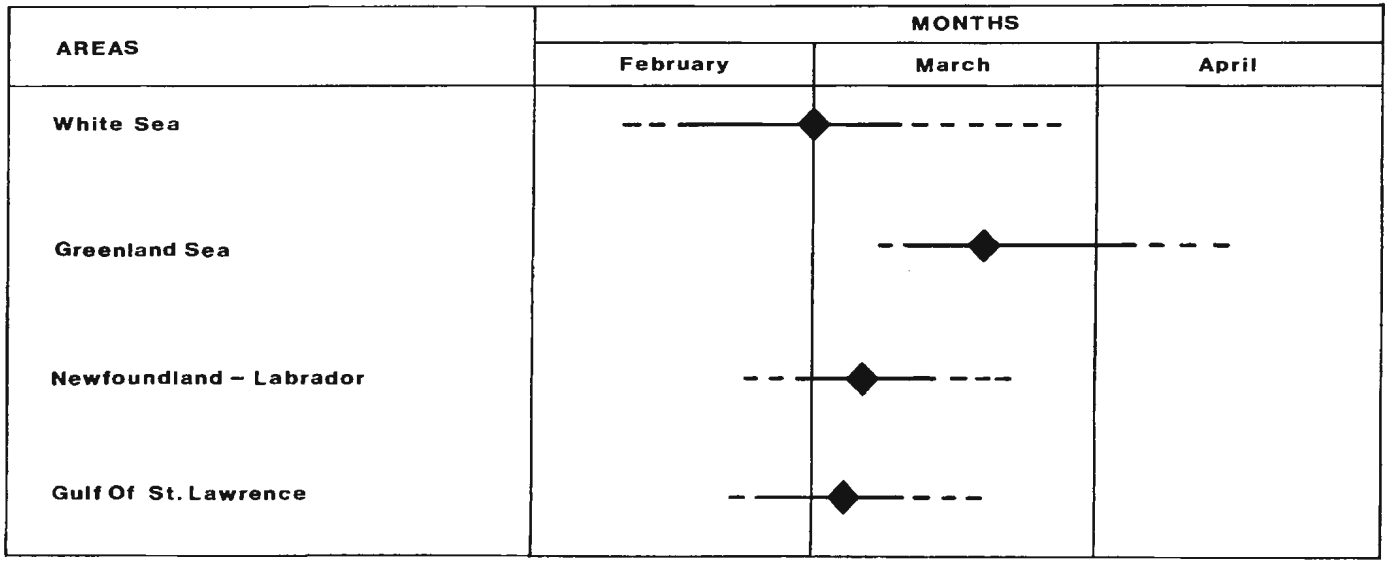

Breeding Areas And Range
Of The Harp Seal
Breeding Area
0 200 400
MILES
After Sergeant
120 W
150W
180
150 E
90 W
60 W
30 W
0
Baffin Island
Greenland
75N
Labrador
Jan Mayen
White Sea
Iceland
60N
Newfoundland

Figure 2-4

Whelping Periods Of The Harp Seal (Pagophilus Groenlandicus, Erxleben 1777) In Different Areas



After Khuzin

Figure 2-5

Newly-Born Harp Seal

Plate 2-3

Newly-Born Harp Seal

Plate 2-4

embryonic pelt (Chapskii 1955:33). At birth they measure approximately thirty-six inches in length and weigh in the vicinity of fifteen pounds (Mansfield 1964:10). They are milk-fed for a shorter period of time than any other northern seal - a necessary adaptation for upbringing on short-lived subarctic ice-floes (Sergeant 1965b:542). Because they are nursed on milk which contains "more than 40% fat, in comparison with 4% in ordinary cow's milk" (Host 1943:10), the young whitecoats gain weight very quickly. The mother seal, during the two-to-three-week period between parturition and the end of lactation, loses an average of forty pounds in weight and at the end of this period the whitecoats usually weigh between sixty and seventy pounds (Templeman 1966:131).

Nine to ten days after birth the pups are of prime commercial value in terms of both the quality and quantity of oil their fat will yield, and the value of their hides, for the long, wool-like hair is only firmly attached to the skin for about a week to nine days (Backhouse 1969:83). As this "fur" does not fall out evenly the young harp seals, during this short moulting period, are locally called "ragged-jackets". Because they do not have "fast" hair and because they usually lose much of their recently acquired fat after they have been left to forage for themselves, the young seals at this stage in their growth are not considered to be very valuable (Fisher and Sergeant

1954:4). After moulting the young seals take to the water for the first time, usually towards the end of March, and are then called "beaters" for the rest of their first year of life.

Immediately after the young have been weaned mating occurs. As the mating period lasts only from three to four days, and as there is a two and one half month delay in the implantation of the blastocyst on the uterine wall (King 1964:121), the young are born at approximately the same time each year. Because conditions in the natural environment are optimum for their survival during the whelping period, it appears that nature has ensured the survival of the species through this interesting adaptation.

Directly after mating the adult males proceed northward until, towards the end of March, they move onto the ice in order to shed their winter coats. Shortly thereafter they are joined by the mature females and the immatures of both sexes. The animals at this stage are not in prime condition. First, there is evidence to suggest that they eat very little during whelping, breeding and moulting and are therefore very thin (Mansfield 1964:12), and secondly, the hides are in very poor condition. In spite of this, these moulting patches were at one time a fairly important secondary objective of the sealing fleet, for the harp seal when moulting is reluctant to leave the ice because of the pain caused by salt water seeping into

the cracked and drying skin (Host 1943:10).

Towards the end of April, after they have shed their old coats, the harp seals follow the disintegrating ice edge northward (Sergeant 1963:29). The young, meanwhile, have already moved seaward towards the ice edge where they frequent the smaller pans of ice. Two or three months after birth they begin to migrate northward independently of, and somewhat later than, the herds of older seals, and only rejoin them on their summer feeding range to the north (Pimlott 1966:37).

These beaters are especially valuable to the hunter as the new silver-grey hair, with its darker spots along the sides, is very soft and thick (Nansen 1925:55). As a percentage of the total catch, however, they usually, and especially in the earlier days, ranked third (after white-coats and matures) because of their greater mobility and propensity to scatter over relatively larger areas. Thus they required greater effort for return than that required when, and if, the whelping and moulting patches were located.

Before the newly independent harp is able to properly care for itself it has to rely on its reservoirs of fat (Host 1943:10). There are, however, abundant supplies of food close to the surface. The Labrador current sweeping south from the ice-covered Arctic Ocean mixes with the waters of the Atlantic off the northeast coast of

Newfoundland thus providing (with the increasing availability of spring sunlight) the conditions necessary for a luxuriant growth of plankton life (Nansen 1925:92). This, in turn, attracts fish in large numbers. The first-year seals and immatures of both sexes feed primarily on caplin, polar cod and pelagic crustaceans. As the young seals mature and their ability to dive increases, the diet is augmented by demersal and benthic fish such as cod, Greenland halibut, American plaice and occasionally redfish (Fisher and Sergeant 1954:19).

The "Gulf" and "Front" herds, after moulting, congregate off the Strait of Belle Isle and follow the retreating ice northward (ICNAF: Document Number 101 1964:1). By the end of June they are in the vicinity of Cape Chidley (Figure 2-4), where a small portion of the herd moves westward into Hudson Bay, reaching Southampton Island and occasionally appearing as far south as the Belcher Islands (Mansfield 1964:12). The main herd, however, continues northward through Davis Strait into Baffin Bay. Their northern feeding range is in the waters surrounding Devon and Ellesmere Islands, for they pass "Bylot Island on their way north throughout July and early August, and again in late August and September on their return migration." (Mansfield 1964:12)

The harp is driven off its summer range when the inshore waters begin to freeze with the approach of winter.

By early November large numbers of harp seals again pass Cape Chidley as they migrate southward. This movement, however, is considerably slower than their summer migration northward for they spend much of their time feeding in the shallow bays and inlets along the coast. It is this characteristic which has enabled the landsmen along the migratory route to trap the harp in seal nets or seal frames as they "trim" the coastline. By late December the herd is usually located in the vicinity of the Strait of Belle Isle where it divides into two groups. A portion of the animals moves into the Gulf of St. Lawrence while the larger herd continues to swim southward along the northeast coast of the island. Little is known of the movement of the harp for the next two months (for it virtually disappears) other than the fact that it spends its time in open water well offshore.

There is evidence, however, that reports of harp seals "wintering" on the Grand Banks are substantially true. Their habitat clearly is extremely rich in nutrition for when they form the whelping patches at the end of February the females are in prime condition (Sergeant 1963: 31). Their annual migration thus goes full cycle. The degree of accuracy repeated in this environment-biological calendar each year is shown by the common reference, in Newfoundland, to February 28th as the "seal's birthday."

As noted previously, the young harp pup is called a whitecoat, then ragged-jacket, and finally, in its first year, it is known as a beater. Thereafter, before it becomes an adult it is called a "turning seal" (turner), "immature", or "bedlamer" - a corruption of the French expression "bête de la mer." (Ronayne 1964:8) At five years of age the majority of both sexes have matured. These adults then take on a characteristic light grey coat with distinctive black markings along both sides and across the back (Plate 2-1) which gives them their common name of harp or saddle-back seal.

Their average life span is well over twenty years, and the upper age limit is probably in excess of thirty years (King 1964:63). In its prime the adult male reaches six feet in length from nose to tail and weighs an average of 400 pounds, the female being slightly smaller.

THE HOODED SEAL

Although the hood seal has always been represented by relatively few animals in the total annual catch when compared with the harp seal, it has, nevertheless, had a considerable influence on the overall development of the seal fishery. This has been due principally to the fact that its migratory habits place the whelping and breeding herds of both species in close proximity to one another. As previously noted, the killing of hood seals has always

been incidental to that of the harp, which is the main objective of the sealing fleet, because although it is smaller,

> The harp yields more oil than the hood and the young are easy to handle. Because it gathers in close herds, less time is required in hunting it. (Bartlett 1929:117)

The hood seal, however, has always made a significant financial contribution in terms of bonus profit when large numbers of harps have been harvested. More important, however, is the fact that in instances where the sealing fleet was unable to reach the whitecoats before they had dispersed, the sealers were often able to make a "saving voyage" by killing the hood seals whose range was in the more accessible seaward reaches of the ice-floes.

Towards the end of March the pregnant female hoods at the front give birth on the "heavier ice to seaward of the breeding herds of harp seals ..." (Mansfield 1964:14). The newly formed hood family (each female pairs with a male before giving birth) claims a fairly extensive territory of up to one hundred yards or more (Andrews 1957: 70) which both will defend to the death (Harvey 1901:198). This is in strong contrast to the female harp as only "5 percent remain on the ice and make aggressive motions towards an approaching human." (Interim Report of The Committee on Seals and Sealing 1972:2)

The newborn "bluebacks" have a more valuable pelt than either the whitecoat, or beater, as they lose their

foetal coat before birth (Mansfield 1964:14). The pelts are silvery blue-grey and their commercial value is further enhanced by the fact that "The hairs do not lie quite so flat as in other seals, and this gives a furry appearance to the coat." (King 1964:85)

The adult hoods mate after the young have been weaned and shortly thereafter they begin their individual northward migration. This is in sharp contrast to the harp seal which is extremely gregarious. By late May the majority of hoods have reached the west coast of Greenland where they feed until early June (Mansfield 1964:16). Shortly thereafter they migrate southward to Cape Farewell and then northward towards the Denmark Strait where they join the other, and larger, breeding stock of hoods (Figure 2-6) known to the Norwegians as the "west-ice" herds, for the purpose of moulting (Sergeant 1965b:548). A small number of these animals, after they have moulted, return to the west coast of Greenland whence they move northward into the extreme margins of Baffin Bay (Mansfield 1964:17).

The approaching winter causes the hood to seek the limits of its winter range to the south and, like the harp, it is to be found in the vicinity of the Strait of Belle Isle by late December (Andrews 1957:70). During this southward migration both the harp and hood can be seen dispersed along the same migratory route: "They appear to

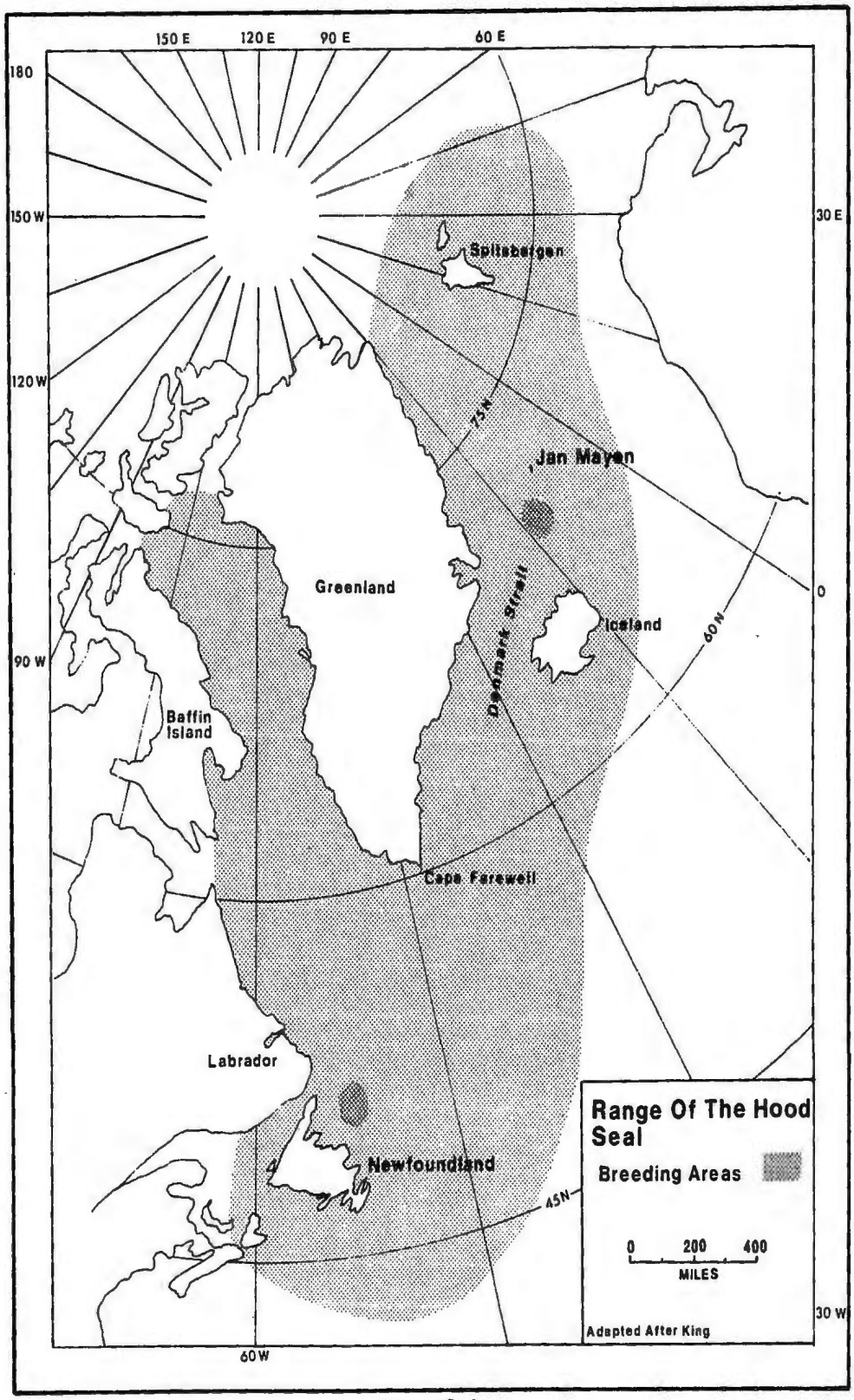

150 E
120 E
90 E
60 E
180
150 W
120 W
90 W
60 W
30 E
0
30 W
75N
60 N
45N
Spitsbergen
Jan Mayen
Greenland
Iceland
Denmark Strait
Baffin Island
Cape Farewell
Labrador
Newfoundland
Range Of The Hood Seal
Breeding Areas
0 200 400
MILES
Adapted After King

Figure 2-6

travel in two long parallel columns, the hoods always holding the eastern or seaward position." (Harvey 1901:195) Continuing southward the hoods feed voraciously before they move northward again to join the harps on the southward moving ice-floes in order to whelp.

The other main differentiating characteristic between the harp and hood is size. The male hood is considerably larger, weighing in the vicinity of 900 pounds and reaching nine to ten feet from nose to tail, with the female (as in the case of the harp) being slightly smaller (King 1964:84).

Information regarding the hood seal in the northwest Atlantic is largely based upon past information, for they are only rarely encountered in this area at the present time. While this scarcity is partially due to unregulated killing in the past with little, if any, consideration given to the conservation of the species, the lack of substantial numbers of hood seals in the northwest Atlantic also appears to be an adaptation to changing climate (King 1964:83). Birger Rasmussen postulates:

> I consider it most likely that the climatic change has resulted in a shift of part of the hood seal stock which has its breeding ground at Newfoundland. The nearest explanation to a cause for such a shift of the hood seal stock at Newfoundland lies in a change in ice conditions which have probably altered in step with the climatic change. We know that the hood normally seeks large fallen ice floes both for pupping and moulting, that is to say, animals seek old ice which has been formed over a period of 2 or 3 years and which comes down from the polar basin

> to Jan Mayen region and from the northern part of Baffin Bay to Newfoundland. At Newfoundland at the present day in March-April we find chiefly small fallen and relatively thin winter frozen ice of a type which serves as a breeding ground for harp seals, but not for hoods. (Rasmussen 1960:9)

As noted previously, the hood seals were an important component of the commercial seal hunt by large vessels. Although both species have been seriously reduced in abundance, some indication of the former size of both herds may be seen by the fact that the present estimated northwest Atlantic harp seal population is 1,255,000 (Interim Report of The Committee on Seals and Sealing 1972:7), while the total estimated global population of hood seals ranks between 300,000 and 500,000 animals (King 1964:86).

The Newfoundland seal fishery, then, developed throughout the nineteenth century in response to the presence of a seasonal marine resource. While the migratory habits of the harp and hood are such that they range over wide distances in feeding, they nevertheless, because of their gregarious nature, congregate in large whelping, breeding and moulting herds on the ice-floes off the coasts of Labrador and northeastern Newfoundland during early spring. The seal herds, therefore, in effect represented a seasonal and welcome addition to the local resource base and filled a void in the seasonal round of activities.

Although the resource is more vulnerable at this time than at any other stage in its yearly life cycle, the seal herds are usually given some degree of protection by the hazardous nature of the environment and man's limited ability to penetrate the ice-floes with the technology available to him. Every major infusion of new technology, consequently, has been associated with the sealer's endeavors to improve his chances of successfully locating the seal herds before they have dispersed. The following chapter, therefore, details the characteristics of the natural environment which were likely to affect the sealing vessels during their annual spring pursuit of the seal herds.

CHAPTER III

THE NATURAL ENVIRONMENT

In the foregoing chapter it was seen that the success of the sealing venture has always depended upon certain features of the harp and hood seals and the seasonal characteristics of the natural environment which have shaped their behavior. Their habit of migrating southwards during the winter months and their subsequent congregation in the same general area each spring to give birth to their young have been undoubtedly the most important of all the adaptive features that have made the harp and hood particularly susceptible to commercial exploitation. Not only were the herds usually located far enough south for relatively easy exploitation from Newfoundland communities, but at the same time they also rendered themselves more vulnerable to large-scale slaughter than at any other stage in their yearly cycle.

The harp and hood seal stocks of the western North Atlantic form whelping and moulting patches in both the Gulf of St. Lawrence and off the coasts of Labrador and northeastern Newfoundland. Throughout the period encompassed by this study the Newfoundland sealing interests

had been concentrating their efforts on the "Front". While the "Gulf" herds had been hunted by a relatively small number of Newfoundland schooners (sailing from the south coast communities) during the sailing vessel era, the seal fishery in the Gulf of St. Lawrence had been prosecuted principally by Quebec, Nova Scotia and New England vessels. Only after the earlier steamers had been outdated by the introduction of newer vessels in the late nineteenth century did the Newfoundland sealing companies begin to send their older vessels to the "Gulf" in large numbers.

This chapter, then, presents the physical characteristics of the "Front" so that the environmental factors which influenced the sealer's ability to locate the seal herds throughout the nineteenth century can be better understood.

PHYSIOGRAPHY

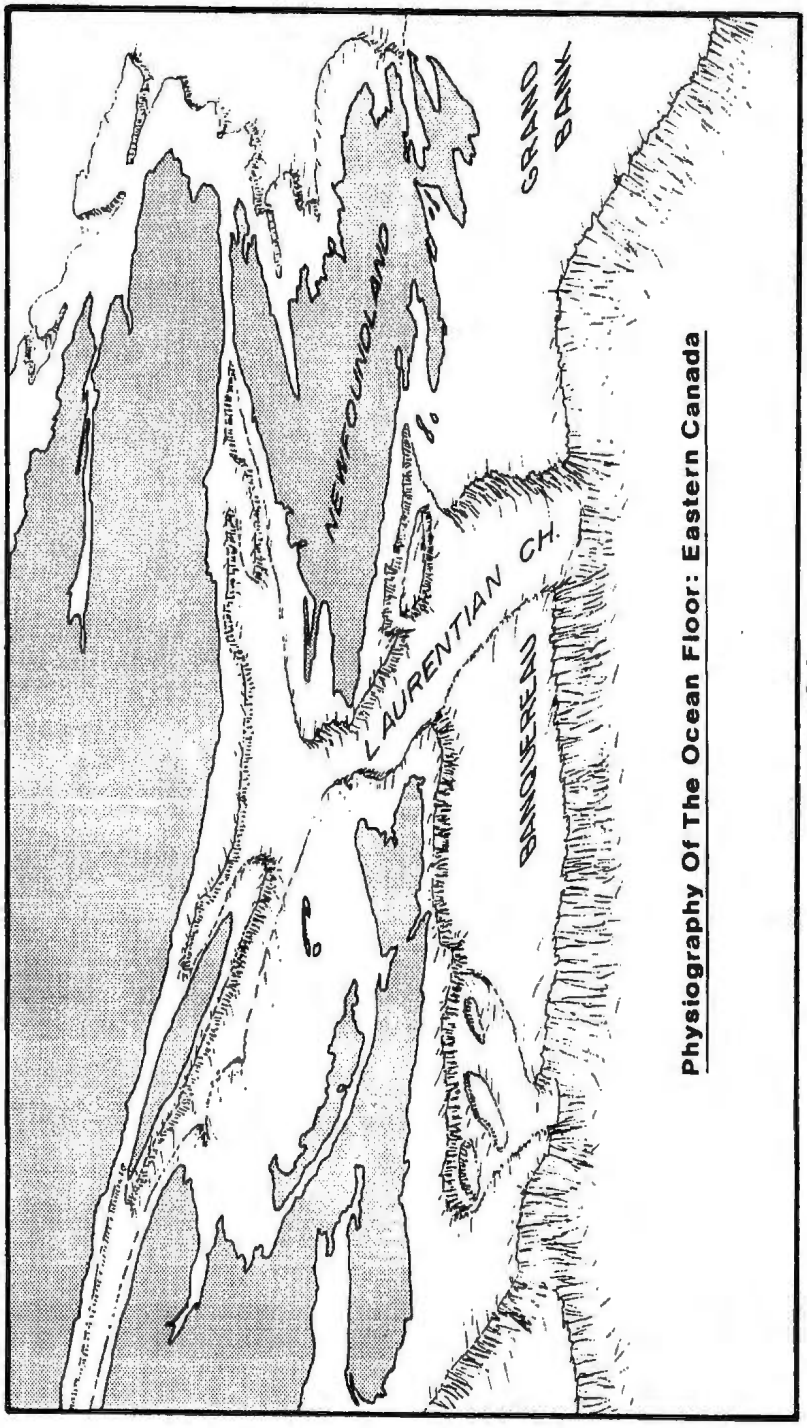
The total area of ice-floes visited by harp and hood seals at the "Front" each spring varies from year to year. While the land masses of Labrador and the Great Northern Peninsula to the west, and Notre Dame and Bonavista Bays to the south, clearly delimit the western, and to some extent, southern boundaries of this area, the eastern and northern limits are quite vague in that they are determined by the outer edge of the ice-floes in any

given year. Although there will be considerable variation in terms of total ice cover on a day-to-day and year-to-year basis, their total area is usually quite extensive. In 1873, the Rev. Moses Harvey attempted to illustrate the massiveness of these ice-fields when he wrote:

> Some idea may be formed of the immense ice-covered area in which our sealers plough their way, by supposing that the German ocean, the English channel, and the Irish sea were blocked up with ice-floes, and that a traveller might start from France and walk, via England, Ireland and Scotland to Norway over the ice. (Harvey 1873:254)

The physiography of the continental shelf, in this area, is such that large areas of relatively shallow water, primarily lying over extensions of the many northern peninsulas (Figure 3-1), provide feeding grounds well within the diving range of mature harp and hood seals.

Surface movement is completely dominated by the Labrador Current (Figure 3-2) which "receives its energy from the Baffin Land and the West Greenland Current, supplemented by the flow from Hudson Bay and the Foxe Basin through Hudson Strait." (Hachey 1961:49) Since the rotation of the earth causes the current to be deflected to the right, the westward part of the Labrador Current flows shoreward along the coast of Labrador and the east coast of Newfoundland (Templeman 1966:23). The seasonal movement of sea ice in this region, then, is southward along the shores of the island.



Physiography Of The Ocean Floor: Eastern Canada

Figure 3-1

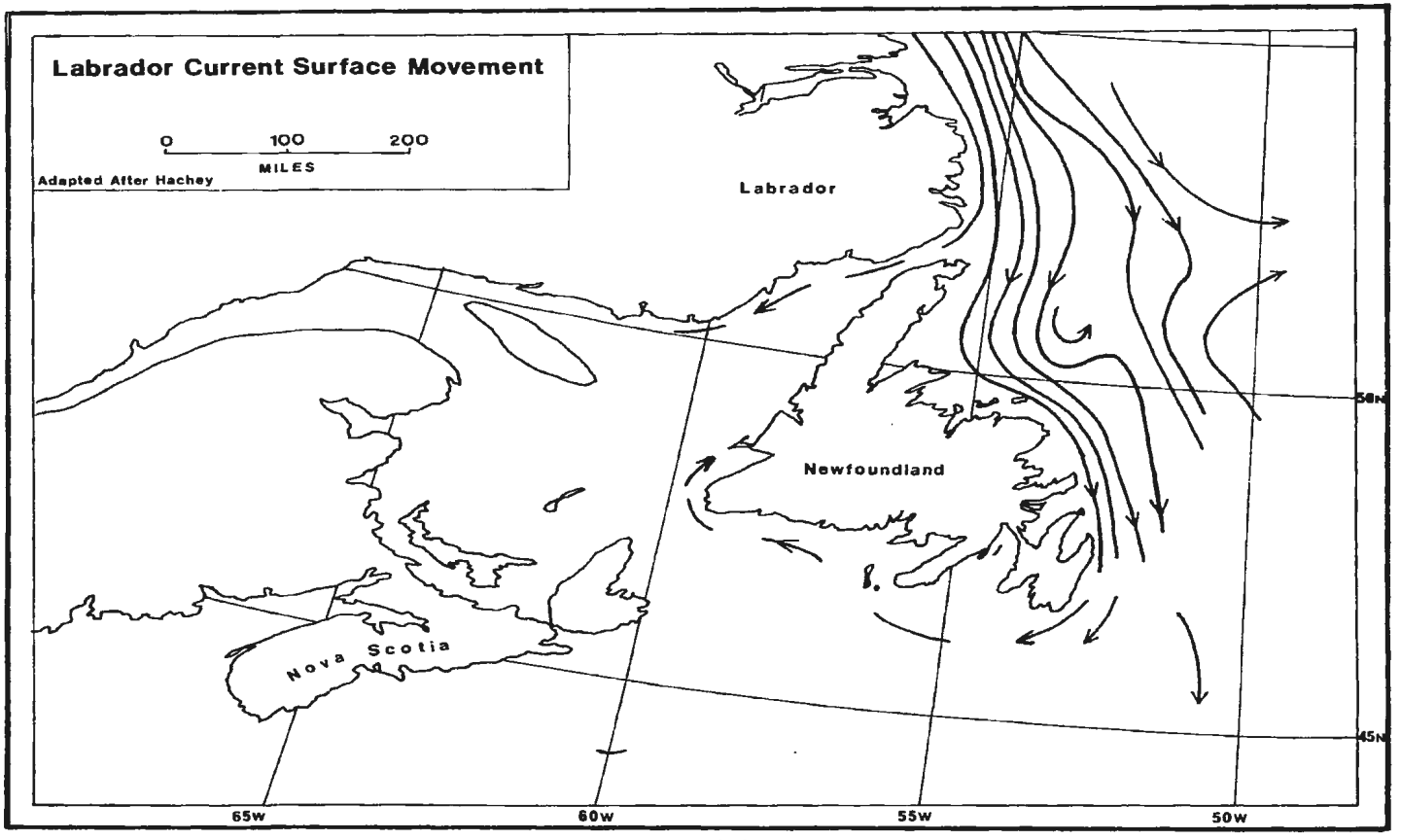

Labrador Current Surface Movement
0
100
200
MILES
Adapted After Hachey
Labrador
Newfoundland
Nova Scotia
58N
45N
65w
60w
55w
50w

Figure 3-2

CLIMATE

The latitudinal position of Newfoundland and southern Labrador places the ice-fields at the "Front" within the mean paths of the eastward moving, mid-latitude, low-pressure cells. While the counter-clockwise movement of air around these areas of depression will provide winds from all points of the compass, the wind roses in Figures 3-3a-c show that westerly components prevail.

Wind direction and strength vary considerably on a day-to-day basis with each wind imposing its own unique effect on ice movement. This has been long recognized, as demonstrated by Carroll's description of wind direction and resulting ice conditions 100 years ago:

> There is no wind that blows that will break up the whelping ice equal to a strong S.E., let the different northern bays be ever so deep inland, S.E. wind will be sure to break up the ice, west wind will blow it off the land, N. and N.E. wind will string it along, S. tide will separate it. (Carroll 1873:21)

The prevailing wind, then, is the single most important component of the natural environment in terms of the day-to-day operation of a sealing vessel. Prowse, for example, records a letter dated April 6th, 1862, written by a Captain E. White, of the sailing vessel Evanthes, to Job Brothers in St. John's. In this letter he noted that as a result of prevailing winds blowing out of the north-northeast and east-northeast, "The young harps are all in

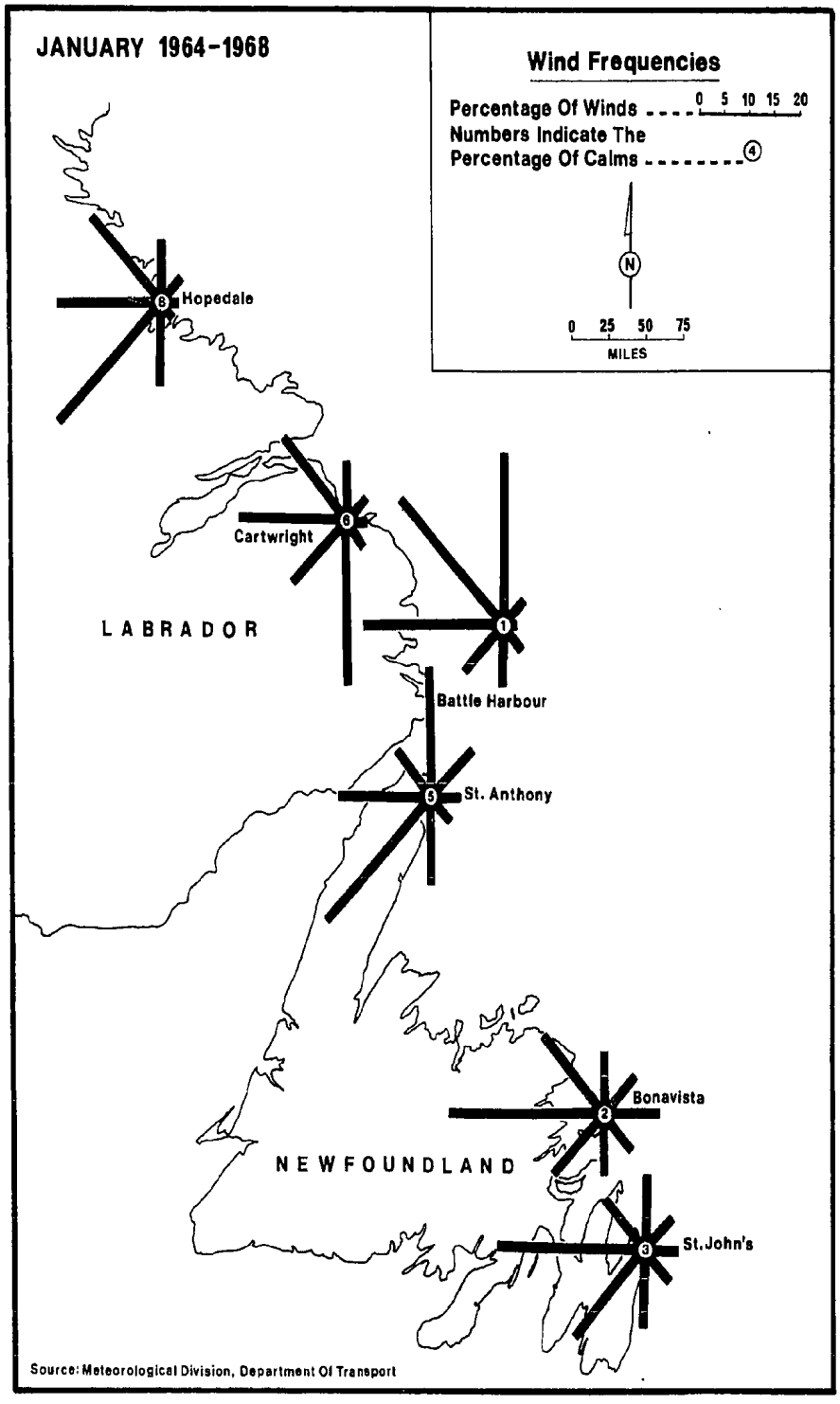

JANUARY 1964-1968
Wind Frequencies
Percentage Of Winds 0 5 10 15 20
Numbers Indicate The
Percentage Of Calms 4
N
0 25 50 75
MILES
Hopedale
Cartwright
LABRADOR
Battle Harbour
St. Anthony
Bonavista
NEWFOUNDLAND
St. John's
Source: Meteorological Division, Department Of Transport

Figure 3-3a

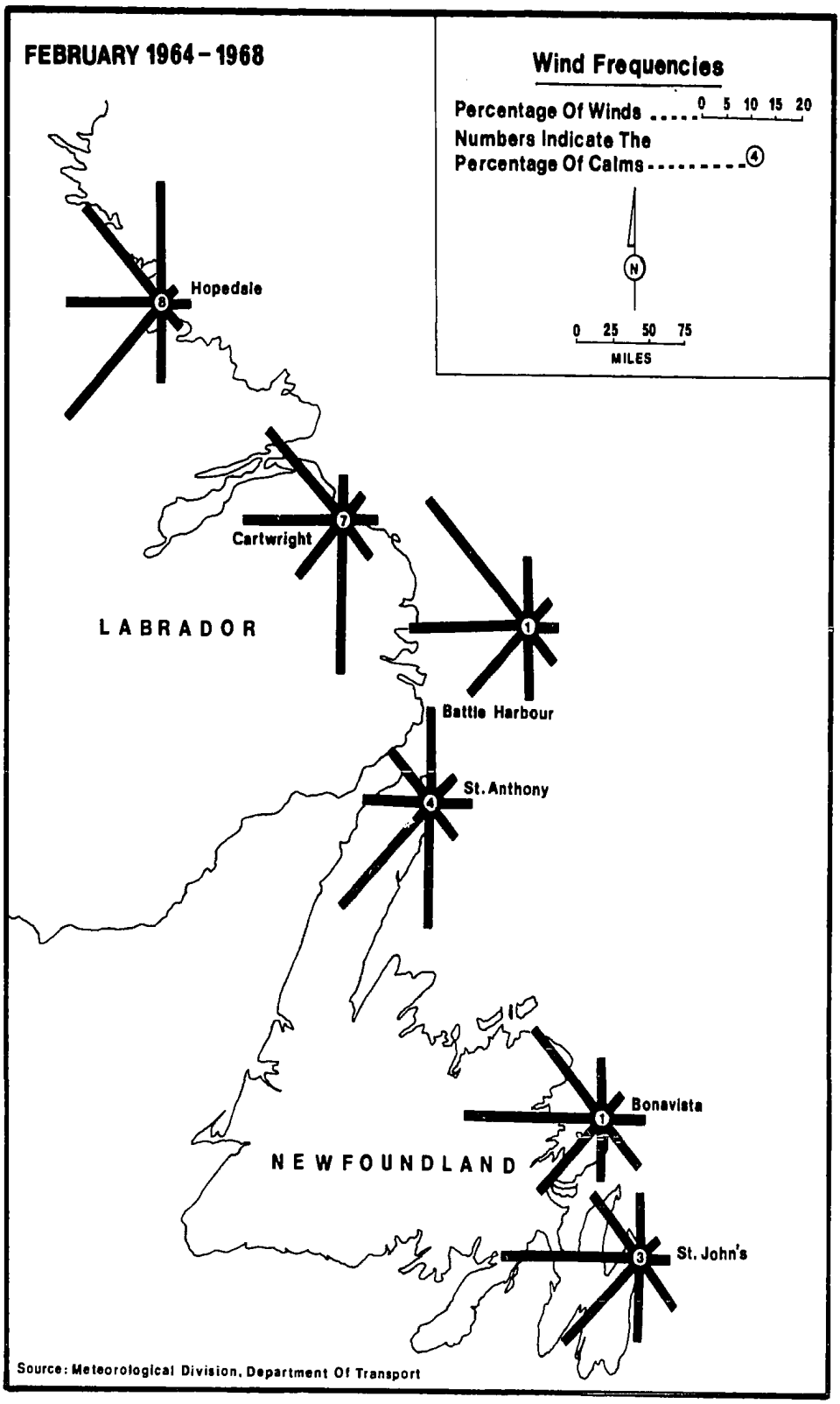

FEBRUARY 1964 - 1968
Wind Frequencies
Percentage Of Winds 0 5 10 15 20
Numbers Indicate The
Percentage Of Calms 4
N
0 25 50 75
MILES
Hopedale
8
Cartwright
7
LABRADOR
1
Battle Harbour
St. Anthony
4
Bonavista
1
NEWFOUNDLAND
St. John's
3
Source: Meteorological Division, Department Of Transport

Figure 3-3b

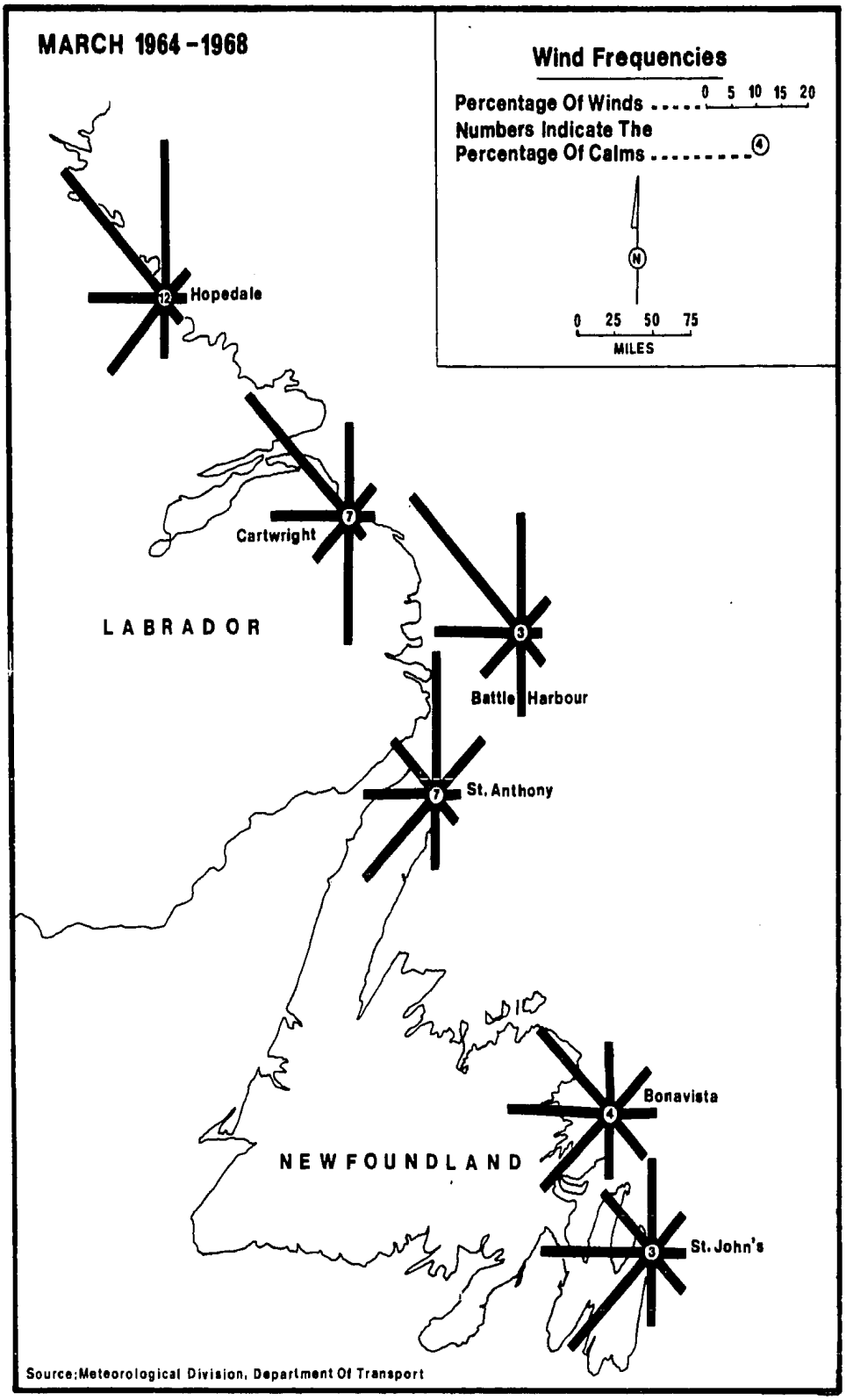

MARCH 1964 - 1968
Wind Frequencies
Percentage Of Winds 0 5 10 15 20
Numbers Indicate The
Percentage Of Calms ..... (4)
N
0 25 50 75
MILES
12
Hopedale
7
Cartwright
LABRADOR
3
Battle Harbour
7
St. Anthony
4
Bonavista
NEWFOUNDLAND
3
St. John's
Source: Meteorological Division, Department Of Transport

Figure 3-3c

Green Bay and White Bay, the vessels cannot enter more than half a mile in the jam of ice, and then they subject themselves to damage and loss from the fearful sea." (Prowse 1896:492) These same winds inspired an editorial in the April 7th, 1862 edition of the Newfoundlander (a St. John's newspaper) which lamented the

> ...sad prospects of our Seal fishery presented to us both by the news now received everyday, and by the incessant prevalence of adverse winds. The obstinacy of the northeaster has not abated one jot since we last wrote - indeed this fierce wind would seem at times to renew its assaults with freshened vigour and more pitiless contempt of every consequence to ensue. Each day brings intelligence of vessels lost... (Newfoundlander, April 7th 1862).

The essence of the cyclonic-anticyclonic control of weather is its irregularity or non-periodic character (Trewartha 1968:213). This instability has constituted one of the major environmental hazards for the individual sealer, for the greatest loss of life throughout the history of the Newfoundland seal fishery can be attributed to the suddenness with which a blizzard is able to overtake a crew on the ice, thus separating the sealers from the relative safety of their vessels.

Because of their east coast, mid-latitude position Newfoundland and Labrador experience colder winter temperatures than might otherwise be expected of a marine environment. It is this factor which has helped contribute to the formation of vast quantities of local ice along the northeastern seaboard.

ICE FORMATION

Of all the environmental variables which affect the pursuit of harp and hood seals off the coast of Labrador and northeastern Newfoundland during late winter and early spring, the single most important component is the availability and total area of suitable whelping ice. The importance of all other elements is determined by the degree of influence each has on the formation, distribution and nature of this ice in terms of how they determine the sealers' ability to locate the whelping patches before they disperse.

These ice-fields are composed of local, or first-year, ice; Arctic ice; and ice-bergs. Figure 3-4 illustrates that the temperature at which sea water will freeze is controlled, in part, by its degree of salinity. Thus, with the commencement of winter, ice formation occurs in the protected coastal bays and inlets where the water is less saline (Figure 3-5) and where there is less wave action. Figure 3-6 indicates that average monthly temperatures along the coasts of Labrador and northeastern Newfoundland have usually fallen below the freezing point by January and remain there until April. The air temperature, therefore, is low enough to give rise to ice formation even on salt water if other factors combine to make it possible, and to preserve ice that may have formed further north and drifted southward into the area.

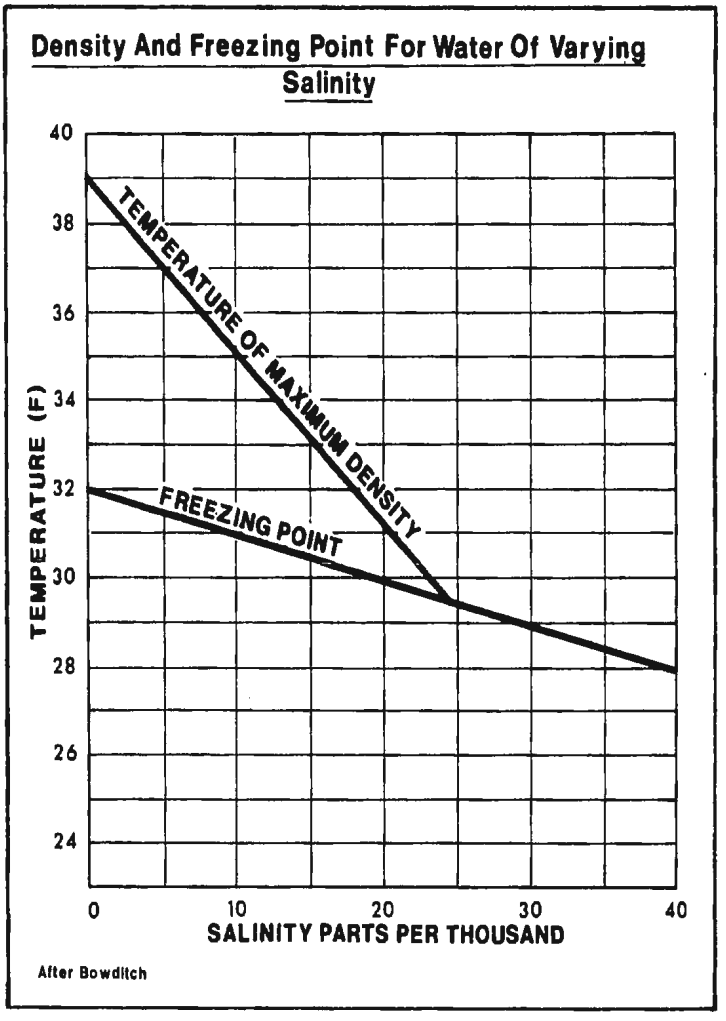

Density And Freezing Point For Water Of Varying Salinity
40
38
36
34
32
30
28
26
24
TEMPERATURE (F)
TEMPERATURE OF MAXIMUM DENSITY
FREEZING POINT
0
10
20
30
40
SALINITY PARTS PER THOUSAND
After Bowditch

Figure 3-4

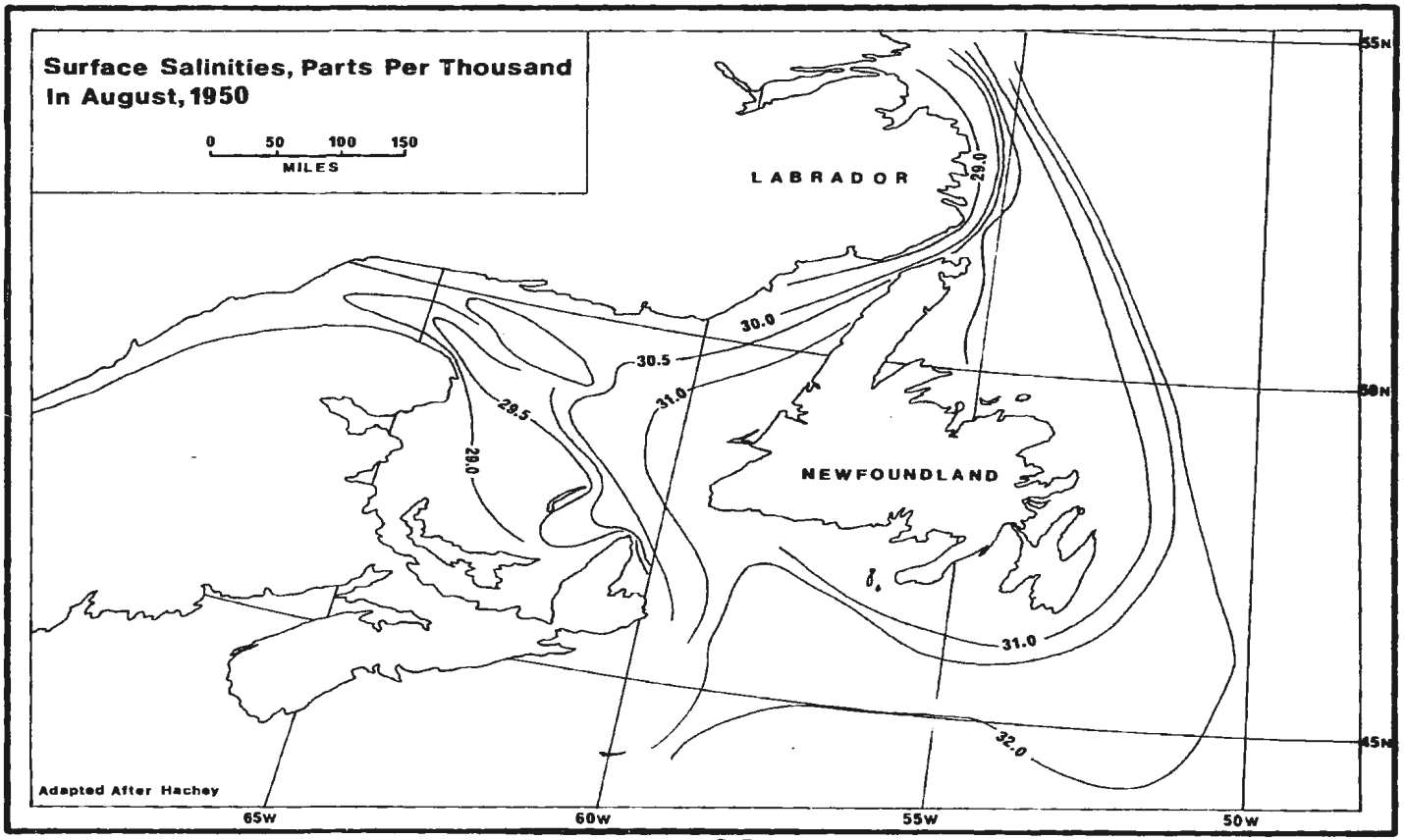

Surface Salinities, Parts Per Thousand
In August, 1950
0 50 100 150
MILES
LABRADOR
NEWFOUNDLAND
29.0
30.0
30.5
31.0
28.5
28.0
31.0
32.0
Adapted After Hachey
65W
60W
55W
50W
55N
50N
45N

Figure 3-5

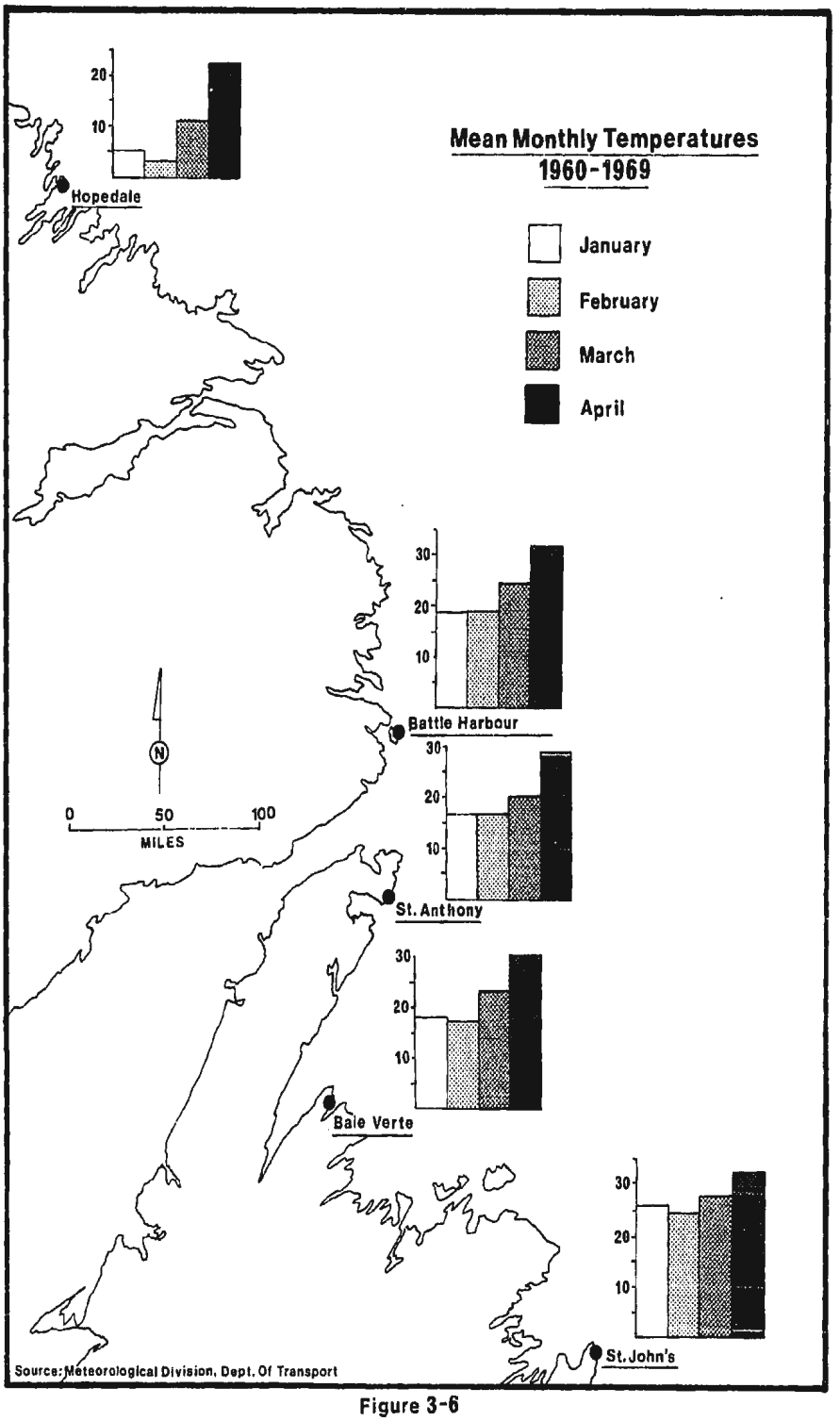

Mean Monthly Temperatures
1960-1969
January
February
March
April
Hopedale
Battle Harbour
St. Anthony
Bale Verte
St. John's
20
10
30
20
10
N
0
50
100
MILES
Source: Meteorological Division, Dept. Of Transport

Figure 3-6

Local ice first occurs along the northernmost parts of the Labrador coast. As this ice is moved offshore by winds and currents the protection offered by the leads and lakes of open water that form between the ice-floes further contributes to the constant growth of the pack-ice. The ice which forms in the northern bays of Newfoundland at a later date initiates further growth and expansion of these ice-fields as they drift southward, so that the northeastern coast of the island is often blockaded during February, March and April.

It is this local ice which is favored by the harp seals, and its approximate thickness (Figure 3-7) is such that they are able to penetrate it, using breathing holes (Plate 3-1), to a considerable distance from the outer edge. Consequently, the territory sealers have had to search in their attempts to locate the whelping patches is often quite extensive.

In the area off the coasts of Labrador and northeastern Newfoundland sea ice of local origin is joined by drifting floes and bergs from Arctic seas and glaciers (Hachey 1961:73). The Arctic floe-ice is usually more than one year old and is consequently much thicker than local, first-year ice (Figure 3-7). Rafting and pressure ridges (Plate 3-2) also make Arctic ice more difficult to navigate. Not surprisingly, the proportion of Arctic ice to local ice varies from year to year. Their relative

TERM	USUAL AGE	USUAL THICKNESS
New Ice	Days To Weeks	<2"
Young Ice	Days To Weeks	2"To 6"
Medium Ice	Days To Weeks	6"To 12"
Thick Ice	Weeks To Months	>12"
Young Polar Ice	>1 To 2 Years	<7'
Arctic Pack	>2 Years	>8'

Usual Characteristic Stages Of Ice Development In NAVOCEANO-WMO Terminology

After Wittman And MacDowell

Figure 3-7

Breathing Holes; Harp Seals

Plate 3-1

Pressure Ridges And Rafted Ice

Plate 3-2

positions, however, seldom change, as the Arctic floes are invariably located to the east and seaward of the local ice.

The differences between ice types and the effects each has on the movement and location of the two principal seal stocks have been relatively well known since the introduction of larger vessels in the seal fishery. In 1874, for example, a British naval hydrographer noted that:

> Harp ice is the next in point of thickness, and is generally rafted ice made on the Labrador shore, while the heaviest, or true Arctic ice, large hummocks and heavy pans, is the favourite place of resort for Hoods. (Maxwell 1874:266)

THE ICE-FIELDS AT THE "FRONT"

In response to the general southward drift of surface currents and the prevalence of offshore westerly winds, the seasonal growth and movement of sea ice on the "Front" is generally away from the land in a southerly and southeasterly direction. In order to give an indication of the total area the sealing fleet could conceivably have to search in their efforts to locate the whelping patches, a series of maps has been constructed to show the seasonal growth; the rate of the growth; variability from year to year; and the degree of variation which could be expected in the location of the ice-fields within the same season.

Ice surveillance on a scheduled and planned basis,

making extensive use of aircraft, is a post-World War II phenomenon. Even as late as 1954, Forward, in his analysis of ice-distribution in the Gulf of St. Lawrence, noted that "Ice conditions in the northern part of the area [the Gulf], including the Strait of Belle Isle, and in harbours, are not treated in detail because the available ice reports refer chiefly to the open areas of the gulf." (Forward 1954:45) In 1954, the Meteorological Branch of the Department of Transport in Ottawa was made responsible for ice reconnaissance and ice forecasting as a supplementary aid to navigation in Canadian waters. It was not until 1959, however, that a comprehensive program, which included the coasts of Labrador and northeastern Newfoundland, was implemented. Further to this, a constant format (thus facilitating yearly comparisons and analysis of trends) was not incorporated in the publication of the annual reports until after 1964 (Noble:Foreword to Ice Summary and Analysis: Eastern Canadian Seaboard, 1964). All of the following maps, then, are based upon data covering the five-year period between 1964 and 1968 inclusive. While the period examined is not sufficient to provide valid averages, the overall seasonal movement and extension of ice, in addition to the differences which occur within the five-year period, do permit certain generalizations to be made which can give a reasonable indication of the natural environmental conditions the sealing vessels have had to

contend with throughout the nineteenth and twentieth centuries.

Figure 3-8 illustrates the growth and expansion of sea ice (at least 4/10s cover) for five days at two-week intervals in 1967. This year best represents the overall median for the five-year period selected. As can be seen, the general formation and movement of ice off the coasts of Labrador and eastern Newfoundland is towards the south and east. Figures 3-9a-f show that, while the extent and rate of growth vary from year to year, the seasonal movement follows the same approximate pattern.

It can readily be seen in Figure 3-10 that the Labrador Coast and Strait of Belle Isle, in addition to a considerable portion of the Great Northern Peninsula, have usually been blockaded by January 15th. Throughout late January and early February the ice pack increases in area and its movement is southerly, and eastward, so that by February 26th the northeast coast of Newfoundland as far south as Bonavista Bay, has been enclosed four years out of five. By mid-March the floes are in the approximate vicinity of St. John's and the ice-fields have usually reached their maximum extension.

Figures 3-9e and 3-9f give an indication of the potential area of the ice pack during the month of March when the harp and hood seals have formed their whelping

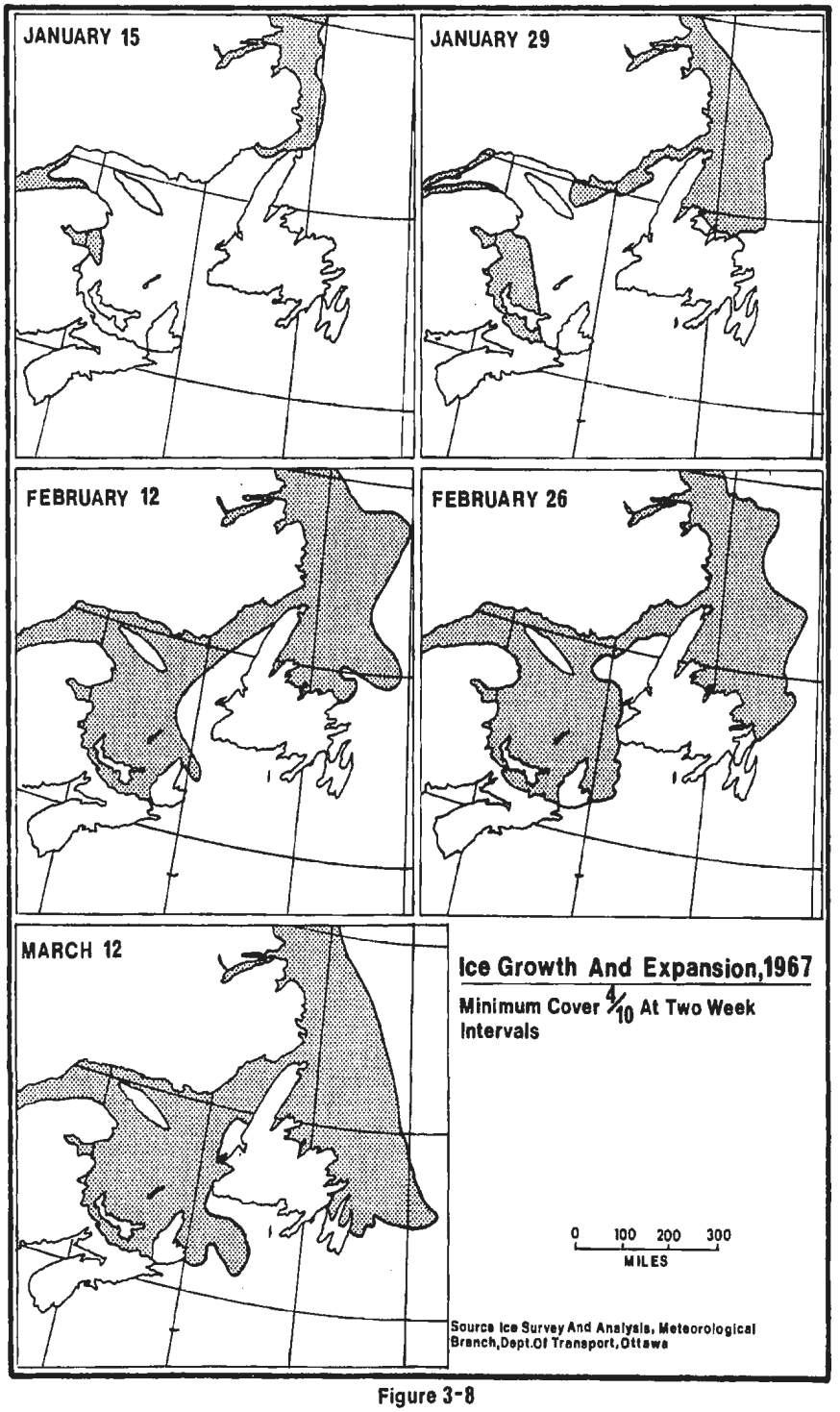

JANUARY 15
JANUARY 29
FEBRUARY 12
FEBRUARY 26
MARCH 12
Ice Growth And Expansion,1967
Minimum Cover 4/10 At Two Week Intervals
0 100 200 300
MILES
Source Ice Survey And Analysis, Meteorological Branch, Dept. Of Transport, Ottawa

Figure 3-8

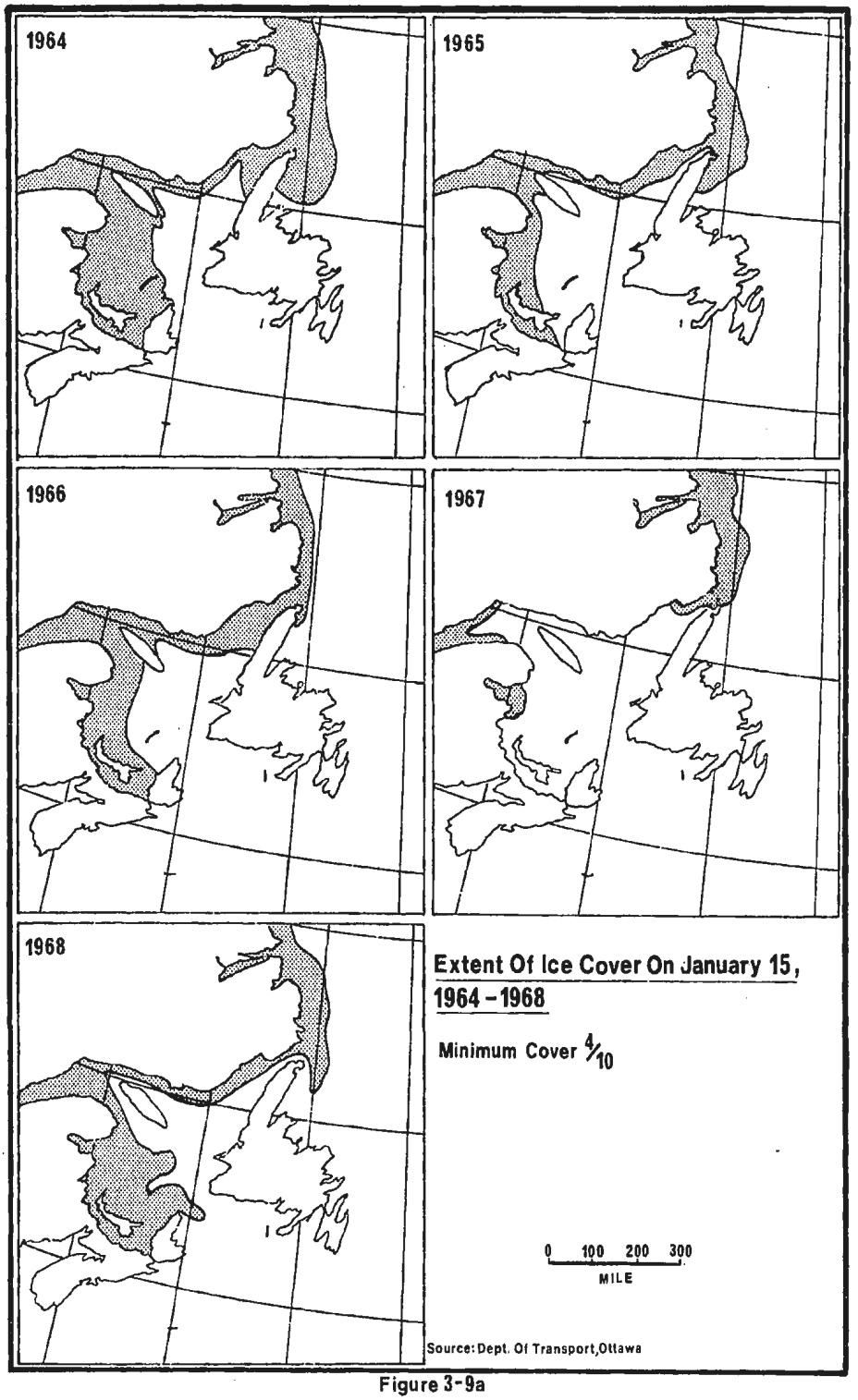

1964
1965
1966
1967
1968
Extent Of Ice Cover On January 15, 1964 - 1968
Minimum Cover 4/10
0 100 200 300
MILE
Source: Dept. Of Transport, Ottawa

Figure 3-9a

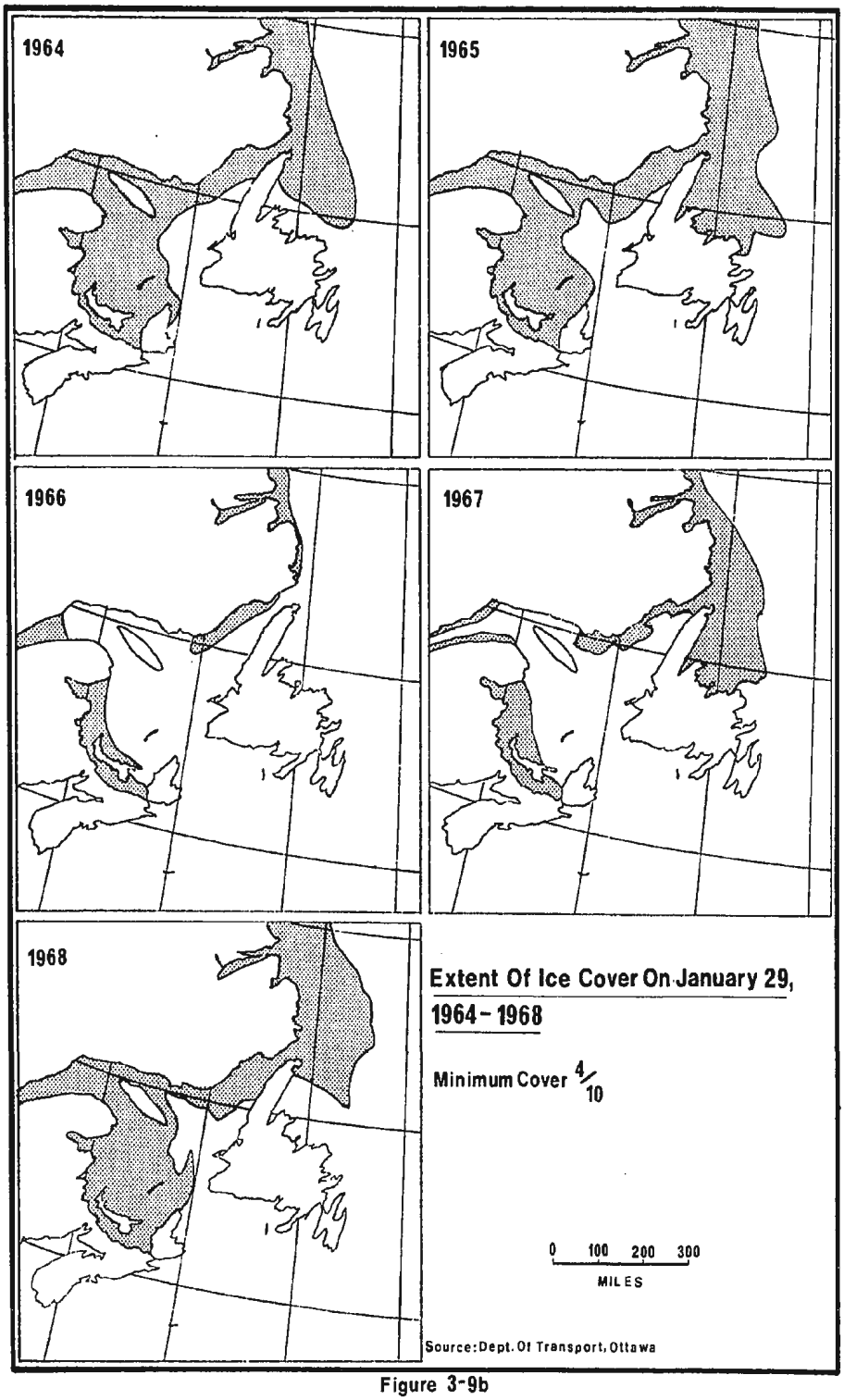

1964
1965
1966
1967
1968
Extent Of Ice Cover On January 29, 1964 - 1968
Minimum Cover 4/10
0 100 200 300
MILES
Source: Dept. Of Transport, Ottawa

Figure 3-9b

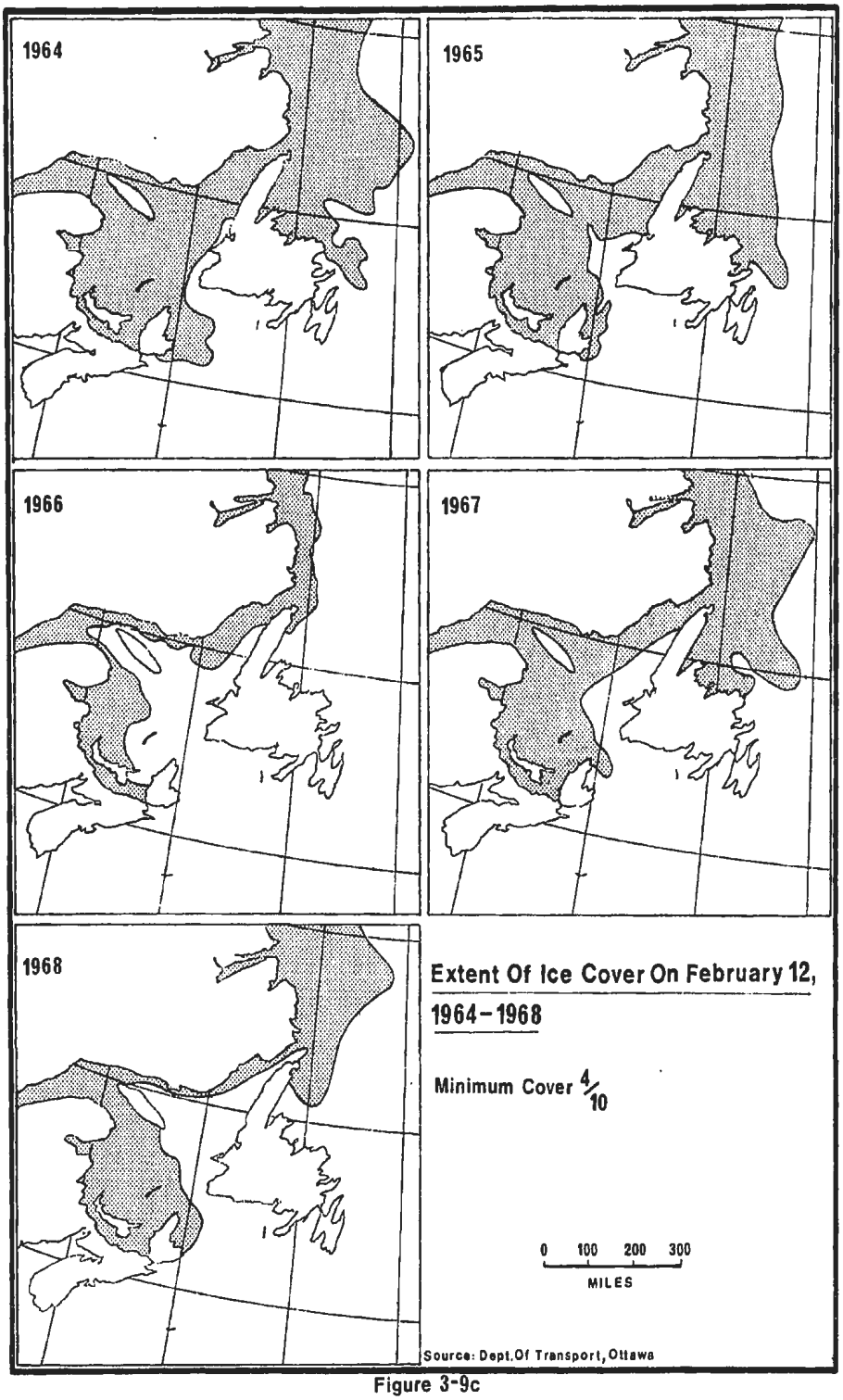

1964
1965
1966
1967
1968
Extent Of Ice Cover On February 12, 1964-1968
Minimum Cover 4/10
0 100 200 300
MILES
Source: Dept.Of Transport, Ottawa

Figure 3-9c

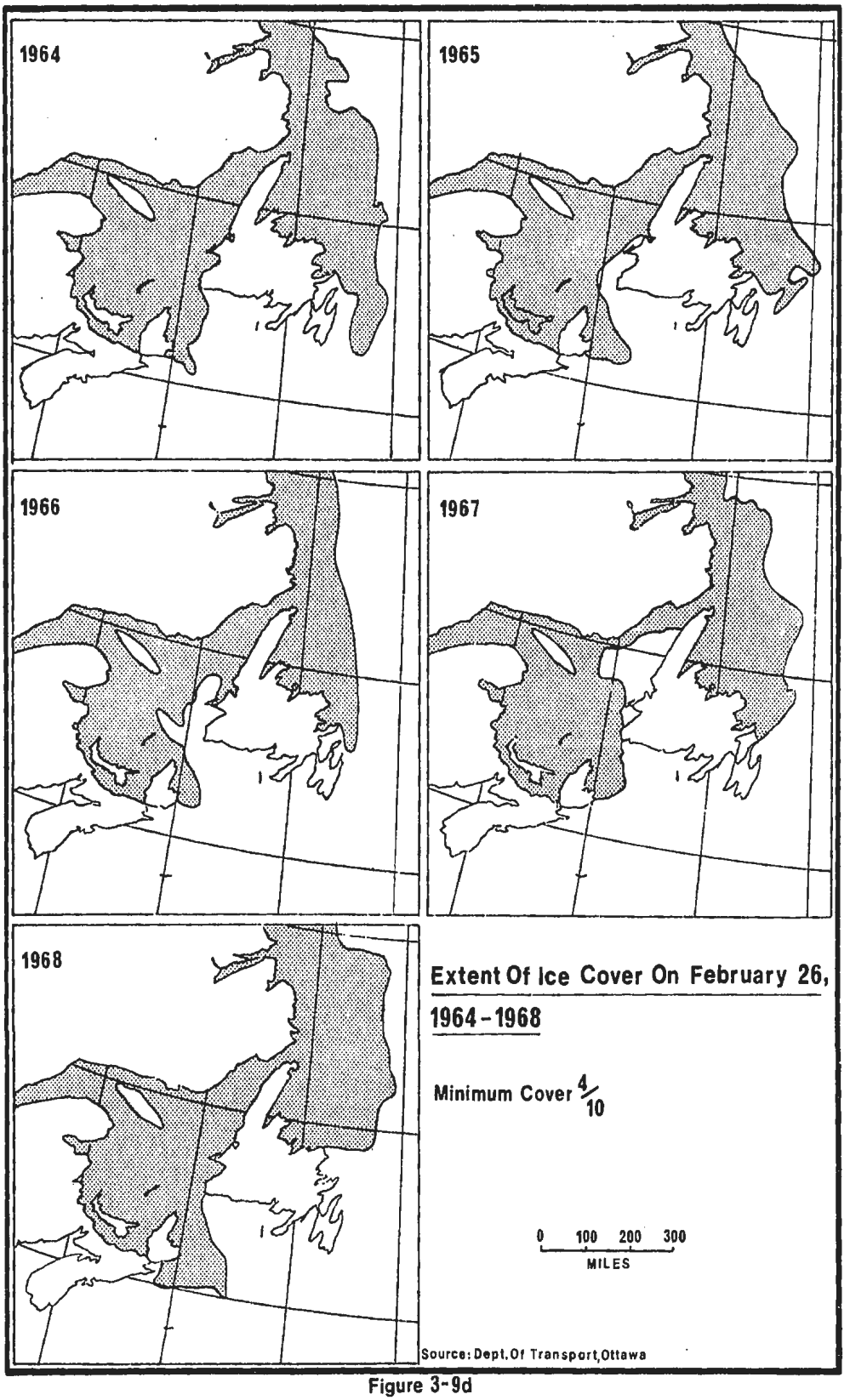

1964
1965
1966
1967
1968
Extent Of Ice Cover On February 26, 1964-1968
Minimum Cover 4/10
0 100 200 300
MILES
Source: Dept. Of Transport, Ottawa

Figure 3-9d

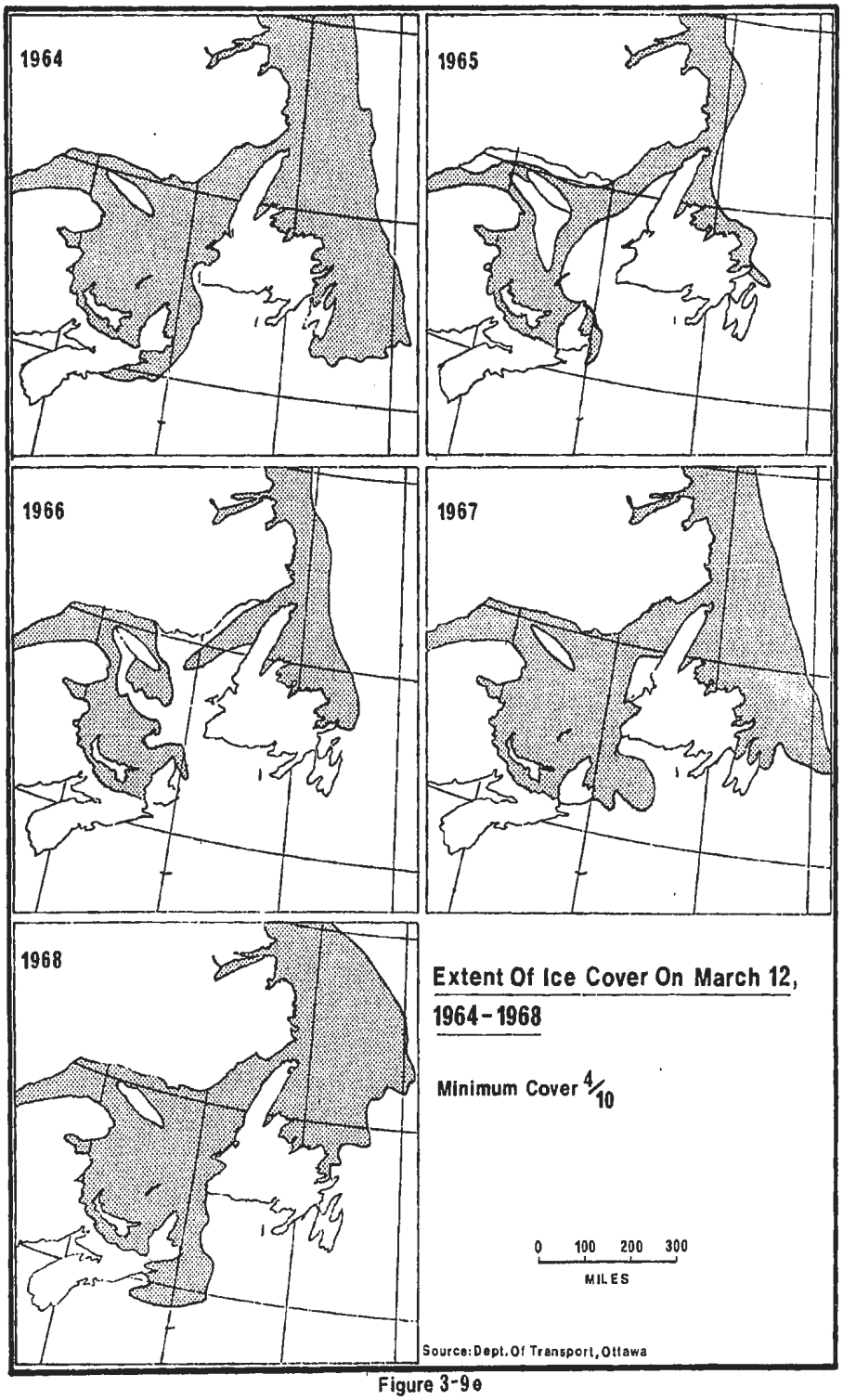

1964
1965
1966
1967
1968
Extent Of Ice Cover On March 12, 1964-1968
Minimum Cover 4/10
0 100 200 300
MILES
Source: Dept. Of Transport, Ottawa

Figure 3-9e

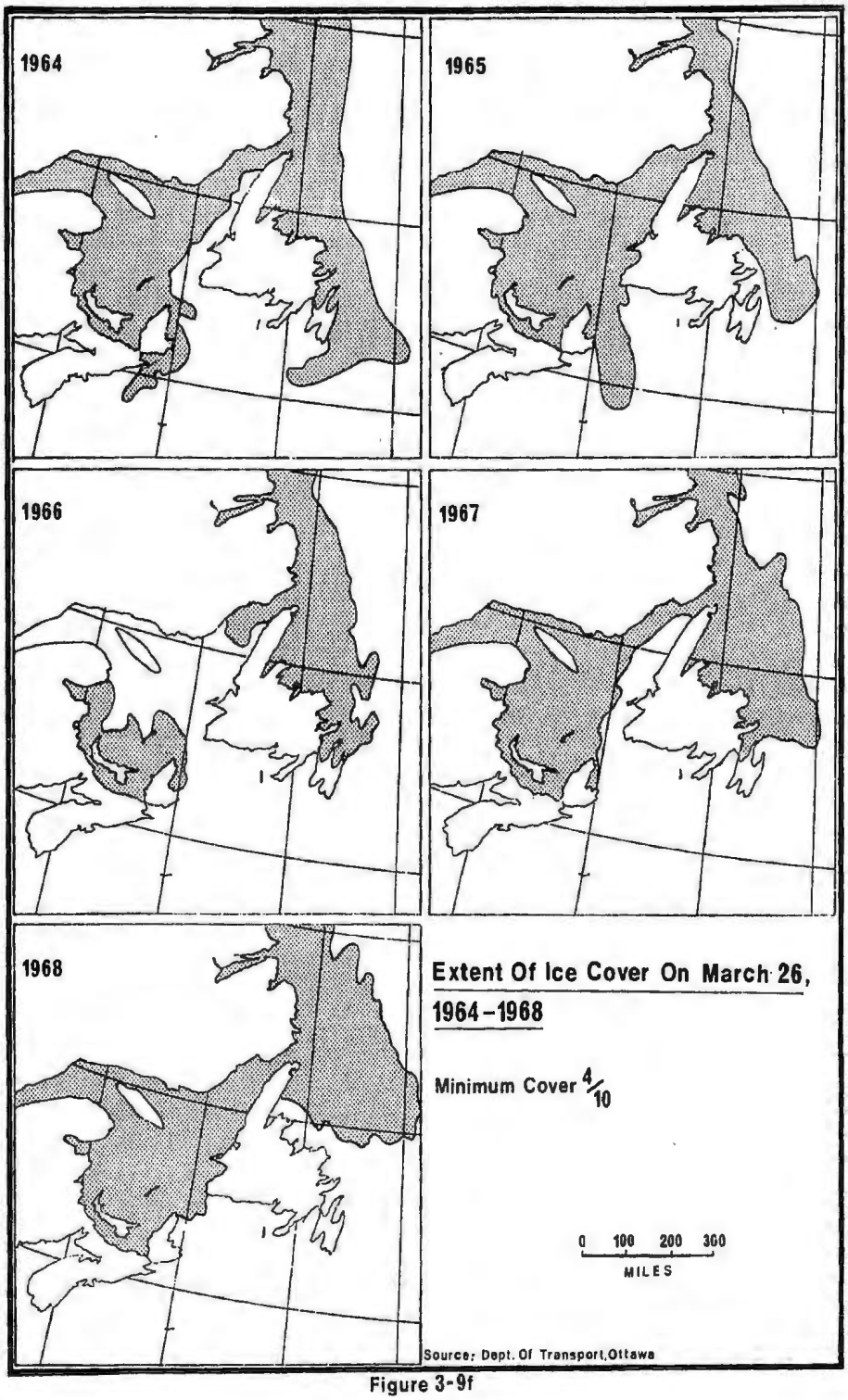

1964
1965
1966
1967
1968
Extent Of Ice Cover On March 26, 1964-1968
Minimum Cover 4/10
0 100 200 300
MILES
Source: Dept. Of Transport, Ottawa

Figure 3-9f

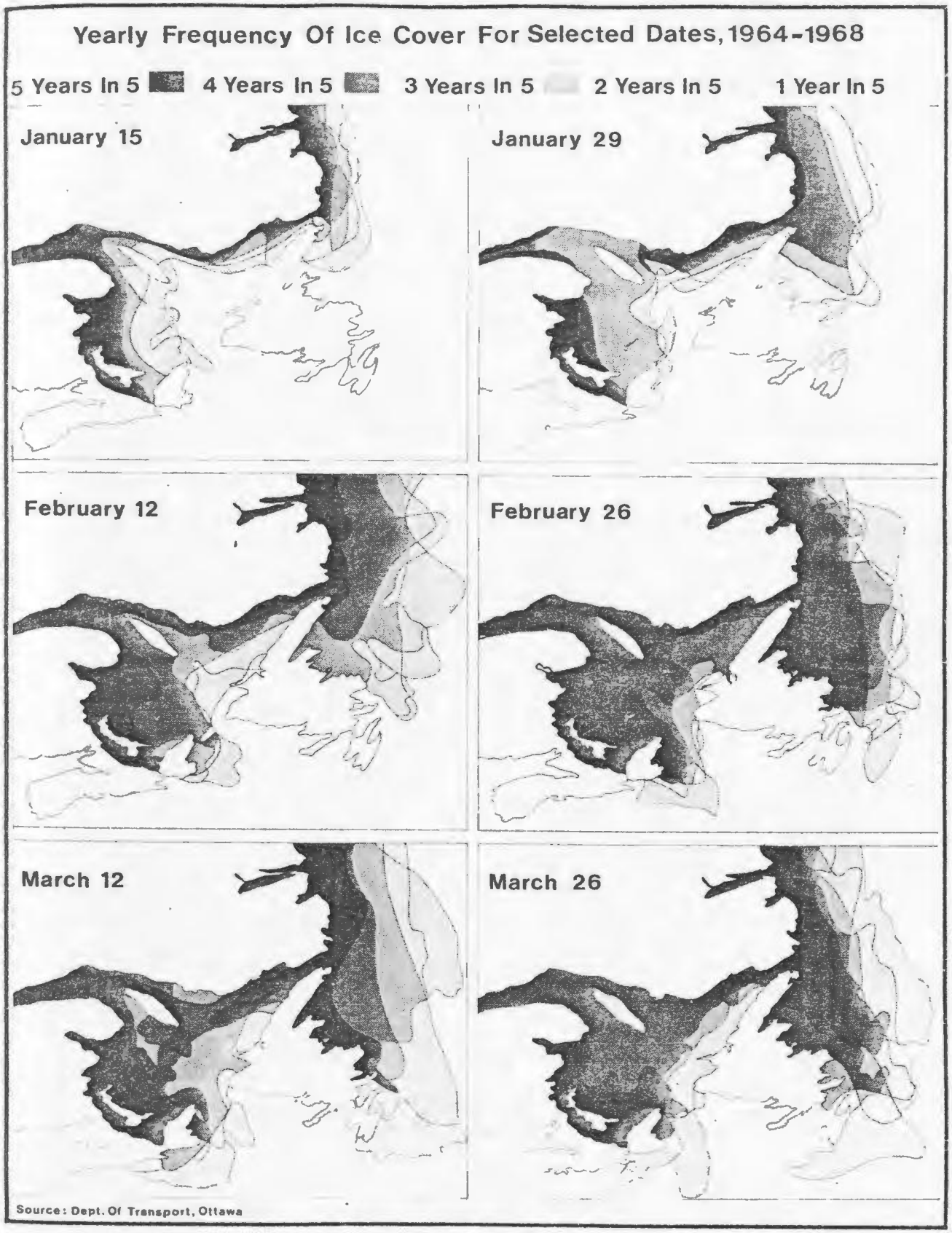

Yearly Frequency Of Ice Cover For Selected Dates, 1964-1968
5 Years In 5
4 Years In 5
3 Years In 5
2 Years In 5
1 Year In 5
January 15
January 29
February 12
February 26
March 12
March 26
Source: Dept. Of Transport, Ottawa

Figure 3-10

patches. The difficulties which the sealing vessels may have had to encounter in their search for these seal herds can be better appreciated when it is realized that the total area to be scoured could conceivably be greater than the area covered by the ice-fields in 1964 (Figure 3-9e). The ease with which sealing vessels may have been able to locate the patches, on the other hand, can be seen in 1965 (Figure 3-9e) when the total area encompassed by the ice-fields was relatively small.

This yearly variation which contributed to the success and failure of the sealing venture, and which is reflected to a large extent in the fluctuating nature of the annual seal catch, can be better illustrated by Figure 3-11. In 1965, a relatively "bad" year, temperatures, currents and winds were such that by February 12th the ice-floes had blockaded the northeast coast of the island as far south as Notre Dame Bay. The following winter was a "good" year and on February 12th, the ice-floes had only moved far enough south to enclose the northern portion of the Great Northern Peninsula. This yearly variation in terms of total ice cover is largely a function of winter temperatures. Consequently, in "good" years the sealing fleet has had to contend with a smaller total area than in "bad" years when colder temperatures cause the ice-fields to be extensive.

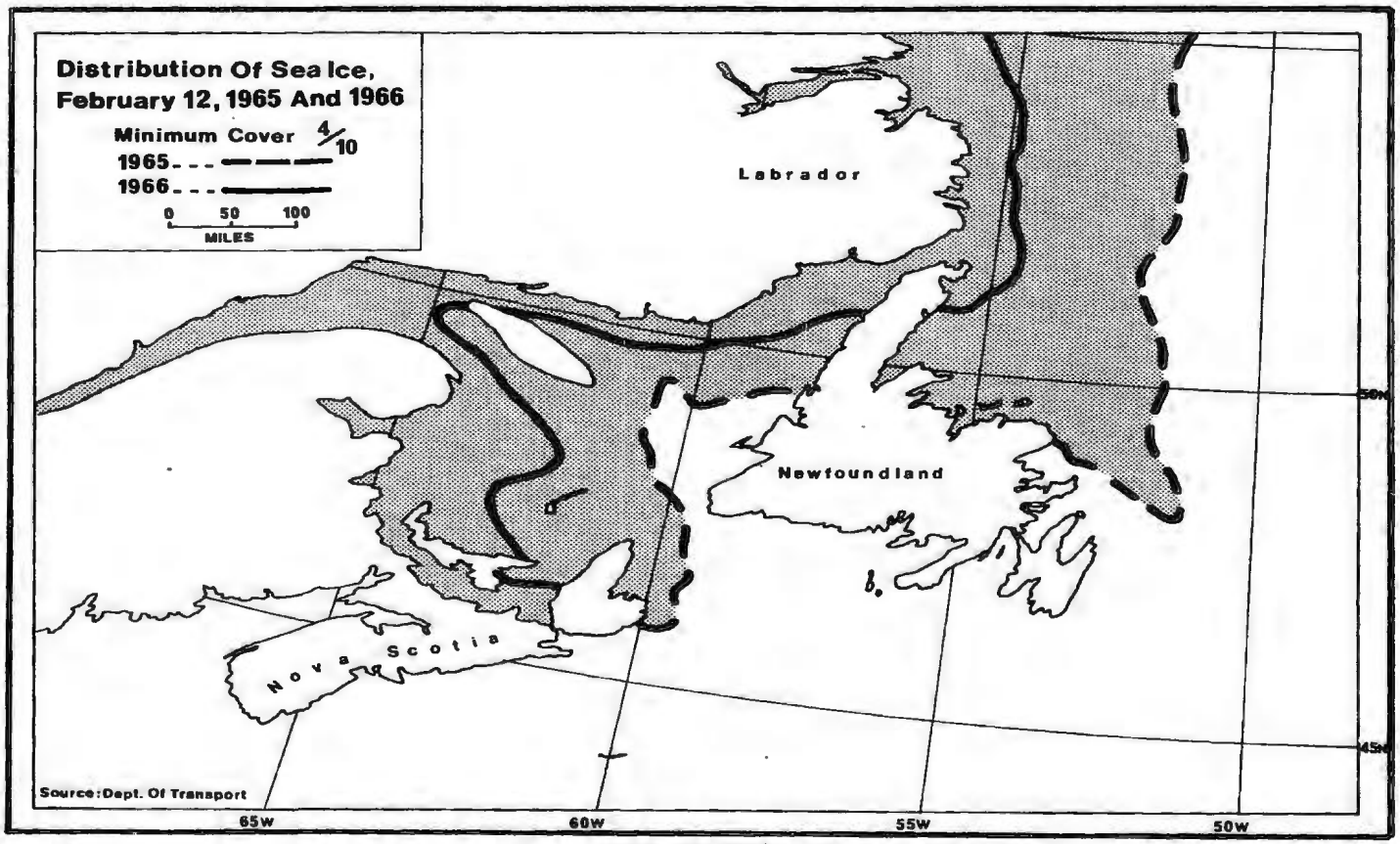

Distribution Of Sea Ice,
February 12, 1965 And 1966
Minimum Cover 4/10
1965
1966
0 50 100
MILES
Labrador
Newfoundland
Nova Scotia
Source:Dept. Of Transport
65W
60W
55W
50W

Figure 3-11

Each year's pattern of ice distribution, then, is a result of temperatures, ocean currents and prevailing winds in that particular season. At the micro-time-scale, however, the largest single determinant of the relative day-to-day location of the ice-fields is the strength, duration and direction of local winds. Figure 3-12a-c illustrates the short term variability with which participants in the seal fishery have had to contend. On February 26th, 1968 (Figure 3-12a), for example, the main body of ice off the northeast coast of Newfoundland was located just north, and to the east, of Notre Dame Bay. The mean surface pressure conditions for the seven-day period between February 27th and March 5th (Figure 3-12b) were such that winds in the Notre Dame Bay area were predominately offshore. The ice map for March 5th, 1968 (Figure 3-12c) shows that as a result of these southerly winds the ice-floes had been driven northward - not withstanding the fact that the surface currents in this area flow southward. It can readily be seen, then, that the variability of the winds is able to affect the southward movement of the whelping patches after they have formed each spring. To complicate conditions even further, the ability of the sealing fleet to locate the seal herds is either hindered or facilitated by the direction in which the ice is being driven. The sealing captains, for example, have always preferred the prevailing winds to be offshore.

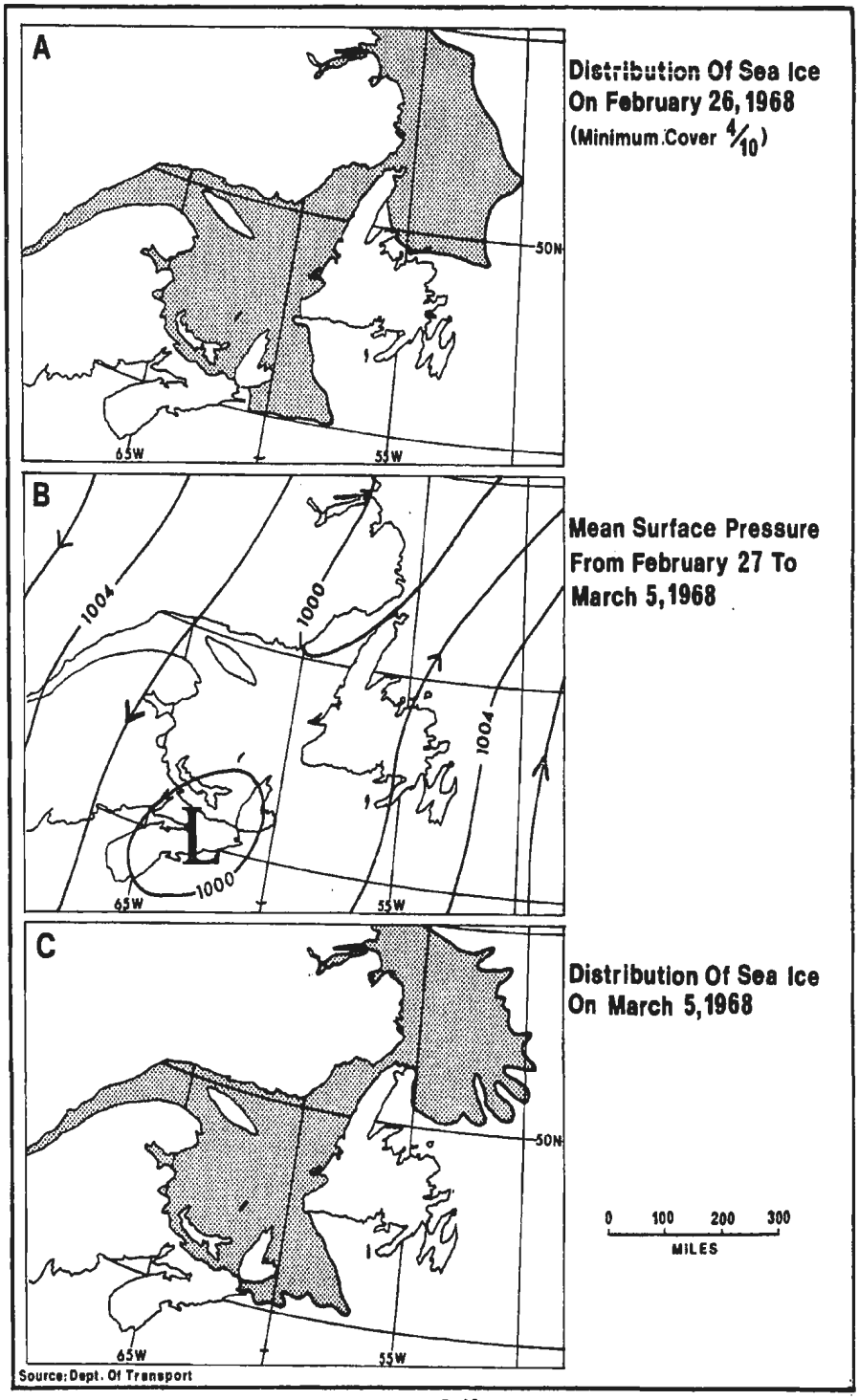


Figure 3-12a-c

In these instances the ice is usually loose, thus permitting them to navigate more freely in their attempts to locate the whelping patches. When the winds are onshore, however, the ice is often compressed into pressure ridges and hummocks, thus reducing the sealing fleet's ability to maneuver accordingly. A good year, then, occurs in those seasons when the ice is not too extensive and the winds are predominately offshore. The sealers' evaluation of what constitutes a poor year, on the other hand, is a spring when the ice is quite extensive and driven onshore by prevailing winds.

After the seal herds have been located, the same environmental components which have dictated the position and shape of the whelping patches have also influenced the sealers' ability to collect the whitecoats before they become beaters and disperse. The winds, currents, and varying nature of the ice-pack cause the breeding lairs to be changed from day to day. Further to this, the ice on which the whelping patches have formed could range from heavy and closely packed to extremely loose in a very short period of time. Consequently, each type of ice-condition, especially in the sailing vessel era before the sealers were better able to cope with the natural environment, required unique strategies and techniques.

The Newfoundland seal hunt, then, was a seasonal phenomenon in the primary exploitive economy of the island, and as such was based upon the peculiar adaptations of the harp and hood seals in their annual life cycle to the occurrence of extensive fields of floe-ice off the coasts of Labrador and northeastern Newfoundland.

The presence of the ice-fields during the spring whelping provided certain coastal settlements of Newfoundland with relatively ready access to a rich seasonal resource and at the same time presented a temporary ice-terrain and sea-scape in which to hunt. This in turn involved difficulties and hazards in both navigation and harvesting of the resource. It was in an environment with these peculiar characteristics, then, that the ships and men of the sealing fleet had to operate. Therefore, if they wished to be successful, or even survive, they had to be able to adapt to the hazards of wind and ice. Their ability to do so depended to a large extent upon the technology at their disposal.

CHAPTER IV

THE TECHNOLOGY

Schon has defined technology as "any tool or technique, any product or process, any physical equipment or method of doing or making, by which human capability is extended." (Schon 1967:1) For the purpose of this study technology may be considered in two of its aspects: resource-converting and space-adjusting. Resource-converting techniques are all those that turn the materials of the physical and the life-products of the biotic world to the satisfaction and needs of men. Space-adjusting technology, on the other hand, shortens the effective distance of travel and transportation and thus permits a more extensive employment of space (Ackerman 1958:26).

The methods and techniques used in the Newfoundland seal fishery have undergone many changes during each technologically innovative or adaptive phase. Consequently, with the introduction of new technology in the form of steam-powered vessels there were many changes in the relative importance of the various components, as well as shifts in emphasis from certain aspects to others.

This chapter, therefore, details the type of equipment used by the industry prior to 1863. The steamer operation is then similarly reconstructed with emphasis on how it differed from the sailing vessel era so that the effects which steam had on the industry may be more clearly analyzed. In so doing, this chapter will provide the background for the following three chapters which discuss the significance of geographical changes that occurred within the industry in response to technological innovation.

THE SAILING VESSELS

It has been noted that the sailing craft employed in the seal fishery became progressively larger throughout the nineteenth century. Originally the vessels had been very small, often less than thirty tons, and

> In fact there was for a long period a prejudice of employing vessels over sixty tons, as they were considered too large and too heavy to prosecute the fishery successfully, the prejudice existed even so late as the year 1825, when two vessels of 120 tons each were built in Conception Bay, expressly for the seal fishery. (Governor LeMarchant C.O. 194:129, Report to Earl Grey, May 4, 1848:147)

Anspach, writing in 1819, noted that the schooners which cleared for the "Front" ranged from forty to seventy-five tons (Anspach 1819:421). Thereafter the average size of vessel increased as the success of these larger ships removed the prejudice that the larger craft could not be

maneuvered as effectively in ice (Chafe 1924:22). By 1830 the debate had been completely resolved in favour of the larger vessels and in 1857, just six years prior to the introduction of the first steamers, several of the sailing vessels were of 200 tons burden (Hatton and Harvey 1883: 248).

While this trend can be partially explained by such considerations as free enterprise and the accumulation and subsequent reinvestment of capital in larger ships, or the realization on the part of the owners that larger vessels could carry a greater contingent of hunters, the single most important factor appears to have been the realization that the larger craft with their extra strength and taller masts were far superior in their ability to navigate in ice. According to Chafe, for example, "The first improvement was to get higher masts to catch the wind in ice." (Chafe 1924:17)

In order to take full advantage of every breeze these sailing vessels were temporarily outfitted for the sealing expedition with square top-sails. The smaller two-masters had extra rigging attached to the foremast which gained them the appellation "Beaver Hat Men", while the larger vessels had top-sails on each of the two or three masts and were known accordingly as "Jack Ass Brigs" (Chafe 1924:17).

For the first two decades of the nineteenth century the sealing fleet usually did not depart until after St. Patrick's Day (March 17th). In 1828, however, Philip Henry Gosse, then an apprentice in Carbonear, wrote in his diary that, "By St. Patrick's Day ... it was a point of honour for all the sealers to have sailed ..." (Gosse 1890:48) In either case the lateness of this sailing date ensured that in most years they would be well aware of the ice conditions to be expected. It also meant that it would be unnecessary for them, if they decided to participate, to penetrate into the "heart" of the ice-floes in order to reach the whelping patches, for by this late date the seal herds would have been carried closer to their shores. If this was indeed the case, navigation was much easier and certainly less hazardous than if they had sailed at an earlier date. This practice, however, did not permit them to harvest the more vulnerable whitecoats which had usually begun to disperse by the end of March and quite often they encountered seal herds that had already been "cut-over" by the European sealers. Consequently, it very quickly became common practice for the Newfoundland sealing vessels to sail on the first of March.

Before the sailing vessels could clear for the ice-fields many modifications had to be made on their hulls. The bows were covered with a hardwood, ideally greenheart (British Guiana timber), but more frequently,

especially in the beginning, local hardwoods such as birch were used. The proportion of each vessel thus covered would vary. In most instances, however, at least three-quarters of the length of the ship extending both above and below the water line was protected in this manner. The bows were further strengthened with iron sheathing. False beams extending the full width of the ship were laid out at approximately eight-foot intervals along the water-line to offset the lateral pressure exerted by the ice. In the larger vessels it was common practice to use two such rows of beams; one set being placed just below the deck while the other provided support at the water line.

The cargo holds also had to be modified to ensure the safety of the vessels prosecuting the seal fishery. The motion of the ship, the heat generated by the pressure of pelts stowed on top of one another, and the natural decaying process would all cause the fat to begin rendering. The instability of such a cargo, especially in the earlier days before preventive measures were taken, often resulted in vessels capsizing if rough seas were encountered on their homeward journey. An example of this was noted by Jukes who reported in 1840 that Captain Furneaux of the 130-ton sailing vessel Topaz had lost a schooner on one of his earlier voyages because he had not taken proper precautions (Jukes 1842:279). By 1830 all sealing vessels had their holds subdivided into "pounds"

(small compartments). This effectively reduced cargo movement and enabled the vessel's center of gravity to remain relatively stationary.

Apart from the necessary changes in rigging noted previously, and the special apparatus used by the sealers when navigating in ice, the only differentiating characteristic of any importance between these sailing craft and the steamers which superseded them was the type of ballast carried. In the sailing vessels rocks and stones (collected throughout the winter months) were stored in the middle pounds so that when the ship reached the whelping patches the side, or "wing" pounds could be loaded first. When these had been filled the ballast in the middle pounds was replaced with pelts as they were brought aboard. This procedure guaranteed that each vessel would have a relatively safe trim at all times. In the case of the steamers, however, the potential length of the voyage, in addition to the high rate of coal consumption when maneuvering in ice, made it necessary to stow extra fuel in the cargo holds. Coal, therefore, was used both as ballast and as a source of power.

Throughout the first half of the nineteenth century, then, the seasonal outfitting of sailing vessels for the seal fishery and the subsequent removal of these precautionary devices - "They wouldn't leave it on because the vessel would be heavier for cod fishing and for sailing"

(Greenham 1971:verbatim) - made a considerable contribution to the overall economy of St. John's and the east coast of the island as far north as Notre Dame Bay. In addition to the income derived directly from participation in the venture and in the preparation for the voyage, inhabitants along this coast were also engaged in shipbuilding, as prior to the 1840s the majority of the ships engaged in the seal fishery had been built locally (Prowse 1896:451).

The seal fishery indirectly acted as a catalyst to the shipbuilding industry in Newfoundland making it larger than it would have been ordinarily. Apart from the continuous need to replace vessels lost each spring, there was also a need to provide stronger craft than vessels that were constructed in Nova Scotia and the New England States whose mariners seldom, if ever, had occasion to use them in ice.

The extravagant profits which could be made in the sealing venture also undoubtedly contributed to the rapid growth in the number of vessels built primarily for the Labrador cod fishery and for local and even foreign trade. This dichotomy of use, in being sealing vessels for two months of the year and otherwise employed for ten, is illustrated by the fact that of fifty ships which cleared for the ice from Harbour Grace in 1867, thirty-six also participated in the Labrador fishery after the sealing voyage had ended. The remaining fourteen vessels carried

supplies and trade goods to Labrador at a later date and were then required to transport dried codfish back to Harbour Grace for export (Ryan 1971:52).

The fact that a disproportionately large number of men were signed on as crew can be partially explained by the desire on the part of the owners to procure as many seals as possible in a situation which was quite often very competitive. Another consideration, however, was the fact that a large crew made maneuvering in ice much easier, thus improving their chances of having a successful voyage.

The departure of the sealing fleet in all of the larger communities was a memorable occasion. The crews were joined by the able-bodied men from the settlement and surrounding area as they cut a channel through the harbour ice. The throng was usually fortified by a plentiful supply of "spirits"; and merriment, singing, and overall good fellowship permeated this activity, giving it a festive mood often consciously encouraged by the vessel owners. Shortis, for example, recalled such a "cutting-out" in his hometown during the mid-1860s "when the British Band was employed..." (Shortis: Evening Telegram, March 1st, 1924)

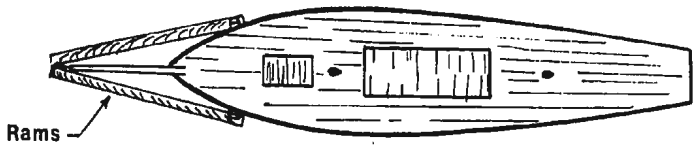
In the smaller communities, however, where there were not as many men to help free the vessels from the harbour, or where the heavier ice conditions in the more northerly settlements made the task more onerous, the ships were usually moored in areas which were easier to sail from.

In Twillingate, for example, the schooners were often kept in Back Harbour because "It was a good place to get out of." (Greenham 1971:verbatim)

After they had cleared port their overall plan of action was to work northward as best they could until they had reached the "Old Cow's Path" - the area lying between the Funks and Belle Isle. Their rate of progress was largely controlled by local ice conditions, for each vessel endeavoured to locate open leads of water which lay in a general northerly direction. When the ice-fields had to be entered they "accordingly crowded all sail, and cracked on with a fresh breeze, urging way now through slowly yielding pans, now sailing gallantly through an open lake of water, and then crashing into a great sheet of ice, splitting it with a mighty fissure, but brought up ourselves all standing and top-gallants set." (Jukes 1842:264) Then the real work began. When the ice was new and only thick enough to retard progress, and when the wind was blowing in a favourable direction, the "rams" were manned. These rams were two round poles of approximately ten inches in the butt and six inches at the other extremity (Greenham 1971:verbatim) that were connected to the bow (one on each side) and joined together beneath the bowsprit (Figure 4-1). The whole apparatus could be raised or lowered by means of a spring tackle (Peddel 1908:6). Using these beams for support (keeping their balance by holding on to

Sailing Vessel Equipped With Rams

Plan



Elevation

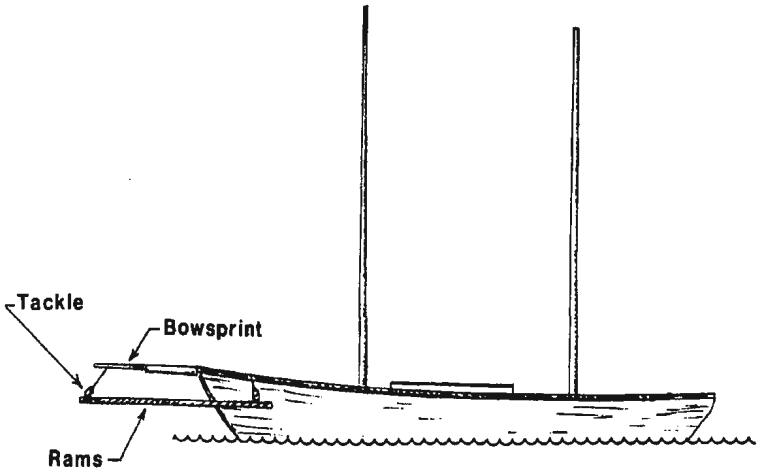


Figure 4-1

bights of rope attached to the bowsprit) the sealers would "jump and dance on the ice, bending and breaking it with their weight, shoving it below the vessel, and dragging her on over it with all their force." (Jukes 1842:262)

When ice conditions warranted, "pokers" were distributed amongst the men. These were large, lightwood poles, six or eight inches in circumference and twelve to fifteen feet long (Jukes 1842:261). They were used to break the ice forward of the vessel. The sealers then used gaffs to lever the broken pieces under the adjoining ice (Clark 1887:482).

By standing in the bow of the vessel the men were also able to use the pokers to fend off loose ice and to help guide the ship into more favourable leads. As the vessels were maneuvered further and further into the ice-fields, the open leads became fewer and the pans of ice progressively gave way to larger sheets which could not be so easily broken and manipulated. Under these conditions all members of the crew were set to work with axes, ice-saws and chisels in order to cut a passage for the vessel. The sealers would then use hawsers to tow the craft along the channel. If circumstances would not permit this, grapple hooks were laid out on the ice ahead of the ship and the crew would then warp the vessel along (Jukes 1842: 262). In this manner they strived "to reach a seal-meadow by sailing or cutting through the intermediate fields of

ice; ..." (Anspach 1819:422)

While the sturdiness of the vessel, in addition to the experience and ability of the captain, was an important factor in determining a vessel's progress, the overall success of a voyage depended to a greater extent on the efforts and energy of the sealers who were motivated by personal pride, reputation, and the promise of greater financial reward. Greene pointed out, for example, that some vessels were more successful than others because they had "the best men, and the hardest-working, showing the sterns of their vessels to the others, who were thus forced to give them best." (Greene 1933:46)

This intensive use of manpower was reflected to some degree in the relationship among the various vessels in the sealing fleet. When one ship's progress was a result of hard labour on the part of its crew, for example, other ships were reluctant to take advantage of their efforts. As Chafe noted, "It was beneath their pride to steer in another man's channel, and when it came to ice saws and rams, it was the hardest worker who won the day." (Chafe 1924:16) In the case of the steamers, however, it was not so much men against men, but rather vessel against vessel, and there was not the same reluctance to use a channel that had been broken by a newer, stronger, and more powerful ship.

Even with their herculean efforts the sailing vessels' chances were still not good, especially in a "hard" season. Therefore, in their attempts to remove as much of the element of chance as possible from the venture, they quite often utilized certain facets of the natural environment to good advantage.

It will be recalled that the overall movement of the pack-ice is in a southerly direction and their attempts to sail north were, in effect, an "upstream battle." In many instances these sailing vessels sought protection under the lee of an island close to the breeding grounds, such as the Funks, where they would wait until the seals

> ... were got either side of them. Until the whelping ice came up, and when there was enough past, they'd let go and come on their own. (Greenham 1971: verbatim)

In 1870, for example, Captain James Murphy remained at Belle Isle until the seals came to him (Shortis 1918:26).

When a ship was in danger of being crushed by the movement of ice due to currents, winds, or ocean swells, sticks were lowered over the sides to act as fenders against the encroaching ice (Bonnycastle 1842:133). To protect the vessel even further a ship's "bed" was often cut into the larger pans (Figure 4-2) and pinnacles of ice were broken up and placed in the water between the sides of the vessel and its berth in the ice (Peddel 1908:7).

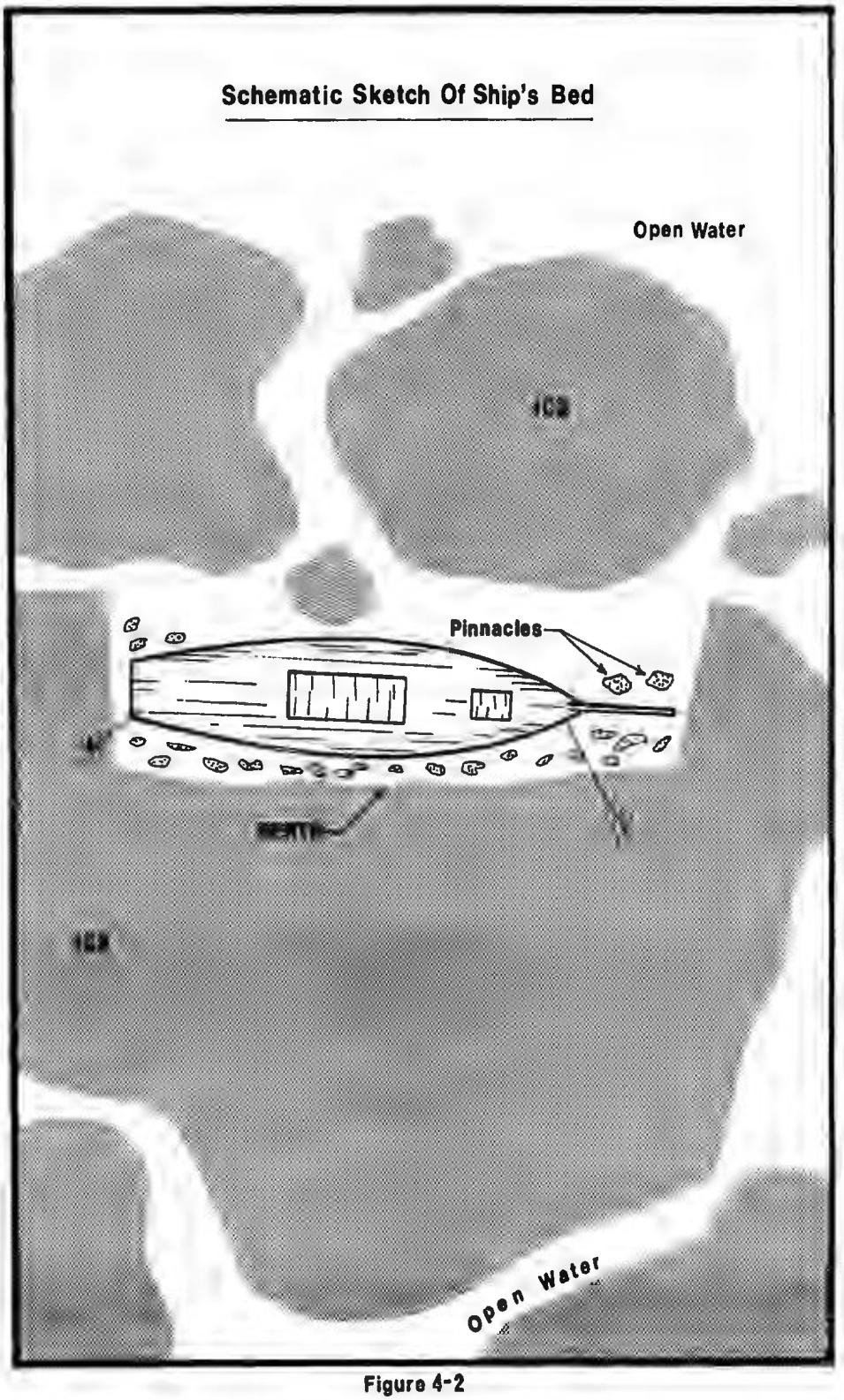

Schematic Sketch Of Ship's Bed
Open Water
Pinnacles
Open Water

Figure 4-2

Another example of how sealers utilized every advantage they could bring to their aid in order to compensate for the frailty of their vessels is provided by Jukes who wrote:

> April 5th - A very heavy gale blowing from south-west. We hove the vessel to, under the lee of a thin skirt of ice, and I witnessed the sea in the grandest aspect I think I ever saw it. There was no ice to windward of us but this thin skirt about a mile broad, which was marked into small round pieces about a foot wide, forming a perfect mosaic pavement on a gigantic scale. (Jukes 1842:318)

It has been noted that the number of sailing vessels reached its peak in 1857 when more than 400 cleared for the ice. While the number declined rather drastically thereafter, the size of the sealing fleet had always fluctuated from year to year prior to the introduction of steam. This can be attributed, at least partially, to the hazards of the natural environment and the desire on the part of the vessel owners to minimize their losses. This was shown by the February 29th, 1848 edition of the St. John's Morning Post, which offered the following observation:

> The outfit for the Seal fishery, this season, we understand, is likely to be more extensive than it was generally supposed it would be, owing in some measure to the mild and open weather we have had, and the promise it gives of a favourable season for that pursuit; ... (The Morning Post: February 29th, 1848)

An overall evaluation of the success and failure of the sailing vessel operation is provided by an article published in 1861, just prior to the first major infusion of new technology into the industry. It read:

> The average fare of successful vessels is two thousand seals, though as many as eight thousand have been taken; but of upward of four hundred vessels that yearly engage in sealing not more than sixty make remunerative voyages, and many suffer heavy losses. (Hallock 1861:594)

This, then, was the sailing vessel era. The seal fishery had grown at a rapid rate throughout the first sixty years of the nineteenth century and the sealing fleet during this period had landed at least seventeen million seals (Hatton and Harvey 1883:265). It appears, however, that the industry by the late 1850s and early 1860s was in a state of decline due to a decrease in the resource without a corresponding improvement in the industry's ability to locate the dwindling herds. Before a new relationship could be established between the resource and its exploiters, however, there was a dramatic change in the human component which was to have far reaching effects on the sealing venture; wooden steamers were added to the sealing fleet.

THE WOODEN STEAMERS

The incidental visit of two Scottish steam-powered sealing vessels to Newfoundland in 1862 appears to have acted as a catalyst, encouraging the local entrepreneurs to introduce steamers into the Newfoundland sealing fleet in 1863. The superiority of these vessels, in terms of their ability to navigate in ice, was quickly recognized, for in

1864 the Newfoundland government chartered the sealing steamer Wolf to bring supplies to the sailing vessels still jammed off the northeast coast of the island at the end of May (The Telegraph, May 25th, 1864).

By 1867 there were eight steamers clearing for the ice. They represented a total of 1,940 tons and carried an average of 128 sealers per vessel as compared with the forty to fifty men who sailed on the larger sailing ships. Within four years approximately ten percent of the sealers had obtained berths on the steamers (Andrews and Parker 1971:9).

The decline in the number of sailing vessels participating in the seal fishery occurred first in the communities closer to St. John's such as Carbonear and Harbour Grace rather than in the more distant sealing outports such as Greenspond, Trinity and Wesleyville. Because of their relative isolation the inhabitants of these latter settlements appear to have had a greater reliance on the complete utilization of their resource base. They were also closer to the approaching seal herds than were their neighbours to the south and the distance to St. John's, if berths on the steamers were to be obtained, was prohibitive. Consequently the number of sailing vessels clearing from St. John's declined from approximately 100 in the years before 1863 to "some half-dozen" by 1883 (Hatton and Harvey 1883:251). This trend gradually spread

northward throughout the island so that by 1895 Tocque was able to write that "The sailing vessels have now nearly all been superseded by steamers, from 300 to 600 tons, carrying from 150 to 280 men each." (Tocque 1895:192).

The majority of these wooden steamers had been especially built at Aberdeen, Greenock or Dundee for whaling and sealing, while the remainder were usually obsolete British men-of-war which had been purchased and strengthened to meet the requirements of the trade (Maxwell 1874:264). Altogether, fifty-eight wooden steamers participated in the Newfoundland seal fishery between 1863 and 1906 when steel vessels were first introduced. The smallest was the 78-ton S.S. Ariel, while the S.S. Newfoundland at 567 tons was the largest, with the overall average at 313 tons.

Because the technical knowledge and expertise required to build these steamers did not exist in Newfoundland, the local shipbuilding industry was one of the first sectors of the economy to feel the effects of this innovation. As for the sealing industry itself, the consequences were immediate and dramatic. The vessels were larger; they were fewer in number; the total number of participants declined; the on-ice hunt was modified; crew composition, in terms of areas represented, changed radically; fewer owners and communities profited from the venture; and the economic return per owner and individual sealer was substantially altered.

All of these effects could be either directly or indirectly attributed to the steamers' superior navigational abilities in ice, which was the main differentiating characteristic between them and their sail-powered competitors. Their greater maneuverability was primarily a product of size, strength, design, and a constant and more powerful source of locomotion.

In the beginning, however, these steamers were little more than auxiliary sailing vessels. The first two - the Bloodhound and Wolf - were powered by only forty and thirty horsepower engines respectively and it was not until 1896, when the S.S. Merlin was purchased by A.M. Mackay of St. John's, that engines capable of generating in excess of 100 horsepower were employed (Greene 1933:268).

As steam vessels became more powerful, and as the sealing masters and crews gained experience in their use, they quickly began to increase their catches. The first vessel to return to port with 10,000 pelts was the S.S. Bloodhound in 1866 and two years later three steamers were able to exceed this number (Chafe 1924:48).

In terms of durability and strength the steamers had many desirable features that were an integral part of their construction and design. This was in sharp contrast to sailing vessels which lacked adequate prerequisites for sealing and required modifications for this task.

In 1874 Lt. William Maxwell, a navigation officer of the Royal Navy, participated in the Newfoundland seal fishery as an observer aboard the S.S. Bear. In his report to the Hydrographer of the Admiralty he gave a detailed description of these special adaptations (Maxwell 1874: 264-267). Further accounts by Greene, Grenfell, Harvey, McGraw, Nansen, Pearce, Taite and Willey substantiate the information which he provided.

The S.S. Bear, a vessel with a displacement of 468 tons, was built at Dundee, Scotland, by A. Stephens and Company. Heavy oak timbers were used in her construction and the hull was completely covered with an ice sheathing of three-inch greenheart planking. The bow was further protected by iron plating. Unlike the sailing vessels the steamers were able to move astern and it was this ability which made it necessary to provide extra protection for the after part of the hull and, perhaps more important, for the rudder and propeller. The stern on the Bear, for example, had iron plating running its full length while both the rudder and propeller were encased by hardwood slip boards.

The steamers were able to attack the ice-floes at a rate of speed considerably faster than that of even the fastest sailing vessel. Subsequently they required stronger bows. While the protection on the bows of the sailing craft was removed after every trip, the pounding

which the steamers took was such that the precautionary measures were much more permanent. The bow on the Bear, for example, extended twenty feet from the stem and was strengthened with numerous beams, timbers and diagonals. This space was called the "fortification."

Maneuverability rather than sheer force had been the strongest asset of the sailing vessels. In the case of the steamers, however, the former gave way to the latter. In order to take full advantage of their speed and weight the bows of the steamers were sharply built and inclined at a rakish pitch to prevent them from striking the ice on all parts of the stem at once. This permitted them to be propelled forward and upward onto the ice which was broken by the combined weight and momentum of the vessel.

If the bow did not have these "proper" characteristics the vessel was not considered a "good sea-boat." As Nansen complained of the S.S. Magdalena:

> ... her bow was not well shaped for going through the ice; it was too vertical, so that she could not run up on to the floes, while it strained the ship too much when she charged them. (Nansen 1925:143)

The early performance of the sealing steamers would tend to indicate that there was not all that much to differentiate between them and their predecessors. While this may have been due to a lack of power, much of their general ineptitude, at least in the beginning, has to be attributed to a lack of experience on the part of the sealing captains who had learned their trade as sealing masters of sailing vessels. It was only through experience

that they were able to learn the limitations and capabilities of these steamers and in the process there is evidence to suggest that a considerable amount of technique and methodology associated with the sailing vessel era was transferred to the early steamers.

Aubyn Pearce, for example, recorded in his diary that on Sunday, March 17th, 1867, the sealing steamer Osprey, in an attempt to reach open water, had "about sixty men ahead with a rope and twenty on the shears, with them and full steam we have loosened her; ..." (Pearce 1917:18). These shears were similar to the rams which had been used by the sailing vessels, for they were only two spars which were

> ... crossed and lashed at one end and suspended from the bows with heavy chains that cross from the bowsprit-cap and one of the other ends on each side from the cat-head. They were intended for men to jump on from the ice when coming on board, or as a temporary resting-place when breaking the ice from the bows or guiding the vessel, and for these purposes man-ropes are slung and a ladder led from the bulwarks to them and the ice. (Maxwell 1874:265)

In comparison, the size of crew carried by the sailing vessels was small, and in order to be effective when attempting to free a ship jammed in ice all of the men were required, in most instances, to do one task at a time. The crews on the steamers, on the other hand, often exceeded 300 men (Greene 1933:96), for it was not until 1898 that legislation was passed limiting the size of

crew. Even then the steamers were still permitted to carry a complement of 270 sealers (An Act Respecting the Prosecution of the Seal Fishery 1898:61 Vic. Cap. 4: section 5). With such a large contingent of men it was possible to have groups of sealers cutting, sawing, using pokers and gaffs, and towing the ship, simultaneously. The size of the crew also introduced a completely new technique. As the vessel steamed towards a particularly heavy sheet of ice the entire crew would run from rail to rail in unison thus causing the ship to roll from side to side. This procedure helped alleviate pressure along the sides of the vessel. While at the ice in 1882, for example, Fridtjof Nansen reported that on April 2nd, the captain of the S.S. Viking, which was jammed in ice, had "sent a message to the other vessels, asking them to provide extra hands to help in 'rolling' the ship..." (Nansen 1925:128).

Besides the size of crew, vessel design, and their use of steam power, these steamers had another advantage over the sailing vessels. In the competition for crewmen most of the sealers desired to obtain berths on the steamers. Such a berth was a real prize, for if the vessel was less likely to get jammed in ice their work would be less strenuous and at the same time the chance of their having a paying voyage was increased considerably. The Reverend Moses Harvey expressed the keenness of the competition amongst the sealers when he wrote in the early 1870s (at a time when the competition for berths was

probably at its highest level) that,

> The great anxiety now is to get a place on board one of the steamers, the chances of success being considered much better than on board a sailing vessel. The masters of the steamers are thus able to make up their crews of picked men... (Harvey 1873:249).

This did not mean that the sailing vessel captains had difficulty in procuring a crew for the sealing voyage. What it did mean, however, was that the caliber of men who did sign on these schooners was not as high as it had been prior to 1863. This had to be reflected in their ability to reach the whelping patches which, as pointed out previously, required in most instances a first rate effort from the entire crew.

As technology improved and capital was accumulated, newer and better steamers were purchased and the disparity between the steamers and sailing vessels became even greater. Throughout the latter half of the nineteenth century fewer and fewer sailing vessel owners were able, or willing, to compete against the obvious superiority of the steamers.

In 1873, in an attempt to preserve the equitable nature of this venture with its economic implications which were felt throughout the island, and in order to protect the capital already invested in the sailing fleet, the House of Assembly in St. John's passed a law making it mandatory for sealing steamers to remain in port until after

March 10th while sailing vessels were permitted to sail on March 5th (An Act to Regulate the Prosecution of the Seal Fishery 1873: 36 Vic. Cap. 9, Sections 1 and 2).

Obviously, the purchase and annual outfitting of these steamers were more expensive than they had been for the smaller, locally-built sailing vessels. In addition, the high replacement value and the fluctuating nature of the venture dictated that only the larger business firms would be able to "weather the worst of the chill financial winds which ruffled the sealing ledgers from time to time." (Keir 1962:122) Consequently, there was a less equitable sharing of at least part of the profits, for by the end of the century there were only eight companies, all located in St. John's (Chafe 1924:67), outfitting vessels for the ice; whereas in previous years hundreds of merchants, representing almost every community along the northeast coast of the island, gained the benefits to be derived from this venture. Towards the end of the century, for example, Dr. Grenfell complained in regard to the funnelling of these monies into fewer and richer pockets:

> ... then only sailing-boats went, and the wealth reaped from the voyages passed mostly into the fisherman's pockets. Now all is revolutionized, and the sealing is in the hands of half-a-dozen firms, that send out big steamers, carrying crews numbering as many as three hundred men. (Grenfell 1896:158)

As newer, larger, and more powerful steamers were introduced, a stratification - which was later to have

important implications for the industry as a whole - began to occur within the steam-powered fleet itself. A hierarchical realignment evolved as a result of the same economic controls which had initiated the decline in the sailing vessel venture. With the purchase of better equipment the existing steamers became relatively obsolete. Spatial readjustment of the seal fishery based upon a ship's relative performance occurred as the companies began to send their older and smaller vessels to the Gulf of St. Lawrence where environmental conditions were not likely to be as severe as those on the "Front".

Prior to this, Newfoundland participation in the "Gulf" seal fishery had been limited to that carried on by landsmen. The few Newfoundland vessels that did sail for "the back of the island" cleared from the extreme southwest coast to join the limited number of small sealing vessels that annually sailed from the Canadian provinces. According to Carroll, for example, "In the spring of 1858 there were 90 sailing vessels prosecuting the seal fishery on the west side [Gulf], vessels belonging to Halifax, Magdelene Islands, etc., etc., etc., tonnage from 60 to 25 tons each, and two out of La Poile..." (Carroll 1873:27) Sailing vessel owners along the northeast coast of Newfoundland had not been anxious to make such a long excursion when the seals could be taken, in a good year, at their very doorstep. Those along the south coast of the island,

meanwhile, were concerned principally with the Banks and inshore fisheries which were, in this area, year-round activities. Due to the French presence, the west coast had remained sparsely populated until the end of the century. The introduction of steam-powered vessels, therefore, opened up an entirely new area for the participants in the seal fishery based on the eastern coast of Newfoundland.

While it may be argued that the economic resources of the larger firms gave a certain degree of security to the seal fishery, it might also be argued that the introduction of steam tended to jeopardize the future of the industry. The initial capital investment and the higher operating and outfitting costs made the financial risks associated with a "clean trip" much greater than they had been during the sailing vessel era. At the same time the sailing vessels had ready alternate employment during the other months of the year. The steamers, on the other hand, were the first true sealing vessels used in the industry and they had a greater need for alternate employment than had the sailing ships, yet this was a problem that the larger commercial establishments were never able to resolve successfully. In 1865, for example, Walter Grieve and Company outfitted the S.S. Wolf for whaling in Greenland, thus introducing this "overseas" aspect of the local whaling industry for the first time

(Punton and Munn, Old Letters, private Library of Mr. Martin Lee, Placentia). Unfortunately this venture was short-lived. Other companies, meanwhile, had their vessels employed "in the dual role of carrying freight and passengers across the Atlantic and hunting seals off the Newfoundland coast." (Keir 1962:97) Failing this, they had their "wooden ships lying up, except when they were chartered for Arctic voyages." (McGrath 1911:140) In total, the overall effect which the introduction of steam had on the Newfoundland seal fishery was aptly expressed by Greene when he wrote that,

> ... the days of the Sailing-ships were over, and, out of date and obsolete, even the most tenacious gradually gave up the unequal contest; finding all their gallant striving useless, and only serving at the best to reach the seals when already cleaned-up by the yearly-increasing numbers of their more modern and far more powerful rivals. (Greene 1933:48)

It can readily be seen, then, that the steamers were radically different from the sailing vessels. Their most important differentiating characteristics were their prohibitive cost and superior maneuverability which were reflected in fewer vessels participating in the venture using entirely new strategies and techniques. By the end of the century, therefore, the industry had been completely altered by the steamers.

The sailing vessels introduced in 1793, then, represented a seasonally adjusted technology which changed the seal fishery from a passive activity into a true hunt. Whereas formerly the sealers had been in essence passive collectors when chance occurrence had caused the whelping patches to be carried onshore, they were now more actively able to pursue the seals in their own habitat. Consequently, the total annual seal catch increased rapidly throughout the early part of the nineteenth century as new vessels, manned by more experienced sealers, were added to the sealing fleet. By the middle of the century, however, the successful application of this technology was reflected in a general though variable decline in the annual catch which appears to indicate that the resource was being over-exploited.

Before the problem of striking a favourable balance between the declining seal stocks and an over-expanded sailing vessel fleet could be successfully resolved, however, the industry responded by introducing steam-powered vessels in 1863, thus substantially improving their ability to search out the smaller and more elusive seal herds. The steamers' superiority was reflected immediately by an increase in the annual returns and average catch per vessel and by a rapid phase-out of the sailing vessel fleet.

The successful application of this new technology, then, marked significant changes in the character of the venture. The following chapter, therefore, details the changes that took place in the "on-ice" operation, while chapters VI and VII are concerned with the overall realignments that subsequently occurred within the industry.

CHAPTER V

THE HUNT

In the foregoing chapter it was seen that the steamers were better able to contend with the natural environment than were the sailing vessels. This chapter discusses the development and effectiveness of new hunting techniques and strategies which accompanied the adoption of steam-powered vessels by the industry. Their increased maneuverability, greater size, extra strength, and the use of steam-powered deck equipment, made obsolete many of the methods previously used to deploy men on the ice. In order to optimize this new technology completely new strategies had to be invented and implemented.

The hunt can be said to have consisted of distinct stages, each with different spatial characteristics that represent adaptations to the resource and natural environment. The first stage was the killing of the newly-born whitecoats in the whelping patches, followed by the taking of beaters after the whitecoats had changed and dispersed. The final stage was the killing of old seals towards the end of April after they had moved onto the ice to moult before heading north for the summer months. These three stages are dealt with separately to

show the influences which the steamers had on each, and both sailing vessel period and steamer operation are reconstructed to facilitate comparison and contrast.

The organization of personnel and killing procedures, basics of the hunt which were not influenced to any large extent by the introduction of the steamers, are presented first to place the changes that did occur in a more meaningful context.

ORGANIZATION OF PERSONNEL

After leaving port and recovering sufficiently from the rivalry associated with the cutting-out activities, the first task at hand was the organization of the ship's company into watches and crews (Vey 1971:verbatim).

The number of men in each watch, and the total number of watches, depended on the crew size. Providing the ship's company did not exceed fifty men (as was usually the case for the sailing vessels) there were customarily three watches. In 1840, for example, the brigantine Topaz carried a crew of thirty-six sealers divided into three twelve-man watches (Jukes 1842:259). Except in instances where all hands were needed to work the ship these watches rotated duty in the daily operation of the vessel until it reached the whelping patches. Each "master-watch" acted as second-in-command, or mate, when

his particular watch was on duty. The master-watch, under the overall supervision of the captain, was responsible for both the safety and deployment of the sealers in his watch when they were working on the ice after the seals had been located.

It will be remembered that in an attempt to control the number of sealers carried by the steamers legislation was passed limiting crew size to a maximum of 270 men, which meant that they were always divided into at least four watches rather than the usual three. The organization of steamer personnel also differed in that the size of each watch was now usually larger than the total complement of men formerly carried by a sailing vessel.

The method of selecting men for the various watches on the sailing vessels had been a relatively simple procedure. Each master-watch knew the attributes and reputations of all men aboard and could select a fairly efficient and homogeneous watch in terms of kinship and community ties. Although the same procedures and considerations for selection were followed on the steamers, the larger contingent of men meant that each watch would be far less homogeneous. The choosing procedure on the steamers was necessarily much more arbitrary with each master-watch selecting a man in turn from the ship's list. In an attempt to placate the men, however, they were given an opportunity to "change over, but you'd have

to have the master-watch's permission. Sometimes he'd oblige, sometimes not". (Kean 1971:verbatim)

Their unwieldy size and the need to preserve a simple and effective system of command required sub-division of the watches when working on the ice. These smaller units were under the control of a "quarter-master", or "deck-router" (Vey 1971:verbatim), who was directly responsible to his respective master-watch rather than the captain.

The sealers themselves were hired on in one of three categories, namely: gunman; gunman without gun; and batsman (Maxwell 1874:265). This classification was necessary for the second and third phases of the sealing venture when the beaters and old seals had to be shot rather than clubbed.

In order to take advantage of each man's special abilities a completely new organizational framework consisting of punt-crews was established, independent of, and coincidental with, the watch system. The crew of the Topaz, for example, was further divided into nine four-man boat-crews, with "three of them commanded by the three masters of the watch, and the other six picked from the crew, and likewise appointed by the captain." (Jukes 1842:260) To ensure harmony and thus promote efficiency these leaders, or "foregunners", were given the opportunity to choose their own boat crews. The first man chosen was to

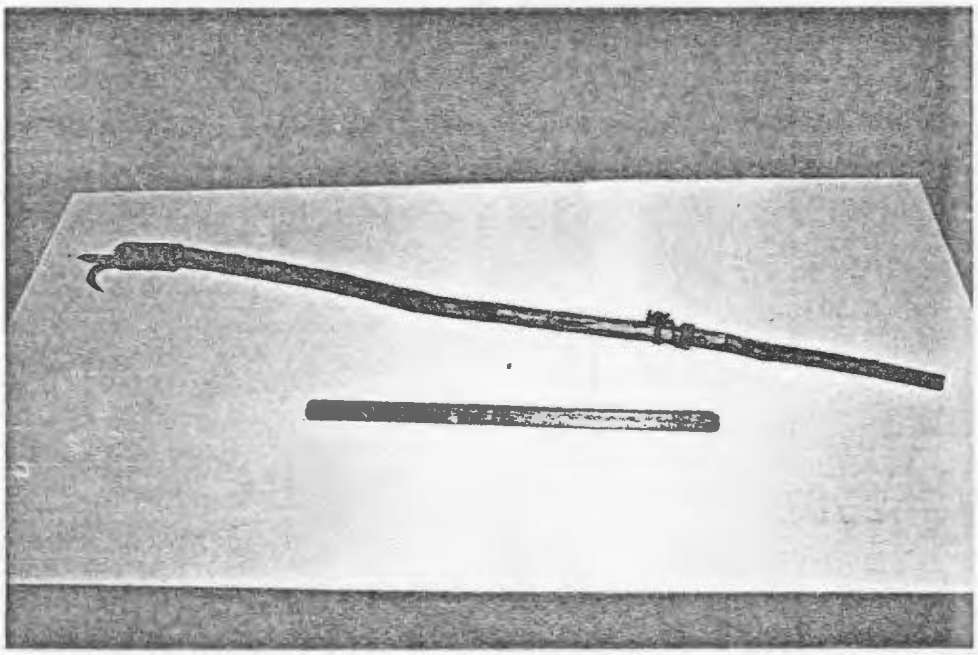
act as second gunner or steersman because he sat in the stern and shot seals only when conditions permitted. The remainder of the punt-crew consisted of oarsmen who usually pelted the seals after they had been killed. Small-boat crews on a steamer were similarly chosen. In most instances, however, only a portion of the steamer's crew could be used in this manner.

KILLING PROCEDURES: EQUIPMENT, PELTING, TOWING, STOWING OF PELTS

EQUIPMENT

Sealers in the past have stunned and killed seals by kicking them with their boots, while others have cut the animals' throats permitting them to bleed to death. The most common method of killing, however, has always been by striking them on the head with a heavy instrument.

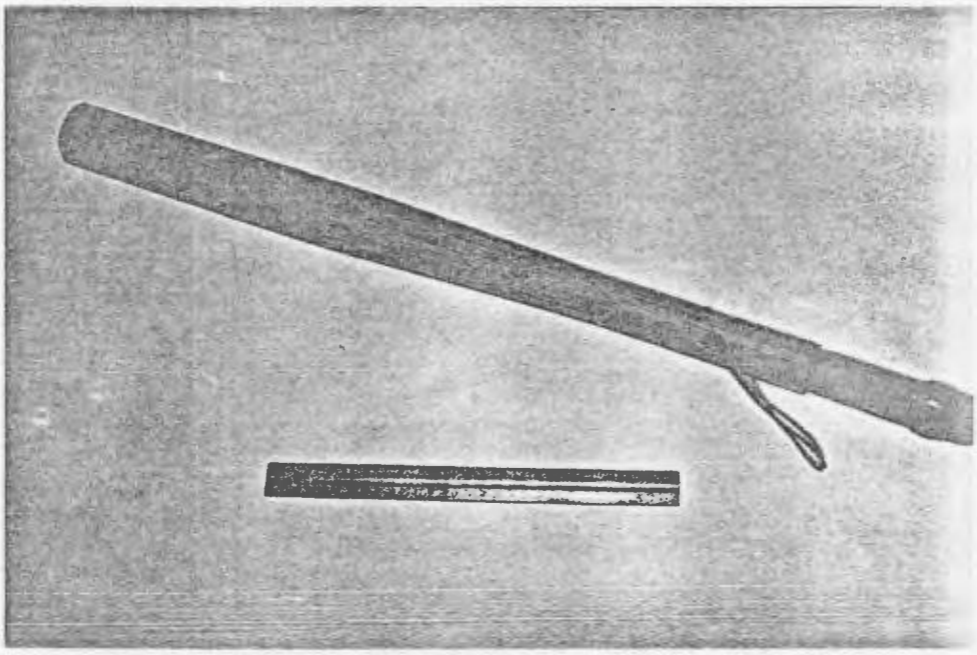
In the earlier days of the seal hunt when there was a greater propensity to use small open boats in order to increase the mobility of the ship's crew, the boat-hook, or gaff (a familiar device to the sealers in their primary roles as fishermen), was an irreplaceable aid as they traversed the open leads of water between the ice-floes. The gaff (Plate 5-1) was a six-foot wooden pole with a metal hook attached to one end. The blunt side of this hook was used to crush the skulls of the young white-coats.



Sealing Gaff

Plate 5-1

Wooden clubs, or bats, very similar to those legislated into use at the present time, were also available at an early date (Archibald 1852:4). The bat (Plate 5-2) is a three-or four-foot wooden club tapered to a handle grip at one end from twice this size at the other extremity. The gaff, however, has always enjoyed a greater popularity amongst the sealers. The most important single reason for this is the fact that, given the heavy clothing they usually wear and the other equipment they have to carry, in addition to the burdensome task of towing seals over long distances, the carrying of the gaff and bat represented an unnecessary duplication of effort. The gaff is considered the more efficient killing implement, at least in the opinion of the present day sealers who have used both, because two hands have to be used and this, in addition to its extra length, causes the blow to be much more powerful than that offered by the bat which is swung with one hand only. This was especially true if the sealer was overly tired after working long hours on the ice. The gaff was also favoured for its other applications. For example, it was looked upon as a safety device which could be used to test the ice ahead for strength, or in the event of a sealer falling into the water its extra length and attached hook offered a better chance of survival. Thus, by the 1860s when the steamer came into vogue the gaff was considered an indispensable part of a sealer's



Sealing Bat

Plate 5-2

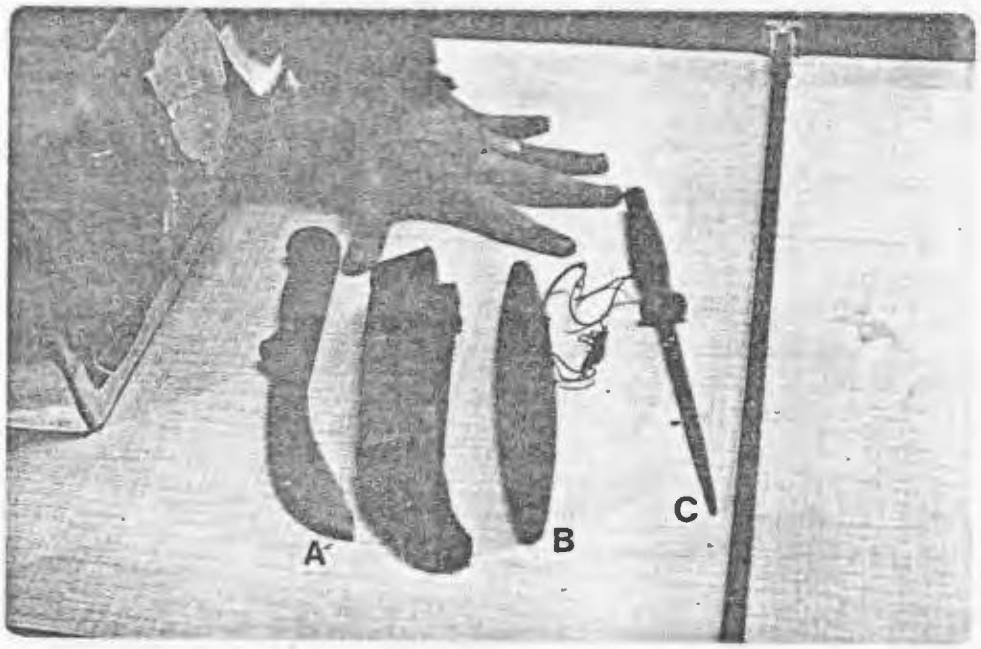
equipment and consequently the bat was seldom taken onto the ice.

In the second and third phases of the hunt firearms replaced both the gaff and bat to a large extent, for the beaters and matures, unlike the whitecoats, usually had to be killed from a distance.

PELTING

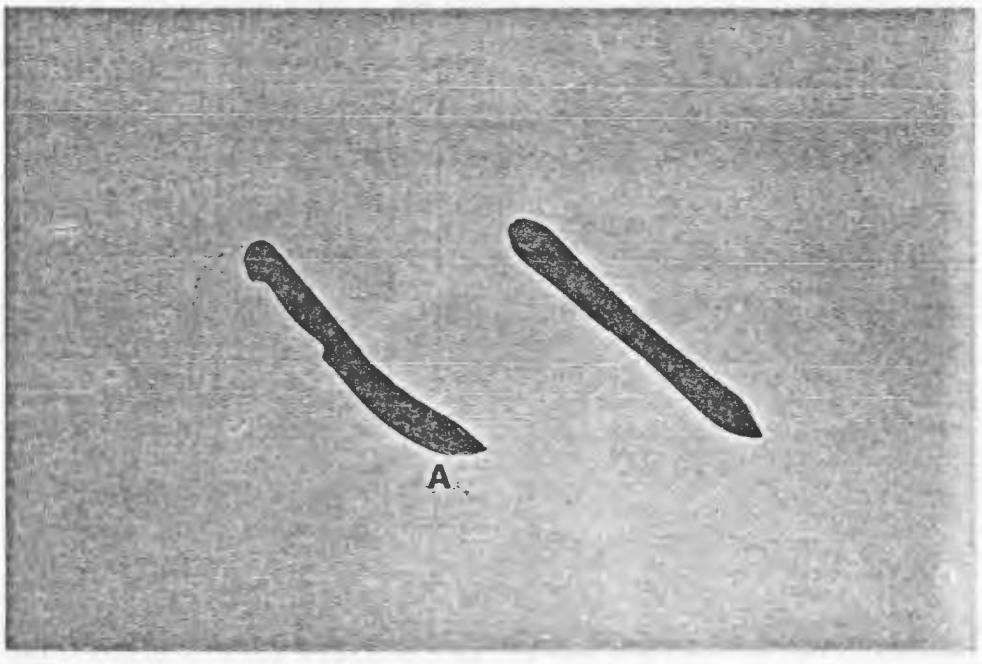
The items depicted in Plate 5-3 are used to skin or "pelt" the dead animals. The intent is to remove the fat, hide and foreflippers, that is the "sculp", from the carcass as quickly as possible without causing any damage to the skin.

Until quite recently each sealer was expected to provide his own knife "A", while the stone "B" and the steel "C" were provided by the owners. Every fisherman had a special knife for cutting and splitting codfish. Because they were also ideally suited for pelting seals each man included a "Greenriver" (so called after its commercial trademark) as part of his normal sealing gear. It can be seen that the size and shape of the sixty-two year old "Greenriver" illustrated in Plate 5-4 and that of a sealing knife "A" provided on the Canadian motor vessel Carino in 1972 are remarkably similar. They both have good quality steel capable of holding a sharp edge, inexpensive wooden handles that are easily cleaned, and



Sealing Equipment: Knife, Sheath, Stone, Steel

Plate 5-3



A Contemporary Sealing Knife (1972) And The Greenriver Knife

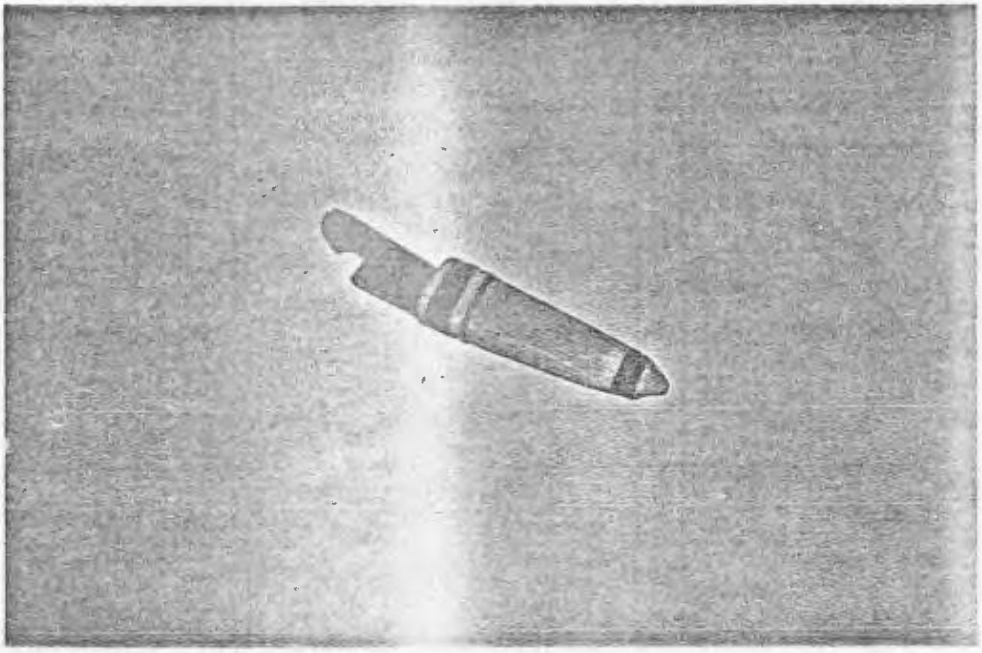
Plate 5-4

curved blades that facilitate the sculping operation.

These knives were never intended to be used for hunting purposes and therefore do not have protective carrying sheaths. This was beneficial to the sealer for it reduced the cost of the knife and also forced him tc make a scabbard which was ideally suited to the conditions he was likely to encounter. These sheaths (Plate 5-5) are constructed by binding two pieces of rough wood together with twine. The sealers invariably prefer wood over leather for many reasons other than the obvious cheapness of this ubiquitous commodity. It is strong enough to prevent the knife from cutting through the protective casing,thus reducing the danger of laceration to the sealer, while the rigidity and bulk of the scabbard also make it easier to handle when the hands are numb with cold or encumbered by woollen mittens made slippery by blood and fat.

The knife, stone and steel are carried on a belt, or rope, attached around the waist. The stone is used to sharpen the knife while the steel is used much more frequently to maintain a fine edge on the blade.

After a seal has been killed it is rolled onto its back and a slit is made along the ventral side from the muzzle to the hind flippers (Plates 5-6 a-h). The fat and hide are then cut away from both sides of the carcass with special care being taken to remove the foreflippers



Sealing Knife And Sheath

Plate 5-5

Pelting Process:Blow On The Head

Plate 5-6a

Dead Animal Rolled Onto Back

Plate 5-6b

First Cut From Muzzle

Plate 5-6c

Full Cut Along Ventral Side

Plate 5-6d

Holes Cut In Rib Cage

Plate 5-6e

Fat And Hide Removed From Underside Of Carcass

Plate 5-6f

Careful Removal Pelt From Skull

Plate 5-6g

The Pelt

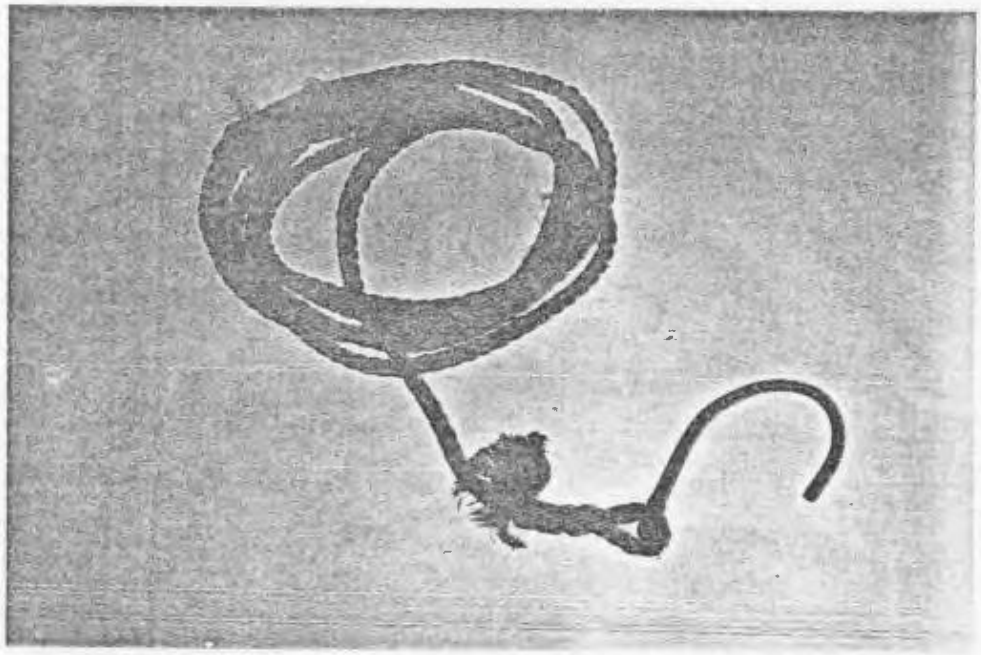
Plate 5-6h

with the pelt. Next, the forefinger and thumb (extended through two holes cut in the rib cage) are used to lift the carcass thus enabling the fat to be more easily removed from the underside. The flippers are then partially cut from the pelt which is now ready to be towed either directly to the ship or to a central pan to be picked up later.

TOWING

Another piece of equipment carried by the sealers is a tow rope (Plate 5-7), usually ten to fifteen feet long and tapered at one end to permit easy passage through small holes cut in the pelts for that purpose. In the sailing vessel period when the pelts often had to be transported to the ship over considerable distances the "making of a tow" was an elaborate procedure.

Depending on the size of each pelt and the distance they had to be dragged, an average tow consisted of three or four pelts (Perry 1971: verbatim). After placing the pelts on top of one another so that there was approximately fifty percent overlap, each sealer laced his towing rope through the eye-holes and small slits cut in the sides of each sculp. When the rope was drawn tight each tow was a compact bundle which was towed hair-down in order to reduce friction. The rope was then placed over the shoulder and grasped with both hands to ensure that every



Tow Rope

Plate 5-7

muscle in the body could be used to drag the load (Plate 5-8).

With the advent of steam-power and the introduction of new techniques the towing distance was considerably reduced. The elaborate and time consuming practice of lacing the pelts together, therefore, was largely eliminated. Consequently, the tapered whipping at the end of the towing rope was replaced with an iron or steel hook which is simply skewered through the eye-holes of each pelt.

STOWING OF PELTS

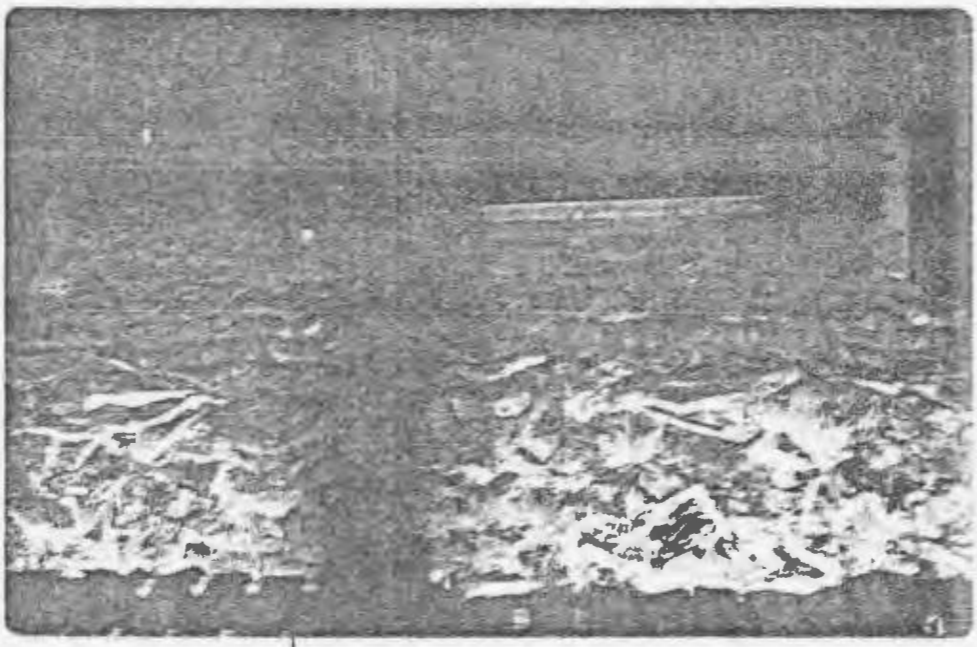
After the pelts have been taken aboard they are stowed on deck, hair to hair and fat to fat (Plate 5-9), so as to reduce stain spoilage caused when the hair comes in contact with fat and blood. They are permitted to remain on deck for one or two nights, all depending on the temperature and number of seals being killed, before they are stowed below deck. By "chilling" the pelts in this manner the tendency for the fat to render is diminished.

STAGE I: THE WHITECOAT CUT-OVER

As noted in the previous chapter the increased maneuverability of the steamers greatly improved their chances of reaching the whelping patches. This, in addition to their higher daily operating costs, acted as an incentive for them to head directly for the newly-formed

Towing Seal Pelts

Plate 5-8



Seal Pelts Being Chilled On Deck

Plate 5-9

whelping herds rather than "waste" valuable time pursuing scattered seals enroute. The sailing vessel masters had also attempted to locate the whelping herds as quickly as possible. Their chances of doing so, however, were not nearly as great and their progress through the ice-fields was considerably slower. Consequently, the sailing vessels were able to "pick-up" scattered seals along the way without hindering their overall progress to any significant degree.

Conservation of the resource was built into the sailing vessel operation by the fact that many of the whitecoats escaped each year because of the frequent inability of the sailing vessels to reach the whelping patches before they had dispersed. The success of the steamers, on the other hand, depended upon their ability to reach these herds before they had been "cut-over" by the other vessels in the fleet. A steamer, therefore, was not likely to be distracted by a small isolated patch of seals. Thus, the higher costs associated with the improved technology also acted as a conservational measure, offsetting to some extent their greater chances of reaching the whitecoat herds. William Coaker, for example, noted in his account of a sealing voyage he made aboard the S.S. Nascopie in 1914, that "Fully ten percent of the young seals have escaped as a few here and there on a pan are not worth stopping to take". (Coaker:The Daily Mail, April 13th, 1914)

The ice conditions they were likely to encounter, it will be recalled, could be classified as extremely heavy and closely packed; light and very loose; or any number of varying conditions between these two extremes. Depending upon the condition of the ice, therefore, and the shape and density of the whelping patch, the crew of a sailing vessel, after it had reached the herd, was accordingly deployed in one of three fashions.

When circumstances were such that navigation was severely restricted, the men were often required to travel considerable distances. The number of seals killed in this manner would depend upon the distance a man could safely travel and return with his tow of seals before darkness set in. As a safety precaution and in order to help one another drag their tows over hummocky and difficult ice, the sealers usually worked in groups of twos or threes (Jukes 1842:275). At the other extreme, however, such as when seals were scattered on pans of very loose ice, a small portion of the crew was kept on board to help sail the vessel with "the men following her and clearing off the seals on each side as we went along." (Jukes 1842:274)

Under less extreme conditions the ice was usually too heavy and compact to permit the sailing craft to maneuver freely. At the same time the movement of the sealers on ice was often limited by open leads of water

and small "lakes" that were constantly forming. In these circumstances the sealing crews resorted to the use of small open boats to reach the seal herds. This practice was potentially dangerous. If ice conditions worsened or the weather deteriorated the sealers would often be stranded away from the relative safety of their mother ship. The results were frequently disastrous. Such was the case in 1873 when the schooner Deerhound

> ... lost twenty-four men out of fifty-six. They had been sent off in boats among the "open", or scattered, ice to cruise in the watery lanes and thus conduct the hunt impossible on foot. (McGrath 1903:8)

Ideally, the captain of a sailing vessel endeavoured to position his ship within the whelping patch, thus permitting the crew to "clean" the area surrounding the vessel. The territory a vessel could effectively control in this fashion was the area encompassed by a circle centering on the ship with the radius determined by the range of the individual sealers as they sought the whitecoats (Figure 5-1). The shape of the area being worked by the men, however, was controlled by many variables such as the shape of the patch, inconsistent ice conditions, and the relative position of other vessels. If the patch was linear in shape, for example, the area worked by a ship's crew would also be linear, with the total length governed by the distance the men were prepared, or able, to travel (Figure 5-2). This in turn could be distorted

Generalized Movements Of A Sailing Vessel And Crew In A Whelping Patch

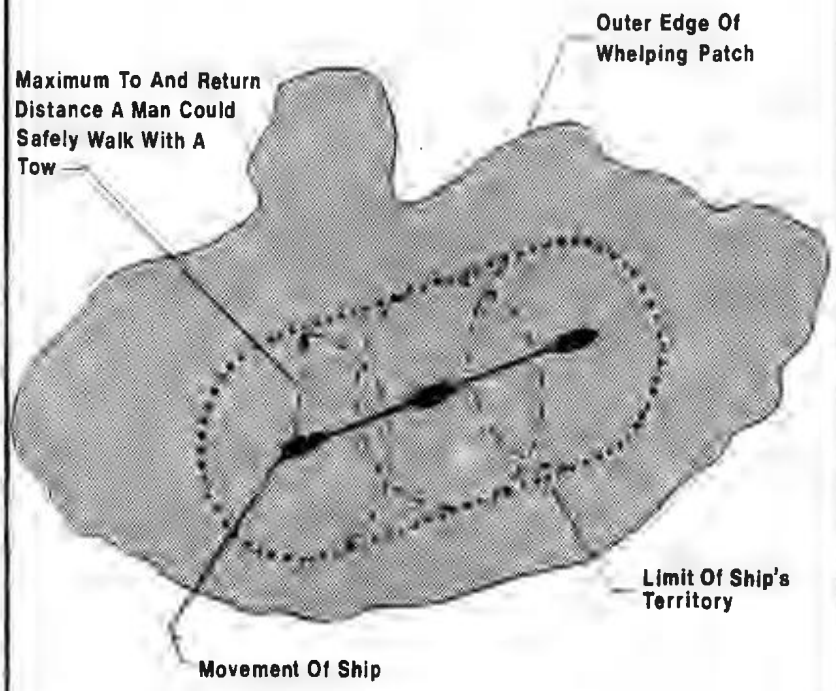


Figure 5-1

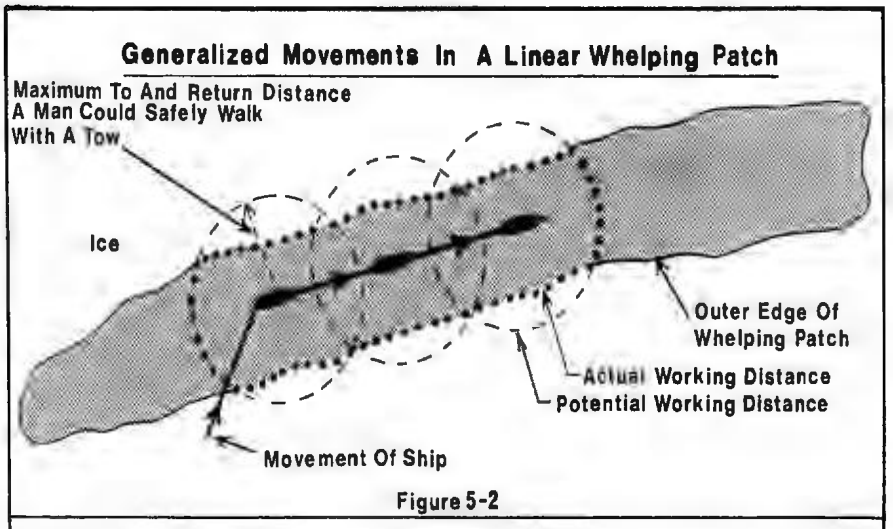


Figure 5-2

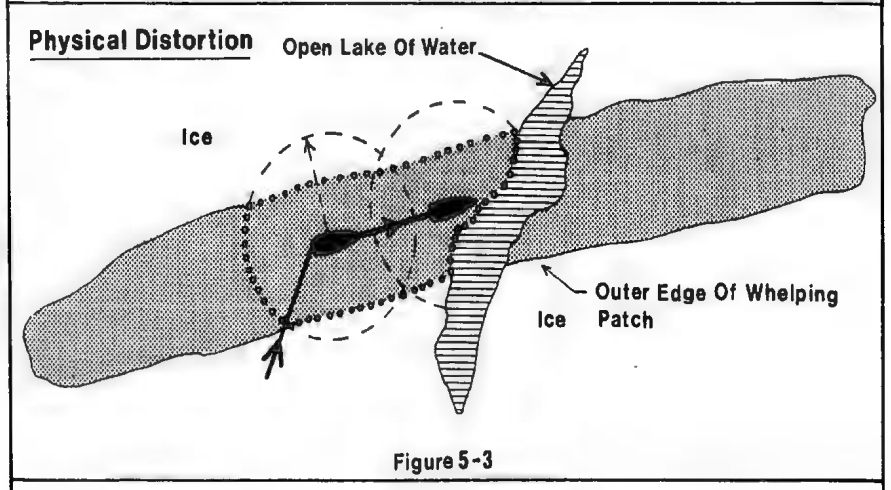


Figure 5-3

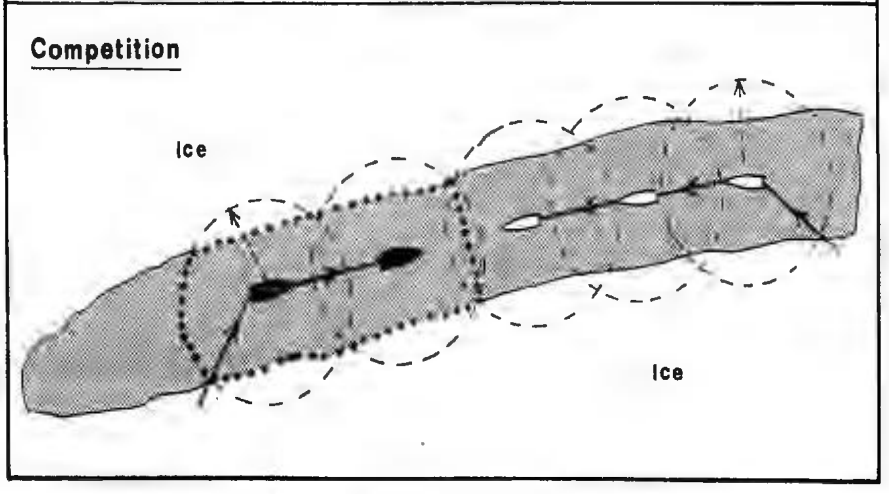


Figure 5-4

by bodies of open water which effectively prevented the sealers from reaching certain portions of the herd (Figure 5-3). A further limiting factor might be the presence of other vessels in the patch (Figure 5-4). It can readily be seen, therefore, that the territory controlled by a vessel's crew was constantly changing. This was due primarily to the sailing vessels' lack of maneuverability which made each day's "on-ice" strategy highly dependent on natural environmental conditions.

With the introduction of the steam vessel, however, the sealers' ability to cope with the natural environment improved considerably. The larger contingent of men carried by the steamers, their greater maneuverability, and the use of steam-powered winches and steel "whiplines", initiated completely new spatial patterns in the on-ice operations.

Previously it had been a question as to whether or not a sailing vessel would be able to reach the whelping patch before it had dispersed. In the case of the steamers, however, the principal concern was how much time a vessel would have in the patch before it was joined by its competitors. Speed and efficiency, therefore, were essential if the first arrival was to enjoy its temporary advantage. The same rationale guided the actions of the late arrivals, for they naturally endeavoured to obtain as many of the remaining seals as possible.

In contrast to the methods used by the sailing vessel captains, the nature of the whelping patch rather than the general ice conditions was more important in determining how the sealers on the steamers were deployed after the herd had been located. As noted previously, each watch on a steamer was approximately the same size as an entire sailing vessel crew. Therefore, in effect, the steamer captains endeavoured to deploy their men in much the same manner as they had before the advent of steam - the men radiating out from a central point (Figure 5-1). Now, however, they did their best to eliminate duplication of effort which would have resulted if 250 to 300 men had been placed on the ice from the same position. Consequently, the effective territory controlled by a steamer under ideal conditions was at least four times greater than that of a sailing vessel (Figure 5-5).

As a result, the captain's task became more onerous. He now had to devise an overall strategy and accept the responsibility for a larger group of men spread over a wider territory. He also had to interpret the environmental and resource conditions over a much larger area, and for a longer period of time, than had the captains of the sailing vessels. After due consideration and consultation with his master-watches the first watch was usually placed on the ice just after daybreak. Each master-watch was then given general instructions by the

Relative Territory Controlled By A Sailing Vessel And A Steamer (Generalized)

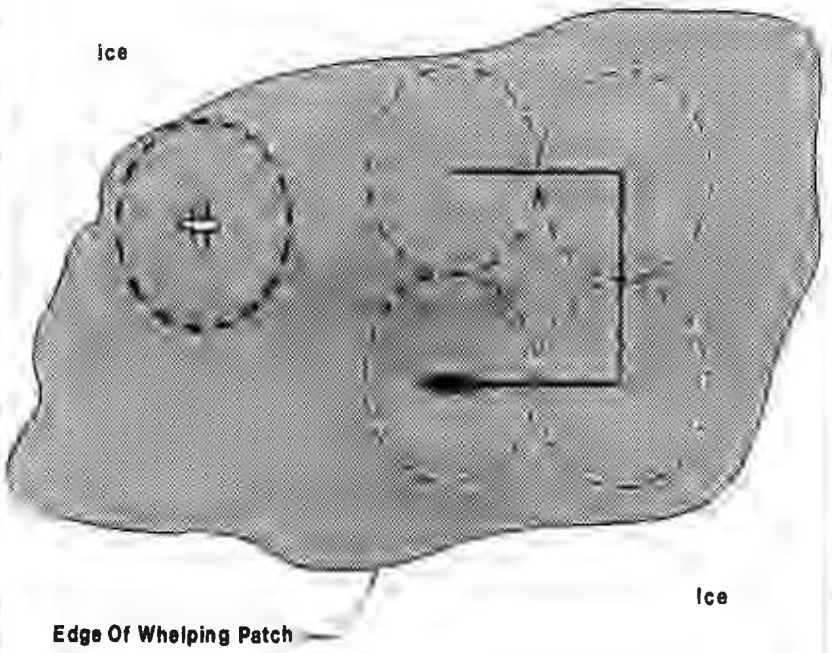


Figure 5-5

captain on the deployment of his men and the general direction in which they should work. Thereafter the master-watch assumed full command. Each quarter-master, in turn, had the same authority over his smaller group of men and was directly responsible to his respective master-watch. As each watch could expect to be away from the ship for long periods of time (conceivably from daylight till after dark), the master-watch was provided with a compass and knew in which general direction the ship would be working if the weather turned bad, or if the ice came together, thus preventing the steamer from picking them up. After the fourth watch had been placed in position on the ice the steamer then proceeded to the area being worked by the first watch and began to pick up the seals they had collected.

This technique, or strategy, was further refined by the practice of "panning" seals - the gathering of pelts in certain areas to facilitate their collection by the steamers. This system, therefore, removed the onus of towing the pelts to the ship from the men and relied, instead, on the steamer's ability to steam about picking up the "panned" seals. The panning procedure and overall plan of operation of the steamers can be better illustrated by the idealized case represented in Figures 5-6 a-c. It is assumed that there were no other ships in the immediate vicinity and that the ice was compact, yet loose enough

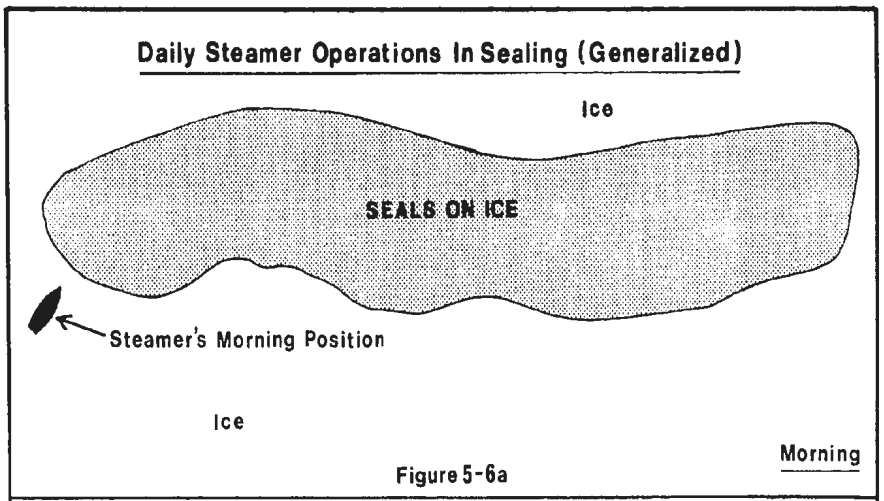


Figure 5-6a

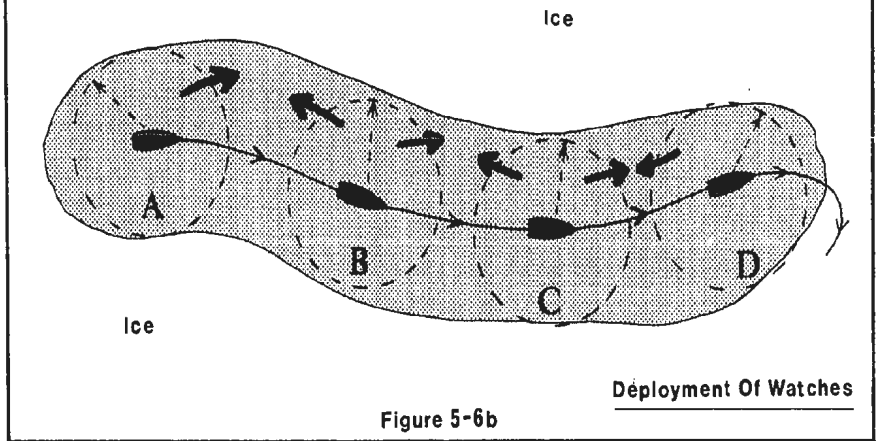


Figure 5-6b

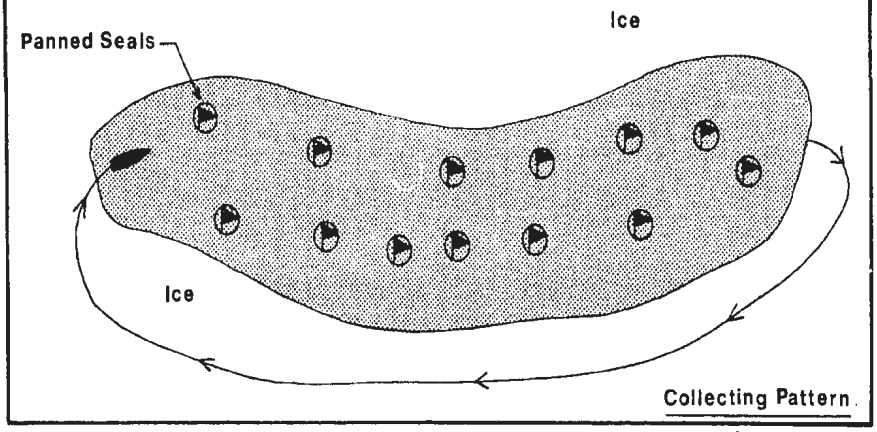


Figure 5-6c

to permit the vessel to steam about with relative ease. The whelping patch was also strung out in a linear fashion. After each watch ("A", "B", "C", "D") had been deployed (Figure 5-6b), the master-watches selected level pans of ice on which they placed brightly coloured flags appropriately marked with the ship's insignia (Plates 5-10 and 5-11). The men then dragged their pelts to these pans where they were subsequently collected by the steamer (Figure 5-6c).

This whole procedure made the on-ice labour of the ordinary sealer easier and more efficient, for the distance the pelts had to be dragged was reduced to a minimum, thus ensuring that a greater proportion of every sealer's on-ice time was spent killing and pelting. In the event a watch killed all the seals in its vicinity, or if the steamer was delayed in picking them up, the men were set to work "doubling" pans (Figure 5-7a, b). That is, the pelts were dragged from their original pans to one larger, more centrally located sheet of ice. This greatly facilitated the picking-up procedure for it eliminated the number of stops the steamer had to make. The usual routine followed by a steamer as it collected seals is illustrated in Figures 5-8a, b. First it moved into a central position (Figure 5-8a). Two "whiplines" were then dragged out from either side of the ship. Next, each pan was gathered into groups of fifteen to twenty pelts held together by straps woven through holes made in

Panned Seals And Ship's Flag: 1972

Plate 5-10

Panned Seals: 1972

Plate 5-11

The Process Of Panning (Generalized)

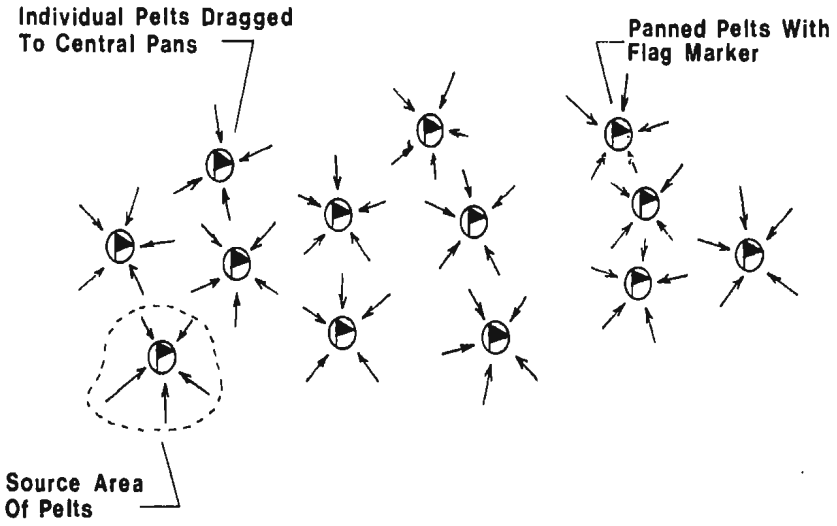


Figure 5-7a

Doubling Pans (Generalized)

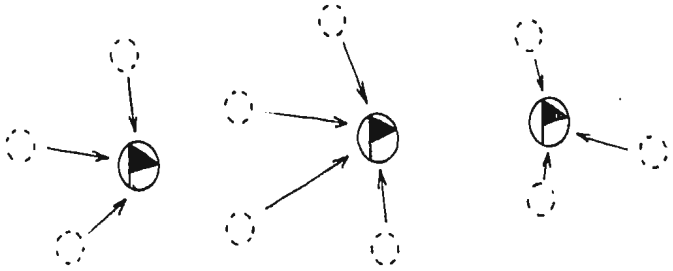


Figure 5-7b

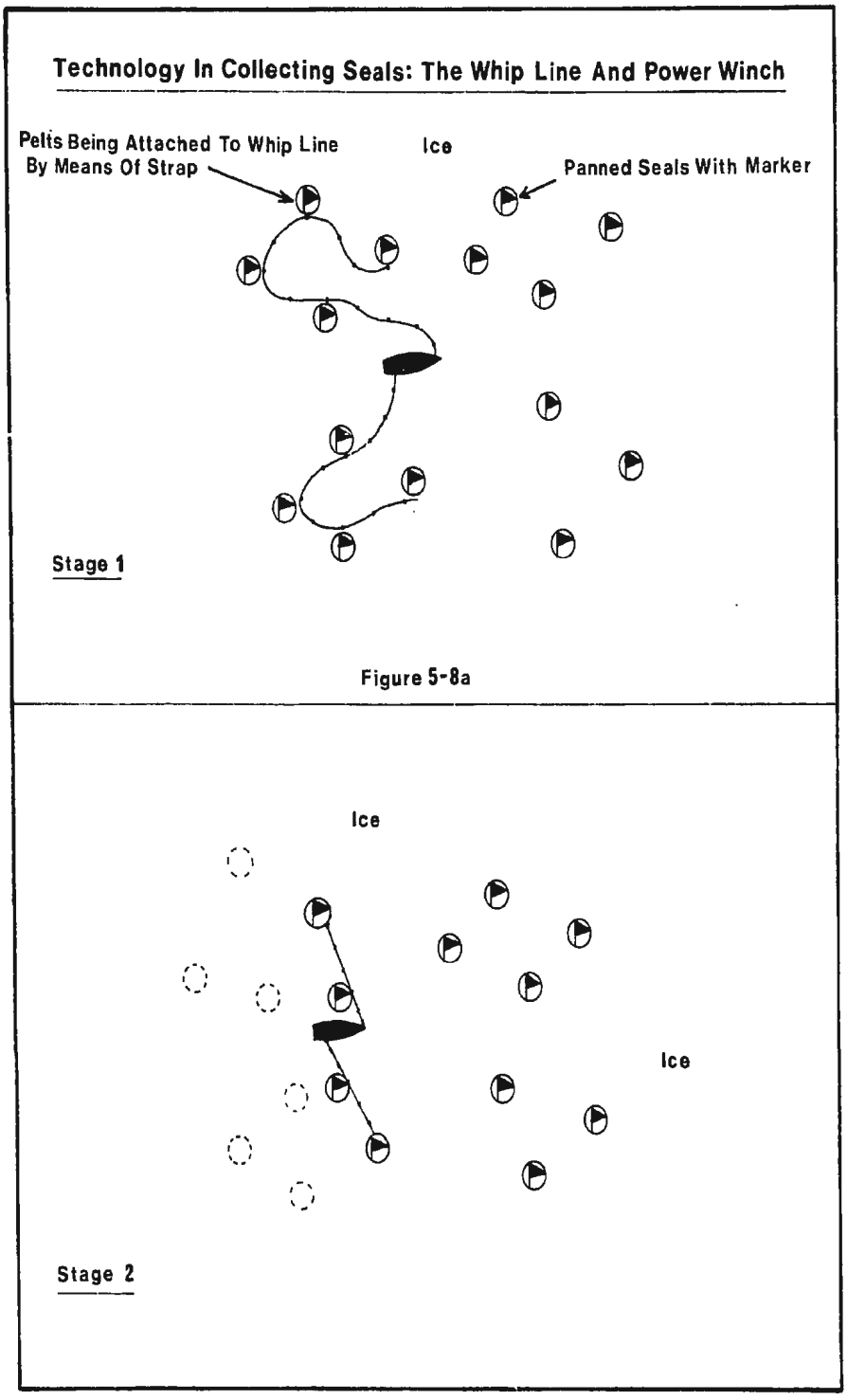


Figure 5-8a

Figure 5-8b

each pelt by the removal of the foreflippers (Plate 5-12). These straps were then attached to the whipline, using "eye-holes" spliced at regular intervals, and winched aboard (Figure 5-8b; Plate 5-13). Although sailing vessel crews often panned or "bulked" seals (Journal of the House of Assembly of Newfoundland 1860-61:526-533) they more frequently were required to drag their "tows" directly to the vessel as soon as the seals had been killed and pelted (Jukes 1842:275). It was not until the steam-powered vessels had been successfully introduced that panning became the commonly accepted and indeed normal procedure because "the steamer could go around and chase after you when she put you off, but the sailing vessels couldn't." (Vey 1971:verbatim)

It has been noted that this technique often required the men to remain away from the relative security of the vessel for longer periods of time than during the sailing vessel era. Even as recently as 1914, for example, William Coaker reported that on March 19th, the S.S. Nascopie (a powerful steel vessel) had not been able to pick up all of her crew until well after dark (Coaker: The Daily Mail, April 13th, 1914). In order to reduce the dangers inherent in this procedure it was common practice to place a small boat on the ice with each watch. This provided protection against the wind when placed on its gunnel, but more important, it could also be used "as a

Seal Pelts Being Placed On Strap

Plate 5-12

Whipline: Seal Pelts Being Winched Aboard

Plate 5-13

mark to find the spot if it was late before we could be picked up." (Coaker: The Daily Mail, April 13th, 1914)

Because the chances of losing the pans increased considerably after darkness had set in, men with lanterns were dispatched to mark the pans still to be picked up. This added to the length of the sealers' on-ice working day and also increased their chances of having to spend the night away from the ship. Captain George Barbour, for example, testified at the magisterial inquiry into the Newfoundland disaster, that,

> In the evening we generally send out some men to put lights on the pans, they don't stay on the pans, they come aboard again, but sometimes they can't get aboard because the ice gets loose and it is risky that way. (Barbour: In the Matter of the Inquiry into Disasters at the Seal Fishery of 1914. Proceedings: Special Reference to the Southern Cross 1915, p. 34)

This practice, therefore, made the on-ice operation more hazardous for the sealers. In the event that the weather suddenly deteriorated the vessels were frequently unable to locate their men. The result was often disastrous. In 1898, for example, forty-eight men were lost when they became stranded away from the S.S. Greenland (Grenfell 1897b:739), and in 1914 seventy-eight sealers from the S.S. Newfoundland perished after they had been marooned on the ice for two nights in a raging blizzard (Journal of the House of Assembly of Newfoundland 1915:357).

Apart from the concern felt for the safety of the men, the practice of panning seals focused a great deal of attention on the industry in the form of criticism resulting from the high percentage of pelts lost when the steamers were unable to collect all of their pans. This concern is illustrated by Michael Carroll's comment in 1873:

> At the lowest calculation I make bold to state that not less than from ten to twelve thousand pounds of currency worth of seals' pelts is lost to the country each sealing voyage by the present system carried on by sealing masters and their crews! (Carroll 1873:34)

Meanwhile, the enlarged territory of the steamers, brought about by their ability to distribute men over larger areas than had the sailing vessels, increased the chances of conflict occurring among the various vessels in the sealing fleet. This likelihood was further enhanced by the over-expansion of the sealing fleet and the increasingly common practice of "stealing" pans from other ships on the assumption that they had been irretrievably lost. Captain L. Kean, a veteran of over thirty years' sealing, commented on the frequency of this practice: "Sometimes you were blamed for taking other ships' seals, but everyone did this, especially in the night." (Kean 1971:verbatim)

The sailing vessels with their own distinctive abilities and limitations usually killed only as many seals

as could be brought on board. The competition among the steamers, however, was such that they killed as many seals as possible in the hope that conditions would permit them to collect as many of their pans as possible. This would appear to make the steamer operation less conservational than the hunt as conducted by the sailing vessels. This, however, was not always the case for the sailing vessels, it will be recalled, were often forced to kill old seals when they were not able to reach the main concentrations of whitecoats. The steamers, on the other hand, were usually able to reach the whelping patches and therefore replace natural mortality amongst the whitecoats, rather than kill the mature breeding seals whose natural mortality rate was very low (Sergeant 1965b:546). This propensity for the steamers to take a higher percentage of whitecoats than had the sailing vessels is illustrated in David Lindsay's account of a sealing voyage he made as surgeon on the S.S. Aurora in 1884:

> Each young seal counted one in settling with the crew and each old seal counted two; of course, an old seal took up more room than two young ones, and on a voyage like this, where the ship could be filled with young, the crew were not anxious to kill old ones. (Lindsay 1911:58)

In spite of the criticism it generated, panning was completely accepted by the personnel involved in the seal fishery. It was efficient and for the most part very successful. Its success, as has already been noted,

depended upon an ability to maneuver in ice and effectively deploy a large number of men. The steamers were able to do both.

The sealing operation in terms of average catch per vessel, however, became so successful that both the number of sailing vessels and the number of men participating in the venture declined rapidly. The immediate success of the steamers had been sufficient enticement to cause the industry to over-expand the steam-vessel sealing fleet. As a consequence, the seal stocks suffered a further reduction, for although the steamers were larger and more powerful, the total annual catch of seals continued to decline throughout the latter half of the nineteenth century. All of these factors, then, initiated dramatic changes within the industry.

The harvesting of whitecoats by the steamers was made more effective by the development of other strategies when the environmental, resource, or human components of the situation made the practice of panning, as outlined above, either impossible or impracticable.

When working in the whelping patch the captains of the various steamers endeavoured to place their men, as could be expected, amongst as many seals as possible. At the same time they desired not to compete directly with the crews of other vessels. Therefore, if another steamer's crew were working in a particularly good area of

the patch it was better to place the men in a secondary location rather than have both crews competing with one another. If one steamer, for example, were working a patch containing 1,000 seals, a competitor would harvest more animals in a smaller patch containing only 600 animals, than if it attempted to gather a portion of the seals in the larger patch. By this reasoning, then, there was an unwritten rule amongst the sealing captains that they, if at all possible, would not "bother" another man's crew when they were working on the ice.

There were many occasions, however, when the vessels were compelled to work at very close quarters, such as when the patch had already been "cut-over". In these instances the competition was extremely fierce and it was every man for himself. In order to "stake" a claim to as much territory as possible, in these circumstances, one or more of the watches were placed on the ice with orders for certain select men to quickly "run-out" a line of flags ahead of the ship (Figure 5-9), as occurred in 1972 when the Canadian sealing vessels were compelled to work in close proximity to one another (Plate 5-14). Thus, they were able to claim a "corridor" by placing flags at regular intervals and by killing whatever whitecoats lay directly in their path. By mutual consent no other ship was permitted to steam through another vessel's territory, and the advancing line of flags could only be cut-off by

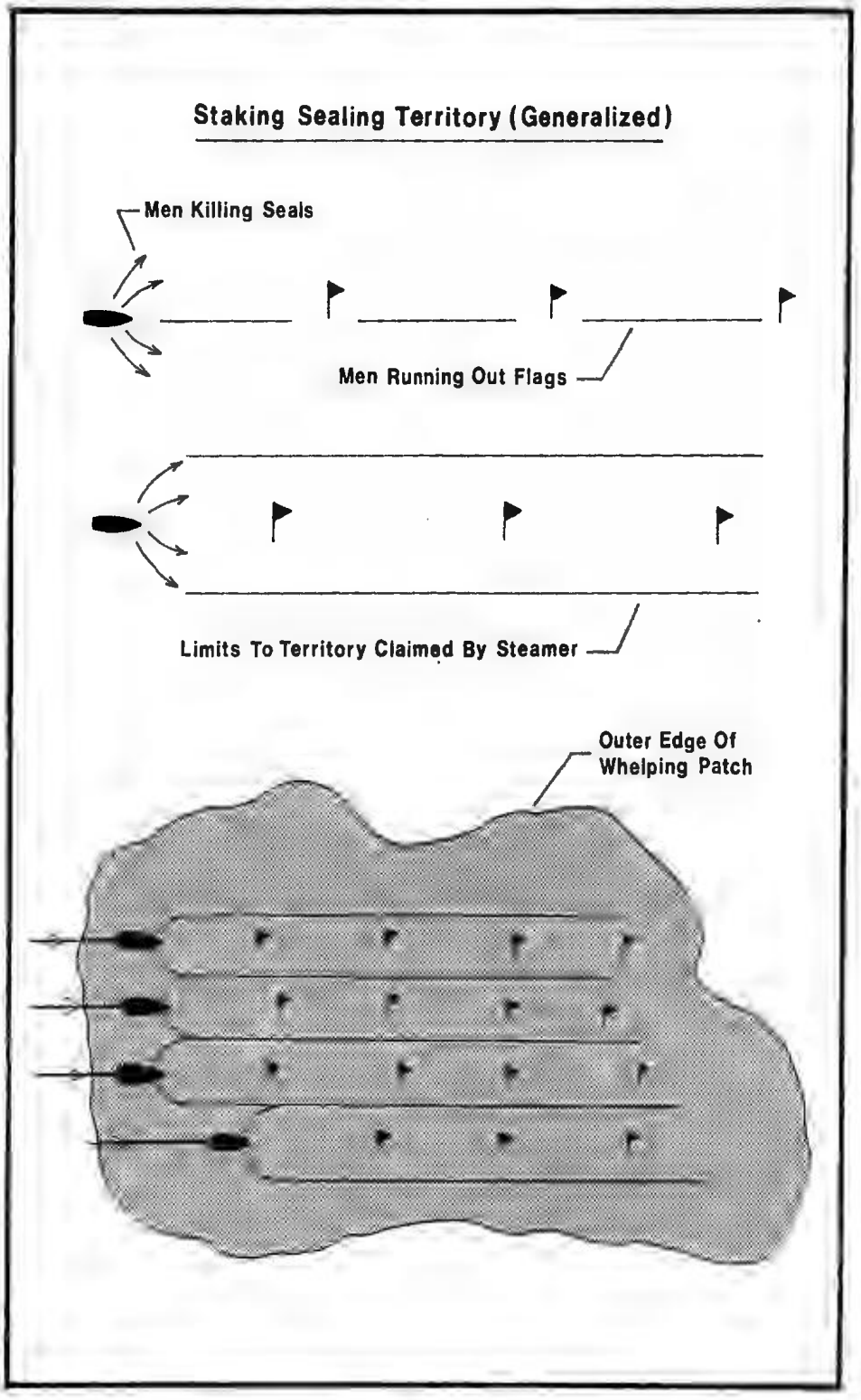
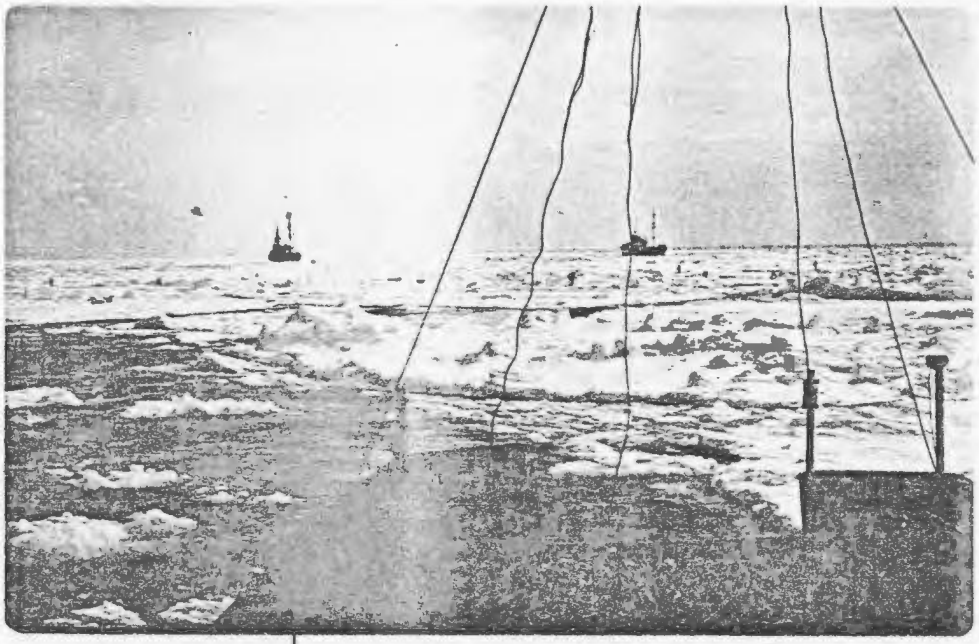

Staking Sealing Territory (Generalized)
Men Killing Seals
Men Running Out Flags
Limits To Territory Claimed By Steamer
Outer Edge Of
Whelping Patch

Figure 5-9



Canadian Sealing Fleet: 1972

Plate 5-14

steaming across its path at a "fair distance". The interpretation of what constituted a fair distance depended upon the size and shape of the whelping patch, the number of vessels in the area, and the number of pelts safely stowed below deck. Under these conditions, then, the various vessels usually aligned themselves abreast of one another in order to collect the pelts gathered by their advancing crews (Figure 5-9).

The keenness of the competition among the individual crews when working in such close quarters often resulted in open hostility. Captain L. Kean of Wesleyville, for example, recalled many such incidents:

> Yes, I see lots of fights. They'd run out with flags as fast as they could and try to stake out territory. Another fellow would come right alongside. As long as they got a seal was all that mattered. (Kean 1971:verbatim)

The steamers, then, required special strategies to enable the participants to gain full benefit from the advantages they offered. These techniques, as one would expect, were modified to meet the variable conditions likely to be encountered. It can be seen that these methods initiated the evolution of completely new spatial arrangements and patterns in the on-ice operation, both among the men and among the vessels in the sealing fleet.

STAGE II - THE BEATER OPERATION

It will be recalled that the beater has always rivalled the whitecoat in value, for while it does not render the same amount of oil as does the whitecoat just prior to the end of lactation, its hide is more valuable at this stage than at any other period in its development. Because beaters do not congregate in large, heavily concentrated herds and, more important, are no longer reluctant to flee into the water when approached by man, this part of the seal fishery has seldom been as remunerative as the whitecoat phase.

It is during this stage of the seal fishery that the venture attained some of the characteristics one would normally associate with a true hunt. In the whitecoat slaughter the operation had all the characteristics of an abattoir. The beaters, however, instead of lying passively on the ice, had to be hunted "with guns and by stealth." (Colman 1937:149) In their endeavours to locate these animals the maneuverability of the steamers enabled the participants to enjoy the same advantages over the sailing vessels as had been evident in the whitecoat phase. While there were fewer steamers, the effectiveness of their search as they criss-crossed the fields of ice easily compensated for the drastic reduction in the number of vessels participating in this phase of the hunt.

During the first half of the nineteenth century the difference between a poor trip and a successful one often depended upon the number of beaters a sailing vessel could kill. Because of their lack of maneuverability, for example, many of the sailing vessels were unable to reach the whelping patches before they had dispersed, while many of them were often jammed in the ice-pack until the whitecoats had changed to beaters. This, and their lower operating costs, mediated towards an unusually high representation in this phase of the operation.

In spite of their superiority the steamers did not pursue the beaters with the same intensity as had the sailing vessels. First, only a relatively small percentage of their extremely large crews (which had been so effective in the first phase of the venture) could be used. Secondly, this, in addition to the other expenses, made the daily operating costs of the steamers exceptionally high. Thirdly, in most instances there was a great deal of competition among the steamers to be first to land their pelts in order to take advantage of the higher prices offered and, also, to reduce the risk of having their pelts spoil as a result of being stored in a confined space for an unduly long period of time. Fourthly, their extra size, speed, and clouds of billowing smoke tended to severely limit the distance they could cover in approaching the beaters before they would flee into the water.

The number of beaters killed by steamers and sailing vessels, therefore, tended to remain relatively constant. The advantages of the steamers were balanced out by their smaller numbers and an increasing reluctance on the part of their owners to pursue the beaters with the same effort as had been exerted during the sailing vessel era.

The methods and techniques used by the sailing vessels and steamers varied, as in the whitecoat phase, with the different ice conditions, availability of the resource, and the relative positions of the various vessels. Because the beaters were less placid, however, the overall manner of deploying the men did not change to any great extent with the advent of steam. Just as a sailing-vessel crew invariably had to travel considerable distances because of the lack of maneuverability of their vessel, the men in the steamers also had to traverse similar distances if they did not wish to startle the resource. As Captain Kean pointed out: "The ships wouldn't go too handy to the seals. No nearer than a mile because you'd scare them off." (Kean 1971:verbatim)

The principal distinguishing feature between this aspect and the whitecoat phase was the higher degree of labour specialization required. If the ice was heavy and closely packed, select members of the crew, armed with their own guns or weapons supplied from the ship's arsenal, were sent ahead of the other sealers. Each

gunner, in turn, was accompanied by one or two men, known as "dogs", who carried a supply of cartridges, or in the earlier days, shot and gun powder.

The overall strategy was to get as close as possible to the herd and then, from behind a protective pressure ridge or hummock, carefully shoot the beaters one at a time. Ideally each seal was shot in the head thus causing instantaneous death. This method offered the best opportunity for success because the herd was not usually startled unless an animal was only wounded and began floundering about. This technique also tended to reduce hide damage.

If the herd were large enough, and if no other vessels were working in that area, several gunners would advance abreast of one another to reduce the danger of being caught in a cross-fire (Figure 5-10 and Plate 5-15). Seals killed in this manner were immediately slit from mouth to hind flippers by the "dogs" who also cut off the tail of each animal. While the gunners advanced toward another herd a portion of the crew which had been following behind moved forward to finish the pelting, while the remaining sealers dragged the pelts to nearby pans to be later collected by the steamers. In the case of the sailing vessels the pelts were usually transported directly to the ship.

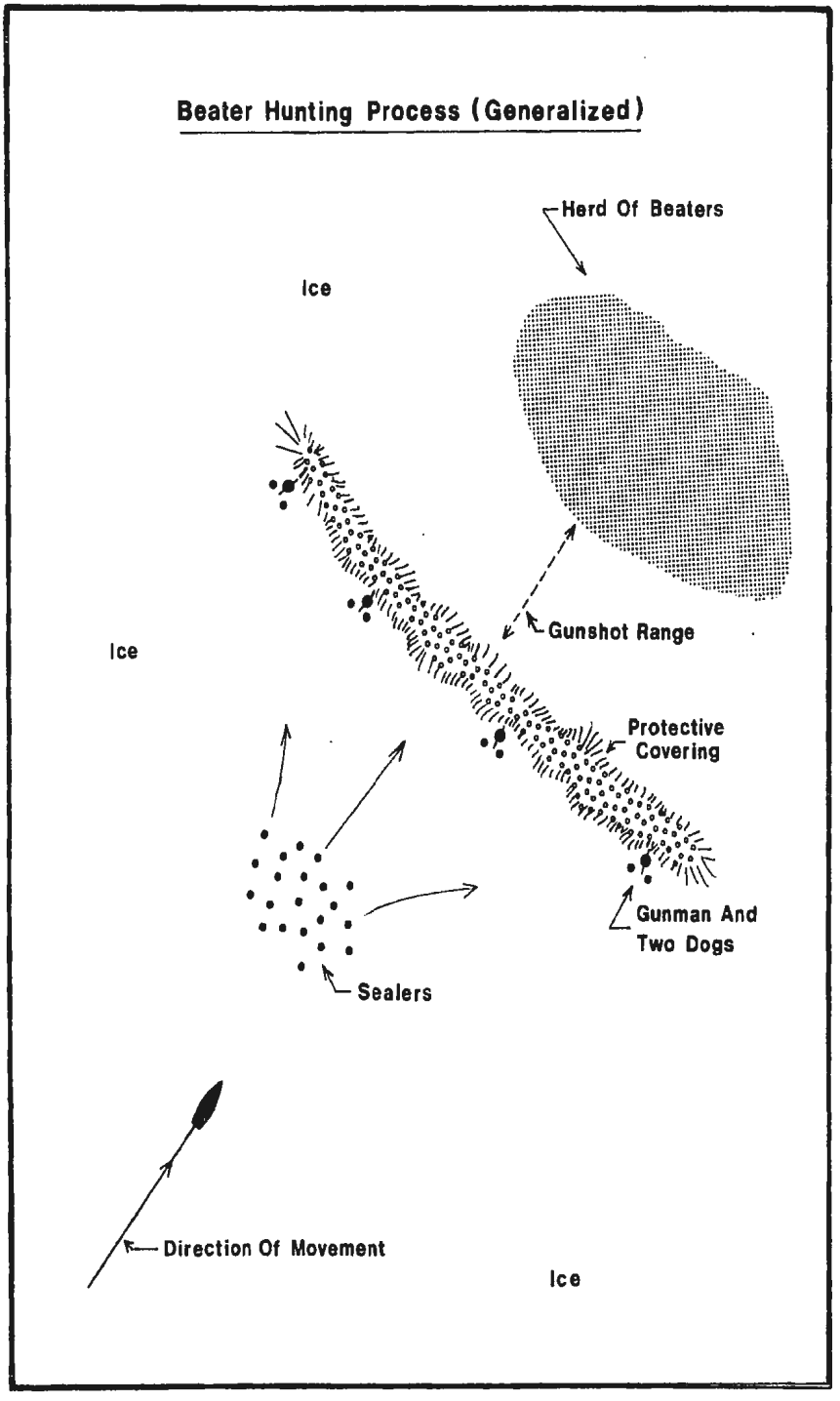
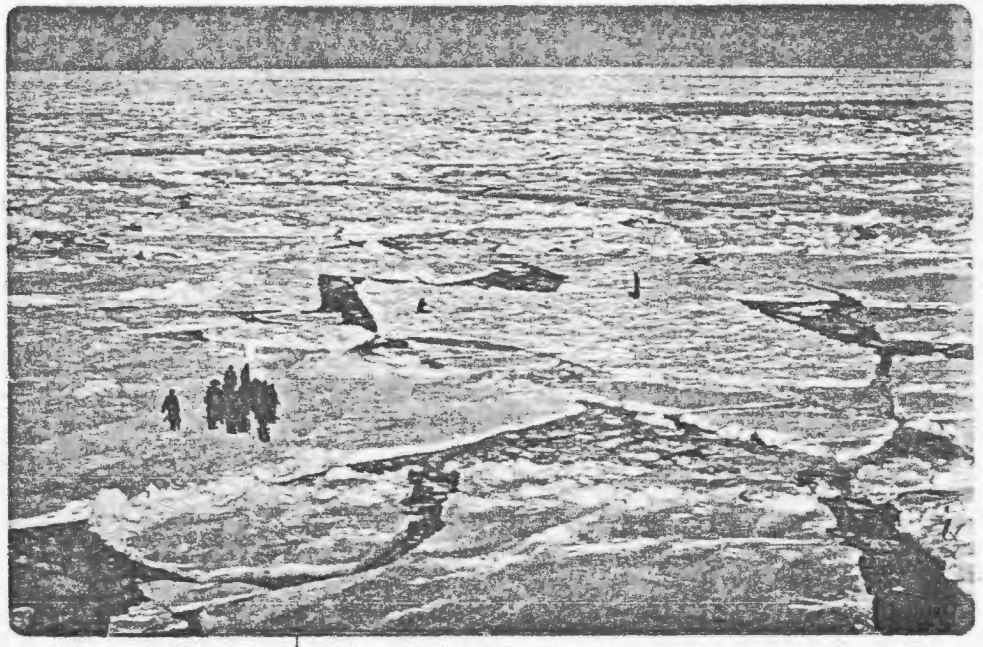

Beater Hunting Process (Generalized)
Herd Of Beaters
Ice
Ice
Gunshot Range
Protective Covering
Gunman And Two Dogs
Sealers
Direction Of Movement
Ice

Figure 5-10



The Beater Operation: 1972

Plate 5-15

At the end of each day the tails were ceremoniously counted in the presence of the captain and other gunners. This provided an accurate count of the number of seals that had been killed. By comparing this with the number of pelts taken aboard it was possible to obtain a good indication of the number of seals still to be collected. It also established the marksmanship of the various individuals concerned and was therefore used to determine who would be designated gunner on the following day. The formality associated with "tail-counting" and the prestige of being considered "top" gunner catered to the competitive spirit which permeated every aspect of the seal fishery. As Captain Kean recalled:

> There was a lot of competition. It was very important to get a lot of tails. There was the same competition with vessels. Everyone wanted to be the first home with the biggest catch. The men wanted to be the best gunman, and the dogs wanted to be with the best gunners. (Kean 1971:verbatim)

When the ice was loose and the sealers were unable to approach the beaters directly from the vessel the same general strategy was implemented whenever possible. In this instance, however, the gunners, "dogs", and ordinary sealers used punts and dories to cross open water. Thereafter the seals were stalked cautiously and shot from a distance as they lay sunning themselves on the ice.

Good weather always improved the chance of success in this phase of the hunt for when the sun was shining the beaters were more reluctant to leave the ice. Pearce recorded in his diary, for example, that "if we don't have fine weather the seals won't ride..." (Pearce 1917:28)

Ideally, then, the beaters were killed on the ice. There was, however, a less successful technique employed in this phase as well, especially when the ice was extremely loose and the weather dull and overcast. Under these circumstances the beaters were often shot in the water. This practice caused a considerable amount of damage to the hides, as illustrated in the case cited by Pearce where a beater was taken only after "a punt was after him [beater] for sometime before they got him, although he was completely riddled with shot." (Pearce 1917:28)

With hindsight the beater operation can be viewed as a useless slaughter that unnecessarily depleted the seal stocks. Captain Abram Kean, business man, legislator, and Newfoundland's most successful sealing captain, commented on the decimation of the seal stocks caused by the use of firearms:

> I estimate that the number of old seals brought to port would average at least 400 per vessel, or 160,000 per year [peak of the sailing vessel era]. In my opinion, for every seal saved and brought to port 20 would be sunk. (Kean 1935:131)

This phase of the hunt, then, differed greatly from the whitecoat operation both in the nature of the resource and in the greater demands it made upon the individual skills of the sealers. There was not, however, the same degree of variation in the strategies and techniques of deploying the men in an effort to adapt to changes that occurred from day to day in the resource, ice-conditions, and relative location of the different vessels. The impact of the steamers on this segment of the seal fishery was also not nearly as dramatic as it was for the whitecoat phase.

STAGE III - THE MOULTING HERDS

It has been noted that all of the mature seals, both male and female, move onto the ice towards the end of April after they have finished mating, where "They repose themselves before they begin their long voyage of the summer, sleeping all day in the sun and neither fishing nor eating, and taking only a little snow to quench their thirst." (Mallet 1918:20)

Because they were very thin and their patchy hides offered little value, the moulting herds were never considered prime objectives of the Newfoundland sealing vessels. As Colman pointed out:

> The moulting harps, though they spend much of their time on the ice off the Funks, are not hunted intensively by the Newfoundlanders; they are by then thin, and their pelts produce relatively little oil. (Colman 1949:42)

The motivational forces, and the methods employed by the vessels which did seek out the moulting herds, were very similar to those of the beater hunt. The sailing vessels that did participate in this aspect of the hunt were either "clean" ships that had become jammed in the ice-pack, or were "well-fished" vessels that were on their second or third voyage. The steamers participating in this phase, however, were invariably ships which had returned to port and then sailed for the ice-fields again with a smaller crew in order to reduce operating costs and thus maximize profits. Maxwell noted in 1874, for example, that "If the vessels are cleared before April 15, they make a second voyage and hunt the Dippers [beaters] and old Harps, principally the latter." (Maxwell 1874:266)

This phase of the seal fishery, in terms of long range planning and overall preservation of the industry, was even less justifiable than the beater operation. The moulting patches were composed primarily of breeders (animals that had taken four to five years to mature) which had very few natural predators and could therefore expect to give birth to at least ten to fifteen pups over their lifetime. Each female killed in this phase, therefore, was potentially equivalent to fifteen whitecoats slaughtered in the early phase of future hunts.

It can be seen, then, that the changes which occurred within the industry were primarily a consequence

of the introduction of steam vessels and their effective application in the whitecoat operation, rather than in the search for beaters and old seals, where their presence did little to alter the methods that had evolved during the sailing vessel era.

It is evident, therefore, from the foregoing reconstruction of the hunt and its distinctive phases of operation that the introduction of more maneuverable steam-powered vessels and the gradual replacement of the sailing vessels with a smaller fleet of sealing steamers made for major and profound changes in the industry. Although the average crew size quadrupled, the total numbers of sealers and vessels were drastically reduced. In addition the "on-ice" aspect of the venture was completely altered by the development of new strategies and techniques which greatly increased the efficiency and effectiveness of the sealing fleet. This appears to have further reduced the seal stocks, for by the end of the century the total annual catch was again declining.

This reconstruction represents an examination of the seal hunt on a micro-scale appropriate to the "on-ice" operation. A larger scale is needed to illustrate the overall aspects and subsequent adjustments which occurred

in other spheres of the venture with the acceptance of this new technology. The following chapter, therefore, deals with the social and economic effects which the steamers had on the sealing personnel, while chapter VII presents the ensuing evolution of new patterns of areal representation in terms of sealers, owners and vessels.

CHAPTER VI

THE PERSONNEL

Chapter IV dealt with the superiority of the steamers over the sailing vessels, while Chapter V illustrated the effects this infusion of new technology had on the methods and techniques employed in the "on-ice" operation. This chapter will present the influence which the growth of the steam-powered fleet had upon the personnel involved in this venture. It will be concerned with the development of completely new economic arrangements between the sealers, masters and owners, and also, at a less significant level, the deterioration in accommodations and fare provided on the sealing vessels which accompanied the industry's acceptance of the steamers.

ON-BOARD CONDITIONS

As noted previously the average size of crew on the sailing vessels was less than fifty men. The majority of these sealers were accommodated in the forecastle, or "ball-room", located forward of the main hatch, or hold, of the vessel. Because these facilities in most instances were originally designed to provide space for a much smaller contingent of men, the living quarters during each sealing

voyage tended to be extremely crowded and uncomfortable. Some insight into the generally poor standard of accommodation and fare provided on the sailing vessels, for example, may be gathered from the following two excerpts selected from the diary of Joseph Jukes:

> We breakfasted this morning on the hearts and kidneys of young seals fried.... (Jukes 1842:293)

and,

> The constant employment of the men on deck, when they had nothing to do, was boiling, frying, or roasting pieces of seal flesh and eating them. Immediately after a dinner or breakfast down below, they would come on deck and set to work at the seal by way of dessert. Their constant food both at sea or on shore being fish or salt pork, fresh meat is at all times a luxury to them, even though it be that of a seal. (Jukes 1842:306)

This clearly indicates that the sealers on the sailing vessels were served regular meals "down below" which they supplemented with seal meat when, and if, they reached the whelping patches. It was not uncommon, however, for a ship's food supply to run short, especially if the voyage was prolonged. For example, Jukes lamented on April 14th, towards the end of the sealing trip, that their "fresh stores had long been exhausted, as also our wine and spirits, and we were now reduced to tea and the common rum, and had not much of that left." (Jukes 1842:320)

In order to facilitate the individual sealer's endeavours to supplement the regular fare prepared by the vessel's cook "cabooses" (half puncheons lined with bricks),

in which open fires could be kindled, were arrayed on deck. While this arrangement may have satisfied, as Jukes suggests, the nineteenth century Newfoundlander's craving for fresh meat, it also indicates that the attempts to provide regular meals on these vessels were not entirely successful.

The sealer's lot during the sailing-vessel era, then, did not include any unnecessary luxuries. Indeed, many of the necessities, at least by present day standards, could not be provided. Water, for example, was rationed and there was no allotment made for individual hygiene. With the introduction of the steamers, however, on-board conditions degenerated even further.

The first steamers, the S.S. Bloodhound and S.S. Wolf, carried 100 and 110 men respectively. Throughout the latter half of the nineteenth century the average crew size continued to increase (Figure 6-1) until the government, it will be recalled, limited the number of men that could be signed on to a maximum of 270 sealers per vessel. In 1866 the S.S. Wolf carried 130 men and in 1867 the S.S. Esquimaux had a crew of 165 sealers. By 1872 the nineteen steamers in the sealing fleet carried an average of 120 men each and in the following year five vessels had crews numbering in excess of 200 sealers. In 1882 the average size of crew for the entire sealing fleet exceeded 200 men for the first time and that same year the 491-ton S.S.

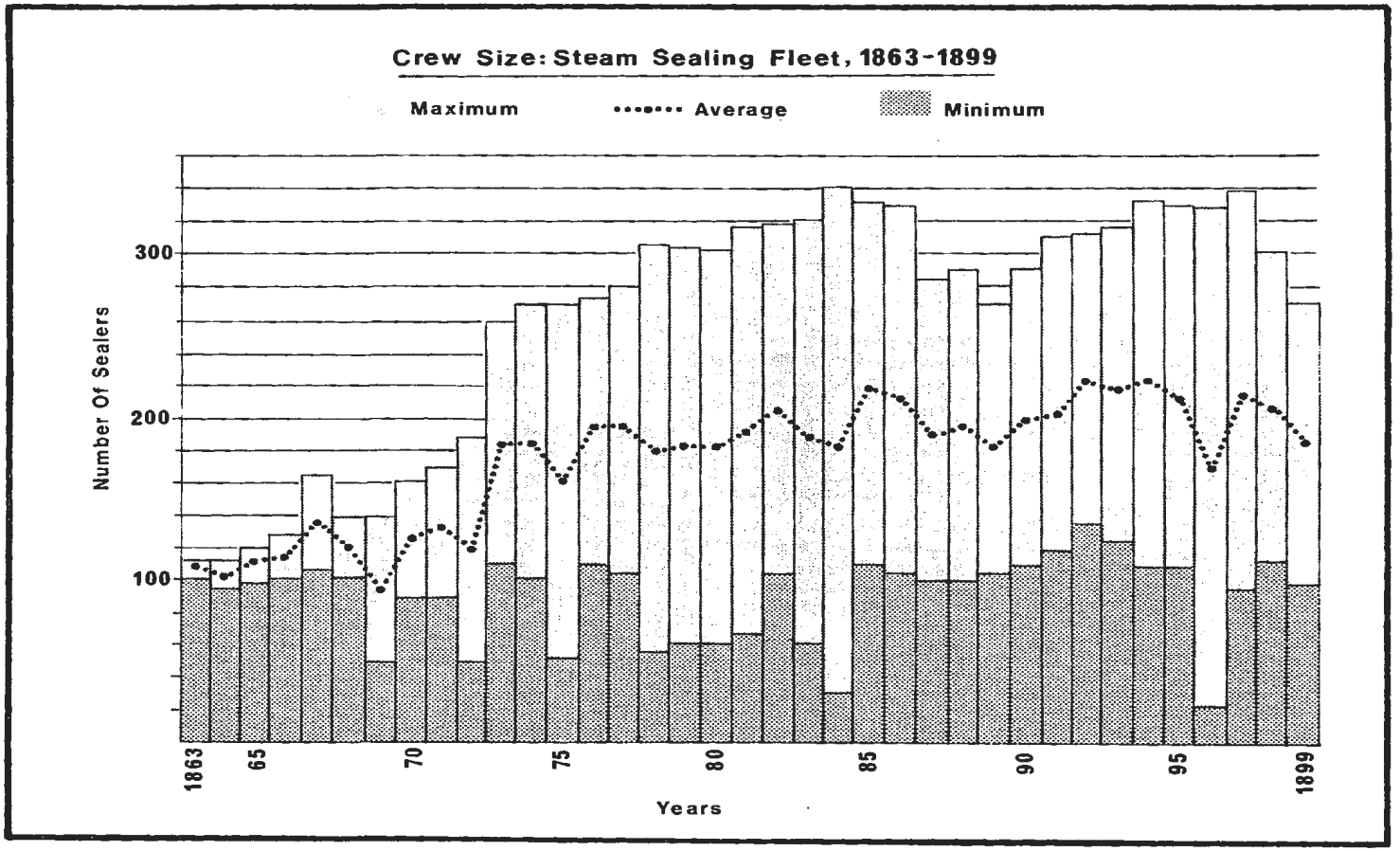

Crew Size: Steam Sealing Fleet, 1863-1899
Maximum
Average
Minimum
Number Of Sealers
300
200
100
1863
65
70
75
80
85
90
95
1899
Years

Figure 6-1

Thetis carried 319 sealers. Figure 6-2 shows that after reaching a high of two tons per man in 1871 and 1872, the average tonnage per sealer consistently declined throughout the next twenty-seven years. Consequently, as the average size of crew increased without a corresponding increase in tonnage, the on-board accommodations began to deteriorate even further. Within ten years of their introduction, for example, the Reverend Moses Harvey was able to write concerning this matter:

> On board, their fare is none of the daintiest, and no man who is squeamish about what he "eats, drinks, or avoids", need attempt to go "soal [sic.] hunting". In the forecastle of each vessel, or other parts of the ship, rough berths are constructed. (Harvey 1873:255)

The "other parts of the ship" were the holds which were utilized as sleeping and living quarters by the sealers. Even as recently as the present century Captain Llewellyn Kean of Wesleyville is able to recall his own steamer-based experiences which illustrate the abominable conditions the ordinary sealer had to endure:

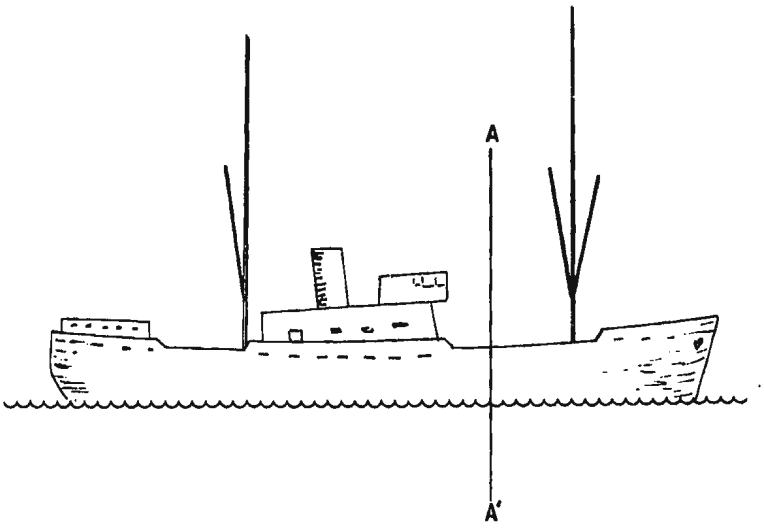
> There were no quarters. They'd sleep where you put the seals. She'd be full of coal when she went out. There were berths built up. The men's bunks were under the gunnels on each side. When you'd get a load of seals the bunks would come down and the seals go there. The men would take their belongings and lie on top of the pelts in the last week or two. (Kean 1972:verbatim)

These bunks (Figure 6-3) were constructed of rough timber and each man brought a "donkey's breakfast" or palliasse, that is, an armful of straw in a cloth covering,


Vessel Tonnage Per Sealer: Steam Sealing Fleet, 1863-1899
Tons Per Sealer
2.0
.5
1.0
1863
1865
1870
1875
1880
1885
1890
1895
1899
Years

Figure 6-2

Schematic Sketch Of Sealing Accommodations In Steamer Fleet



Cross Section Of Crew's Quarters A-A'

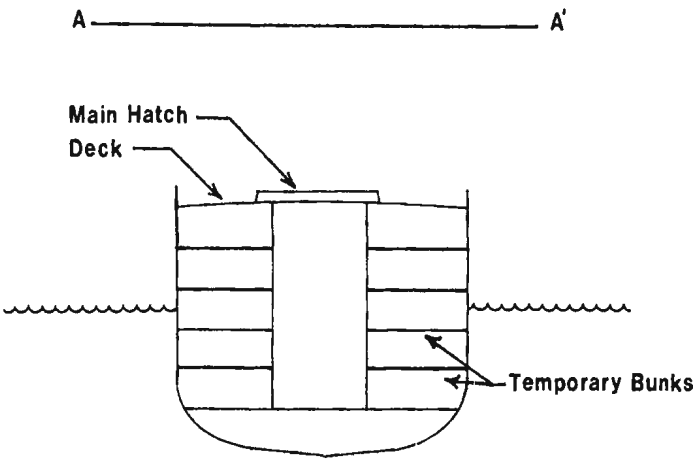


Figure 6-3

to line his bunk (Grenfell 1897a:287). The sharing of bunks by two or three men and their alternate use by different watches permitted further economy of space.

Unlike the outfitters of the sailing vessels, the steamer companies were unable, or unwilling, to incur the costs of providing sufficient food and working personnel to adequately cook for such a large contingent of men. Consequently, the mainstay of a sealer's diet was hard-bread, butter and tea. One hot meal, usually consisting of salt fish or meat and flour "duffs", or "dumplings", was provided on alternate days - Tuesday, Thursday, Friday, and Sunday (Vey 1972:verbatim). The Sunday meal, however, was the dietary highlight of the week for

> On Sunday they'd make sweet pudding, a drop of molasses in it. This [the other prepared meals] was Tuesday, Thursday, Friday, and Sunday, and the rest you made yourself, hard-bread and butter. (Kean 1972:verbatim)

Immediately after the men had signed articles and stowed their meagre belongings on board they formed partners with two or three of their friends in what they called a "square" (Vey 1971:verbatim). Each sealer took turns bringing the weekly supply of hard-bread and butter to the area claimed by the square as its territory. It was also each man's duty to bring hot water, tea and other food from the ship's stores and galley to the square on a daily basis, thus facilitating distribution amongst the men with a minimal amount of delay and bickering. Therefore,

as in the sailing vessel era, it was only "When a ship was amongst the whitecoats [that] the crew lived well, as they ate the livers, hearts and flippers of the seals" (Lindsay 1911:42).

The introduction of the steamers, then, while reducing the physical labour and enhancing their chances of success, appears to have caused an overall deterioration in the on-board living conditions. Some indication of the deplorable conditions on the early steamers can be better illustrated by the following legislation which was not passed until 1916:

> The following regulations shall apply to all steamers prosecuting the seal fishery:
>
> (1) In addition to the food usually supplied, not less than one pound of soft bread shall be served out to each member of the crew three times each week;
>
> (2) Beef, pork, potatoes and pudding shall be supplied for dinner three times each week;
>
> (3) For breakfast stewed beans and fish brewse shall be supplied alternately;
>
> (4) Soup shall be supplied on Saturdays, in which onions, potatoes and turnips shall be ingredients;
>
> (5) Fresh beef shall be supplied to each member of the crew once each week, and when fresh beef is not available through circumstances over which the owner or master of the ship has no control, canned beef shall be substituted therefor;
> (Of the Prosecution of the Seal Fishery, chapter 162, Consolidated Statutes of Newfoundland, Volume III, 1916:Section 3)

If it was necessary for the Newfoundland House of Assembly to guarantee the provision of these bare necessities at this late date, it is incredible that the sealers on the early steamers were able to survive the ordeal let alone continue to compete with one another for the opportunity to participate.

In view of these abhorrent conditions: cramped living quarters; lack of facilities and fresh water for sanitary purposes; inadequate fare; and the necessity of each man having to forage for himself, the startled comment of Dr. David Lindsay, a surgeon on the whaler Aurora that sailed from St. John's in 1884 after picking up a crew of sealers, can be properly appreciated:

> I looked into the 'tween-decks and saw a horrible mess. The bunks were full of men, many playing cards, as each bunk held four. They must have been stifled. For light, lamps burning seal oil were used, and the reek coming from the main hatch would almost have suggested fire. (Lindsay 1911:47)

END OF VOYAGE INCOME: THE SAILING VESSELS

The proceeds of a sealing voyage during the sailing vessel period were divided among sealers, captains and owners according to a pre-arranged agreement. The owners supplied "all the boats, sealing gear, powder, shot and provisions, in consideration of which they are entitled to

one-half the seals, old and young..." (Carroll 1873:9) Normally the remainder was shared equally among all members of the crew. The captain, if he was not the proprietor of the vessel, was "paid by the owner four pence to six pence for each seal the vessel brings in, or one shilling to one shilling and three pence per cwt. [hundredweight: 112 lbs.] according to the agreement that may be made between them previous to the commencement of the voyage." (Governor LeMarchant, C.O. 194:129, Report to Earl Grey, May 4, 1848:148)

The ordinary sealer was paid in both kind and cash in accordance with the "barter" or "truck" system which was the accepted method of transacting business between fisherman and merchant during the first half of the nineteenth century. In the cod fishery this was a credit arrangement entered into by a merchant and fisherman whereby the latter was outfitted for the fishery on the proviso that the former was to receive all his produce, with the prices for both supplies and fish being determined by the merchant (Prowse 1896:379). It was subsequently transferred to all other seasonal activities. In 1828, for example, Philip Gosse recorded that "each man was allowed to take up goods on the credit of the [sealing] voyage, to a certain amount, perhaps one-third, or even one-half, of his probable earnings." (Gosse 1890:48)

There are numerous indications that owners were prepared to accept only minimal risks and that the burden of unprofitable voyages fell equally upon both owners and ordinary sealers. Those sealers who were unable to make a paying voyage, therefore, were liable to the merchants as they had signed notes for the goods, or "crop" they had received in advance (Gosse 1890:48). In order to offset even further the economic consequences of poor catches and lost vessels, the owners improved their profit margins by taking advantage of the competition for berths among the sealers. The keenness of men wishing to take part in the venture guaranteed that the number of applications always exceeded the number of berths. Consequently, each sealer was required to "pay the owner a sum varying from ten shillings to thirty five shillings for being allowed to proceed in the vessel, which is called Berth Money, each man has to find a gun, or to pay the hire of one and also has to find twenty-five sticks of firewood for fuel while on the voyage." (Governor LeMarchant, C.O. 194:129, Report to Earl Grey, May 4, 1848:148)

In 1806, at the beginning of the sailing vessel seal fishery, the sealers could expect to earn "from £5 to £25 for their few weeks' work". (Head 1971:337) By 1819, however, Anspach noted that the expected earnings would only range "from nine to twelve pounds sterling per man." (Anspach 1819:423) It appears, then, that the earnings of

the ordinary sealer may have been declining at a very early date. As newer and bigger vessels carrying larger crews were introduced throughout the first half of the nineteenth century, the costs and risks of failure grew correspondingly greater. At the same time the total annual catch, although fluctuating from year to year, was generally decreasing and the average catch per vessel was declining. This, in the absence of substantial increases in the price of seal products, caused both the owners' profits and the sealers' earnings to continue declining during this period.

END OF VOYAGE INCOME: THE STEAMERS

It has already been noted that the steamers were much more expensive to purchase, outfit and operate than were the sailing vessels. The sealing companies, therefore, endeavoured to ensure their profits by changing the traditional sharing arrangements. Consequently, the crew's share of the profits to be made on a sealing voyage was reduced from one-half of the vessel's total catch to one-third. In spite of this, the steamer captains, it will be recalled, were always able to have their choice of the better men: working conditions were less arduous; physical risks were reduced considerably; the

chance of returning with a paying load was greatly enhanced; the average number of seals taken per vessel was greater than for the sailing vessels and finally, because "The men that go in steam ships pay no berth money, those that go in sailing vessels pay from $4 to $6 as berth money - the berth money depends on the character of the man." (Carroll 1873:9)

The practice of "cropping", that is, advancing credit to the sealers, was continued throughout the steamer period into the present century and its importance to the ordinary sealer is demonstrated by Captain Kean's recollections of sixty-five years ago when

> They [the sealing companies] would give you a crop, that was nine dollars. You might want a suit of oil skins. Boots you had on your own, and then a kettle for tea aboard the ship. We had to have our own kettle, our knife, our spoon, everything else all cheap. A couple of pounds of tobacco. When you come in you had to pay twelve dollars. You didn't have to take the crop, but everyone needed it. (Kean 1971:verbatim)

Figure 6-4 shows the average catch per sealer for the steamer fleet between 1863 and 1899. Superimposed on this is a graph representing the total number of sealers who signed articles as crewmen on the steamers. It can readily be seen that between 1863 and the early 1870s the numbers of men and vessels were still low enough to permit the annual average kill per sealer to increase each year. Thereafter, however, the propensity to hire on larger crews and the addition of newer vessels (Figure 6-5) caused the

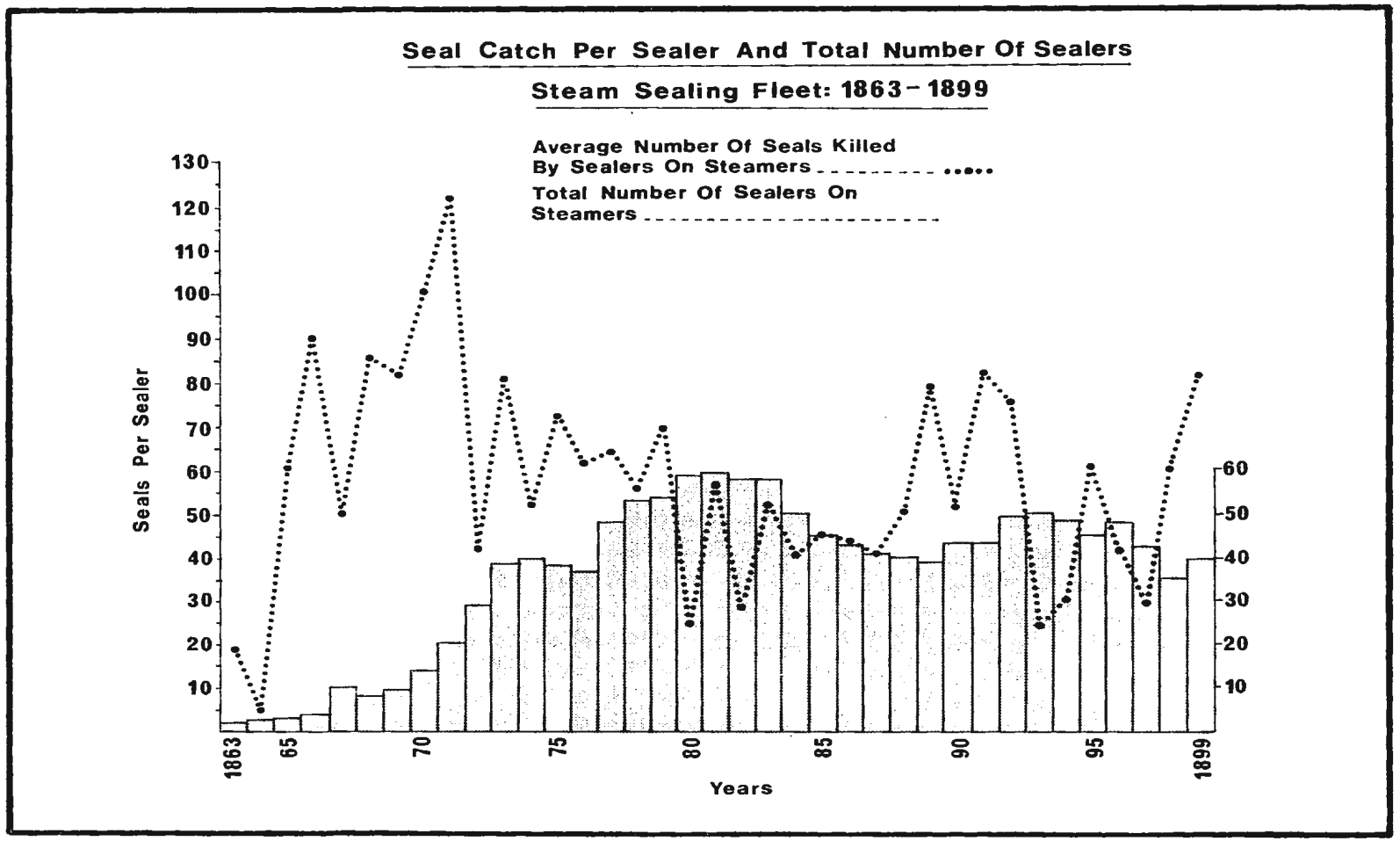

Seal Catch Per Sealer And Total Number Of Sealers
Steam Sealing Fleet: 1863 - 1899
Average Number Of Seals Killed By Sealers On Steamers
Total Number Of Sealers On Steamers
Seals Per Sealer
130
120
110
100
90
80
70
60
50
40
30
20
10
60
50
40
30
20
10
1863
65
70
75
80
85
90
95
1899
Years

Figure 6-4

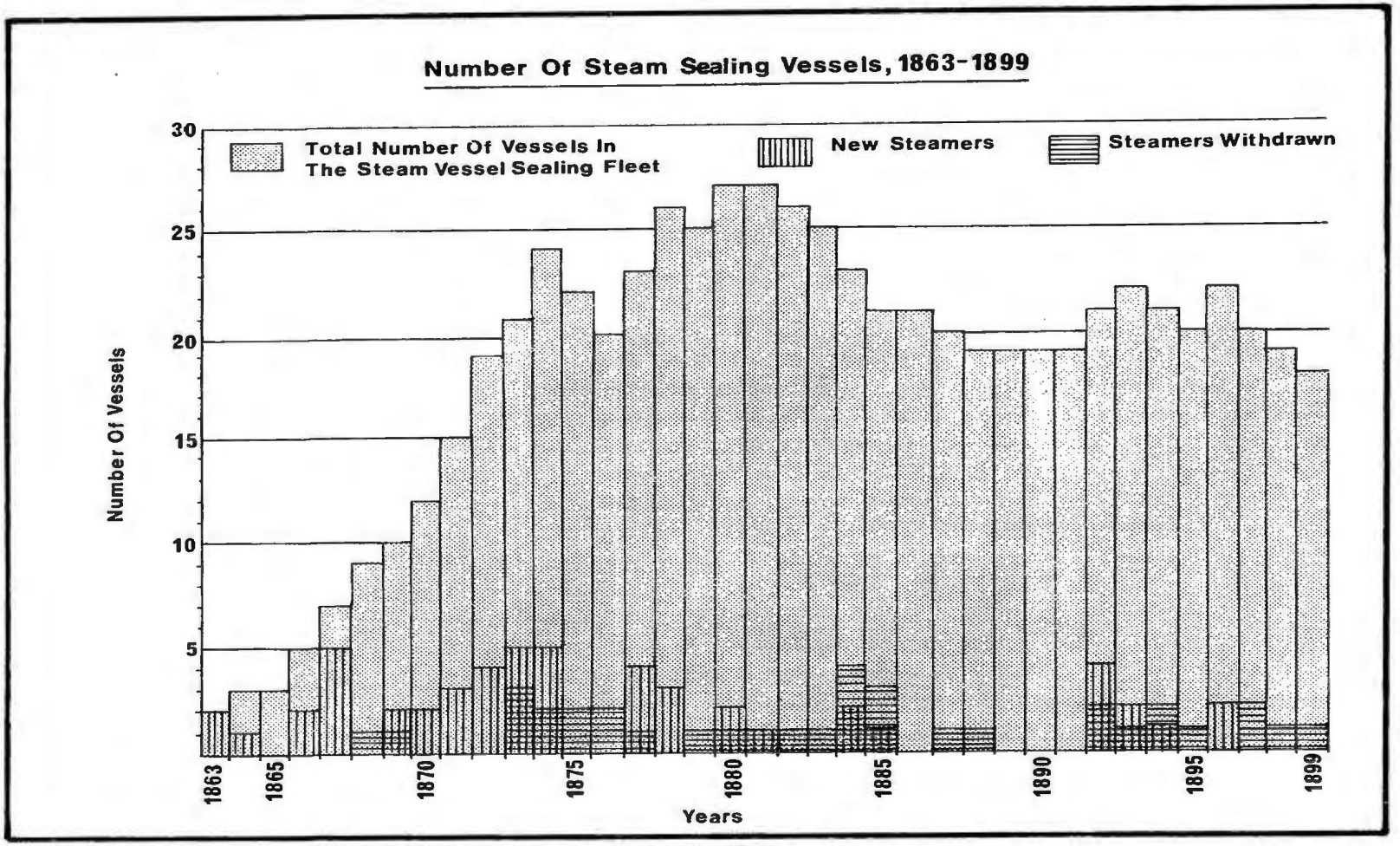

Number Of Steam Sealing Vessels, 1863-1899
Total Number Of Vessels In The Steam Vessel Sealing Fleet
New Steamers
Steamers Withdrawn
Number Of Vessels
30
25
20
15
10
5
1863
1865
1870
1875
1880
1885
1890
1895
1899
Years

Figure 6-5

fleet to be over-expanded and the average catch per sealer to decline. The decline in total personnel throughout the 1880s is reflected in a subsequent increase in the average catch per man. A further increase in the number of participants throughout the early 1890s, however, coincides with a decline in the average number of seals killed per sealer.

Although the financial returns for the early steamers are incomplete, Figure 6-6 illustrates the fact that as long as the crew size remained relatively small and the number of vessels competing with one another was limited, there was a dramatic upsurge in the industry which was reflected in an immediate increase in the amount of money a sealer could expect to earn. In 1865, for example, the 120 sealers in the S.S. Wolf averaged fifty-nine seals per man and were able to earn ninety-two dollars each, while in 1868 the 128 crewmen sailing in the S.S. Lion averaged 120 seals per man and individually made $120.00. By the late 1880s, however, the average wage a sealer could expect to earn had declined to approximately thirty dollars (Figure 6-7). It appears, then, that the over-expansion of the sealing fleet and the increased effectiveness of the operation caused a further reduction in the seal stocks. This in turn was reflected in the resumption of the trend towards diminishing returns for all participants in the venture which had become evident towards the end of the sailing vessel era.

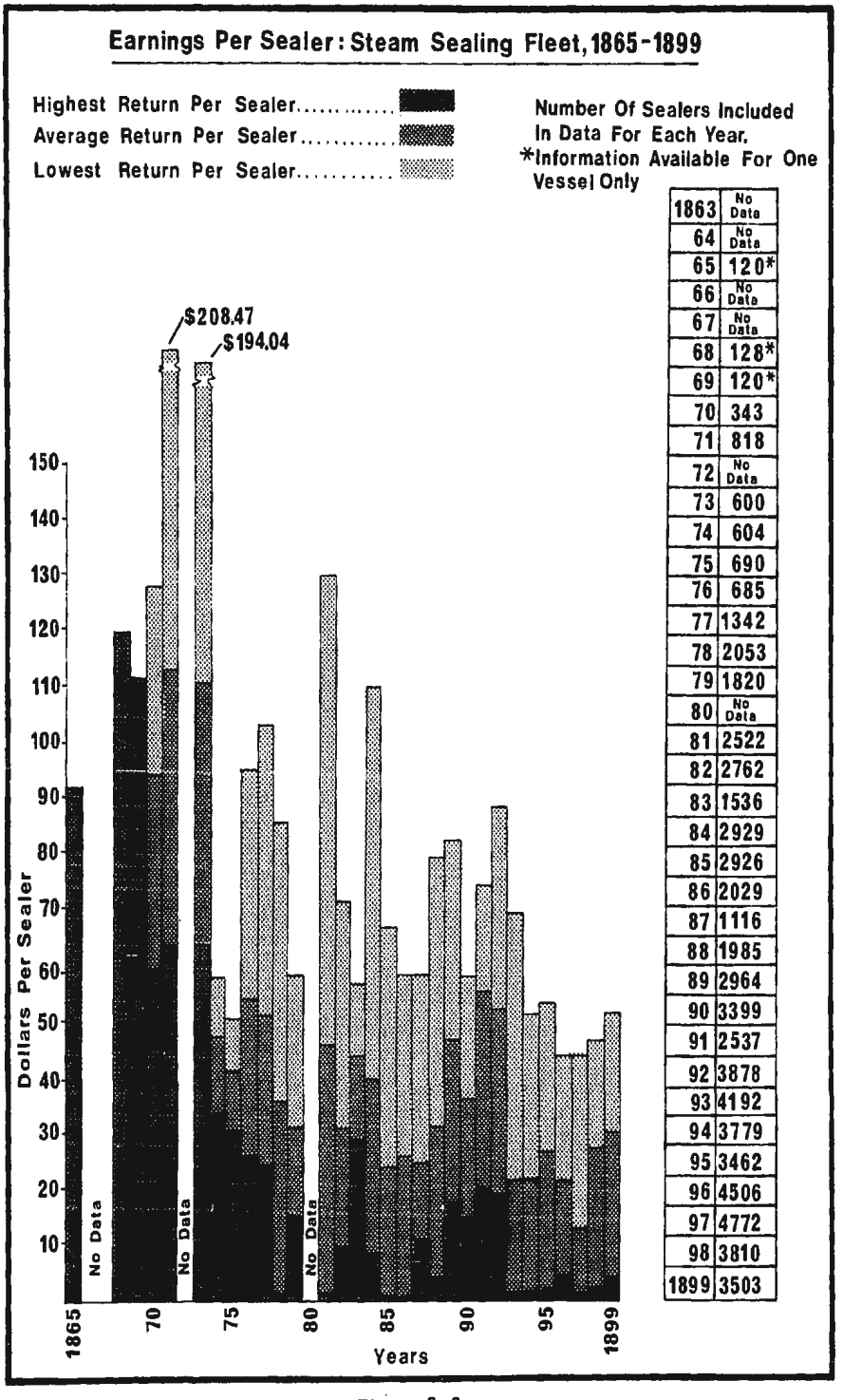

Earnings Per Sealer: Steam Sealing Fleet, 1865-1899
Highest Return Per Sealer.....
Average Return Per Sealer.....
Lowest Return Per Sealer.....
Number Of Sealers Included In Data For Each Year.
*Information Available For One Vessel Only
$208.47
$194.04
No Data
No Data
No Data
Dollars Per Sealer
Years
1865
70
75
80
85
90
95
1899
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
1863 No Data
64 No Data
65 120*
66 No Data
67 No Data
68 128*
69 120*
70 343
71 818
72 No Data
73 600
74 604
75 690
76 685
77 1342
78 2053
79 1820
80 No Data
81 2522
82 2762
83 1536
84 2929
85 2926
86 2029
87 1116
88 1985
89 2964
90 3399
91 2537
92 3878
93 4192
94 3779
95 3462
96 4506
97 4772
98 3810
1899 3503

Figure 6-6

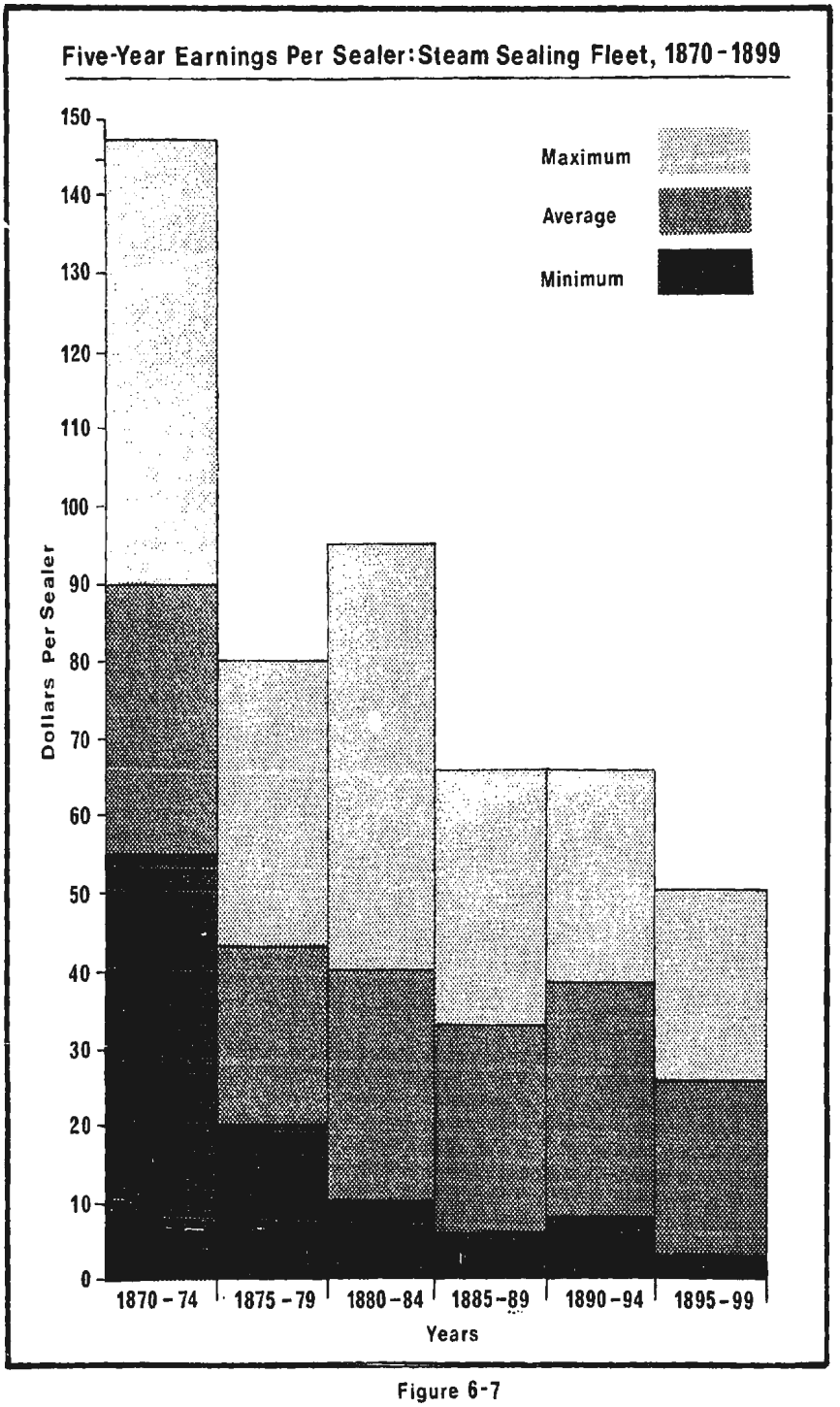

Five-Year Earnings Per Sealer: Steam Sealing Fleet, 1870-1899
Maximum
Average
Minimum
Dollars Per Sealer
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1870-74
1875-79
1880-84
1885-89
1890-94
1895-99
Years

Figure 6-7

The variable nature of the operation is shown by each year's maximum and minimum earnings which represent vessels that were either "well-fished" or "clean". Figure 6-8 further illustrates this variation in the average number of seals killed per sealer (and as follows, his expected earnings) for the five-year period between 1870 and 1874. It can be seen that even by this early date the fleet had become over-expanded to the extent that there were not enough seals in the whelping patches to provide a good trip under normal circumstances for the entire fleet. Consequently, all vessels could not be successful. Although many steamers were known as "good ice-boats" and certain captains earned the reputation of being "Jowlers" (successful), the individual sealer's chances of enjoying a successful voyage varied considerably from year to year regardless of the captain or vessel (Figure 6-8). The S.S. Lion, for example, was highliner in 1870 and 1871. In 1872 and 1873, however, it did relatively poorly. The following year, 1874, saw the Lion again highliner of the fleet. The S.S. Walrus, meanwhile, did better than average for the first four years represented, but in 1874 her crew averaged only 20.6 seals per man. This variability may have been due to the fact that the command of both these vessels had changed in 1872. The S.S. Eagle, on the other hand, was a new vessel of 343 tons purchased by Bowring Brothers in 1871. Between 1871 and 1874 it was under the

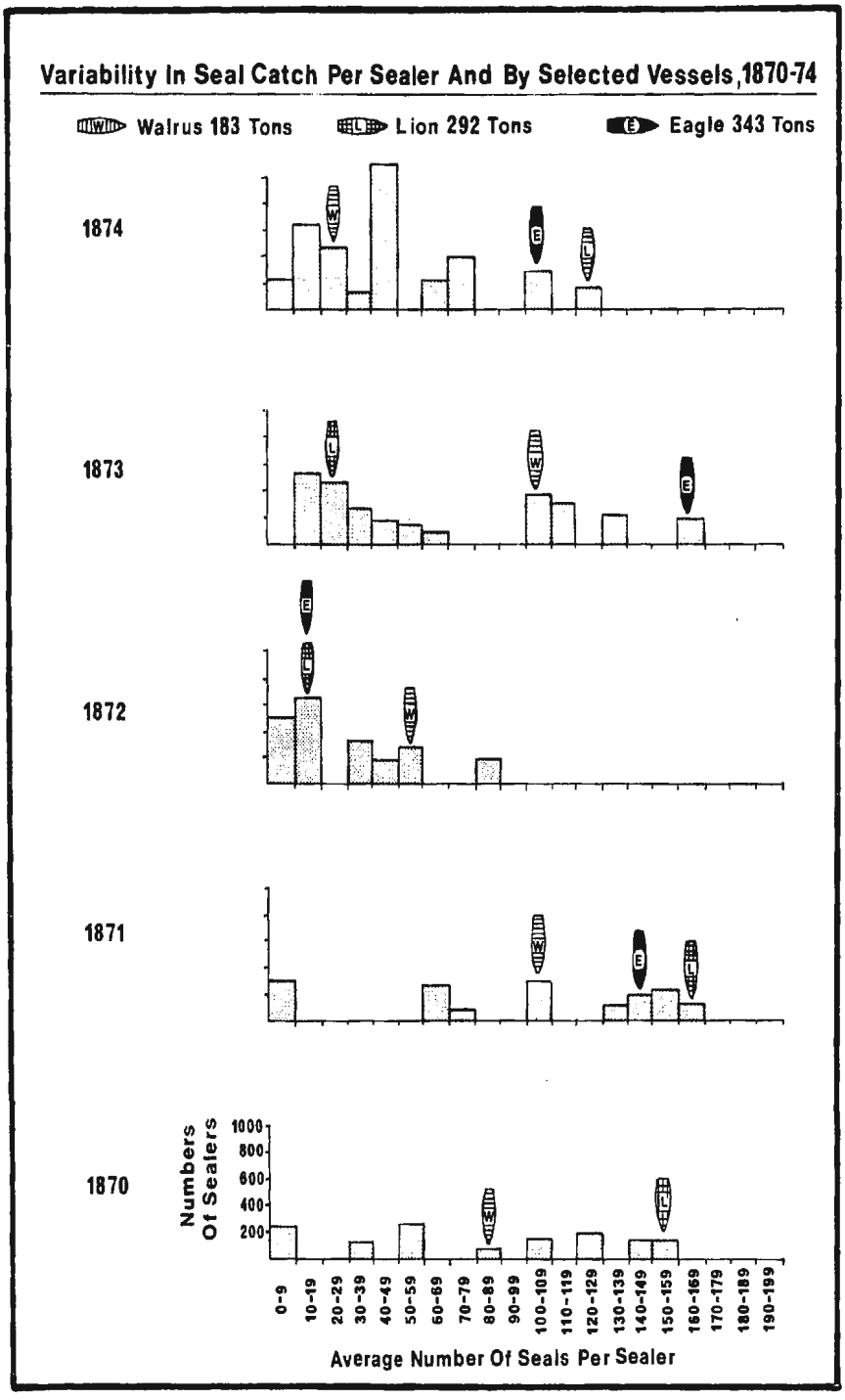

Variability In Seal Catch Per Sealer And By Selected Vessels, 1870-74
Walrus 183 Tons
Lion 292 Tons
Eagle 343 Tons
1874
1873
1872
1871
1870
Numbers Of Sealers
1000
800
600
400
200
0-9
10-19
20-29
30-39
40-49
50-59
60-69
70-79
80-89
90-99
100-109
110-119
120-129
130-139
140-149
150-159
160-169
170-179
180-189
190-199
Average Number Of Seals Per Sealer

Figure 6-8

command of Captain William Jackman. In the first year his crew averaged 142.7 seals per man while in 1872 it dropped to only 13.9. In the following year, however, he was highliner of the fleet.

An ordinary sealer, then, perceived the sealing operation as a lottery even though the majority of them were aware that many important factors determined the overall success of each voyage. Although the size, strength and power of the vessel, in addition to the experience and past record of the captain and his ability to perceive and correctly interpret the various components of the natural environment, have been prime considerations, the overriding factor has always been the element of chance. Major William Greene, for example, cited the case of Arthur Jackman, captain of the 458-ton S.S. Eagle (No. 2), who

> ... steered, in 1905, a course exactly opposite to that of the rest of the fleet. Almost due south he steered, steaming far out over the Banks on the most extraordinary course ever set in the history of the Seal Fishery. Yet he actually caught up with the seals while they were still riding the ice south of the Virgin Rocks that lie in Lat. 46° 27' N., Long. 50° 47' W., or south-east of Cape Race. (Greene 1933:50)

These statistics, it should also be noted, undoubtedly reflect fluctuating and declining seal prices (Figure 6-9) determined by such variables as the condition of the pelts; the proportion of young seals to old; the date of arrival in port; the total number of seals killed by the other ships; fluctuations in the European

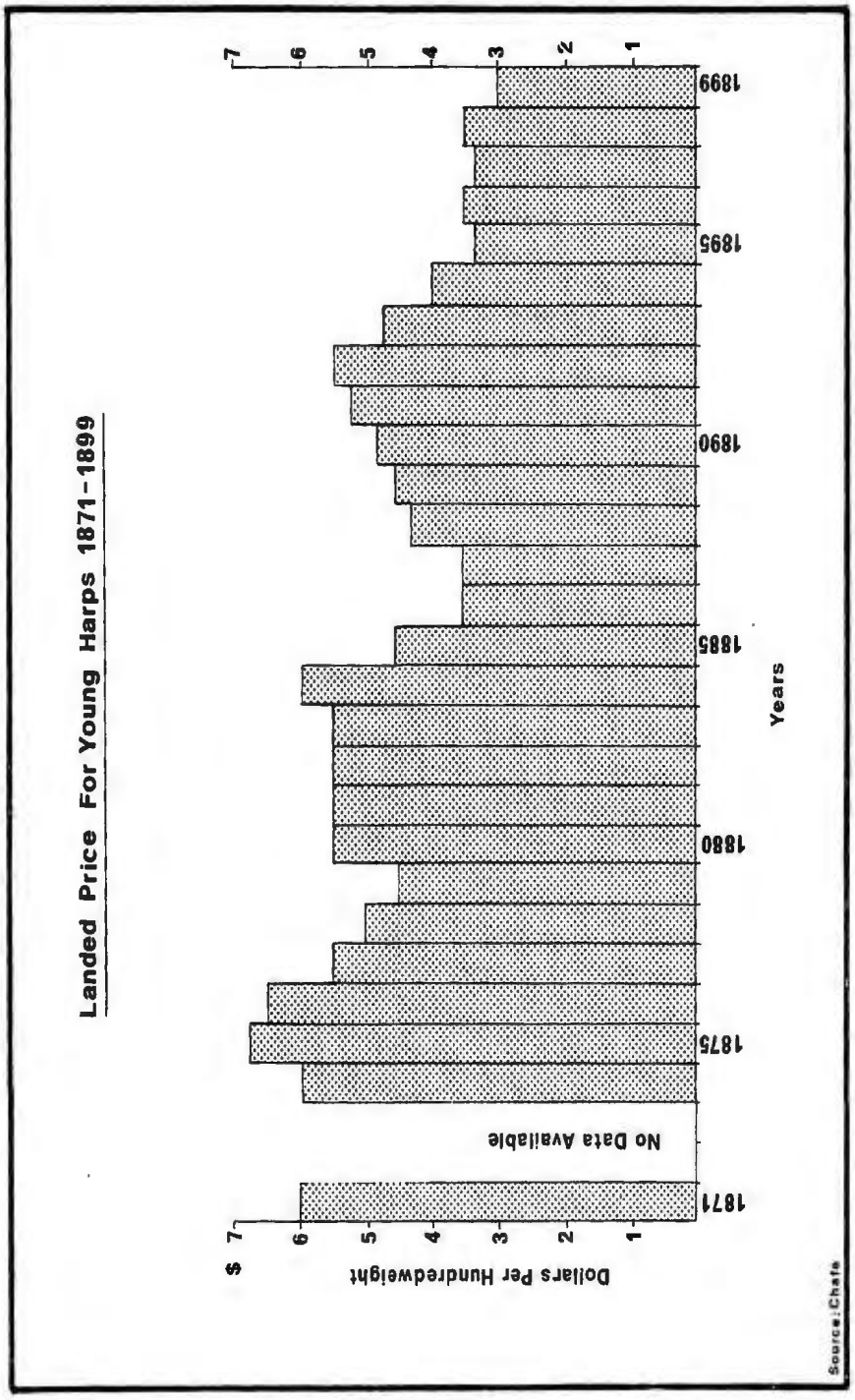

Landed Price For Young Harps 1871-1899
Dollars Per Hundredweight
$ 7 6 5 4 3 2 1
1871
No Data Available
1875
1880
1885
1890
1895
1899
Years
Source: Chafe

Figure 6-9

and American markets and the replacement of seal oil by other illuminants in lighthouses and the mining industry. They do show, nevertheless, that the introduction of steam-powered vessels had an immediate and beneficial effect, in that the men on the steamers were in most instances able to earn more per sealing voyage than their predecessors on the sailing vessels.

This revitalization of the industry, however, was all too brief and the earnings for the individual sealers as well as the returns to the owners show a fluctuating, yet overall decline throughout the 1870s, 80s and 90s. As noted previously, this decline can be partially attributed to the addition of newer and more modern vessels (Figure 6-5) thus giving the older vessels a degree of obsolescence while at the same time increasing the number of ships and men competing for an ever-dwindling resource brought about by almost a century of indiscriminate slaughter. The decline in the number of participants and the phasing out of ten steamers which were replaced by only three new vessels during the early 1880s appears to have been an effort on the part of the sealing companies to bring the relationship between the resource and catching capabilities of the steamers into better balance. The smaller fleet did result in an increase in the average catch per sealer (Figure 6-4). These increased averages, however, were still far below their total load capacity. The relative success of the

fleet throughout the late 1880s and early 1890s (Figure 6-4) again acted as an incentive to introduce more vessels (Figure 6-5) and the average catch per steamer subsequently again began to decline.

The income for the individual participant, then, increased dramatically with the introduction of steamers. This trend, however, very quickly reversed itself so that by the end of the century the profits to be made sealing were again in a state of decline similar to that which had been evident toward the end of the sailing vessel period.

The introduction of steamers, then, led to a further deterioration in the sealer's lot from a situation on the sailing vessels which was already one of privation. One of the principal requisites for the successful operation of a sealing steamer was the effective deployment of an extremely large crew. The increase in number of sealers, however, was not compensated for by a proportionate increase in tonnage. Consequently, such aspects as lack of space, inadequate food supplies, scarcity of fresh water, unsatisfactory sanitary facilities, and the generally squalid nature of the venture were further aggravated.

The immediate desire on the part of the sealers to obtain berths on the steamers rather than on the sailing vessels

after 1863, however, indicates that there was sufficient financial incentive to offset the less favourable on-board conditions they were likely to encounter. Further increases in crew size, a reduction in the sealer's share of the voyage from one-half to one-third, over-expansion of the sealing fleet, and a continued reduction in the seal stocks quickly offset these economic advantages. Therefore, while the chances of a sealer's returning home with little or no earnings as a result of an empty voyage had declined with the introduction of steam vessels, the earnings of the individual sealers continued to decline throughout the latter half of the nineteenth century.

The steamers, then, brought about an overall deterioration in the on-board accommodations while at the same time initiating a further reduction in the total number of participants and the amount of money they could expect to earn. They also initiated a trend towards consolidation within the industry which resulted in the emergence of entirely new patterns of areal representation.

CHAPTER VII

THE REGION

It has been noted that the use of sailing vessels in the Newfoundland seal fishery began initially in St. John's and the larger centers of Conception Bay. As the sealing fleet expanded, settlements as far north as Notre Dame Bay began to participate in the venture. By the middle of the nineteenth century certain areas of the island were consistently represented in the seal fishery and might be said to delineate a sealing region. With the introduction of steam-powered vessels, however, the sealing region began to assume entirely new characteristics. This chapter will consider the various factors and processes which initiated these changes and will detail the subsequent emergence of new patterns of areal representation.

As shown previously, the evolution of the Newfoundland seal fishery as prosecuted by larger vessels was directly associated with the growth of the Labrador cod fishery. At the beginning of the nineteenth century, therefore, the sailing vessel seal fishery was concentrated in St. John's and Conception Bay with Trinity, Bonavista and Notre Dame Bays sharing less prominently. The

importance of St. John's and Conception Bay as focal points of the sealing industry is better illustrated in Figure 7-1 (C.O. 194:87:19). In 1833 more than half of the sealing vessels, carrying 56.6 percent of all personnel participating in the venture, were clearing for the ice-fields from such Conception Bay communities as Carbonear, Brigus, Harbour Grace and Bay Roberts.

The more northerly areas of the island at this early date were more sparsely populated (Figure 7-2), did not participate in the Labrador cod fishery with the same intensity, and had better access to a migratory seal resource that habitually frequented their shores. Consequently, the population of Trinity and Bonavista Bays concentrated their efforts in developing a local small-vessel seal fishery and a more intensive landsman operation.

This situation existed with very little change until the end of the sailing vessel era. In 1848, for example, Governor LeMarchant in his report to Earl Grey noted that twenty-eight percent of the sealing vessels sailed from St. John's, fifty percent from Conception Bay, and only twenty-two percent from "other parts" of the island (Governor LeMarchant, C.O. 194:129, Report to Earl Grey, May 4, 1848:148). Thereafter the number of sailing vessels in the sealing fleet declined dramatically. Nineteen

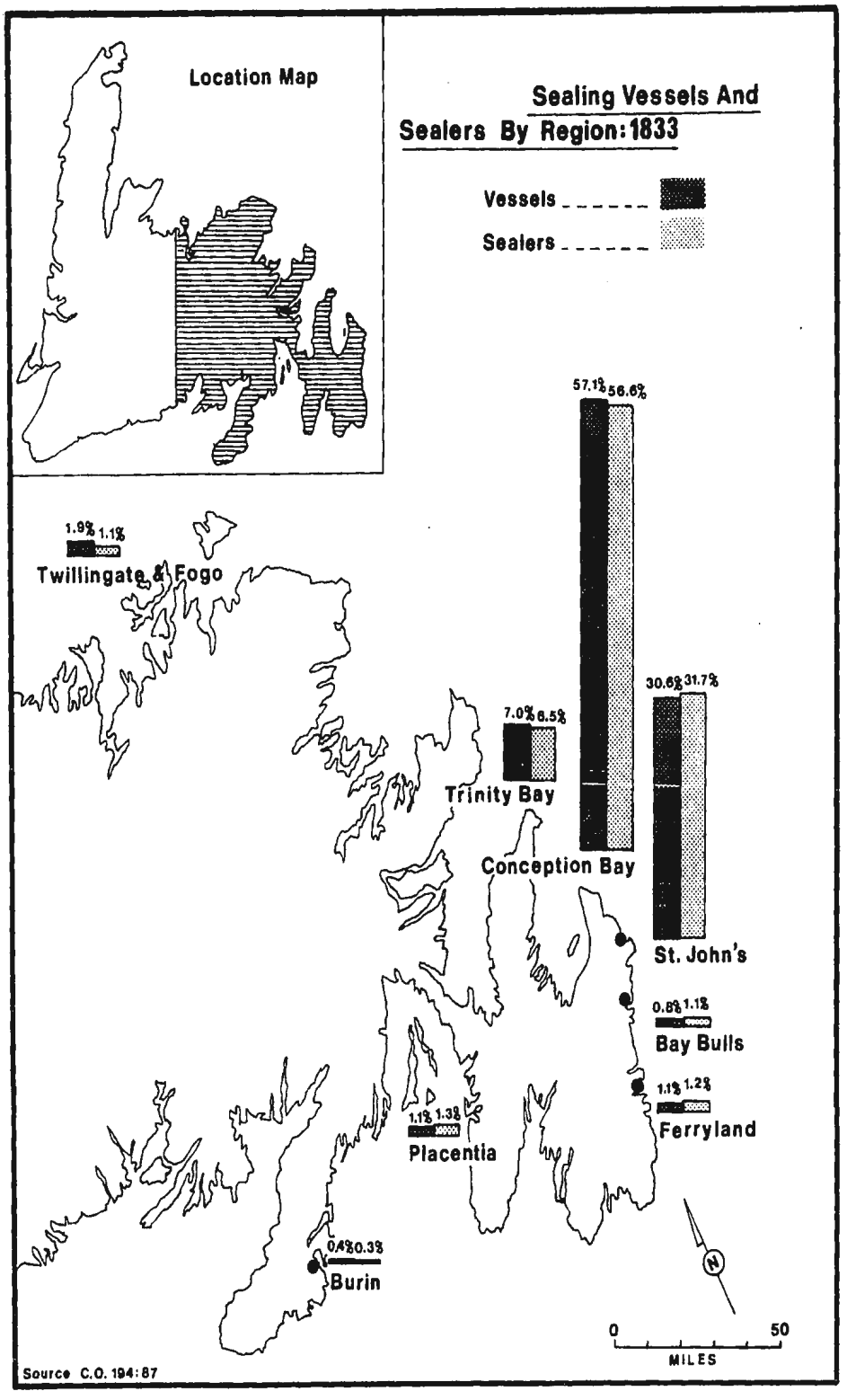

Location Map
Sealing Vessels And
Sealers By Region: 1833
Vessels
Sealers
57.1%
56.6%
1.9%
1.1%
Twillingate & Fogo
7.0%
6.5%
Trinity Bay
30.6%
31.7%
Conception Bay
St. John's
0.8%
1.1%
Bay Bulls
1.1%
1.2%
Ferryland
1.1%
1.3%
Placentia
0.4%
0.3%
Burin
N
0
50
MILES
Source C.O. 194:87

Figure 7-1

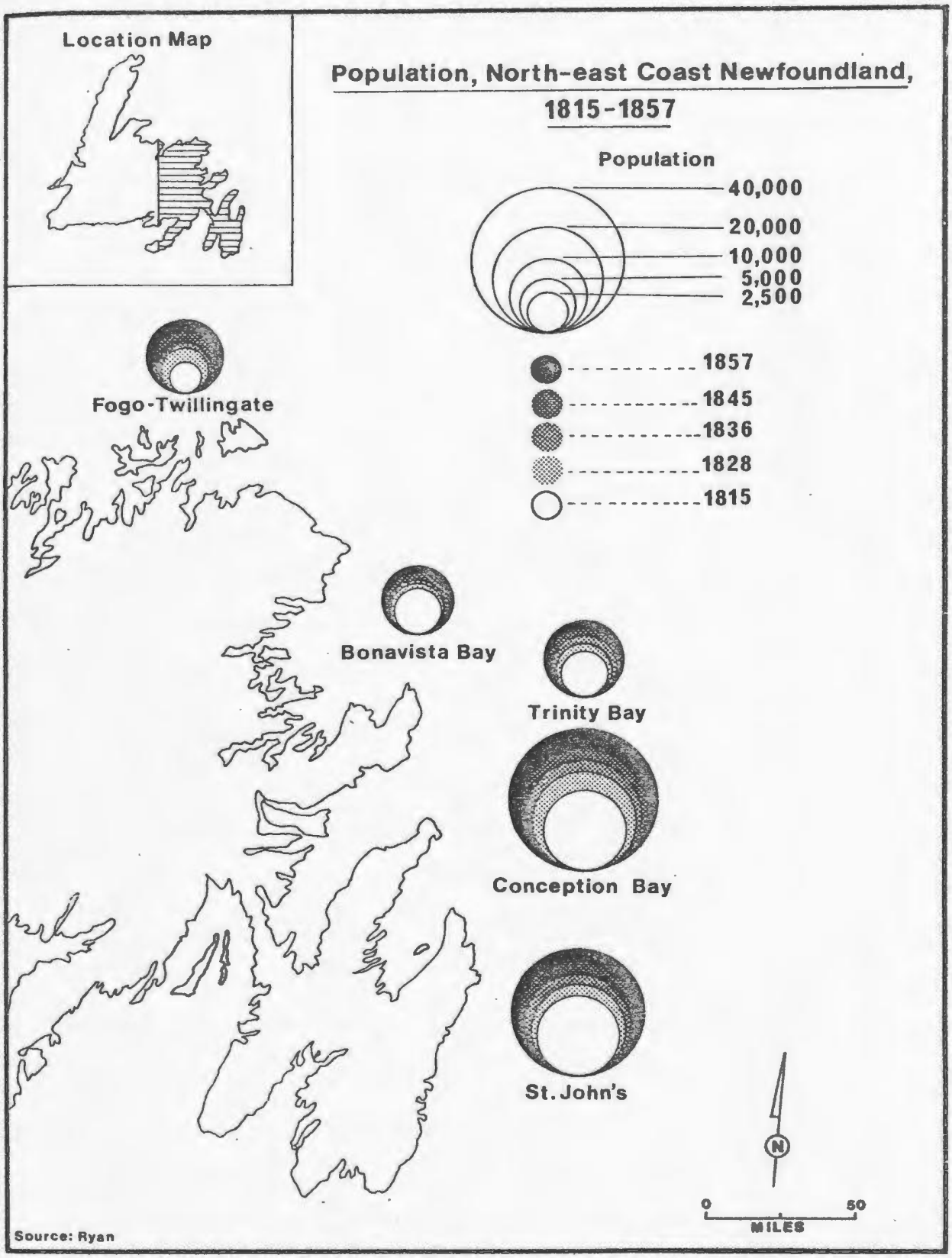

Location Map
Population, North-east Coast Newfoundland,
1815-1857
Population
40,000
20,000
10,000
5,000
2,500
1857
1845
1836
1828
1815
Fogo-Twillingate
Bonavista Bay
Trinity Bay
Conception Bay
St. John's
N
0
50
MILES
Source: Ryan

Figure 7-2

years after the introduction of the steamers in 1863, for example, Talbot was able to write:

> ... the mode of conducting it [the seal fishery] has been greatly altered within the last twenty years. It is now conducted chiefly by steamers - about twenty in number - and partially by small craft, numbering from twenty to thirty, and varying in size from ten to seventy tons. (Talbot 1882:21)

As might be expected the effects of this reduction were felt in the communities with the largest representation in the industry prior to the introduction of the steamer. This is shown in Figure 7-3 which illustrates the dramatic decline in the number of sealing vessels clearing from Harbour Grace during the latter half of the century. Although fifty-eight sealing vessels had cleared from Harbour Grace in 1868, within six years the number of participants had declined to twenty and by 1884 the Harbour Grace sealing fleet consisted of less than ten vessels. The other Conception Bay centers were similarly affected. Consequently, Trinity and Bonavista Bays show a proportionately greater representation in the declining sailing vessel operation after the steamers had come to the forefront.

While the average size of the steamer crews increased, the total number of participants, it will be recalled, declined. As a result, the competition for berths, especially in light of the fact that fewer sailing vessels were participating each year, became even greater.

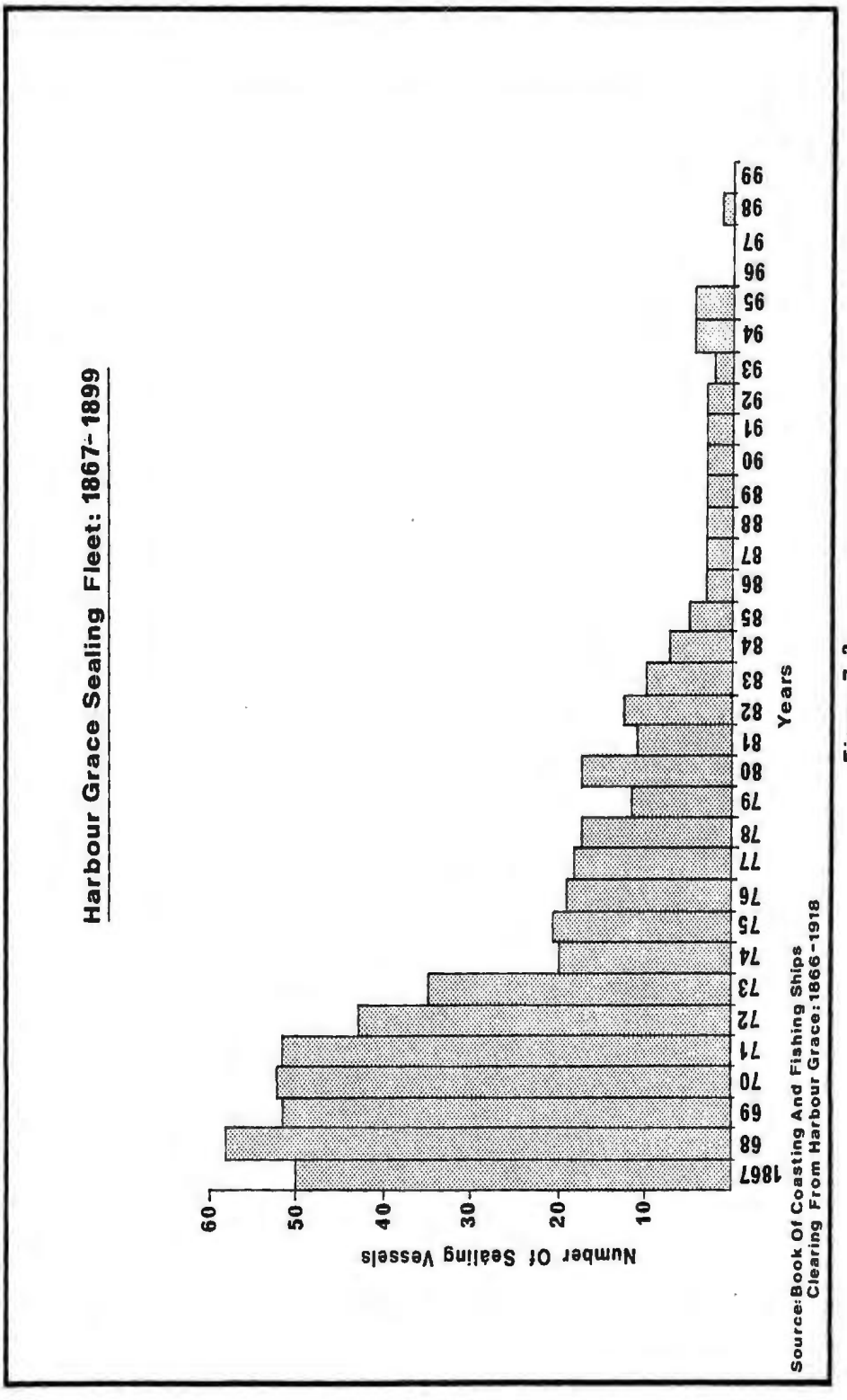

Harbour Grace Sealing Fleet: 1867-1899
Number Of Sealing Vessels
60
50
40
30
20
10
1867
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
Years
Source:Book Of Coasting And Fishing Ships
Clearing From Harbour Grace:1866-1918

Figure 7-3

While one or two vessels usually sailed from Catalina in order to take advantage of its more northerly location, the majority of the earlier sealing steamers cleared for the ice-fields from St. John's (Figure 7-4). This meant that most communities north of Conception Bay, because of a poorly developed transportation system and the distance involved, were unrepresented in the obtaining of berths on these vessels (Figure 7-5). If the very first steamer, the S.S. Wolf which sailed from Pool's Island under the command of Captain William Kean in 1863, is discounted, none of the earlier steamers sailed from Bonavista Bay until the spring of 1876, when Captain Joseph Barbour of Newtown, in command of the S.S. Walrus, cleared from Greenspond thus enabling the sealers from this area to be properly represented on the steamers for the first time.

In order to take full advantage of their proximity to the approaching whelping herds, however, it became increasingly more common after 1876 for the older vessels to officially clear for the ice-fields from communities in Trinity and Bonavista Bays (Figures 7-4 and 7-5). This trend continued throughout the 1880s and 1890s as the steamer fleet became larger and the discrepancy between the older and newer vessels became greater. In 1905, for example, sixteen of the twenty-two steamers cleared from Bonavista Bay while one of the remaining six vessels sailed from Fogo, even further north.

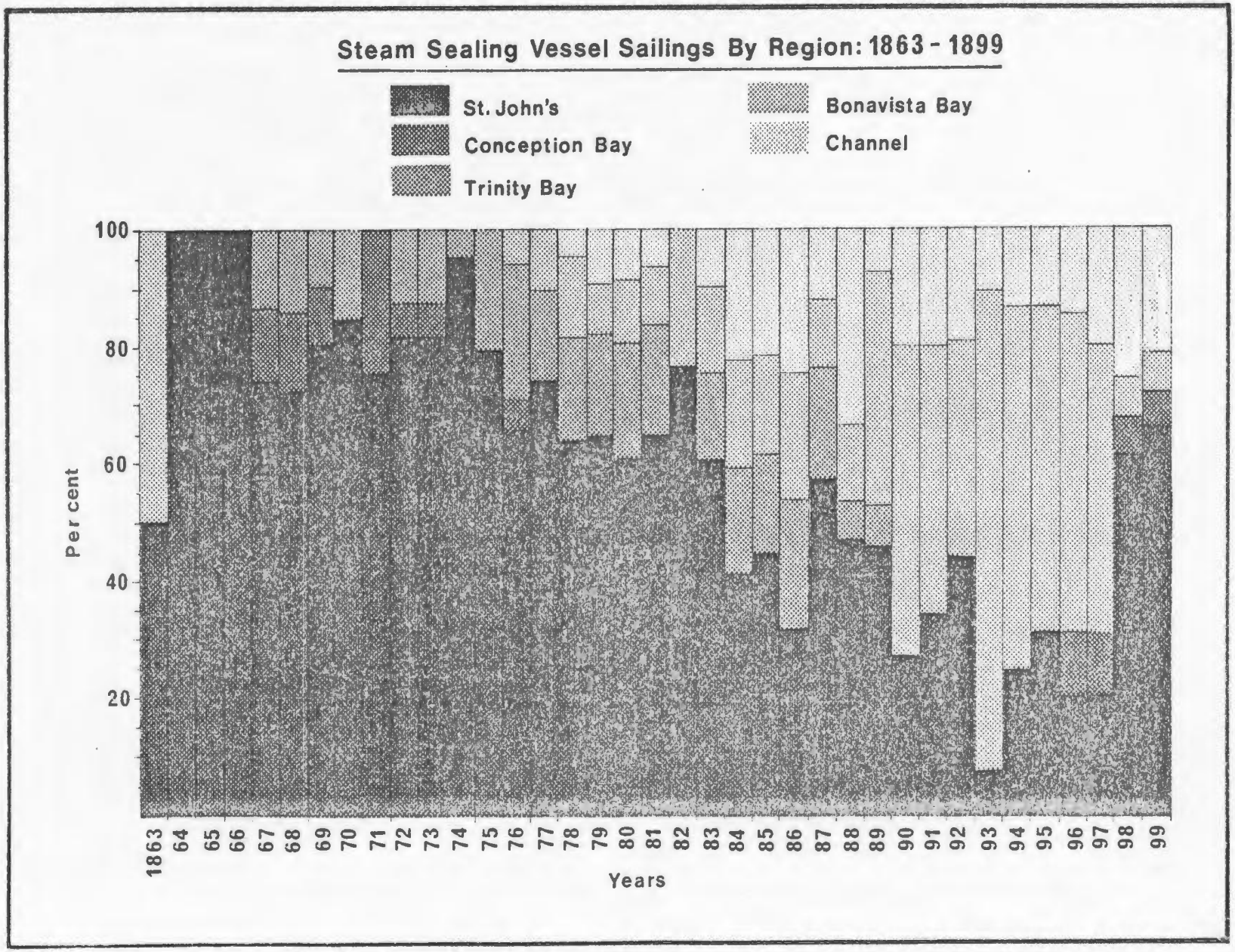

Steam Sealing Vessel Sailings By Region: 1863 - 1899
St. John's
Conception Bay
Trinity Bay
Bonavista Bay
Channel
Per cent
100
80
60
40
20
1863
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
Years

Figure 7-4

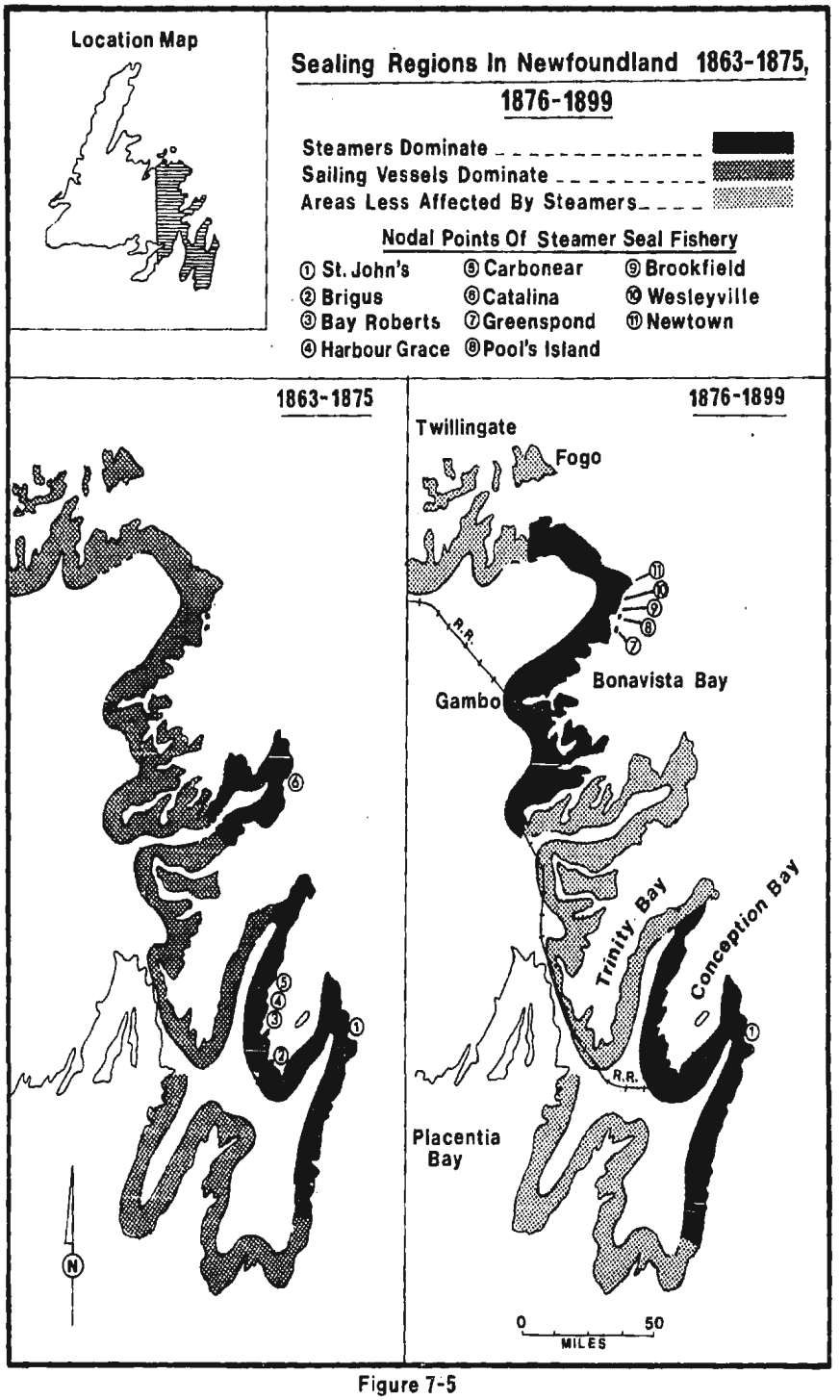

Location Map
Sealing Regions In Newfoundland 1863-1875, 1876-1899
Steamers Dominate
Sailing Vessels Dominate
Areas Less Affected By Steamers
Nodal Points Of Steamer Seal Fishery
① St. John's
② Brigus
③ Bay Roberts
④ Harbour Grace
⑤ Carbonear
⑥ Catalina
⑦ Greenspond
⑧ Pool's Island
⑨ Brookfield
⑩ Wesleyville
⑪ Newtown
1863-1875
1876-1899
Twillingate
Fogo
R.R.
Gambo
Bonavista Bay
Trinity Bay
Conception Bay
R.R.
Placentia Bay
N
0
50
MILES

Figure 7-5

Although the sailing vessel operation declined throughout the 1860s and 1870s there were still numerous sealing masters in the more northerly areas of the island who continued to command their own sailing vessels at the ice each spring (Kean 1935:13-40). Prior to this period the majority of the sealing masters on the steamers had been residents of the regions more immediate to St. John's. Throughout the last two decades of the nineteenth century, however, the larger business firms began to give command of their steamers to the more experienced "northern" captains. Consequently, towards the end of the nineteenth century the list of captains in command of the steam-powered sealing fleet began to be dominated by such Bonavista Bay North families as the Barbours, Keans, Winsors, Knees and Blandfords (Figure 7-6). While old Conception Bay families such as the Bartletts and Dawes, and the Jackmans and Ryans from the St. John's area, continued to be represented in the seal fishery, proportionately they gave way to the more northerly-based families. In 1890, for example, fifty percent of all sealing captains were Bonavista Bay North men, and in 1910 eleven of the nineteen steamers clearing for the ice-fields were under the command of men from Greenspond, Pool's Island, Wesleyville and Newtown. The Kean family alone had five members of their family in command of sealing steamers from 1909 through 1914 (Figure 7-7).

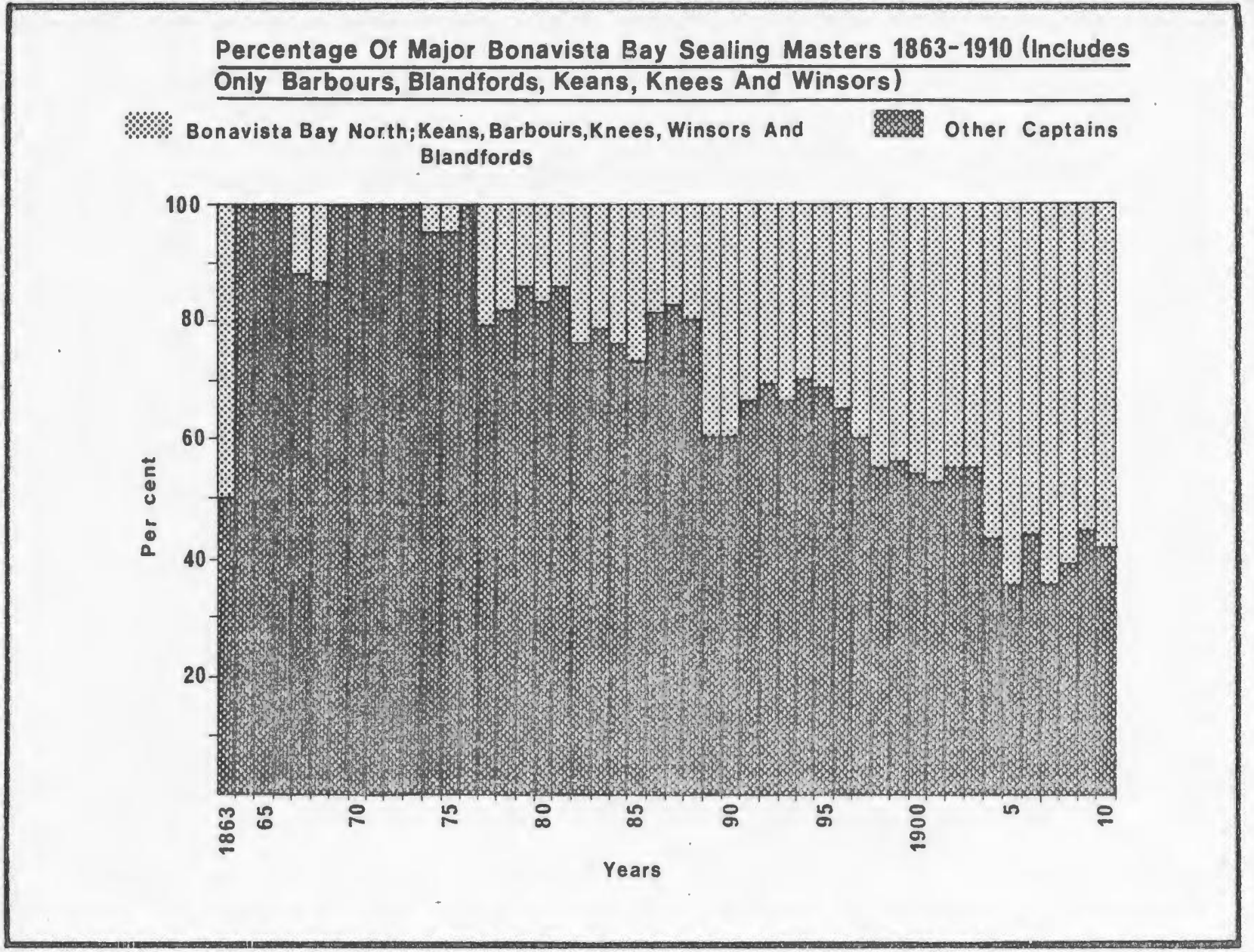

Percentage Of Major Bonavista Bay Sealing Masters 1863-1910 (Includes Only Barbours, Blandfords, Keans, Knees And Winsors)
Bonavista Bay North; Keans, Barbours, Knees, Winsors And Blandfords
Other Captains
Per cent
100
80
60
40
20
1863
65
70
75
80
85
90
95
1900
5
10
Years

Figure 7-6

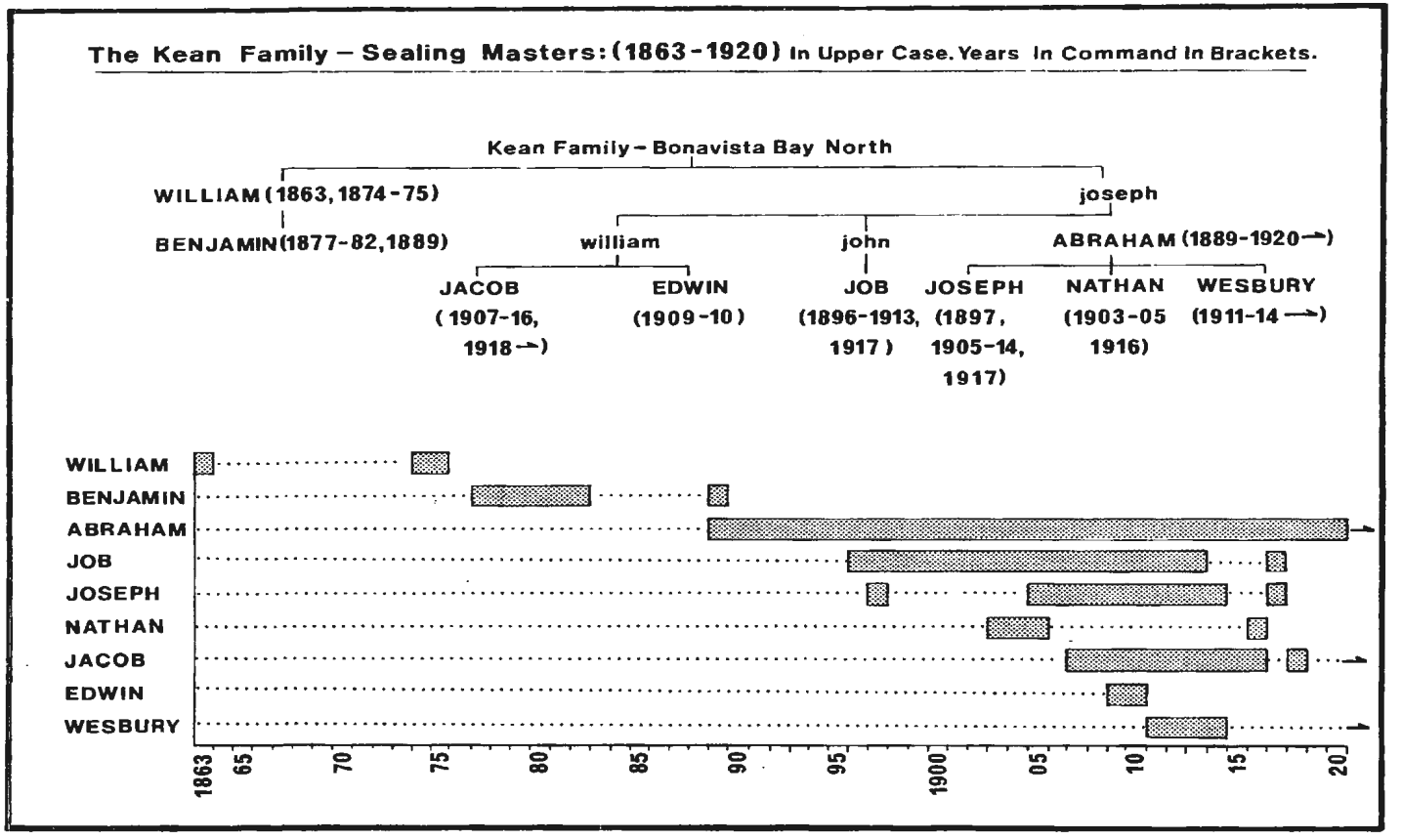

The Kean Family – Sealing Masters: (1863-1920) In Upper Case. Years In Command In Brackets.
Kean Family – Bonavista Bay North
WILLIAM (1863, 1874-75)
BENJAMIN (1877-82, 1889)
joseph
william
john
ABRAHAM (1889-1920→)
JACOB (1907-16, 1918→)
EDWIN (1909-10)
JOB (1896-1913, 1917)
JOSEPH (1897, 1905-14, 1917)
NATHAN (1903-05 1916)
WESBURY (1911-14→)
WILLIAM
BENJAMIN
ABRAHAM
JOB
JOSEPH
NATHAN
JACOB
EDWIN
WESBURY
1863
65
70
75
80
85
90
95
1900
05
10
15
20

Figure 7-7

The completion of the trans-island railway as far north as Gambo in 1891 (Figure 7-5) made it possible for the sealers from the Bonavista Bay North communities to travel to St. John's in order to obtain berths on the steamers that still cleared from that port. Thereafter there were two principal and opposing forces which helped relocate the foci of the industry away from the southern portions of the sealing region towards the expanding northern settlements (Figure 7-5). St. John's and the Conception Bay communities had shown an immediate and rapid decline in the number of sailing vessels participating in the sealing venture as a result of the direct competition with the larger business firms sending steamers to the ice. At approximately the same time the construction of the railway which had commenced in 1881 (Penney 1967:478) and in the following year "the construction of the dry dock at River Head [in St. John's] and the Rope Walk" (Prowse 1896:510), provided employment for a large labour force from St. John's and Conception and Trinity Bays which ordinarily would have been seeking berths on the sealing steamers each spring.

If the growth of the seal fishery in the Bonavista Bay North communities, then, can be at least partially explained by default on the part of St. John's and the Conception Bay settlements, their expansion was equally due to the existence of a patronage system based upon

kinship and community ties. It was natural for the growing number of Bonavista Bay sealing captains to be more receptive to applications for sealing berths from among their "own people" (Greenham 1971:verbatim). This propensity for captains to sign-on men from their home areas is illustrated by Figures 7-8, 7-9, and 7-10 which are based upon newspaper statistics published as a result of three major sealing disasters. The S.S. Greenland, it will be recalled, was under the command of Captain George Barbour of Bonavista Bay in 1898 when forty-eight sealers perished on the ice. Although the vessel had cleared from St. John's seventy-six percent of its crew were from Bonavista Bay. In 1914, the S.S. Newfoundland lost seventy-eight sealers after they had been stranded on the ice for two nights in a raging snowstorm. Although the Newfoundland was an older vessel and would only have signed on a crew after the other steamers had taken their full complement of men, the statistics show that fully fifty percent of the crew were still from the same area as was Captain Wesley Kean - Bonavista Bay. The fact that there were twenty-one steamers participating in the seal fishery that year gives a good indication of the total number of men from the Bonavista Bay North area who still regarded the monies to be earned from this venture as an important contribution to their overall economy. The

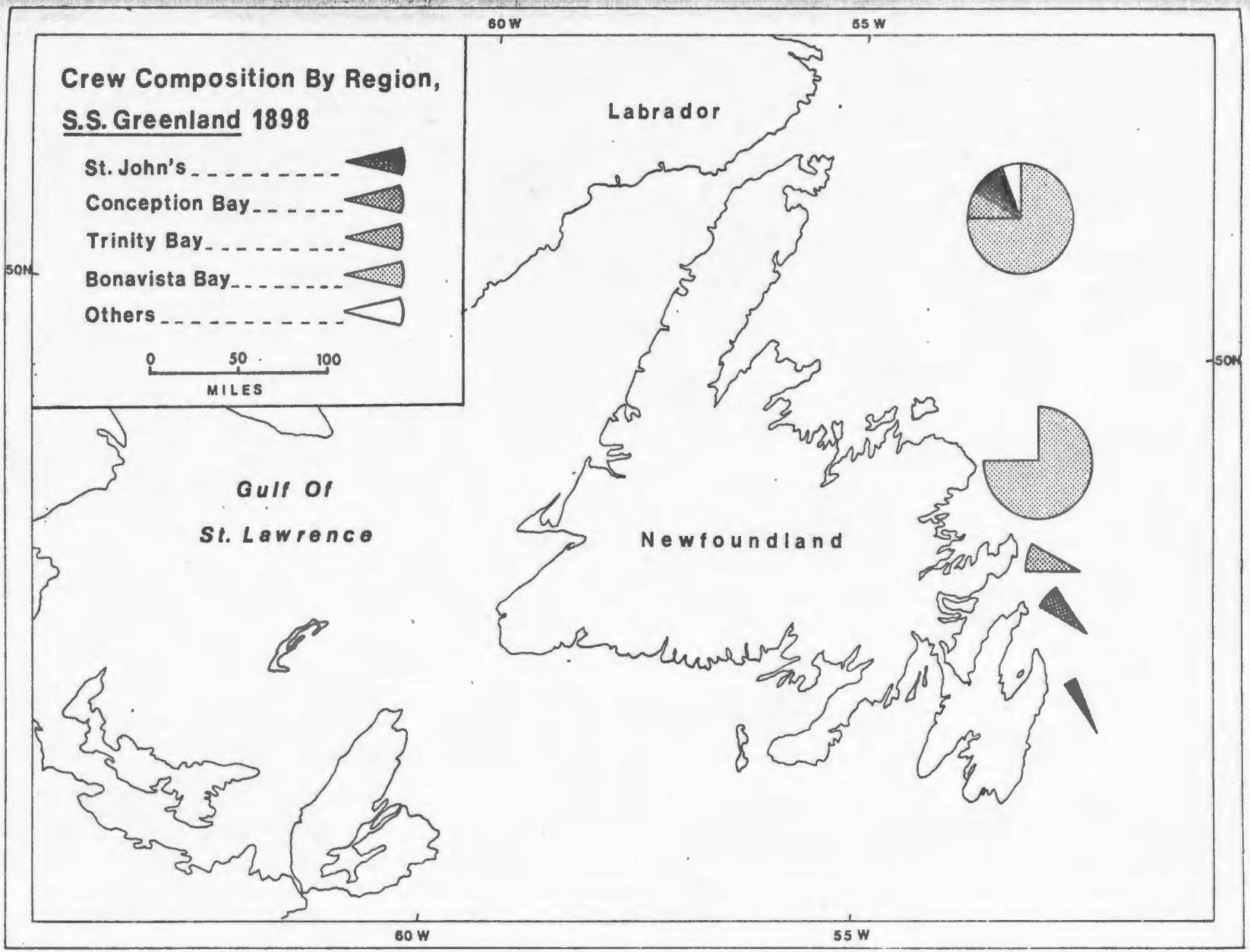

Crew Composition By Region,
S.S. Greenland 1898
St. John's
Conception Bay
Trinity Bay
Bonavista Bay
Others
0 50 100
MILES
60 W
55 W
50N
Labrador
Gulf Of
St. Lawrence
Newfoundland

Figure 7-8

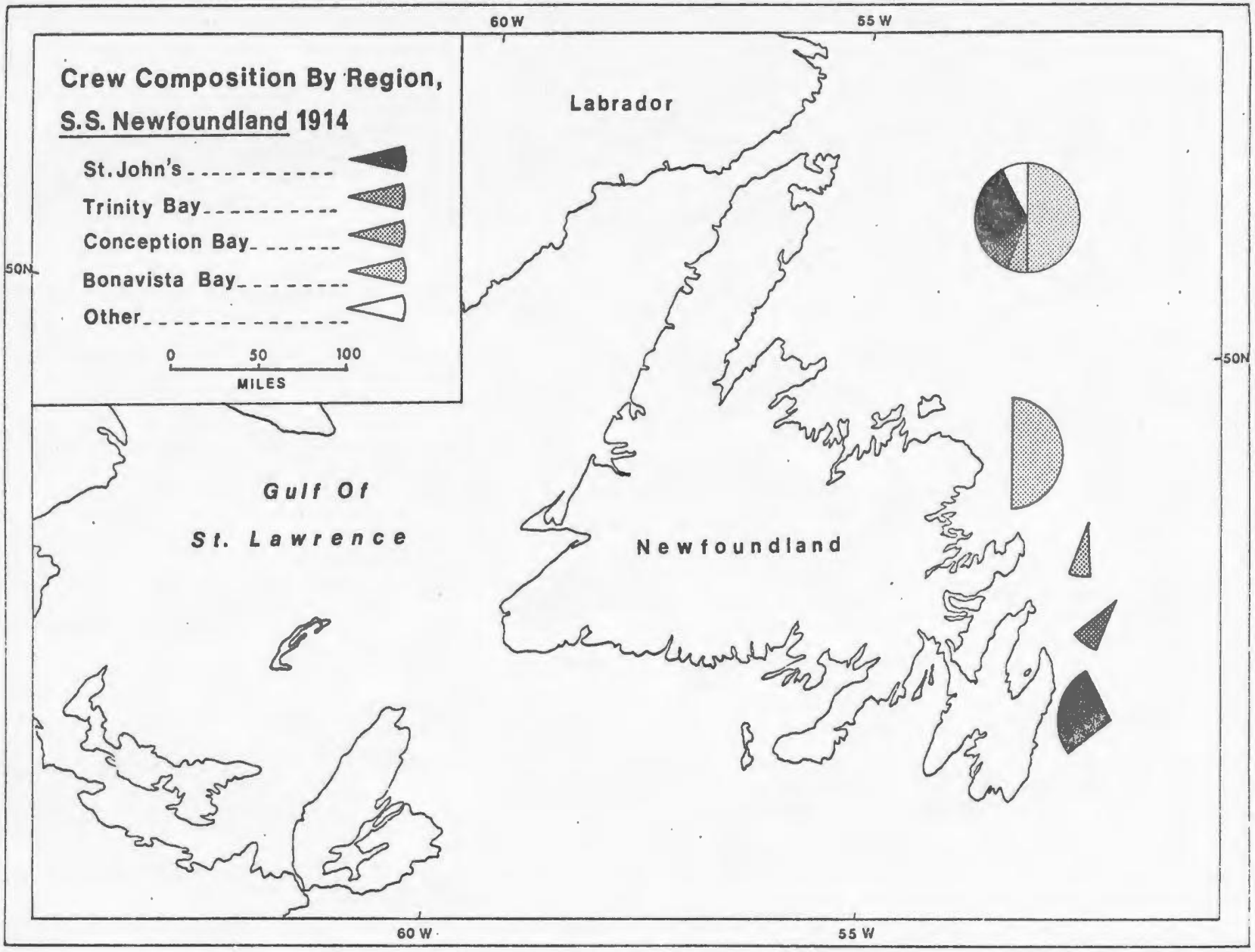

Crew Composition By Region,
S.S. Newfoundland 1914
St. John's
Trinity Bay
Conception Bay
Bonavista Bay
Other
0 50 100
MILES
60 W
55 W
50N
Labrador
Gulf Of
St. Lawrence
Newfoundland

Figure 7-9

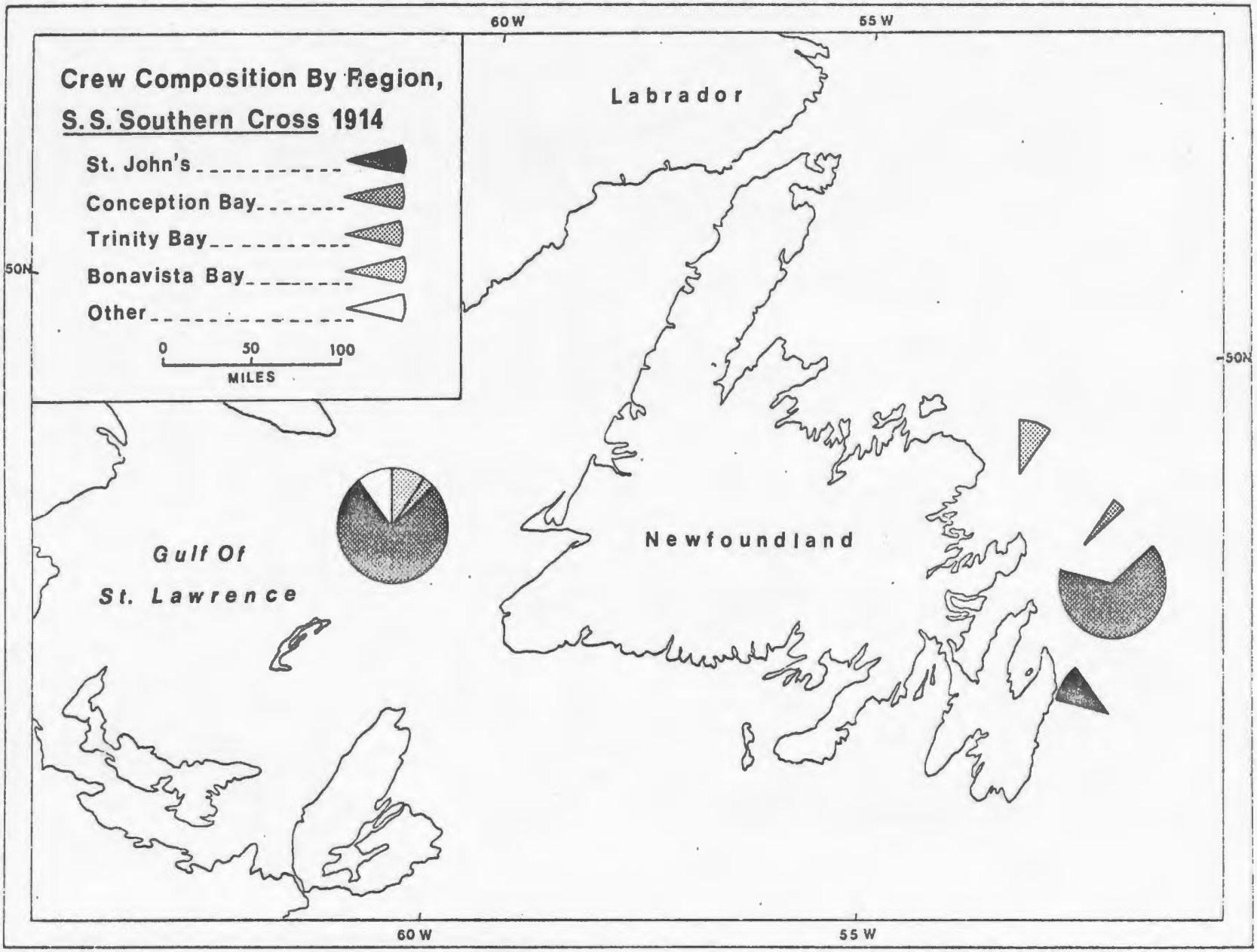

Crew Composition By Region,
S.S. Southern Cross 1914
St. John's
Conception Bay
Trinity Bay
Bonavista Bay
Other
0
50
100
MILES
60 W
55 W
50N
Labrador
Newfoundland
Gulf Of
St. Lawrence

Figure 7-10

influence of the sealing masters in determining crew composition and the degree of representation their home areas were to have in the industry are more dramatically illustrated in Figure 7-10. The S.S. Southern Cross was lost in 1914 with all hands while returning from the Gulf of St. Lawrence with a full load of pelts. Captain George Clarke was a resident of Conception Bay and sixty-seven percent of his crew came from the same area. It is noteworthy, however, that the Southern Cross was the only vessel to clear from Conception Bay that year, and even so, fifteen percent of the crew were from Bonavista Bay. It is apparent, then, that with the introduction of the steamers there were opposing forces which mediated toward the growth of the more northerly areas as the focal point of the industry at the expense of the southern settlements which had dominated the sealing venture during the sailing vessel period.

As noted in the previous chapter, the effects which the introduction of steam-powered vessels had on the owners and the distribution of the profits to be made from the venture were opposite to those experienced by the sealing masters and ordinary sealers. The entrepreneurs who had previously been spread throughout the island between St. John's and Notre Dame Bay were now reduced to a few larger firms concentrated in St. John's.

The acceptance of steam-powered vessels, therefore, brought about dramatic changes in the parts of the island directly involved in the seal fishery. With the growth of the venture throughout the first half of the nineteenth century the profits of owners and outfitters, in addition to the share earnings of sealers and masters, all played an extremely important role in the growth and expansion of every major settlement between St. John's and Twillingate and as such made an important contribution to the overall economy of the island. The reduced scale of the venture after 1863, however, was reflected in a readjustment of areas actively represented in all aspects of the operation.

High initial capital investment and increased operating costs associated with the steamers made it increasingly more difficult for the smaller entrepreneurs to participate. Consequently, the vested interests very quickly became concentrated in St. John's where the larger, more diversified and better funded companies were located. Coincidental with this change was an opposite shift towards new source areas for personnel, with the area represented in these terms migrating northward as the industry became less important to the populace of St. John's and Conception Bay and increasingly more important to the growing communities along the north shore of Bonavista Bay.

The infusion of new technology, therefore, had initiated spatial readjustment and caused the evolution of completely new patterns of areal representation in all aspects of the industry. By the end of the century the areas represented by the owners and personnel which had been co-existent prior to 1863 had been consolidated and were now polarized at the two extremities of the sealing region.

CHAPTER VIII

CONCLUSION

In many areas where resources of any one particular type are scarce, or where seasonal changes impose strong influences on occupations and life styles, some people have developed economies and settlement patterns suited to exploiting a number of resources. Such are the coastal margins of Newfoundland which represent a land environment of limited farming potential, yet front seas which are by comparison both bounteous and productive. Under such conditions, as Sauer points out, "Every human population, at all times, has needed to evaluate the economic potential of its inhabited area, to organize its life about its natural environment in terms of the skills available to it and the values which it accepted." (Sauer 1956:49)

Faced with these geographical conditions, then, the coastal populations of Newfoundland adapted their economy and settlement to focus on the fisheries and the cultivation of small areas of land. The utilization of these different resources was woven into a yearly round of activity in harmony with seasonal availability. In most instances the family income was further supplemented

both directly and indirectly by such activities as the procurement of wood for fuel and building requirements, berry-picking, the hunting of wild game and fowl, the processing of cod liver oil, and a variety of local household industries.

Ideally each activity in such an economy complemented the others over time, and if two or more of the resources became available concurrently, labour specialization within the family unit guaranteed their maximum utilization. In the typical year-round cycle of activities, in the area and time under study, there was a period of relative inactivity between the decline in the forest-based occupations of winter and the first appearance of the cod stocks in late spring and early summer.

The characteristics of the natural environment and the habits of the harp and hood seals, however, enabled the population along the northeast coast of the island to participate in the annual seal fishery during this lull. While the niche occupied by the seal resource covered an extensive area, their migratory nature placed them, during a few short weeks in March and April, within the range of a growing population which was not otherwise employed. Although the earnings varied from year to year, the sealing venture was, nevertheless, an important component of their overall economy, for it offered a cash incentive which in a "good" spring was substantial and which

potentially offered them a "head start" in their preparation for the fishing season. Because it provided money rather than goods, it could also be stored for later consumption, transferred spatially, and reinvested in durable goods or productive outfit (Brox 1969:17).

It can be seen, then, that the seal fishery - the interaction between the bio-physical and socio-cultural systems for the short period of time when the seal resource was available and men were free to exploit it - was extremely important to the island's growing economy.

Although the female harp and hood seals do not mature until they are four to five years of age, at which time approximately ninety percent of the breeders produce one pup per year, the large size of the seal stocks that had been built up over the centuries in the absence of a significant predator meant that the only major problem confronting the owners of the sealing vessels during the early part of the nineteenth century was how to catch more seals.

This they were effectively able to do with modifications in the structure and use of existing sailing vessels. Notwithstanding improvements in construction and techniques, however, the sailing vessels throughout the nineteenth century were still largely dependent upon favourable ice conditions to permit them to locate and

reach the seal herds. The sealers, therefore, had to be constantly adjusting to hostile conditions imposed by the natural environment. The seal stocks were sufficiently plentiful, however, to permit the harvesting of large numbers even in "bad" years, despite the limited maneuverability of their vessels.

Towards the middle of the nineteenth century, however, even though the sealing fleet had increased in size, and the sailing vessels were larger and stronger and carried more experienced crews, the average annual catch was declining. It is apparent that with their improved seal catching ability Newfoundlanders were prepared to forsake "The previously characteristic manner of living within the means of an area, by using its actual 'surplus', [and to replace it with] a reckless glutting of resource for quick 'profit'." (Sauer 1938:767)

If the level of technology available to the participants had remained constant, this downward trend would have undoubtedly initiated a readjustment in the venture. With the decline in the seal stocks the participants would have had to re-evaluate their chance of success. The number of vessels consequently would have declined which in turn would have brought about an increase in the seal stocks followed by the re-entry of more vessels and the subsequent decline in the resource, ad infinitum. The reduction in scale of effort, in other

words, would likely have resulted in the development of a sustainable balance between the renewal of the resource and its human exploitation, subject only to minor cyclic fluctuations.

Before this could happen, however, the entrepreneurs sought to improve their chances of success by introducing new technology. This technical equipment, represented by the steamers, and the associated changes that occurred in the work organization, involved larger initial capital investment and required more expensive daily operating costs than in the sailing vessel era. The seal fishery consequently began to assume the characteristics of a primary industrial activity. While the individual sealing masters still retained a considerable degree of autonomy and control "at the ice", overall control of the venture tended to accrue to the larger St. John's companies.

At the beginning of the larger-vessel seal fishery, then, the size of the seal stocks, as indicated by the number of annual catches over a half million seals, undoubtedly left the impression with the participants that the resource was inexhaustible. In actual fact it is evident from the decline in the average annual catch that the seal stocks were being over-exploited by the sealing fleet. It appears that the profits to be made sealing

provided sufficient incentive to limit policy formation to short-range planning only. As a result, the history of the seal fishery throughout the nineteenth century reflected a desire on the part of each individual participant to harvest all of the seals to the exclusion of all other operators. It was impossible, therefore, for the participants collectively to place any premium on long-range strategy and, consequently, on providing adequate measures of rational resource management and conservation. The opportunism of the individual clearly was too strong to allow the long-range best interests of everyone concerned to prevail. The inception of long-term planning and the attainment of optimal sustainable yields, which might have resulted if the sailing vessels had remained the highest form of technology available, were frustrated by technological adaptation. This occurred, unfortunately perhaps, before gradually diminishing catches effected the withdrawal of least efficient units and the establishment of the principle whereby participation was balanced against optimal sustainable yields. Because barriers to entry were relatively low the tendency had been towards a level of exploitation that was excessive.

As noted previously, the investors continued their contributions because they found the inducements offered by the chances of a successful voyage sufficiently enticing. The larger firms, therefore, were quick to adopt the wooden

steamers. The only rationale apparently was that if the seal stocks were indeed being reduced, larger more powerful vessels emancipated from dependence upon sails and manpower would increase their ability to maintain and even increase catches.

These steamers were more efficient than the sailing vessels. This is not to say that they were more effective in the overall analysis, for while on a short-term basis, when measured by average catch per vessel and total catch per year, the sealing operation showed resurgence, in the long run they caused the seal stocks to decline even further. The seal fishery, therefore, experienced a temporary period of increased prosperity followed by even greater depression. The reasoning which one would expect to find in the exploitation of what was a common property resource seemed to prevail: each sealer, captain, and owner strove to obtain a maximum share of the total catch because each increment represented further immediate profit. Because there was no long-run plan for the harvesting of the seal stocks, maximum utilization offered the best short-range strategy from the point of view of each user. With the introduction of the steamers, then, the sealing fleet became in a sense too efficient, which in the long run made it less effective for the participants who were unwilling, or unable, to consider the consequence of over-predation.

The rate at which the steamers were introduced and the effectiveness with which they were used, however, appear to be only partially related to their inherent mechanical efficiency. The rapid demise of the sailing vessels was also an indication of the difficulties which had beset the sealing industry towards the end of the sailing vessel era. The wooden steamer, therefore, was an example of more efficient technology being less effective than the less efficient technology it replaced, for once its potential was realized it was beyond the ability of the resource to sustain itself. Thus, the sealers' improved ability to cope with the hazards of the natural environment, the seals' principal natural protection, caused the herds to decline at an ever-quickening rate.

A further factor which made it extremely difficult to regulate the industry was the fact that none of the participants, from the ordinary sealers to the vessel owners, considered themselves to be dependent upon the seal fishery. Sealing was in large part merely an addition to basic income, albeit a very welcome one.

The harp and hood, then, constituted a fugitive flow resource that was being over-exploited and which would eventually reach a biological point beyond which regeneration of the stocks would be impossible. Christy

and Scott point out, however, that in the exploitation of such common property resources it is highly unlikely that

> ... the process will be carried to the point of resource extinction. Rather, the generally growing demand and improving technology will work to deplete the resource and reduce the yield well below a maximum level that could be sustained indefinitely. When "depletion" in this sense becomes severe, the fishermen [sealers], or the nations from which they come, usually accept forms of control designed to prevent further depletion or to rehabilitate the stock to the point where it produces a higher sustainable yield. (Christy and Scott 1965:9)

Price states that when such conditions exist government action is the only effective form of control which can "be applied when other methods fail". (Price 1955:81) However, it was not until the present century that legislative authority demonstrated any interest in ensuring the continuance of the Newfoundland seal fishery. During the period under study the sealing interests continued to maximize their immediate profits regardless of the future of the industry.

Their goals, then, were completely short-range and collective action even if it were possible was unacceptable, for substantial seal stocks were known to be still available at the end of the century. In defence of the policy-makers it should be noted that their apparent irresponsibility and poor stewardship of the resource can be set against the nature of the seal fishery. The size of the seal stocks and the constantly fluctuating nature of the industry from year to year could at least partially explain

their complacency or laggard concern. The decline in the industry, in other words, may have been attributed on their part to particularly poor environmental conditions, a situation which would quickly rectify itself with a series of "good" springs.

Although the seal fishery had been declining throughout the latter half of the nineteenth century, the scale of the operation and its important annual contribution to the overall economy appears to have left the impression with the Newfoundland government that it was still a healthy and thriving activity. The malaise that had overtaken the industry, therefore, was not nearly as pressing to the legislative body of the island as other matters such as the building of a trans-island railway. Moreover, the government reflected the attitudes and interests of big business because of its inordinately high representation in the legislative assembly. It was not surprising, therefore, that the few pieces of sealing legislation passed in the nineteenth century were primarily concerned with the protection of existing capital investment and the maximization of immediate profits rather than the development of long-range strategies.

The parts of the island represented in the large-vessel sealing venture could be defined by certain characteristics each of which could be represented spatially. They were: the northeastern coastal areas of

the island blockaded by the southward expansion of the ice-pack; the approximate location of the whelping herds which formed each spring; and a coastal population whose economy lacked productive employment during March and April.

By the end of March the coasts of Labrador and northeastern Newfoundland were usually enclosed by the southward extension of ice-fields frequented by the harp and hood. The whelping patches, however, were seldom located north of Cape Bauld and in most cases were to be found, especially in the first half of the nineteenth century, south of the Funks. They were also frequently carried shoreward at points along the coast stretching from Green Bay in the north to Trinity Bay in the south. It is interesting to note that their use of such terrestrial terminology as "ice fields", "seal meadows" and "harvesting" in describing the ice-scape and sealing operation itself (similar terms are listed in the glossary) suggests that the sealers perceived the ice-floes to be a seaward extension of their terrestrial resource base.

At the beginning of the nineteenth century the major communities north of St. John's were primarily located in Conception Bay and it was in this same area that the main interests in the Labrador cod fishery were concentrated. Because their sailing vessels were not otherwise gainfully employed during the early spring due

to the presence of the pack-ice, the owner/outfitters of St. John's and Conception Bay were prepared to participate in the seal fishery.

Consequently, the large-scale sealing industry was initially restricted to the populated interface, or zone of contact between the coastal area stretching from Cape Race in the south to Conception Bay in the north and the physical and biological marine environment. Throughout the first half of the nineteenth century the population of the coastal areas north of Conception Bay increased dramatically. This growth can be at least partially explained by the profits and earnings to be derived from the correspondingly rapid expansion of the large-vessel sealing operation into these areas. By the mid-1800s, therefore, the northern boundary of the sealing region in terms of ordinary sealers, captains and owner/outfitters had migrated northward to include the growing communities in Trinity and Bonavista Bays. By the end of the sailing vessel era, then, the sealing regions as defined by the distribution of sealers and captains on the one hand and of owner/outfitters on the other were fairly co-extensive.

When steamers were introduced in 1863, however, the socio-economic distance between owner/operators and ordinary sealers became greater. This, in addition to the fact that there were fewer men and vessels participating, initiated rapid changes in the patterns of areal

representation. Whereas the focal point of the region even as it expanded northward had first been concentrated in the southern margins in terms of both owners and sealers, the greater investment and maintenance costs made it increasingly difficult for the smaller entrepreneurs to participate. Thus, as the sealing industry began to consolidate in terms of both investment capital and management, the areas represented by the owners began to concentrate in St. John's to the gradual exclusion of the former owner areas. Because of the decline in the number of vessels and the growing propensity to sail from St. John's during the first few years of the steam vessel period, the ordinary sealers of necessity came from the Southern Shore communities, Conception Bay and the less remote areas of Trinity Bay which were all fairly accessible to St. John's. The northern boundary of the sealing region as defined by distribution of sealers, then, was also contracting southward to the exclusion of Bonavista Bay and the more remote parts of Trinity Bay.

By the early 1880s, however, new forces were at work within the industry. A preference on the part of the steam vessel owners to hire experienced sealing captains from the more northerly communities to command their vessels; an attempt to nullify the obsolescence resulting from the introduction of newer vessels by having older ships clear for the ice-fields from the northern areas to

be closer to the resource; and the development of a more efficient transportation system which enabled the sealers from Bonavista Bay and Trinity Bay communities to obtain berths on the St. John's steamers, all caused the focal point of the region defined by the sealing personnel to migrate northward out of St. John's and Conception Bay into the Bonavista Bay North communities of Greenspond, Pool's Island, Brookfield, Badger's Quay, Wesleyville and Newtown. By the end of the study period, then, there existed a dichotomous region polarized on Bonavista Bay North and St. John's.

Not only had the areal patterns of representation changed throughout the nineteenth century, but the overall decline in the industry in terms of both personnel and owners meant that the venture was a far less important component of the total economy of the island than it had been during the first half of the century. In addition, there was a less equitable sharing of profits. Previously every major community in the sealing region had rendered oil and prepared the hides from the seals which had been caught by their own vessels. After the introduction of the steamer, however, the profits to be made from the export of these commodities were controlled by a few St. John's firms with home offices in the "Old Country". Furthermore, as the number of sealers declined and the total population

increased, the seal fishery which had been such a significant factor in the growth of the island throughout the nineteenth century gradually diminished in importance.

GLOSSARY

ARCTIC ICE:
Ice that has formed in the far north and which moves southward along the coasts of Labrador and north-eastern Newfoundland. Heavier than local ice.

ARTICLES:
Agreements signed between ordinary sealers and sealing companies or masters prior to the commencement of each sealing voyage.

BACK OF THE ISLAND:
The Gulf of St. Lawrence (see FRONT).

BALLROOM:
Forecastle of a sealing vessel used to accommodate a portion of the extra men hired on for the sealing voyage.

BAT:
A wooden club used to kill seals.

BATSMAN:
A term used during the sailing vessel era and early steamer period to refer to a sealer who was not permitted to use firearms.

BEATER:
First year harp seal after it has completely shed its first coat of white hair (see DIPPER).

BEAVER-HAT-MAN:
A two-masted sailing vessel of sixty to eighty tons, rigged with a large square-topsail on the foremast.

BEDLAMER:
A two-three-or-four-year-old harp seal (see IMMATURE, TURNER).

BERTH MONEY:
Money paid to sealing vessel owners by each sealer for the privilege of participating in the venture.

BLOCK-ICE:
Pieces of Arctic or local ice six to thirty feet across.

BLUEBACK:
A newly-born hood seal.

BRASH-ICE:
Pieces of Arctic or local ice less than six feet across.

BREEDING PATCH:
A concentration of harp or hood seals formed on the ice-floes for mating purposes.

BULKING:
The gathering of seal pelts to a central location on the ice so as to facilitate collection by the sealing vessels (see PANNING).

BUMPER TRIP:
Full load of seal pelts.

CABOOSE:
A half puncheon lined with bricks, suitable for preparing open fires on deck and thus enabling the ordinary sealers to roast seal meat on the sailing vessels.

CHILLING:
The practice of placing pelts on deck in order to cool before being stowed in the vessel's hold.

CLEAN SHIP:
No seals taken.

CLEAN TRIP:
Unsuccessful sealing voyage.

CROP:
Credit given to the sealers as an advance on their possible earnings.

CUT-OVER:
A whelping patch after the sealing vessels have harvested a majority of the whitecoats.

DECK-ROUTER:
Second-in-command of a watch (see QUARTER-MASTER).

DIPPER:
First year harp after it has completely shed its first coat of white hair (see BEATER).

DOGS:
Ordinary sealers who carried cartridges for the foregunners.

DONKEY'S BREAKFAST:
A sack filled with straw used to line a sealer's bunk (see PALLIASSE).

DOUBLING:
Moving pelts which have been panned to another pan more centrally located.

FALSE BEAMS:
Timbers temporarily installed below deck to strengthen the sailing vessels during each sealing voyage.

FOREGUNNER:
The leader of a small-boat crew during the sailing vessel era and early steamer period.

FORTIFICATION:
Strengthened bow of a steamer.

FRAME:
A trap used to catch seals on their coastal migration (see STOPPER).

FRONT:
Area of the Atlantic immediately east of the Island of Newfoundland (see BACK OF THE ISLAND).

FUR:
The long wool-like hair of the whitecoat.

GAFF:
A five- or six-foot long wooden pole with a metal hook attached to one end, until quite recently the implement most frequently used to kill whitecoats.

GREENHEART:
A tough, durable wood used to strengthen and protect the sailing vessels during the sealing voyage, applied as extra sheathing at the waterline.

GREENRIVER:
A popular sealing knife. So named for its commercial trademark.

GULF:
Gulf of St. Lawrence.

GUNMAN:
A term used during the sailing vessel era and early steamer period referring to a sealer who enjoyed special status due to his prowess with firearms.

GUNMAN-WITH-GUN:
One such who carried his own gun.

GUNMAN-WITHOUT-GUN:
One such who used a weapon from the ship's arsenal.

HIGHLINER:
Ship or captain with largest load of seal pelts.

ICE-FIELD:
An extensive area of Arctic or local sea ice greater than five miles across.

ICE-FLOE:
Varying expanses of Arctic or local sea ice ranging in area from giant floes (more than 3000 feet across) to smaller pieces labelled medium or small floes.

ICE-PACK:
Extensive areas of Arctic or Polar sea ice.

IMMATURE:
A two-three-or four-year-old harp seal (see BEDLAMER, TURNER).

JACK-ASS-BRIG:
100-140-ton sailing vessel with a square rig on the foremast, one square topsail, and one topgallant sail on the mainmast for temporary use during the sealing voyage.

JOWLER:
A successful sealing captain.

LEAD:
A lane of open water within the ice-fields.

LOCAL ICE:
Ice formed locally either onshore or in open water and between pans of ice.

MASTER-WATCH:
A sealer who has responsibility for a watch.

MIDDLE POUNDS:
Centre pounds (see POUNDS).

MOULTING PATCH:
A concentration of harp or hood seals on the ice-floes for purposes of shedding their old coats of hair.

OLD COW'S PATH:
The area lying between the Funks and Belle Isle frequented by the whelping herds.

PACK ICE:
Extensive areas of local or Arctic ice (see ICE-PACK).

PALLIASSE:
A sack filled with straw used to line a sealer's bunk (see DONKEY'S BREAKFAST).

PANNING:
The gathering of seal pelts to a central location on the ice so as to facilitate collection by the sealing vessels (see BULKING).

PATCH:
A concentration of harp or hood seals on the ice-floes, usually for purposes of whelping, breeding or moulting.

PELT:
(n) The hide and fat after it has been removed from a seal carcass; (v) the process of removing the hide and fat (see SCULP).

PINNACLES:
Lumps of ice; pointed peaks or jagged edges of hummocky ice.

POKERS:
Twelve- to fifteen-foot wooden poles used to warp sailing vessels through loose ice.

POUNDS:
Smaller holding units, temporarily installed in the cargo holds, which were designed to reduce the danger of fat rendering during the sealing voyage.

PUNT CREWS:
The sub-division of sealing crews into smaller units to permit the use of small open boats in loose ice.

QUARTER-MASTER:
Second-in-command of a watch (see DECK-ROUTER).

RAGGED-JACKET:
Young harp seal changing from a whitecoat to a beater.

RAMS:
Wooden poles attached to the bows of the sailing vessels and early steamers to support the sealers as they helped guide the vessel through the ice (see SHEARS).

ROLLING:
The deployment of men running from side to side on deck in order to give the vessel a rolling motion thus removing ice pressure on the hull.

SADDLEBACK SEAL:
Mature harp seal.

SEAL'S BIRTHDAY:
Colloquial reference to February 28th, as the usual date of birth for the majority of harp seals off the shores of Newfoundland.

SECOND GUNNER:
The second-in-command of a small-boat during the sailing vessel era and early steamer period.

SCULP:
(n) The hide and fat that has been removed from a seal carcass; (v) the process of removing the hide and fat (see PELT).

SHEARS:
Wooden poles attached to the bows of the sailing vessels and early steamers to support the sealers as they helped guide the vessel through the ice-fields (see RAMS).

SHIP'S BED:
A berth cut in a larger ice-pan to offer protection to a sailing vessel endangered by ice movement.

SHIP'S LIST:
The register of all personnel signed-on for the sealing voyage.

SQUARE:
The "housekeep" space allotted to three or four sealers aboard a sealing steamer.

STEEL:
Implement used to retain a sharp edge on a sealing knife.

STONE:
Implement used to sharpen a sealing knife.

STOPPER:
A trap used to catch seals on their coastal migration (see FRAME).

TAIL-COUNTING:
Tabulation of the number of seals taken at the end of each day during the second and their stages on the sealing operation.

TOW:
(n) Three or four seal pelts laced together so as to form a small compact bundle; (v) to drag seal pelts over the ice.

TURNING SEAL OR TURNER:
A two- three- or four-year-old harp seal (see IMMATURE, BEDLAMER).

WATCH:
Major sub-division of sealing crew to facilitate the operation of the vessel and effectively deploy the sealers on ice after the whelping patches have been located.

WELL-FISHED:
A full load of seal pelts.

WHELPING:
Giving birth.

WHELPING PATCH:
A concentration of harp or hood seals on the ice-floes for purposes of giving birth.

WHIPLINE:
A steel cable used to winch seal pelts aboard a sealing steamer.

WHITECOAT:
Newly-born harp seal.

WING POUNDS:
Side pounds (see POUNDS).

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