



The Author of
Atlantic Crossings Before Columbus

FREDERICK J. POHL was born in Durham, New York, but has lived for most of his life in Brooklyn. A graduate of Amherst who did advanced work at Columbia, Mr. Pohl taught English for many years. His official field is literature, but his avocation has always been history, especially the reconstruction of the forgotten eras of history and a correcting of the record. His previous books include *Amerigo Vespucci*, *Pilot Major* and *The Lost Discovery*. He has also written numerous articles about the Vikings in America, and has edited the papers of the explorer Frederick Cook.

Of *The Lost Discovery* reviewers have said:

"... history written vividly. Mr. Pohl dredges up history from the deep and makes centuries of forgotten endeavor live."

—*Christian Science Monitor*

"He writes with conviction about the great pioneers who crossed the ocean in their small undecked vessels to find lands beyond... skillful historical detective work." —*New York Herald Tribune*

"An excitingly written book."—*The New Yorker*



**ATLANTIC
CROSSINGS
BEFORE
COLUMBUS**
•
POHL

**ATLANTIC
CROSSINGS
BEFORE
COLUMBUS**

By **FREDERICK J. POHL**
Author of *THE LOST DISCOVERY*



An historical detective
retraces the voyages of the
mariners of many nationalities
who braved the unknown
and crossed the
Atlantic before Columbus



\$4.50

YA

ATLANTIC CROSSINGS BEFORE COLUMBUS

FREDERICK J. POHL

Frederick J. Pohl, who uncovered the track of the Vikings in America in his earlier book, *The Lost Discovery*, again steers a course into the past to retrace pre-Columbian voyages across the Atlantic by mariners of many nationalities. He discusses possible crossings by the Phoenicians, reported crossings by the Irish and Welsh, and presents evidence that the northern Europeans — as early as 800 A.D. — reached a spot in North America which will surprise many readers.

Atlantic Crossings Before Columbus also contains new and provocative material regarding the Vikings, including the archeological findings which have resulted from two digs undertaken by the Massachusetts Archaeological Society. In addition, Mr. Pohl turns again to the Viking sagas for his clues, and describes

[Continued on back flap]

BY FREDERICK J. POHL

Atlantic
Crossings
Before
Columbus



W · W · NORTON & COMPANY · INC · *New York*

Books by Frederick J. Pohl

THE SINCLAIR EXPEDITION TO NOVA SCOTIA IN 1398

AMERIGO VESPUCCI, PILOT MAJOR

THE LOST DISCOVERY

THE VIKINGS ON CAPE COD

ATLANTIC CROSSINGS BEFORE COLUMBUS

COPYRIGHT © 1961 BY W. W. NORTON & COMPANY, INC.

FIRST EDITION

Library of Congress Catalog Card No. 61-11346

All Rights Reserved

**Published simultaneously in the Dominion of Canada
by George J. McLeod Limited, Toronto**

**PRINTED IN THE UNITED STATES OF AMERICA
FOR THE PUBLISHERS BY THE VAIL-BALLOU PRESS**

1 2 3 4 5 6 7 8 9

Contents

CHAPTER 1	
Clues and Questions · 11	
CHAPTER 2	
Did the Phoenicians Reach North America? · 17	
CHAPTER 3	
St. Brendan of Ireland · 36	
CHAPTER 4	
Heavener Runestone · 45	
CHAPTER 5	
Leif Erikson's Vineland · 55	
CHAPTER 6	
Thorfinn Karlsefni · 133	
CHAPTER 7	
Freydis · 153	
CHAPTER 8	
Prince Madoc of Wales · 171	
CHAPTER 9	
The Round Stone Tower at Newport, Rhode Island · 176	
CHAPTER 10	
Inscriptions, False and Genuine · 191	

CHAPTER 11

Kensington Runestone · 208

CHAPTER 12

Sinclair the Sea-King · 227

Acknowledgments · 291

Bibliography · 294

Index · 303

Illustrations

- Copper dagger from Merrimacport, Massachusetts · 15
- Map showing where Pennsylvania ironstones were found · 23
 - Natural grooves on ironstones · 25
- Variations in alphabetic forms in the “inscriptions” · 28
 - “Phoenician inscriptions” on ironstones · 29
 - Runestone, Heavener, Oklahoma · 51
 - Disputed letters used in early runic writing · 52
- Route of Leif Erikson’s first day in Vineland · 71
 - Bass River · 87
 - Shoring for a viking ship · 108
- Actual size of axe-blade used to cut keel-bearing posts · 109
 - Vineland, as explored by Karlsefni · 152
 - Follins Pond · 155
- Trail between Icelanders’ Sheds and Leif’s House · 160
 - Helgi-Finnbogi Shed · 162
- Probable plan of Helgi-Finnbogi house interior · 165
 - Newport Tower · 177
- Newport Tower with ambulatory added · 188

- Indian petroglyphs and alphabetic writing · 191
 - Evolution of an ideograph · 192
 - Evolution of an alphabetic letter · 193
 - Runes—variations · 195
 - Manana-Monhegan markings · 197
 - Kingiktorsuak Runestone · 200
 - Aptuxet Runestone · 201
- Grave Creek and Braxton Runestones in West Virginia · 203
 - Yarmouth Inscription · 206
 - Kensington Runestone · 211
 - Numerals in Kensington Inscription · 212
- Sixteenth-century misreadings of fourteenth-century handwriting · 240
- Stellarton, Nova Scotia, showing “Asphalt” · 251
- Map of Nova Scotia showing the smoking hill · 255
- Map showing places in Glooscap legend · 266
- Map of Cape D’Or · 269
- Military effigy on ledge at Westford, Massachusetts · 285

Atlantic Crossings Before Columbus

CHAPTER 1

Clues and Questions

P RIMITIVE man on the coast of Europe gazed upon a waste of waters. He faced winds from the West, saw waves whipped up by Atlantic storms, and trembled before breakers rolling ashore. The ocean was a vast samelessness where he lost his sense of direction and would be sucked under. Conceiving it to be the realm of monsters and unknown perils, the mother of mystery, he sought to make its largeness less terrifying by dotting it in his imagination with fabled islands. When some intrepid sailors from the Mediterranean sailed out through the Pillars of Hercules, daring the surging seas, and found a group of islands west of Africa, they called them the Fortunate Isles, the Islands of the Blest, where the dead came to a welcoming harbor, so that even today there is a saying that when a man dies he has "gone West."

When the Phoenicians learned to build ocean-going ships, the Carthaginians reached the Azores, 1200 miles out; and the Greeks ventured to Ultima Thule, which was in all probability Iceland. The Phoenicians often sailed to the Canary Islands, which the Romans later called the "Dog Islands" from the large canines that roamed there, and thus the realistic name supplanted the mythological. These courageous voyagings widened horizons but did not reveal what lay beyond. Some of the sailors who in ancient times crossed to

the western side of the Atlantic were, as we shall see, reticent or silent by policy, and none had any means to publicize what they knew. And so there were rumors, and much credulity, and many doubts. The continent of North America "slipped in and out of history like a ghost, a kind of paradise in the sea that was lost over and over again." This is the way Walter Millis, Jr. of Johns Hopkins University expressed it, and this is why a publisher gave the title *The Lost Discovery* to my book which was on the trail of the vikings.

- Every child is taught that Columbus discovered America. Every child also learns that the viking leader, Leif Erikson, got to America before Columbus. Not everyone has heard that Leif had predecessors, but there are records which do not seem to have been inventions, and are too circumstantial to be doubted. Some of the early reported crossings of the Atlantic must have occurred. And there are physical remains in North America which substantiate more than one of the stories. We must, however, be on guard against misleading intrusions such as runic-lettered grave markers in eastern Massachusetts and New Hampshire, brought home long ago from Greenland as curiosities by New England ship captains who placed them on their lawns where they were "discovered" generations later by persons who sincerely supposed them to be evidence of the one-time presence of the vikings; or inscribed stones like the tablets bearing mysterious hieroglyphics dug up in northern New York and later deciphered and found to be financial records of an Egyptian king.

Most of the evidences have been lost, no doubt, and many have suffered from neglect or have been destroyed by early settlers who had no appreciation of their value. Happily, we have enough by which to steer our course as we retrace some of the pre-Columbian voyages across the Atlantic.

Here is a remarkable thing. In the Museum of the American Indian Heye Foundation at 155th Street and Broadway, New

York City, there is a bronze palstaff, protector for the handle of a spear, unquestionably of the Bronze Age, which was found in an ancient burial ground in Ontario. When was it brought across the Atlantic? Who can say?

The stone ruins on a large granite ledge at North Salem, New Hampshire, about which the last word has by no means been said, may be further evidence that points to the same remote period of time. These ruins have recently been exploited as a tourist attraction under the name "Mystery Hill Caves," though there are no actual caves; but there is a stone structure standing on the ledge which has a corbeled roofing covered with earth, so that the unobservant who approach it receive the impression that they are entering a cave. This structure is T-shaped, and not at all Y-shaped as many have persisted in describing it. At what would be the bottom of the T, there seems to have been an altar for some form of worship. From the top of the T, a speaking tube runs out through the wall with its outer opening facing the underside of a stone table. Upon the top surface of the table is an area in the form of a rectangle six feet long, outlined by a grooved channel that deepens toward one end where there is a channel to the edge of the table, which may have been for the run-off of blood. The rectangle is long enough for a human sacrifice. Many other interesting and provocative details are described in my book *The Lost Discovery* (W. W. Norton & Company, 1952).

Everyone agrees that the ruins are not the work of Indians. One theory has been that the stoneworks were built in the first half of the nineteenth century by a resident in the area, Pattee, with the aid of five stalwart sons (who, however, it now seems, were five daughters). The alternative theory is that the ruins were pre-Columbian, and of pre-Christian or, at any rate, pagan religious significance.

Several men who have studied the ruins have suggested that they are of very great age. A well-known archaeologist of

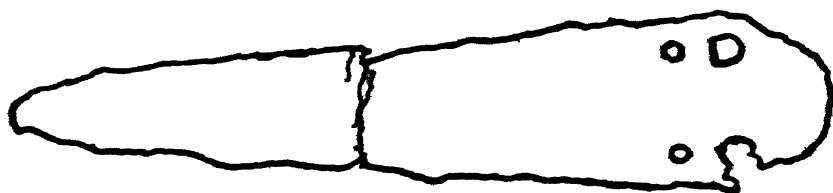
Harvard remarked when he first set eyes on them: "These look to be 1500 years old!" William B. Goodwin developed the theory that the stoneworks had been erected by Culdee monks before the fifth century of our era, and Professor Hugh Hencken dated the stump of a tree that indicated that the wall through which it had grown was "older than Pattee's occupancy."

Following the publication of *The Lost Discovery*, which devoted twelve pages to the North Salem ruins immediately after some pages on the Irish, but did *not* suggest that they were the work of the Celtic Culdees, several distinguished archaeologists and historians founded an organization, The Ancient Sites Foundation, with the purpose of sending a trained archaeologist to investigate them. The foundation selected a graduate of Yale, Gary Vescelius, for whom it was a first assignment. Vescelius found artifacts admittedly of the time of Pattee's occupancy, and only such artifacts, and in one small area where it was possible to dig, he found the artifacts in gradually lessening proportion underground: about half of them in the top horizontal layer, about a third of them in the next layer, a few in the next lower layer, and none below that. When he found no more artifacts he ceased digging. In his published report Vescelius claimed that he had proved conclusively that the ruins date from Pattee's time. According to much more experienced archaeologists, artifacts tend to sink into the ground in varying proportion in the first eighteen inches, and all that the findings of Vescelius indicate is that artifacts of the time of Pattee were once scattered over the surface of the ground. In other words, Vescelius proved Pattee's occupancy, which was already a matter of historic record.

Frank Glynn, President of the Connecticut Archaeological Society, dug far deeper than Vescelius, and below several feet which contain no artifacts and represent centuries of abandonment of the site, he found some of the stone work-

ings of the original builders, and some other evidence there and in the vicinity which points to a distant time in antiquity, to the European Bronze Age. Incredible as it sounds, it appears that at North Salem, New Hampshire, we have European stonework, a Megalithic-type sanctuary fully 3000 years old. But that is Frank Glynn's story and I say no more than to whet appetite for it.

Here, however, is something that may support Glynn's dating of the North Salem ruins. Arthur Petzold recently called my attention to a heavily-patinated copper "spearhead or knife" found many years ago by Dr. C. A. Kershaw of Merrimacport, Massachusetts, on Indian Flat near his home. A drawing of it showing two large and two small rivet holes for hafting was published by Warren King Moorhead in 1931. One of the large holes is partly broken out. Benjamin L. Smith, who wrote "Supplementary Notes" to the Moorehead volume, says he has always been "troubled" by the copper artifact because its unusual form suggests it may not be Indian. Dr. Gad Rausing of Lund, Sweden, thinks that the general outline and size agree quite closely with the very early Bronze Age daggers of Northern Europe—but he has never seen one with two big and two small rivet holes arranged in such a manner, and so he says he "cannot claim to recognize it at all." It may be, as he suggests, that the four rivet holes were not made at the same time, but that the small ones were added when one of the large ones got broken out. A distinguished archaeologist, a specialist in European pre-history, has written



Copper dagger from Merrimacport, Massachusetts

me that the copper object is doubtless a dagger and, he believes, a very old one, from the mid-European early Bronze Age, presumably about 1300 B.C. But, he says, "How could it have found its way to Massachusetts, I wonder. Perhaps brought by some collector, and lost. Who can tell?" On the other hand, Dr. William A. Ritchie, New York State Archaeologist, assures me that prehistoric Indians of the Upper Great Lakes area riveted some of their spear points to the shaft, and so he says of the Merrimacport specimen that it may or may not be prehistoric. Spectrum analysis should determine its place of origin; for North American Indian copper is quite pure, having only slight traces of silver and iron, while European smelted copper contains antimony, bismuth, lead, iron, cobalt, nickel, sulphur, gold, silver, arsenic and oxygen. In view of the possibility that the Merrimacport artifact may be early European, it is interesting that it was found only thirteen miles from North Salem and near the river used by boats approaching the North Salem site.

An ABC-TV program, Johns Hopkins File 7, on April 26, 1959, contained the statement: "The entire story of pre-Columbian exploration is badly in need of some positive, unarguable, accepted archaeological evidence." Such evidence would be welcome and wonderful to have. Some "positive" and some very widely "accepted" archaeological evidence will be presented in this book, but "unarguable"? Is there any unarguable evidence in any field? It is the spirit and glory of scientists that they keep their minds always open to the possibility of the need for adopting a new interpretation of facts. New arguments are never out of order in the so-called exact sciences, and in a social study like history there will always be room for arguments, except those which have already been shown to be invalid. The purpose of this first chapter has not been to down opposition or to silence skeptics, but to cut into rumors and clues and hints, and to let the chips fall where they may.

CHAPTER 2

Did the Phoenicians Reach North America?

UNRECORDED voyages, whether by accident or design, were made across all the oceans before there were any official explorers. We know this because the continents and most of the islands of the earth were inhabited by "native" peoples before the "discoverers" arrived. Why then are we so much concerned with determining to whom credit should be given for the discovery of America? Since millions of people of Asiatic ancestry had occupied the New World in prehistoric times and were developing civilizations like those of the Incas and the Mayas before any white men arrived, why is it important to know who first reached the New World from the Mediterranean? Is it because we believe that whatever the European man does is more significant than anything other human beings have done? Or is it because we are naturally interested in the march of that western civilization of which we are a part? Geographical discoveries of historic times are no more remarkable in themselves than prehistoric discoveries, but are of far greater significance because they form the intelligible pattern of recorded facts through which we short-lived human beings acquire perspective.

There is historic record that the Phoenicians circumnavigated Africa, and the kind of sailors and ships that did that could have crossed the Atlantic. Evidence that the Phoenicians of Carthage got halfway across the Atlantic was found on Corvo, a small island which is one of the westernmost of the Azores. In 1749, after a storm which ripped at the western shore of Corvo, a broken, black cask lay uncovered, in which were many ancient Carthaginian coins adhering together in a mass.¹ The coins were pried apart, and some of them were sent to Lisbon. From there some came into the possession of a numismatist in Madrid, Father Florez, who in 1761 presented a Swedish scholar, John Podolyn, with nine of them, telling Podolyn that these included one of every kind of coin in the whole find. Podolyn made and published drawings of the nine coins.

Because the coins presumably came out of a ship that was wrecked on the western side of Corvo, it is likely that the ship had come from the West. The Azores lie on the eastward sailing route from the Chesapeake to the Mediterranean. Prevailing headwinds made it practically impossible for ancient ships to sail westward directly from Gibraltar to the Azores. Since the ancients could sail only with a following wind,

¹ Other evidence in the form of coins exists in several places. Roman coins minted during the Roman occupation of England and southern Scotland have been found in Iceland. Roman coins found on the coast of Venezuela have aroused much curiosity. The coins of the Venezuela find are in the possession of Mendel L. Peterson, Curator of Armed Forces History at the Smithsonian Institution, and he has been making a study of them. Since the hoard includes many duplicates, we assume that the coins were not assembled by a collector, but were a merchant's stock of ready money for purchases of cargo. Since the coins were found packed in a jar and not scattered along the beach, it seems reasonable to assume also that they were not accidentally dropped by someone or lost in the sand but were cast ashore in a shipwreck or were deliberately buried by their possessor. From the fact that among them are coins of every Roman emperor down to the middle of the fourth century, we know the approximate date of the voyage of the ship that brought them. At Naskegg Point, Brooklin, Maine, among many thousands of Indian artifacts, Guy Mellgren of Hingham, Massachusetts, has found an English silver coin of the reign of King Stephen (1135-54).

they would have crossed the Atlantic from Gibraltar on a southwest course with the trade winds. From the Caribbean the Gulf Stream would conveniently have carried them north to the latitude of Cadiz for the return crossing with prevailing winds from the West, and the mouth of the Chesapeake is within half a degree of the latitude of Cadiz. Ships would have entered the Chesapeake and ascended the rivers that flow into it, if for no other reason than to lay in fresh water for the return crossing.

A possibly related matter that may be only a legend was reported by Manoel de Faria a Sousa, who in his *Epitome de las historias portuguesas*, Madrid 1628, says that an equestrian statue with its right hand pointing to the West was found on a headland on Corvo when the Portuguese first came. If such a statute did ever exist, it long since suffered destruction. See "Die Erreichung der Azoren-Gruppe durch die Karthagen" in *Archäologischer Anzeiger*, 1927, columns 12-19.

A specialist in Punic coins at the British Museum, Dr. E. S. G. Robinson, to whom I submitted a photostatic copy of Podolyn's drawings, identified two Carthaginian gold coins, five Carthaginian bronze coins, and two bronze coins of Cyrene. Two were from close to 350 B.C. and the others from the third century B.C.

At Uppsala, Sweden, I talked with a professor at the University who told me he had searched in vain in the public and private coin collections in Sweden to find the nine coins. He sent me to the curator of one of Europe's greatest coin collections, which is in another country. The curator was a sweet-faced white-haired gentleman who, like all Scandinavian scholars, spoke beautiful English. The instant I mentioned the finding of Carthaginian coins on Corvo he shrieked, "Impossible!" When I gave details of how and where they were found, he again shrieked, "Impossible!" When I told him their discovery had been recorded by Alexander von Humboldt in his *Kritischen Untersuchungen*, the curator abruptly

dashed into his library and up a tall ladder to a top shelf close to the ceiling, from which he brought down the von Humboldt volume, found the reference, nodded vigorously and fervently declared, "Ah! Yes!" As Dickens would have put it: "First you condemn, then you reads it out of a book and changes your tune."

Evidences of Phoenician Transatlantic Voyages

But did the Phoenicians (Carthaginians) get all the way across the Atlantic? Here are the evidences:

The story of a Carthaginian expedition across the Atlantic was a subject of gossip in the Greek portion of the Mediterranean world. We find it in a book included among Aristotle's "Minor Works," probably written by one of his followers. It is Section 84 of *On Marvelous Things Heard*. A free translation runs thus:

"In the sea outside the Pillars of Hercules they say that an island was found by the Carthaginians, a wilderness having wood of all kinds and navigable rivers, remarkable for various kinds of fruits, and many days' sailing distance away. When the Carthaginians, who were masters of the western ocean, observed that many traders and other men, attracted by the fertility of the soil and the pleasant climate, frequented it because of its richness, and some resided there, they feared that knowledge of this land would reach other nations, and that a great concourse to it of men from various lands of the earth would follow. Therefore, lest the Carthaginian Empire itself should suffer injury, and the dominion of the sea be wrested from their hands, the Senate of Carthage issued a decree that no one, under penalty of death, should thereafter sail thither, and they massacred all who resided there."

Note the phrase "masters of the western ocean." The description "having . . . navigable rivers" applies only to land

on the western side of the Atlantic and not to any island in that ocean. It could apply only to Haiti or Cuba or to one of the continents, South America or North America.

The story was retold in the first century B.C. by Diodorus of Sicily:

“Over against Africa lies a very great island in the vast Ocean, many days’ sail from Lybia westward. The soil there is very fruitful, a great part whereof is mountainous, but much likewise a plain, which is the most sweet and pleasant part, for it is watered with several navigable rivers. . . . The mountainous part of the country is clothed with very large woods, and all manner of fruit trees and springs of fresh water. . . . There you may have game enough in hunting all sorts of wild beasts. . . . This island seems rather to be the residence of some of the gods, than of men.

“Anciently by reason of its remote location it was altogether unknown, but afterwards discovered upon this occasion: The Phoenicians in ancient times undertook frequent voyages by sea, in way of traffic as merchants, so that they planted many colonies both in Africa and in these western parts of Europe. These merchants succeeding in their undertaking and thereupon growing very rich, passed at length beyond the Pillars of Hercules, into the sea called the Ocean. And first they built the city called Gades [Cadiz]. The Phoenicians, having found out the coasts beyond the Pillars, and sailing along by the shore of Africa, were on a sudden driven by a furious storm off into the main ocean, and after they had lain under this violent tempest for many days, they at length arrived at this island, and so they were the first that discovered it.” (*The Historical Library*, Book V, Chapter II, tr. by G. Booth, London, 1700.)

“Over against Africa” (not west of Gibraltar or west of Cadiz) strongly supports the idea of an Atlantic crossing; for

if the Carthaginians crossed the ocean it must have been westward from Africa, as it was only there that the prevailing winds and currents would have made a westward crossing possible. Readers of course demanded that every voyage have a storm.

Claudius Aelianus in the second century A.D. said the story of the discovery was "a definite tradition of the Carthaginians or Phoenicians of Gades." (*Varia Historia*, London, 1701, pp. 217-222.)

The "definite tradition" in Cadiz persisted for 1500 years. Marianus de Orscelar, a Spanish historian of the early seventeenth century, was too far from the event to be an authority, but he picked up the tradition. He wrote that about the time of the Battle of Leuctra, 371 B.C., some Carthaginians departed from Cadiz by sea, and he went on to say:

"Taking the course between the setting sun and the meridian, they surmounted the waves of the ocean, and after many days' sail discovered a very extensive 'island.' This island was rich in pastureland, in vegetation, and forests, and was watered by rivers that flowed down from steep mountains and were broad and deep enough to be navigable. Because the land was attractive and not crowded with inhabitants, many of the Carthaginians remained to settle there; the others returned with the fleet, and arriving at Carthage, gave a report to the Senate. After the matter was discussed, the Senate decided to suppress the information, and so they put to death those who had brought the news. They feared, it seems, that the people, weary of the war that had lasted many years and desiring a change, would with a single mind move out of the city and go to live in such a good land. They reasoned that it would be better to forego the great wealth and resources rather than to weaken the forces of the city by extending themselves so much." (Marianus, "Biblioteca de autores espanoles . . ." V. 30, 31, *J. H. U. Library*, tr. by Mrs. D. E. Fields.)

In addition we now have what may be evidences corroborative of the story, and in one of the most likely places—up one of the rivers that flow into the Chesapeake.

Philip Beistline, a school teacher of Mechanicsburg, Pennsylvania, was an ardent collector of Indian artifacts. In 1941 he found a small limestone about four inches long marked on two sides with what looked like a "cuneiform" inscription. Since this bore no resemblance to anything known to be of Indian origin, it excited the curiosity of one of Beistline's neighbors, Dr. William Walker Strong, a physicist with a Ph.D. from Johns Hopkins. He immediately visited the site of Beistline's find, which was on the Hoy Farm near the Conodoguinet Creek. Beginning with this first search, Dr. Strong discovered many ironstones marked with grooves apparently in the form of alphabetic letters.

As a physicist Dr. Strong was familiar with Alpha, Gamma, Delta, etc., and because he recognized some of these letters, he supposed the "inscriptions" were Greek. When he later



Location of Pennsylvania Ironstones

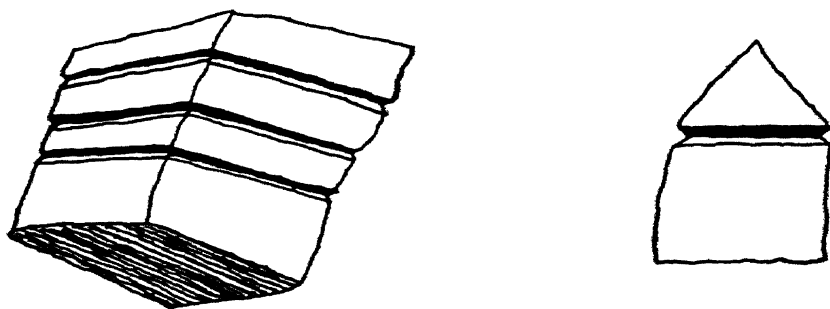
found some letters unlike anything in the Greek alphabet, he examined ancient alphabets to see whether they could be Etruscan, or Cyprian, or Hebrew. Study finally convinced him they were North Phoenician, or what he called "Canaanite."

When I asked Dr. Strong on what date he had discovered the first of the "inscriptions," he surprised me by being unable to remember the day or the month and he was uncertain even as to the year. When I asked whether he had felt elated at the moment of seeing that first "inscription," he replied that he had been skeptical, even questioning whether the marks were alphabetic, until he had found fifteen or more letters of the alphabet. By the summer of 1942 he had found recurrent examples of 21 of the 22 letters of the North Phoenician alphabet. The one letter that was missing was "Beth," but finally he discovered markings which included Beth on a stone in a path to a farm kitchen. Without hesitation and with glowing enthusiasm, Dr. Strong gave the precise date of this discovery, August 31, 1942. For him, this was the big day.

He collected over 400 ironstones bearing markings in alphabetic forms. He found these in York and Cumberland Counties of Pennsylvania, in regions close to creeks that flow into the Susquehanna River. He took them from stone fences or from the surface of the ground. Ironstones are Triassic diabase, a fine-textured igneous rock which was thrust up in dikes through the local limestone. Ironstones are a dark gray in color, but their exposed surfaces are patinated with a red oxide to a depth of several millimeters. This patination, when it powders away, forms the red earth color of the ironstone regions.

The "inscription" grooves are quite unlike the deep, straight, V-shaped grooves which encircle some ironstone blocks. The V-shaped grooves are usually an inch or more in depth, and show a slight fault demarcation at the bottom of the V. Where a fault extends completely through an ironstone, the V-shaped

groove follows the weakness of its edge on all sides of the stone. It is nature's way of cutting straight through, often in parallel planes. At first appearance the V-shaped grooves look as though they had been sawed by machine. Authority for saying that these fault-following grooves are the work of nature is a former Curator of Physical Geology and Minerals at the American Museum of Natural History.



Natural grooves on ironstones

Entirely different in cross section, size, shape, lack of parallelism, and general appearance are the shallow, gently-rounded grooves which are found in the form of alphabetic letters. They vary in depth from $\frac{1}{16}$ to $\frac{3}{16}$ inch, and they average from $\frac{1}{2}$ to 1 inch or more in width, and from 3 inches to 6 inches in length, though the shortest is about 1 inch and the longest 14 inches. These "inscription" grooves show no evidence of chisel or edged graving tool, but are so smooth that they seem to have been made by abrasion. They are not depressions in the surface patination but in the hard gray core of the ironstone, though their surfaces are covered with about the same depth of patination as are the unmarked surfaces around them. Ironstones sometimes flake or scale off, or exfoliate, but these are not exfoliations. They do not follow any visible fault line, nor do they continue straight around an ironstone block, but they begin and end at definite points, and generally on rounded surfaces.

Theories of Origin

Various theories of origin were at first proposed. One man called the grooves "the result of glacial action." However, they existed south of the southern limits of glaciation, and a glacier does not mark a rock in eight or ten different directions, nor does it leave short curves as in the Phoenician letters Teth and Q'oph.

The theory of accidental gouging by farmers' plows or harrows cannot hold; for iron and steel are not hard enough to abrade or to do more than scratch ironstone, which has a hardness of 6 or 7, and sometimes a little more than quartz; and besides, the point of a plow does not leave complex letters like Aleph, Daleth, Mem, and Shin. Ironstone is so resistant that even with a carborundum pencil it requires two hours' hard work to make a straight abrasion of the length and width of an average stroke of one of the letters.

It is fairly safe to say that Indians in the Susquehanna region lacked the technical means of abrading rock of the hardness of Triassic diabase. The reader will judge whether there is any pictographical quality in the grooves. No pre-Columbian Indians were ever known to have had knowledge of the Semitic alphabet. Few today are willing to entertain the theory which some religionists in the nineteenth century proposed, that members of the Lost Tribes of Israel were living in North America several centuries before Christ, and that all those who knew the alphabet were later exterminated by disease or war.

The early Pennsylvania Germans did not make the grooves. They used the modern alphabet, and had pen, ink, and paper, and did not need to resort to abrasion on ironstones. And the grooves have been found in too wide a dissemination for them to have been made by some other group small enough to remain in complete obscurity, escaping historic record.

A hoaxer would have had to work strenuously all day and

every day for several years to have made all the abrasions; for the average number of letters in an "inscription" is more than six, and there are more than 400 of these grooved stones in Dr. Strong's barn. A hoaxer who worked for so long a time on ironstones on various farms in two counties would inevitably have become a legend in the region.

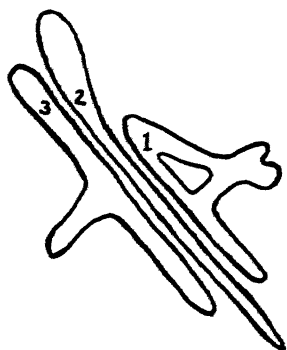
Elimination of all these theories of origin leaves only two alternatives: Dr. Strong's theory, or recognition that the grooves are the work of nature. There can be no suspicion of any attempt by Dr. Strong to deceive the public. The existence of the "inscription" grooves before Dr. Strong was born has been attested to in an affidavit I procured from a man who as a boy in 1880 lived on a farm where he and his father before him had noticed them. But we cannot overlook the possibility of *self*-deception on Dr. Strong's part; perhaps it was merely a will-to-believe that persuaded him that he was finding man-made alphabetic inscriptions.

As a physicist Dr. Strong said that the depth of patination in the grooves is evidence of many centuries of exposure; for there is no known method by which ironstone patination can be artificially produced. Cemetery monuments of dark-gray polished ironstone were first erected in Civil War times, and these are now only beginning to show the first slight traces of red discoloration.

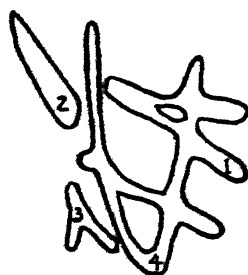
Laboratory studies to determine the rate of patination on ironstone would require several years. A possible method of determining the rate is one which Dr. Strong proposed, to take the age in millions of years of Triassic diabase and the presumed original height of the diabase dikes in eastern Pennsylvania, which have been worn down to their present level during those millions of years, and from these factors estimate the average rate of erosion (or patination) of the ironstone areas. This might not furnish an accurate measure of the rate on loose rocks, but should determine whether it is, as Dr. Strong has computed it, within the order of from 1

Aleph	✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠
Beth	9 9 9 9 9 9 9
Gimel	Λ Λ Λ Λ Λ Λ Λ
Daleth	7 7 7 7 7 7 7
He	3 3 3 3 3 3 3
Vau	4 4 4 4 4 4 4
Zayin	7 7 7 7 7 7 7
Cheth	8 8 8 8 8 8 8
Teth	0 0 0 0 0 0 0 2 2 2 2 2 2 2
Yodh	1 1 1 1 1 1 1
Kaph	3 3 3 3 3 3 3
Lamed	6 6 6 6 6 6 6
Mem	4 4 4 4 4 4 4
Nun	5 5 5 5 5 5 5
Samekh	7 7 7 7 7 7 7
ayin	0 0 0 0 0 0 0
Pe	1 1 1 1 1 1 1
Tsade	7 7 7 7 7 7 7
Q'oph	8 8 8 8 8 8 8
Resh	9 9 9 9 9 9 9
Shin	W W W W W W W
Tau	† † † † † † †

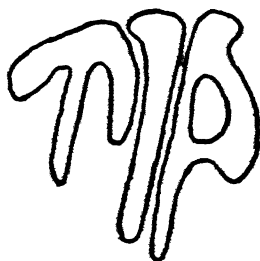
Variations in alphabetic forms in the "inscriptions"



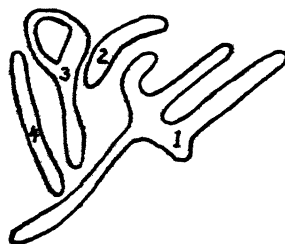
Aleph Resh Kaph
ARK—Eryx
(a city in Sicily)



Aleph Resh 'ayin Daleth
Arad—Aradus
(City in Asia Minor)



Q'oph Resh Tau
Carthage



Shin Resh Daleth Nun
S R D N
Sardinia



Tau Nun Nun Tau Nun'ayin Zayin
(reading right to left)
Zoan Tanit
(a Carthaginian goddess)

“Phoenician inscriptions” on ironstones

to 3 millimeters in 1000 years.

Phoenician, like Hebrew, reads from right to left, but most of the "inscriptions," which are not linear, Dr. Strong has read counterclockwise. Let us see whether we can accept any of his transliterations and translations.

The alphabet table shows the variations of the 22 letters as they appear on the ironstones in Dr. Strong's collection.

Since only some of the easily transliterated and translated "inscriptions" have been chosen as illustrations, these admittedly carry weight in favor of Dr. Strong's theory; actually he was unable to translate, and in some cases even transliterate, 40 per cent of the "inscriptions," and these of course argue against his theory.

Dr. Strong found about 150 Mediterranean place names among the "inscriptions," and the names of about 90 slave overseers or "rabs." His transliterations are consistent, and his translations are convincing, if one accepts his theory that the markings are man-made. Dr. Strong believed the "inscriptions" were made by soldiers, slaves, miners, and overseers who had come from many different Phoenician cities from all over the eastern and southern shores of the Mediterranean, in a very large expedition sent out in the fourth century B.C. by Carthage to procure iron for weapons. In ancient times iron was smelted with charcoal, and when North Africa had become largely denuded of trees so that there were insufficient sources for charcoal, the Carthaginians sought for and found ironstones in a forested land across the Atlantic. The expedition, Dr. Strong believed, faced disaster and fell apart into dissident groups, each made up of those who had come from a separate city.

All this brings us back to the essential question: Are the "inscriptions" man-made or the work of nature? If man-made, they are Phoenician and have an exciting story to tell of great historical and archaeological importance. If they are the work of nature, Dr. Strong's imagination ran away with him.

If an overactive imagination on Dr. Strong's part is the true explanation of his discoveries, here would be a counterargument: Would nature in the "Peach Orchard" area of ironstones (near Elcock Schoolhouse) make what look sufficiently like alphabetic inscriptions to appeal to Dr. Strong's imagination, but fail to make any such markings in another area less than two miles away? While Dr. Strong and I were passing an ironstone area about one-third of a mile wide in the "Red Lands," as the local people call them, Dr. Strong remarked: "I have been all over this area and found nothing."

On the other hand, a point apparently against Dr. Strong's theory is that if the grooves are alphabetic, it is strange that the Phoenicians left inscriptions only on ironstones and not on any of the more prevalent limestones. Or is the rate of weathering on softer rock such that only inscriptions on hard ironstones survived for more than 2000 years? Another telling point against Dr. Strong's theory is that Phoenician inscriptions in Africa, or in Carthage, are linear. Among the more than 400 "inscriptions" Dr. Strong left to his son, Dr. W. Albert Strong, it would be reasonable to expect that practically all would be linear, instead of in bunched groups most of which must be read counterclockwise. Less than a half-dozen of Dr. Strong's finds can be called linear.

As to whether the "inscriptions" are man-made or the work of nature, I am of two minds, which you may say is with no mind at all. For years I tried my best to obtain authoritative opinions from recognized scholars, and did not foresee what a fiasco that attempt was bound to be. With the backing of a wealthy enthusiast, I offered to pay any geologist who would take a day off to visit Mechanicsburg and examine the "inscriptions" in Dr. Strong's barn at 500 South York Street, and publicly state his opinion as to whether man or nature made them. But professors and scholars know when to be busy enough to keep themselves out of trouble, and no criticism of them is implied or intended when I say that I could not

persuade any geologist to risk his reputation. Hearing of the offer, a professor said: "I will gladly risk my reputation any-time for \$200," but he was a biologist retired on a pension.

In a sincere search for an answer, I consulted with many scholars, and corresponded with the geological departments of the Smithsonian Institution, Johns Hopkins University, the University of Pennsylvania, Dickinson College, and the State College of Pennsylvania. So far as I was able to ascertain, only one geologist had seen the runestones in Dr. Strong's barn, and the directors of the Department of Internal Affairs and of the Bureau of Topographic and Geologic Survey of the Commonwealth of Pennsylvania told me that he was "the only geologist that we know that has personally examined these stones."

He had a distinguished record, having served in an important capacity as a geologist for one of the states of the Union and in the Geological Survey of the United States, and he was the author of many authoritative reports. Since he did not wish to be quoted, I cannot name him.

It was his opinion that the grooves on the ironstones in Dr. Strong's barn were not the work of nature, but man-made, by accident and not as intended inscriptions.

Until recently only one other scholar had examined the stones in the barn, and he has kindly given me permission to quote the following statement which he prepared:

"Dr. George E. McCracken, Professor of Classics and of Ancient History at Drake University, Des Moines, Iowa, visited the home of Dr. W. W. Strong, at Mechanicsburg, Pennsylvania, and was shown by Dr. Strong a large number of ironstones on which were markings in various patterns. It was Dr. McCracken's conviction derived from his personal examination of the stones that the markings were man-made and not made by nature; that they were made by friction rather than the use of a chisel; that the markings represent

writing of some sort. Dr. McCracken is unable to make any further statements concerning the markings, cannot state what language is represented, nor who made the markings or at what period. For some time following his visit, Dr. McCracken attempted in vain to get competent orientalists and archaeologists to examine the stones. He approached to this end professors at the University of Pennsylvania, Harvard University, and New York University, two of whom were then editors of periodicals in the archaeological field. It is further Dr. McCracken's conviction that no one is competent to make any statement concerning the origins of the aforesaid ironstones who has not personally examined them at Mechanicsburg."

Of the opposite opinion was Dr. W. F. Foshag, Head Curator of the Department of Geology at the Smithsonian Institution, who gave me permission to quote the following:

"I know of no one who is familiar with the ironstone concretion occurrence at Mechanicsburg, Pennsylvania. Such objects are not uncommon, and the natural markings are frequently mistaken for cuneiform characters. They are, however, natural in origin and are due to shrinkage of finely crystalline material."

Dr. Foshag wrote me that while the various types of markings in clay-limestone and similar materials are well known to geologists, none have considered them of sufficient importance to make a detailed study of them, and he could give no bibliographical references to them.

Dr. Otto Haas of the Department of Geology and Paleontology at the American Museum of Natural History, when shown Dr. Foshag's letter, expressed the highest confidence in Dr. Foshag's competence, and concurred in his opinion that the markings are sports of nature.

Here we had it: two against two. The two scholars who personally examined the grooves thought them not made by

nature; the two who expressed an opinion of them sight unseen declared them to be the work of nature.

It seems significant that Dr. McCracken, a professor of classical languages, "cannot state what language is represented" by Dr. Strong's ironstones. A professor of classical languages would presumably recognize letters in the Phoenician alphabet; of course the "inscriptions" in Mechanicsburg may be Phoenician only in Dr. Strong's imagination.

Recently Dr. Strong's son, Dr. W. Albert Strong, who resides in Ohio, got from Mechanicsburg two of the "inscribed" stones and loaned them to me. I took them to the American Museum of Natural History to show to Dr. Brian H. Mason, Curator of Physical Geology. In one of the museum offices I met Dr. François Goudchaux, a scholar from the Sorbonne, and as he helped me open the box in which I had carried the stones he told me he had heard of the Pennsylvania ironstones and was eager to see them. The instant he saw the *SRDN* rock, he read off the letters: "Nun, Daleth, Resh, Shin." I said, "They go in the opposite order." Dr. Goudchaux helped me carry the stones to another office where Dr. Mason looked at them and gave me permission to quote him. He said no geologist could commit himself as to how they were made, as it would be a matter of opinion, not scientific certainty. He said the markings "could be the work of nature." When I pressed him to mention at least one way in which nature might have made them, he said: "The roots of trees or bushes pressing against the roots covered with soft patina would rub off the patina so that those places would appear as grooves." Appreciative of Dr. Mason's frankness, I quoted something from Shakespeare that seemed applicable, and he nodded and repeated after me: "Nature is infinite in her capacity." Afterwards when I asked Dr. Goudchaux what he thought, he threw up his hands and said: "If one can read 'Sardin!'" He could not credit nature with such a marvel as alphabetic writing in spite of her infiniteness.

How does the law of probabilities enter into the problem? Can it be that nature has produced alphabetic forms among many others, and that Dr. Strong, infected with the imagination disease, collected only those which seemed to him alphabetic? Can it be shown that on the same type of diabase ironstones everywhere nature produces grooves resembling what some think are man-made letters? If the "inscription" grooves are the work of nature, they would seem to be among nature's most marvelous performances, quite as remarkable as anything ever imputed to the ancient gods.

CHAPTER 3

St. Brendan of Ireland

AFTER the time of the Phoenicians, that is, after the destruction of Carthage in 146 B.C., and down to the days of the Nordic sea rovers called the vikings, did any Europeans arrive in America?

From the fifth to the eighth centuries the Celts were the most powerful force in the culture of western Europe. Did Celtic explorers cross the Atlantic?

Many tales of daring Irish voyages upon the stormy western ocean are almost universally believed in—by Irishmen—but are without adequate documentation. Absence of documentary evidence in this case, however, is not of overwhelming significance, since we know that practically all historical records in Ireland were destroyed during the centuries of warfare that ravaged that country. As strongholds and castles were besieged and captured and sacked by conquering armies, the manuscript libraries went up in flames, and the Irish were left with only their traditions and their pride. Having no desire to reopen a closing wound, one feels constrained to say that it would be quite unfair for an historian born in England, for example, to cite the absence of written records in Ireland as an argument against Irish claims of pre-Columbian crossings of the Atlantic. This does not mean that we should accept all the Irish claims; for some of them are obviously

mystical and poetic weavings of a highly-active Celtic imagination, as most Irishmen would happily affirm. Yet there are some tales of Irish sea voyagings which are credible, and are supported by and substantiated by—and perhaps we may say proved by—two bodies of evidence so strong as to be practically incontrovertible.

Before we look at these evidences, however, we should face some facts regarding Irish sea rovers. We know that the Irish had coracles, boats made of animal skins stretched over frames of withies. Though frail by modern standards, these were remarkably seaworthy. A coracle that carried someone from Ireland to King Alfred in England was “made of two hides and a half.”

The Irish may have had a natural proclivity to sea travel, but in any case they became capable mariners, aware of every sign that birds and sky color could give as to weather changes and as to directions and location of land. Some of them were driven by necessity to take to the sea as fishermen and traders, practical men with mundane goals; others gave vent to spiritual energies released in the fifth century by the preaching of St. Patrick and the advent of the Roman form of Christianity, and with an irresistible proselytizing urge sailed to other lands as missionaries. So many from Ireland went across to settle in the northern third of Great Britain that eventually that northern part ceased to be called Land of the Picts, and acquired the name “Land of the Irish,” or Scotland, from “Scotti” which means Irish. Missionary zeal carried Irish anchorites to all the islands around the North Atlantic: the Orkneys, Shetlands, Faeroes, Iceland, and, we believe, to Greenland and Newfoundland. For several centuries Irish priests and anchorites flourished in the islands north of Scotland, until the heathen vikings began to invade them. The religious conflict between the Irish and the Norse led to long-lasting enmity, until by the time the Norsemen triumphed in physical warfare throughout the islands and even in Ireland itself, the Irish

saw spiritual victory in the conversion of the Norsemen to Christianity. The facts of the Irish expansion into these northern islands are undisputed.

Irish monks reached Iceland in 795, sixty-five years before the Norsemen did. The Icelandic Book of the Settlement (*Landnámabók*) says: "Before Iceland was peopled by the Northmen there were in the country those men whom the Northmen called 'Papas.' These were Christian men, who would not remain here among heathens, and the people believed that they came from the West, because Irish books and bells and croziers were found after they left, and still more things by which one might know that they were West-Men [Irish] that were found in the island of Easter Papay and in Papyli."

As to whether the Irish reached Greenland before the Norsemen, the evidence is questionable. When Erik the Red, exiled from Iceland in 982, went exploring in Greenland, he found what had been human habitations "east and west in the country," and stone implements and fragments of boats scattered along the shores of the fiords. While these former inhabitants may have been Eskimos, it is generally believed that the Eskimos did not begin to arrive in Greenland until later. The most likely explanation seems to be that they were Irish, and this opinion is strengthened by Antonio Zeno's recording of the report of the fourteenth-century Orkney fisherman who said of the inhabitants of Estotiland (identified as Newfoundland in the last chapter in this book): "It is believed that in times past they have had intercourse with our people, for he said he saw Latin books [there] which they at the present time do not understand." Books in Latin argue the former presence of Christian missionaries, and since the Irish had been far more active than any other people in missionary enterprises, those books logically point to the Irish. The Orkney fisherman said the island (Estotiland) was called Icaria (Kerry) and that all the chieftains there were called Icari.

The name Estotiland seems to have come from "Escociland," a variant of Scotland, and points in the same direction. If the Irish had been either in Greenland or Newfoundland, they must have been in both; for the Zeno Narrative tells of trade between the two.

The Irish undoubtedly did much island hopping. But there are also tales of long voyages made directly across the open ocean, one of them a very early pagan tale, "Voyage of Bran MacFebhail," with poetic "gauds and trappings." Most of these tales of ocean-crossing voyages center around a sailor monk of the late fifth century and first half of the sixth, St. Brendan (Brandan, Brenainn). His is the outstanding name, and he is said to have had rule over three thousand monks in various parts of Ireland. Whether he in person did all the voyaging ascribed to him, or whether the exploits of monks sent across the sea under his authority have been credited to him, we know not. Whether the expeditions he is said to have conducted set sail from Kerry or Galway or Brittany is matter for speculation. His fame spread so widely that he has been associated with several localities. Legends grew up about him, and there came to be told a prophecy about him at his birth, that "there will be a multitude of kings and princes who will adore him." His heroic voyagings were recounted not only in Ireland but in many countries of Europe; for manuscript versions exist in English, French, German, Swedish, and Italian. Several important manuscripts are in the Bodleian Library: Rawlinson B485 and 505, and Bodl. e Musaeo 3, folio of about 1200 A.D., from the monastery of Valle Crucis, Wales.

Some think the whole complex of St. Brendan voyages is merely an allegory of a devout soul's struggle against waves of wickedness. Religiosity has almost swamped reality. Breaking through to the realities, however, we find a convincing description of St. Brendan's boat on one of his reputed voyages. It had ribs of timber, and a frame of wickerwork covered

with three thicknesses of ox-hide dyed reddish-brown with oak bark. The seams were smeared with butter, of which they had a goodly supply on board to replace what the sea washed off. The keel and gunwales were of wood, and there was one mast and one sail, and an iron anchor. According to the fifteenth-century *Book of Lismore*, compiled from earlier versions of St. Brendan voyages, he sailed not with one coracle or currach but with three, with 30 men in each, who with him faced the "bitter" and "strong-maned" sea. On a later occasion he sailed with a crew of 60 in a vessel built with "boards" in Connaught, and this is said to have been half-decked, with cordage of nettle fibre or possibly purple *melic*, and it was steered by a paddle. This voyage, which is said to have occurred between 565 and 573, is celebrated by a festival in Ireland on March 22.

The miraculous floated with St. Brendan across the waters; for we are told that in the midst of peril from "red-mouthed monsters" which we unimaginatively call whales, he baptized a mermaid. A charming ceremony in mid-ocean! Why not? Since sailors often saw mermaids, a sailor monk who saw one could be expected to perform the rite that would save the soul of the enticing creature. St. Brendan also encountered a "monstrous sea-cat, the size of an ox," which we in the prosaic present might identify as a walrus. He found an island where mice were as large as cats. He found also a Paradise of birds. He sought the Land of Promise, some said, and it was "with the grace of the Holy Spirit on him," and of course the sailing of such a saint was always a mystic quest.

St. Brendan was born at Fenit, on a small promontory almost surrounded by water near the entrance to Tralee Bay, County Kerry. He seems to have inherited a love of the sea, and since he was brought up among fishermen, was as well-acquainted with the ocean as any man of his time.

The *Book of Lismore* says that "he desired to leave his land and country, his parents and his fatherland, and he urgently

besought the Lord to give him a land secret, hidden, secure, and delightful, separated from men." Descriptions of the regions he visited, however, show that even if hidden and secure, most of them were decidedly not delightful. Here is an account of a St. Brendan voyage across at least one thousand miles of ocean to what must have been ice-capped Greenland with its glaciers:

"They saw a column in the sea, which seemed not far off, yet they could not reach it for three days. When they drew near it, St. Brendan looked toward the summit, but could not see it because of its great height, which seemed to pierce the skies. It was covered with a rare canopy, the material of which they knew not; but it had the color of silver and was hard as marble, while the column itself was of the clearest crystal. St. Brendan ordered the brethren to take in their oars and to lower the sails and mast, and directed some of them to hold on by the fringes of the canopy, which extended about a mile from the column, and about the same depth into the sea. They ran the boat in through an opening. The sea seemed transparent like glass. While they sailed along for a day by one side of the column they could always feel the shade as well as the heat of the sun, beyond the ninth hour."

A Norman-French version of this St. Brendan voyage calls the ice "a great and bright jeweled crystal temple."

After beholding ice in such quantities as they had never before imagined, and shivering from the chill of it, they skirted it for four days, and on the fifth day they "rowed toward the north," and afterward sailed "for eight days toward the north" until they discovered "a volcanic island, very rugged and rocky, covered with slag, without trees or herbage, but full of smith's forges" with the "noise of bellows' blowing like thunder and the beating of sledges on anvils and iron." On another day they saw a mountain "with misty clouds and

a great smoke issuing from the summit," with great clouds rising from the sea. Later they saw "the peak of the mountain was clouded and shooting up flames into the sky, which it drew back again to itself so that the mountain seemed a burning pyre." Thence they voyaged southward for seven days and found "frozen waves."

The volcanic island was probably Jan Mayen, far north of Iceland. "Frozen waves" aptly describes the pack ice off the northern coast of Iceland. The Norman-French version says it was "where the sea sleeps and cold runs through their veins."

On another voyage, St. Brendan or some Irishman visited the Canaries and saw Tenerife, "a hill all on fire, and the fire stood on each side of the hill like a wall, all burning." St. Brendan's voyages seemed to take him to the most uncomfortable spots, where one suffered freezing cold or felt the terror of hell fire. But most persistent is the legend that he found an island that was warm and lovely (Madeira? Azores?). There was another voyage said to have been in the year 535 in which St. Brendan or some sailor monk sailed for 40 days from an island which was 12 days' sail from Ireland (one of the Azores?) and came to another land. This, for lack of any description to the contrary, may have been as temperate and delightful as a saint could wish. It is said that in a western island he found a stone church and an old man praying in it, an Irish monk named Festinus, who had dwelt there thirty years, and who said he was the last of twelve who had come from Ireland. One account says that one of St. Brendan's voyages lasted 2 years; another tells of a voyage that lasted 5 years, and another, 7 years. In any case, St. Brendan returned to Ireland where, as tradition has it, he died on May 16, 577.

Was the land which St. Brendan is said to have found to the southwest of the Azores actually on the continent on the western side of the Atlantic? There is more than a hint that

it was, when we consider the belief of the natives in Mexico that a white-skinned teacher whom they called Wixipecocha (Quetzalcoatl) had come to them from the East in a boat with sails, bearing a cross, and had taught them his religion and sailed away again to his holy island Tlapallan. This had occurred between 500 and 800 A.D. As William H. Prescott shows in *History of the Conquest of Mexico*, the religion of Mexico when Cortez arrived was a combination of savagery with Christian beliefs and practices.

The first body of evidence that establishes as fact the pre-Columbian crossing of the Atlantic by the Irish consists of the descriptions of the ice-capped mountains and glaciated coast and frozen sea and the active volcanoes which St. Brendan or some sailor monk saw, with whatever hints we may be willing to accept from legends. The second body of evidence is more explicit and places the Irish all the way across the Atlantic by the tenth century or earlier. This evidence that the Irish reached the continent of North America more than 1000 years ago depends on a supporting fact, as occasionally happens in a matter of historical reconstruction, but since in this case the supporting fact is solidly established in a subsequent chapter, it can be presented with brevity here. The supporting fact is that the vikings in the first decade of the eleventh century reached North America, explored it extensively by characteristically entering inlets and bays and ascending navigable rivers, and applied the name Vineland to the entire area from Maine to Virginia. The depending fact which becomes challenging evidence for the Irish is that those eleventh-century vikings repeatedly said that the Irish had reached the North American continent before them. A disclaimer of priority coming from boastful explorers is most impressive.

The first story the Norsemen told that gives the Irish precedence over themselves in crossing the full width of the Atlantic is that Ari Marson, a prominent man of Iceland, was driven by storms to the shore of continental America in 983,

three years before any other reported first sighting of that shore by a Norseman (Bjarni Herjulfsson), and that Ari was there baptized. Who could have been there to baptize him? It had to be some Christian priest, and soon we will see why we have reason to feel certain that it was an Irish priest.

The story of Ari Marson was told by two of the most reputable historians of Iceland. One was Rafn, the so-called Limerick Merchant, because he traded much in Limerick, Ireland. Rafn was related to Ari Marson as well as to Leif Erikson, and he lived about the beginning of the eleventh century. The other narrator was Ari Frode (Ari the Wise) who said his uncle Thorkell Gellerson, who was Ari Marson's great-grandson, had told him that Ari Marson had been recognized in "White Man's Land," where he was held in high respect. As for the location of "White Man's Land" and who lived there, this is what the vikings said (*Codex 770*, p. 124):

"Now are there, as is said, south from Greenland, which is inhabited, deserts, uninhabited places, and icebergs, then the Skraelings, then Markland [Nova Scotia], then Vineland the Good; next, and somewhat behind lies Albania, which is White Man's Land; thither was sailing, in former times, from Ireland; there Irishmen and Icelanders recognized Ari the son of Mar and Katla of Reykjaness, of whom nothing had been heard for a long time, and who had been made a chief there by the inhabitants." Another name for White Man's Land was Great Ireland (*Irland ad Mikla*), and this was used in the *Landnámabók*: "Great Ireland lies to the west in the sea near Vineland the Good."

Nothing could be more specific. The vikings reached North America, and when they got there they found that Irishmen had arrived there before them.

CHAPTER 4

Heavener Runestone

DURING sea-farers from Europe reached North America much earlier than has hitherto been accepted. Evidence for this, found several decades ago, has been gaining attention. One of the earliest clear evidences is a rock bearing an inscription in the Germanic alphabet that was going out of use before the days of Leif Erikson. And where is this evidence? The reader may be surprised to find that it is in an area most persons would assume to be unlikely.

There are hints in old records that long before Columbus some adventurers who crossed the Atlantic from Northern Europe acquired some correct information regarding the civilization in Mexico or Yucatan. The fourteenth-century fisherman in the Zeno Narrative said of the coast of the "New World": "The farther you go southwest, the more refinement you meet with, because the climate is more temperate, and there they have cities and temples dedicated to their idols, in which they sacrifice men. . . . In those parts they have some knowledge and use of gold and silver." Men from Northern Europe could certainly have entered the Gulf of Mexico, and from the Gulf they could have had access to the north and west via the Mississippi and Arkansas Rivers. From the Arkansas, the Poteau River, navigable by small craft, leads south to within a mile of the site of the rock that bears the

old runic inscription, at Heavener, Oklahoma. Heavener is not pronounced like the opposite of Hell, but begins with a "heave."

Mrs. J. Ray Farley, wife of the former city manager of Heavener, had for years been sending us urgent invitations to come to Heavener to examine the runestone. The more she told about the inscribed rock, the more it seemed that we should go to look at it; for no one could form a sound opinion of it sight unseen. But Heavener was a long distance from Brooklyn, and time and again other pressing interests interrupted plans to make the journey. Mrs. Farley said that the inscribed rock is on a mountain one mile from town, and she warned me never to try to see the rock in any year until November. When asked why, she explained: "By November, rattlesnakes, copperheads, and water mocassins will have gone into hibernation." A boy in a group that was climbing up the mountain to the rock had in the nick of time cut off the head of a moccasin that was about to strike one of his companions, and a girl in another party had run into two rattlesnakes just beside the runestone. It was clear that the pursuit of knowledge had the taste of danger.

It never was convenient for us to visit Heavener in November, but in 1959 we were in the region in mid-September, and as we drove toward Heavener one forenoon to call on the Farleys I had my mind made up that I was not going up the snake-infested mountain. However, when Gloria Farley and her husband came out to the car to greet us, she immediately inquired: "Will you go up to look at the runestone this afternoon—or tomorrow morning?" I have always tried to conceal my cowardice, of which I have as much as the next man, and so after sputtering a bit I capitulated with great bravery and chose to defy death at once.

The ride in a jeep up Poteau Mountain almost loosened our teeth. The jeep forced its own road, flattened trees, conquered boulders and incredible inclines, and bounced and all

but broke us; when it could ascend no further it deposited us one hundred yards from our goal, to which we had to scramble up a ravine over a tumble of rocks. The anticlimax of the climb was that we never saw a snake.

The runestone is a flat monolith standing on edge within one or two degrees of vertical, with 12 feet of it exposed. It is 10 feet wide and 2 feet thick. The inscription is at the height of a man's head across the surface overlooking the ravine up which we had come. On the uphill side the lower half of the rock is attached to several other layers of sedimentary rock which are likewise up-ended, showing that the rock was at one time part of an overhang of the cirque above it, and fell into its upright position. It was definitely not planted by man.

The cirque, 400 feet above the valley, is a semicircle of horizontal rock layers presenting a wall thirty feet high, with overhang enough to provide shelter for twenty or thirty campers, with convenient drinking water in the form of a thin waterfall. It is a natural camping place that primitive man and early explorers must have appreciated.

The rock is a Savanna Sandstone, the very fine-grained particles having been cemented together in Pennsylvanian Time by liquid silicon, so that it is extremely resistant to erosion or cutting. It is nature's own plastic, much tougher than granite. I had chopped a hole one inch in diameter and one inch deep in New England granite with a straight-edged chisel in five minutes, and I wanted to test the comparative hardness of the sandstone—on its rear side, of course. The jeep owner obligingly brought me a tire steel sharpened at one end, and this I used as a chisel with a stone for a hammer. I made so little impression on the rock that occasionally I speared at the hole I was making with the steel held in both hands. I labored for twenty-five minutes, but succeeded in cutting out what I estimated as only a flat half-teaspoonful of material.

I then turned attention to the weathering of the grooves

of the runic characters of the inscription. Each letter is from 6 inches to 9 inches in height, and the grooves average $\frac{3}{4}$ inch in width and $\frac{3}{16}$ inch to $\frac{1}{4}$ inch in depth. Inscription grooves on similar sandstones in two local cemeteries furnish comparative data. The grooves on cemetery gravestones 80 to 100 years old still retain edges that feel sharp to the thumb, and so do 250-year-old grooves on sandstones in Bruton Parish Churchyard in Williamsburg, Virginia, while the edges of the grooves in the Heavener Runestone have been weathered to comparative roundness, and therefore must be of very great age. The runestone stands deep in the ravine, sheltered from winds on three sides by the walls of the cirque. Rain-water runs off the vertical surface and the warm climate seldom permits ice erosion. When the runestone was discovered by C. F. Kemmerer while he was hunting in 1912, the grooves of the runic letters were covered with lichen, as was the entire rock surface. A geologist has said that the growth of lichen on that rock surface has required more than one hundred years, and this is borne out by the fact that initials of a local resident, scratched through the lichen twenty-five years ago, have not been covered over by the growth.

Gloria Farley had arranged for a meeting with Colonel George H. Shirk, the President of the Historical Society of Oklahoma who was coming the next day with a party of interested scholars to see the runestone and to confer with me. And so the following evening we met Colonel Shirk; Miss Muriel H. Wright, historian, author, editor of the *Quarterly* published by the State Historical Society, and granddaughter of the Cherokee Indian Chief who had been spokesman for all the tribesmen in the Indian territory when they announced what the name of the State was to be; Dr. Mildred Frizell, geologist from the State University; and her husband, John Frizell.

Colonel Shirk first questioned the geologist, who established that there is nothing in the geological evidence to pre-

clude belief that the inscription is 1000 years old. This, let us note, actually amounts to a statement that the geological evidence supports that belief; it also aptly illustrates the tendency among scholars to hold to the illusion that they have left open a line of retreat if they present a fact in negative rather than affirmative terms. The point for us in regard to the Heavener inscription is that the geologist was categorical, and gave an absolute statement. On geological grounds, there would seem to be no possibility of contention against the belief that the inscription is many centuries old.¹

Colonel Shirk next interrogated the historian, Miss Wright, who showed that it is "unlikely if not impossible" or "not believed possible" that the runic inscription was made by the Spanish, the French, or the Indians who were ever in the region. Colonel Shirk's own opinion was in complete concurrence with Miss Wright's.

It was then my turn to be questioned by Colonel Shirk, and here are my replies fundamentally as he expressed them in the report he published in the *Quarterly* of his Historical Society, Autumn 1959.

"Mr. Pohl gave a detailed report on viking activities in North America. During the period from 986 to 1018 A.D. there was intense viking activity in North America and at least five expeditions were sent to this country. Considering all factors, details of these expeditions are quite well known. These vikings reported that they found adequate evidence of earlier visitations by people from Ireland; and that even at that early date there had already been European penetration inland from the seacoast. The inscription in question was not made during the A.D. 1000 period, Mr. Pohl pointed out, since those particular explorers did not reach this far west."

¹ Another geologist, Dr. Ham, Associate Director of the Oklahoma Geological Survey, has said that the Heavener rock is of sufficient hardness to hold the carvings almost without time limit.

I did not assert it to be a proved fact that there had been European contact with North America "long before A.D. 1000," except as the Heavener Runestone itself was evidence thereof, but I stated it as my belief. I showed how it was possible for European man to have reached the Heavener region while the early Germanic alphabet was in use. I certainly did not intend to convey any hard and fast notion such as arises from giving a definite date as to when the early runic alphabet was supplanted by later ones; for such a book-learned point of view would be misleading if taken literally and too narrowly. It is better to say that the early alphabet was in process of being supplanted over a considerable period of time, perhaps from before 800 A.D. to about 1000 A.D. The change-over in alphabets was not sudden and universal; while the transition was in progress there were undoubtedly some rune users who clung to the old alphabet and taught it to their sons long after others had adopted the new. Some rune makers may have occasionally confused the alphabets, and this might particularly have been the case with the maker of the Heavener inscription, who had to rely on memory after he had been away from home for months and perhaps years.

The Heavener inscription consists of eight characters, six of them of the Continental Germanic or English alphabet of 24 letters, and two from later alphabets. (See runic alphabets, p. 195.) This would seem to eliminate the likelihood of a hoax; for if there had been a hoaxer in recent centuries, when the separate alphabets were shown in available printed books, he would presumably have refrained from weakening the credibility of his hoax by mixing the alphabets, and would scrupulously and consistently have employed only one alphabet. The mixture of alphabets is strong evidence that the Heavener inscription was made during the period of transition from the early alphabets to the later ones.

Here is the Heavener inscription with transliteration of the six letters which are in the early alphabet:



Runestone, Heavener, Oklahoma

Letter Number 2 is from a later runic alphabet which was developed in Scandinavia, and it means *A*. If it is an inverted or reversed form, it would be *N*.

Runic inscriptions are sometimes retrograde; that is, some of them are to be read from right to left.

Letter Number 8 is either a retrograde or reversed character of the early alphabet, and as such is *L*; or it is a correctly made *T* of a later alphabet. It may be an imperfect *S*.

The inscription has been variously read as *GAOMEDAL*, *GNOMEDAL*, *GAOMEDAT*, *GNOMEDAT*, or retrograde, as *LADEMONG*.

Take your choice, but be warned by what follows. A professor of Germanic Languages at one of our leading universities, a runeologist, authoritatively wrote me that the inscription "looks like a monstrosity" because of the characters 2 and 8, since, he asserted: "These two types never appear in connection with the six" others, in existent runic inscriptions. However, I had heard that there was a certain ancient inscription which did use all the letters in the Heavener inscription, and so I asked the professor where I might find a clear photograph of this. He answered that the ancient inscription positively did not contain all the Heavener letters, but since I wished so commendably to see for myself, he recommended the book he considered to have the best photographs of runic writings, *Runeninschriften im älteren futhark*, by Wolfgang Krause, 1937. I found it was indeed true that the ancient inscription in question did not contain Heavener letters 2 or 8, but being a perverse and persistent heretic I looked at the other photographs in Krause's book, and found that the runic inscriptions named below contain the follow-

ing characters:

✕ 1 M
 ✕ 8 1 M
 H F S M X 1
 H X 1
 1 ✕ F
 M F 1
 X 1
 IXIS81HΓFY

Disputed letters used in early runic writing

In seven photographs Heavener letter Number 8 appears along with letters of the early Germanic alphabet, and in *In-schrift von Stenstad* the Heavener letter Number 2, meaning *N*, appears with early alphabet letters. In face of the professor's statement that characters 2 and 8 *never* appear with the six others, in existent runic inscriptions, I wondered whether I had made a correct observation or had merely revealed my ignorance in his special field. The professor had corresponded at length with me about the Heavener inscription, but when I called his attention to the eight photographs, he gave me another "never"; that is, he never replied.

Still harboring the belief that truth needs an academic blessing, I wrote to the Head of the Department of Germanic Languages at another leading university and asked him to identify the letter in the first seven photographs and the letter

in the Stenstad inscription. This question involved only the alphabets. This second professor replied that he did not consider himself an expert on runic alphabets, and advised me to write to a professor who he said was well-informed in the Germanic field at another university. I did so. My question was not answered but it was suggested that I write—now you guess it—to the professor with whom I had first corresponded! This amusing and classic example of the complete runaround left me ignorant but undaunted, and forced me to bypass the three cautious professors.

A layman's guess is that what might appear to be timidity was sincere uncertainty because there are so many variations in runic forms, not quite as many as there are surviving inscriptions, but too large a number for mental digestion. Adolph Noreen listed 26 runic alphabets in one section of Sweden! Also, the publication of an alphabet gives an impression of it that may be too hard and fast. Many a runemaster exercised eccentricity, and the book-learned scholar is bound to be constantly meeting surprises.

Since the first professor was possibly and probably in error in regard to the two runes which he said were never used in connection with the others, I therefore venture to say that the Heavener inscription is not a monstrosity; that in the present state of our small knowledge, which is limited to surviving runic inscriptions, no valid objection can be raised against the combination of runic forms in the Heavener inscription; and that the philological evidence corroborates the geological evidence as to its great age.

The various translations that have been suggested do not contribute much, because an eight-letter message is too brief to open up much of historical significance. The professor at the first university did not attempt a translation. Among other scholars whom I consulted were five who offered their opinions, which are given in the alphabetical order of their author's names:

"No recognizable word or words or personal name"—Sievert Nielson Hagen, Franklin and Marshall College, Lancaster, Pennsylvania.

"Give attention to that" or, "to this" (reading *GAOMEDAT*)—Haakon Hougen, Larwick, Norway, who says that in an old Norwegian song, "Draumkedet" ("Dream Song") from Telemark, *gaume* in the old dialect means "attention."

"Sun-Dial Valley" (reading *GNOMEDAL*), and "Demon" (reading in reverse, *LADEMONG*, with meaning suggested from the French)—Carl Christian Jensen, Brooklyn, New York.

"*G. Nomedal*"—Aslak Liestøl, Universitets Oldsaksamling, Oslo, Norway.

"Give Supplication God Man Before Day Has Set"—Erich Stirnemann, Los Angeles, California, who says this translation was obtained by "assuming that each rune speaks out the full name of the rune."

Mr. Jensen's first translation combines *GNOME*, meaning "sun-dial" or "monument" or "boundary marker," with *DAL*, meaning "valley." As Colonel Shirk says: "Thus, the meaning of 'monument valley' or something to the effect of 'valley of the boundary marker' could be achieved." The Heavener Runestone is on the western end of a 40-mile-long ridge. Its inscription face happens to be almost precisely due west, and so that surface is edge-on to the sun at noon. Thus the stone indicates when it is noon, and the translation "Sun-Dial Valley" seems to be most apt.

CHAPTER 5

Leif Erikson's Vineland

MANY farmsteads in the fiords of Norway have been forced by nature into a typical pattern. Each consists of a few acres of cultivated land lying between a wooded mountain and the tidal water. At either end of the meadows, cliffs forbid land passage to other similarly isolated farmsteads. The only communication with one's neighbors is by boat, and life on the farm seems circumscribed indeed. But there are compensations. The Gulf Stream from far-off America brings warm moist air in which roses may bloom all year, even near the foot of a glacier. The land is fertile and well-watered, nested in scenic beauty and grandeur, and perfect for farming—there are good house sites, always a brook full of fresh-water fish, rich soil for garden vegetables and fields of grain, hillside acres for orchard trees, steeper meadows for cattle grazing, and above them accessible timber which may be easily rolled down to where it is needed for house building and dock- and ship-building. The farm has its own wharf, and a sizable boat for salt-water fishing, and for use when going to church or visiting the neighbors. The geography is conducive to the development of strong family ties, which makes for stability of land-holding, so that Norway proudly boasts of farms that have been retained in one-family ownership for over 1000 years.

But while a farm might be productive enough to support twenty persons, of three or more generations, nature has set strict limits, so that younger sons have always had to leave to make a living elsewhere.

Such farmsteads were the homes of the vikings, men from the *viks* (fiords), pronounced "veeks." Scandinavians say "veekings," but most Americans use a long "i." The farm boys had to use boats in the fiords to call on their girls, and deep-water fishing drew some of them outside the mouths of the fiords, through which activity they learned to build ships that could surmount waves of the open sea. At home with their grandparents, parents, and older brothers, life was well-ordered by custom and law, but brawlers who ran afoul of the law and young fortune seekers perforce went adventuring, and roved the seas to other shores. They sailed to the Shetlands and seized them, and to the Orkneys and Hebrides and Iceland, and harried the coasts of Scotland and England and Ireland, and carved out dukedoms or kingdoms for themselves in Normandy, Sicily, and Naples.

Erik the Red's father, Thorvald Asvaldsson, was a quarrelsome viking, and when exiled from his native Norway for having committed homicide, he sailed to Iceland where he found free land and settled. There his son Erik grew to manhood, and in the family tradition got into a quarrel of his own over some land holding, fought with a neighbor, committed homicide, and was exiled for three years, during which time he explored a land farther west, upon which he bestowed the attractive name "Greenland." Green comes in many shades, but the white of an icecap and glaciers is not one of them. However, Greenland's climate was a trifle warmer in Erik's day, and permafrost had not penetrated all the meadows bordering the fiords on its west coast, so there was green there, if you looked for it.

After his exile, Red Erik returned to Iceland. In 986 A.D. he emigrated to Greenland, and many good people—wooded

by the inviting and partially false but not completely deceptive name of that land—emigrated with him. Of 35 shiploads that set forth, 14 arrived, and two Greenland settlements were established, both on the west coast. The Eastern Settlement was in the fiords for the first 150 miles from the southern tip of Greenland, and the Western Settlement was only a little to the west of it, but considerably to the north. Most of the farmsteads of these settlements were many miles from the sea, as far into the fiords as boats could navigate, and the importance of this geographical placement must not be lost sight of, as it has been by many who have tried to follow the trail of the vikings in North America. When the vikings later came and explored our continent, they by habit ascended each river as far as they could. They were not coast-clingers, but penetrators.

The Greenland Settlements ultimately had a population of several thousand, with many parish churches and a cathedral. Vatican records give the names of every Greenland bishop, but each appointee was not just "Bishop of Greenland," for his diocese was the largest in Christendom. He was "Bishop of Greenland and Vineland."

Where was Leif Erikson's Vineland? If you wish, call it Vinland (the spelling in Icelandic), or Wineland. We now know definitely that it was on the North American continent, but where?

Was it where viking weapons and artifacts have been uncovered? Was it at Aillik in Northern Labrador, where a Norse sword was found? Or was it at Sops Arm on the west side of White Bay, Newfoundland, where a viking axe, some iron chisels, boat rivets, hafted-end scrapers, etc. (Mallery, pp. 142, 143), were found? Or at Tor Bay, Nova Scotia, where a viking axe of about the year 1000 and inscribed with its maker's name (See *The Lost Discovery*, pp. 289, 290) was found? Or was it on Cape Cod, because the Moulton-Orleans axe, believed to be Norse (*The Lost Discovery*,

pp. 290, 291), was dug up there?

To be specific and to get at the original concept of the place, where in North America did Leif Erikson land and build his house? His winter camp site was the base from which subsequent explorations by the vikings started, with extensions by them of their concept of "Vineland."

This has been the Vineland problem for the past two centuries, and it has been one of the great guessing games in geography, such a fascinating puzzle that many will regret its solution. Twenty different theories have been advanced, and I have had forty-nine predecessors by whom the Vineland geographical football has been kicked into a position only 100 miles from Leif's Greenland home, into Labrador, Newfoundland, Nova Scotia, Quebec, and Ontario, and carried into every state along the Atlantic seacoast from Maine to Florida.¹ Obviously, it would appear that the information upon which the theories were based was inadequate, or the details of the problem were too complex, or the proper approach was not understood.

A geographical detective looks for clues. In this case what are the clues? Let us examine the story of Leif Erikson.

After spending a year in Vineland, Leif Erikson and his men returned home to Greenland, and there told their seafaring neighbors how they had discovered and named three lands to the southwest. Particularly, they told how they reached the place where Leif built a house in the farthest of these lands. This story, laconic and sparse, but rich against the starkness of life in Greenland, was memorized and treasured by the Greenlanders, proud of the exploits of their hero. Leif's story, preserved in tribal memory, was told and retold at firesides and at public meetings in Greenland and Iceland.

¹ My historical detective work on the trail of the vikings was presented in *The Lost Discovery*, but with some overemphasis on mooring holes. The book was published before anyone knew the sea level in Leif's day, and before the archaeological evidences could be evaluated.

Before books were written in Iceland, the story was handed down for generations by word of mouth. Everyone, old and young, knew the story by heart, every word, every syllable of it. For this reason its oral transmission was precise. If any narrator made the slightest mistake, he was instantly corrected by those who heard him.

It is an established fact that oral transmission can be absolutely accurate, not permitting any change. A German scholar in the sixteenth century wrote down a story he heard from the lips of illiterate peasants in Russia, and two hundred years later another German scholar, not knowing what the first scholar had done, wrote down what he heard from the lips of peasants in the same locality in Russia, and later discovered that his text was identical with what the previous scholar had recorded.

Leif Erikson's story or saga was first written down about three hundred years after his time. The mediaeval Icelandic manuscript which contains it is a parchment folio called the *Flateyjarbók* (Flat Island Book), because it was a copy owned by a man who lived on Flatey, an island in an Icelandic fiord. This man gave it to the king of Denmark in 1647, and it is now in the Royal Library at Copenhagen, where it is numbered A.M.544.

The Sighting of Three New Lands

The sailing directions Leif Erikson followed when he made his geographical discoveries about the year 1003 were based on those of another man's previous voyage, and so we must first look at what that other man did.

Bjarni, a young merchant who owned a trading ship, had made it his custom to remain every second winter with his father in his native Iceland. In the odd-numbered years he went "abroad," which meant to Norway and possibly other countries in Europe. In 986, upon his return to Iceland, he learned that his father, Herjulf, and other gullible Icelanders,

had been induced to go as colonists to a land to which the real-estate promoter Erik the Red had given heightened color with an enticing name.

The *Flateyjarbók* saga says: "Herjulf settled on a cape near the south end of Greenland, and was the leading man of the region. Bjarni was much surprised to hear of the move which his father had made. Bjarni would not unload his cargo in Iceland, and when his shipmates asked what he intended to do, he replied that it was his purpose to keep to his custom, and to spend the winter with his father.

" 'I will take the ship to Greenland, if you will go with me.'

"They all replied that they would follow him wherever he decided to go. Then Bjarni said, 'Our voyage into the Greenland Sea must be regarded as foolhardy, since none of us has ever been there.'

"Nevertheless they put to sea when they had provisioned their ship; and after three days' sail when the land was hidden by the water, the fair wind failed and changed into north winds and fogs, and they knew not where they were carried, and this uncertainty lasted many days. When the sun came forth again, they were able to establish direction from the heavens, and they hoisted their sail and sailed for a day before they sighted land. They wondered what land it could be. Bjarni doubted if it were Greenland. Bjarni's shipmates asked whether he wished to sail to the land, but he proposed that they merely sail close to it, and as they did so, they soon perceived that the land was mountainless and wooded with low hillocks."

Bjarni was not on an exploring expedition. It was undoubtedly rather late in the sailing season, and he had only one purpose, to reach his father's home in Greenland as soon as he could. He was an experienced navigator. He knew from the altitude of the sun or stars that he was far south of Greenland. Since the land to the west prevented his sailing westward,

or since no land at that latitude south of Greenland had ever been reported, Bjarni correctly surmised that Greenland must lie somewhere to the east as well as north. He therefore turned his prow to the northeast.

"Leaving the land on their larboard with their sail swung over toward it, they sailed for two days before they sighted another land. They asked Bjarni whether he thought this was Greenland, but he said this was no more like Greenland than the first, because he had been told that in Greenland there were mountains with very large glaciers. When they drew near this [second] land they saw it was flat and extensively wooded.

"The fair wind then failed, and the crew thought it prudent to land, but Bjarni refused. The men pretended that they needed wood and water, to which Bjarni replied, 'You have no lack of either,' and for this assertion he brought criticism upon himself from his shipmates.

"They hoisted sail, and turning the prow from the land they sailed out upon the high seas, with gales from the southwest, and after three days' sailing saw a third land which was high and mountainous with glaciers. When Bjarni was asked whether he wished to land, he said he did not, because this land seemed unprofitable. Without lowering their sail they coasted along this [third] land and perceived it was an island.

"They left this land astern, and sailed on with the same fair wind. The wind rose mightily and Bjarni commanded them to reef, to slacken speed for the sake of ship and rigging. They now sailed for four days. Then they saw a fourth land, and this time Bjarni said, 'This is most like Greenland, according to my information, and here we may steer to the land.' Thus they did, and came to land in the evening below a cape at which there was a boat, and upon this cape dwelt Bjarni's father, Herjulf, for whom the cape was named Herjulfnes. Bjarni now joined his father, and gave up voyaging and remained with his father as long as Herjulf lived, and made his

home there after his father died."

Bjarni's sailing directions to Greenland from the three lands he had seen became Leif Erikson's sailing directions to Vineland, in reverse order.

Leif's Voyage to Vineland

When Erik's son Leif grew to manhood in Greenland, he made a voyage to Norway in the year 999. In those days ships with one square sail could sail only with the wind, for if they attempted to sail into the wind, their sideways drift defeated them. Leif on his way east was carried off course and landed in the Hebrides, where he lost his heart to a local girl and dallied all summer. In the autumn he reached Nidaros (Trondheim) in Norway, and met King Olaf Tryggvason. King Olaf was a proselytizing zealot who converted Leif to Christianity, and commanded him to return the next spring as the first missionary to Greenland.

The year after Leif came home with his new religion, Bjarni Herjulfsson sailed to Norway, and there described the three new lands he had sighted fifteen years before. He was "somewhat slandered" for his lack of curiosity, since he had not gone ashore on any of these lands. From the viking point of view, Bjarni the merchant was no hero. In the summer of 1002 when he returned to Herjulfssnes, his shipmates' gossip about the interest awakened in Norway by his talk of the three new lands gave rise in Greenland to "much speaking of land seeking."

Leif the Christian now heard of the three new lands, and had desire to explore them, the more because he was the leader of those who criticized his heathen father's excessive enthusiasm, if not rank dishonesty, in naming Greenland. Greenland offered grazing for cattle, but almost no agriculture. There were bleak moors, bare rocks, lichens, no sizable trees. The report of lands to the southwest that were "wooded" held the promise of wealth for any man who could bring back

a shipload of timber. Leif eagerly journeyed south from his home at Brattahlid in Eriksfjördr (now called Tunugdliarfik) and visited Bjarni in Herjulfnes.

He learned Bjarni's sailing directions, bought Bjarni's *knarr* or trading ship, and assembled a crew of 35 men. Leif took the trading ship to Brattahlid and asked his father to lead the expedition. Erik refused, describing himself as stricken in years and less able than of yore to withstand the exposure of sea voyaging. Leif countered with an argument that Erik's presence would give them good luck. This argument appealed strongly to the old heathen because of his profound faith in luck and because he was irked by his Christian son's ascendancy over him in public influence. Erik agreed to go, but on the day the ship was to sail, Erik, ostensibly intending to make the voyage, rode on a horse from the house to the ship. The horse stumbled, Erik fell off and said he had hurt his foot, and this he asserted was a bad omen. It is possible that his fall was not an accident, but a deliberate stratagem. It was unnecessary for Erik to ride a horse the short distance of a few hundred feet from his house to the shore where the ship would have been moored or berthed, unless the horse was to be taken along on the voyage. Erik declared himself not predestined to discover other lands in addition to Greenland, and said he and Leif should "no longer follow together."

Erik feared that if a well-wooded country were found to exist to the southwest, colonists from Norway and Iceland would bypass his shrewdly named land. He had vested interests in Greenland, and his son Leif represented an alarming movement to explore lands in a warmer climate.

Leif and his men sailed away from Greenland, and the first land they saw, the saga says, was the island "which Bjarni and his shipmates had seen last." The definite identification of the mountainous island indicates that Leif probably had in his crew one or more of the men who had sailed with Bjarni seventeen years before. When he left the island, Leif sailed

to the southwest and reached in turn the other two lands, the last of which he named Vineland. The narrative of Leif's voyage will be presented in due course.

What were the three lands which Bjarni had sighted and Leif visited? Apparently, Bjarni had sailed consistently to the northeast from the farthest of these lands to the southern tip of Greenland, as the directions indicate: "Leaving the land on their larboard [left] with their sail swung over toward it," they reached the second land. "The fair wind then failed. . . . They sailed . . . with gales from the southwest. . . . They left this island astern and sailed on with the same fair wind."

Were the three lands those which lie across open water in a comparatively straight line to the southwest of Greenland? That is, were they Newfoundland, Nova Scotia, and Cape Cod? Or were they Baffin Land, Labrador, and Newfoundland, or some other triple combination, as many had believed?

The saga narratives, *Flateyjarbók* and others to be mentioned later, give all we know directly of Bjarni's and Leif's voyages. These texts stirred controversy. Some readers, like Fridtjof Nansen, held that these stories were a mixture of legends and myths. Nansen doubted whether Leif Erikson had reached North America, though he believed that some Norsemen did. Some held that the geographical and sailing data in these stories were too vague to be used as a reliable guide to Vineland.

The great amount of armchair exploration created the false impression that a thorough and intelligent search of the Atlantic seacoast had been made, and that it would therefore be fruitless for a newcomer to attempt a search. But the repudiation or ignoring, in all of the published theories, of one or more of the facts established by the saga texts was to my mind an encouragement to begin looking. It was a problem I relished because it had many facets, every one of which must be kept under consideration. I agreed with Professor M. L. Fernald, who wrote: "The matter-of-fact accounts of

the voyages are so direct and without embellishment as to indicate that in the main they are trustworthy historical records." I found myself in agreement also with Andrew Fossum, who said of the sagas: "If they are worth following, we should follow them closely and assume that they say just what they mean. . . . There are numerous details and names of places and descriptions of countries and coasts that can hardly be fictitious."

I was convinced that these stories were not merely idle tales; that they were not composed for entertainment or boasting or for the glorification of ancestors. They were mariners' narratives, told to seafaring neighbors. Sailors of all eras have had a mind for practical details in a sea voyage. Bjarni and his men and Leif and his men, in telling of their voyages to Vineland, gave their seafaring listeners in Greenland all the details needed to enable them to follow in imagination and duplicate those voyages, while they omitted much that seamen would take for granted. Those who memorized the stories must have retained all essential details. Greenlanders used these sailing data successfully; for the sagas tell of several later expeditions which had no difficulty in finding Leif's camp site in Vineland. If eleventh-century seamen had been able to find it, I felt I should be able to do so also.

Perhaps the difficulty lay in the fact that we moderns had forgotten how to read such stories. Would nautical lore enable us to reconstruct Leif's voyage? Could we interpret the sailing directions in the same way in which they were interpreted by a Norse sailor?

Setting aside theories based on prejudice and the desire to establish Leif's Vineland camp site in some personally favored location, like the theory of Professor Horsford at Harvard who wished to get Leif as near as possible to the Harvard yard and placed him within one mile of its principal gate, the chief stumbling block to those who attempted to solve the puzzle was distance.

The distances Bjarni reported did not seem to fit any known geography. Bjarni had sailed from the farthest land to the second land in two days; from the second land to the mountainous island in three days; and from the island to the southern tip of Greenland in four days. Here was a total of only nine days.

Among the Norsemen a day's sail was not a measure of time but of distance. In inland waters in daylight hours it was 75 miles. Across open ocean in a day of 24 hours it was 150 miles. This was not average sailing, of course, but an ideal maximum with a strong fair wind. But since eleventh-century mariners set sail only when the wind was in the right direction and invitingly strong, they probably often attained 150 miles a day, and Bjarni certainly did "with gales from the southwest."

Nine days at 150 miles each is 1350 miles. From the southern tip of Greenland, where Bjarni ended his voyage, and Leif began his, 1350 miles will not stretch to the southwest beyond Halifax, Nova Scotia. This obdurate fact was the absolute sanction for the northern school of theorists who would not allow Leif south of the Canadian border.

Arithmetic is stubborn. For those who attempted to trace Leif's voyage in reverse direction to Bjarni's, distance at the very outset was confusing. What large mountainous island was it which Leif reached first? Was it Newfoundland? It should have been. But could it have been? Bjarni said he had sailed from the mountainous island to Greenland in four days. Four days of sailing was 600 miles.

But the distance between the nearest point of Greenland and the nearest point of Newfoundland is 730 miles, enough to make a liar out of Bjarni. This obstinate mileage was an impasse for those who approached the saga stories from a landsman's point of view.

The *Flateyjarbók* saga had been more than adequately studied by literary scholars and philologists. I happened to have

in addition a valuable clue given by practical mariners. Bjarni's sailing directions had been a sufficient guide for Leif and for those who followed Leif. If one considers Bjarni's narrative in terms of the needs of mariners in the eleventh century, its meaning comes clear.

The sailing directions required by a mariner before the days of accurate latitudinal and longitudinal determinations and reliable maps were the general direction and the distance across open water out of sight of land. The mariner had no need of information as to the extent of any seacoast. How long a mariner stayed on land or how long he took to skirt a shore was his own business. When he came to the end of a land, he wanted to know the direction to the next land, and how far he would have to sail out of sight of land before he sighted it.

Look again at the text: From the farthest land, "Bjarni sailed for two days before they sighted" the second land. "After three days' sailing saw a third land. . . . They coasted along this land. . . . They left this island astern. . . . They now sailed for four days. Then they saw a fourth land . . . Greenland. . . . They came to land in the evening."

The distances were out of sight of land, clearly stated or implied.

Do the distances fit the three open-ocean, out-of-sight-of-land distances if the new lands were Cape Cod, Nova Scotia, and Newfoundland?

In two of the three distances there is no problem. From Cape Cod to Nova Scotia, nearest point to nearest point, the distance is under 245 miles, less than the 300 miles of two days' sail. And from Nova Scotia to Newfoundland, nearest point to nearest point, is only 115 miles. From whatever point of Nova Scotia Bjarni sailed, it was not more than three days' sailing distance of 450 miles to Cape Ray in Newfoundland.

But there are 730 miles between the nearest points of Newfoundland and Greenland. How did Bjarni sail that distance

in four days?

In the first place, with gales from the southwest, it is likely that there was no fog to prevent his seeing, near the shore of Belle Isle, the mountains of Newfoundland, the northern slopes of which are frequently covered with snow until late summer. These snow patches he assumed to be "glaciers." And it is likely there was no fog to prevent his seeing Belle Isle with its 660-foot elevation, which is about thirty-two miles to the east of north from the northeast tip of Newfoundland, Cape Norman. A 660-foot elevation can be seen for more than thirty-three miles at sea level, and adding seven miles for the mast-height horizon, we find that Bjarni may have been forty miles from Belle Isle, or seventy-two miles from Cape Norman of Newfoundland before he sailed out of sight of land.

As for his sighting of Greenland, about nine miles to the northeast of Herjulfssnes is the highest mountain along the west coast of the south end of Greenland, with an elevation of 4,900 feet. We apply the formula for visible horizon in statute miles. We take the square root of the height above sea level, which in this case is exactly seventy ($70 \times 70 = 4,900$), and we multiply by 1.3226, which gives us ninety-two miles. Adding seven miles for the mast-height horizon, and subtracting nine miles for the mountain's distance inland, we have ninety miles as the distance from Herjulfssnes at which Bjarni could have first sighted Greenland's icy mountains.

Of the 730 miles, 72 plus 90 may have been within sight of land, leaving only 568, or comfortably less than the 600 miles which were four days' sailing distance. It was after four days that Bjarni sighted Greenland, presumably one clear morning, and it was "in the evening" when he landed.

Yes, Bjarni's three new lands could have been—and were in all probability—Newfoundland, Nova Scotia, and Cape Cod.

Overwhelming conviction that these were the three lands

comes from analysis of the story of Leif's voyage to Vineland.

When Leif and his men reached the mountainous island, they entered a harbor, cast anchor, launched a boat and went ashore. They found no grass, and lying inland were great ice-covered mountains. From the sea to the mountains the land was like one great flat rock. It seemed a country devoid of good qualities. Then Leif announced: "Unlike Bjarni we have stepped ashore on this land, and I will now give it a name and call it Helluland [Flat Rock Land]."

Leif had sailed from Greenland with the knowledge that the land Bjarni had seen last was an island, because Bjarni had skirted it on its western side and had therefore "perceived" that he had in his roundabout voyage from Iceland to Greenland circumnavigated it. It seems likely, therefore, that Leif chose to coast its east side, which Bjarni had not seen, in order to gain further knowledge of the island. The actual site of Leif's landing in Helluland was probably Flat Rock Cove, about fifteen miles north of St. John's, Newfoundland. This identification, suggested by Hjalmar R. Holand, fits the narrative in all particulars.

The saga does not tell us how many days Leif required to sail to Helluland, for the distance had already been stated in the story of Bjarni's voyage; nor does it tell how long Leif spent coasting Helluland.

When they again put to sea, "Leif and his men found a second land, and here also they went ashore. This was a wooded land with broad stretches of white sand." From the Greenlanders' point of view, a stretch of a few hundred yards or a half-mile was a broad stretch of sand. "The shore regions where they went did not slant steeply toward the sea."

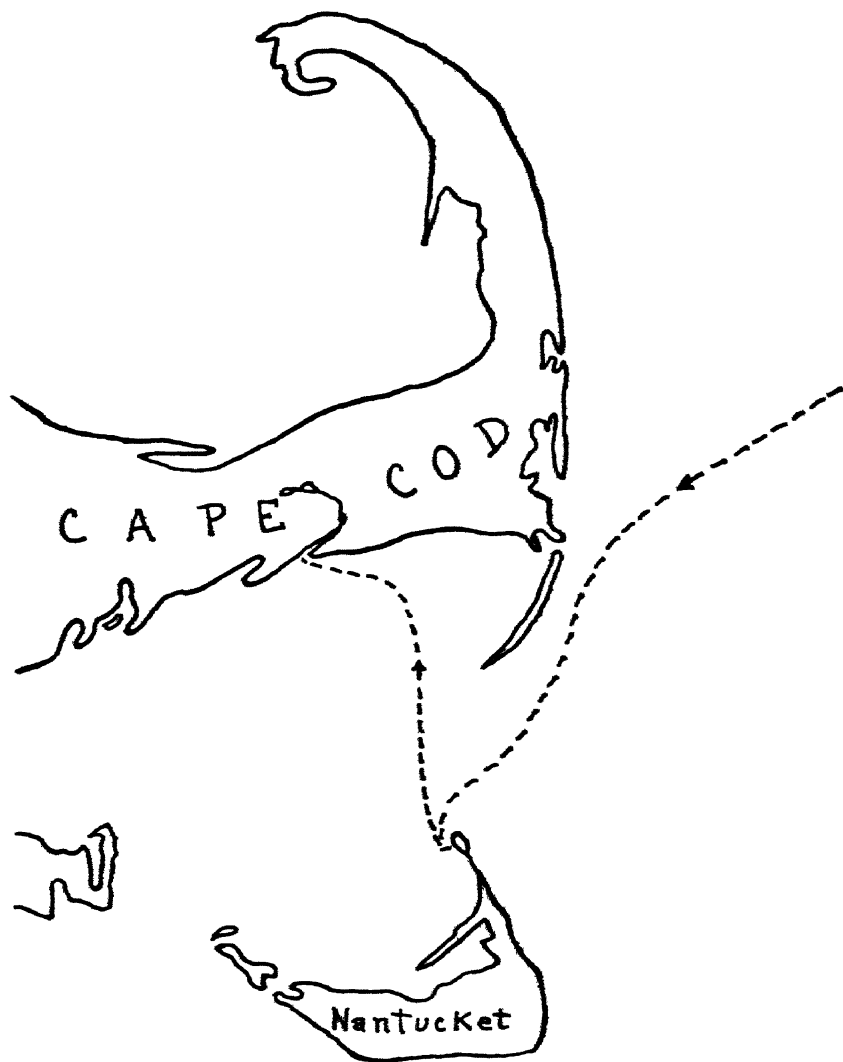
Leif said: "This land shall have a name in accordance with its nature and shall be called Markland [Forestland]." The forest primeval of Nova Scotia was an extraordinary stand of timber, with many trees well over a hundred feet in height. Many of them were too large in girth for convenient reduc-

tion to useful timber before the days of power saws, and the vikings seem to have preferred to cut the smaller trees of the third land.

The *Flateyjarbók* tells us that after Leif had named Markland, he and his men returned to their ship promptly, sailing again at once because they had an unusual wind in the right direction. And in precise translation of the Icelandic, they "sailed from thence over the open ocean with a northeast wind and were out for two days before they saw land. Approaching this land, they came upon an island which lay to the north of the land. They went ashore on this island and looked about them. It proved a fine day, and they found dew on [or 'in' or 'among'—the Icelandic preposition *a* having the three meanings] the grass, and when they wet their fingers with the dew and put their fingers in their mouths, they felt they had never tasted anything so sweet. Back on the ship they sailed into a sound between the island and that cape which went to the north from the land, and steered to the west of the cape. It was very shallow there at ebb tide and they ran aground, and it was a long distance to look from the ship to the sea. They were so curious to go ashore that they could not wait until the tide rose, but hastened ['ran'—that is, by small boat] to the land, where a river flowed down from a lake. As soon as the tide floated their ship, however, they rowed in the boat back to the ship, which they steered up the river and then into the lake where they anchored. They carried their gear ['leather bags'] ashore and built themselves temporary shelters ['booths']."

Could this account of the day of Leif's landfall in Vineland guide one to the site of his camp?

Where was the island that lay to the north of the land? Where the grass with the dew that tasted sweet? Into which sound did they sail? Which was the cape that went to the north from the land? Where were the shallows where the ship went aground? Up which river did they take their ship?



Route of Leif Erikson's first day in Vineland

In what lake did they anchor? On what shore of that lake was Leif's camp? These were the questions that had to be met by a detective on the trail of the vikings.

It was encouraging that the story of that first day had served as satisfactory guide to Leif's brother Thorvald, Thor-

finn Karlsefni, the Icelanders Helgi and Finnbogi, and Leif's half-sister Freydis. None of these had experienced any recorded difficulty in finding Leif's house in the Vineland wilderness. Thorvald, Karlsefni, and Freydis may have been piloted by men who had been with Leif and knew the way, but not so the Icelanders, who arrived at the camp independently ahead of the shipload of Greenlanders who had set sail for Vineland at the same time with them. What the saga gave was all that the Greenlanders who committed the text to memory considered essential. It was reasonable to believe that it should be possible to reconstruct Leif's day in Vineland waters, and from that reconstruction read the geography correctly.

Finding the Island That Could Not Exist

The initial problem was to identify the island upon which Leif first landed in Vineland. The application of logic to the *Flateyjarbók* story seemed impossible, because of the apparently perverse statement that the island lay "to the north of the land." Since the Atlantic seacoast of North America runs northeastward, no island along that coast lies to the north of the continent. Because the trend of the New England coast is "down east," all the islands near that coast lie to the south of it. Because there can be no island lying to the north of our Atlantic coast line, I was stymied for a long time.

The saga demanded that I find an island that could not exist. A friend, who had written a book in which he had dealt with the Vineland problem, felt the apparent impossibility so strongly that he suggested that there is an error in the saga text, and he said to me: "I guess we'll have to assume the original word was 'south' and that 'north' got substituted for it in the course of centuries." I refused to predicate an error in a text concerning sailing directions that had been handed down by oral transmission. The *Flateyjarbók* said the island was to the north. To the north it must be, or I was facing an

insoluble problem. To accept the text as a working hypothesis and then to repudiate an inconvenient part of it would be self-defeating. Any desired conclusion could be reached by free rejection of troublesome details. I felt that the details in the *Flateyjarbók* had to be accepted and applied *in toto*.

Until I found an island lying to the north of the land, I could not be guided by the belief of the Reverend Abner Morse (1861) that the region of Bass River on Cape Cod (about five miles east of Hyannis) was where the Norsemen had visited America. I could not be guided by the opinions of Alpheus S. Packard (1888), Professor William Hovgaard (1914), and G. M. Gathorne-Hardy (1921) that Cape Cod was the most probable location of Leif's Vineland. Until I had found such an island, I could not accept Mr. Holand's suggestion that Leif went up the Bass River. Even if I had been familiar with Professor A. W. Brögger's statement (1937) that Leif's Vineland must be looked for in the interior of the southern portion of Cape Cod, I would not have followed it until I had found the island to the north of the land.

The lost Nauset Island formerly existing off the east coast of Cape Cod, according to Professor Agassiz, and suggested by the Reverend Morse in 1861 and by B. F. DeCosta in 1868 as the island of Leif's first landing, could not be said to lie "to the north of the land." The islands off the entrances to the harbors of Boston and Portsmouth may be described as north of the land, but with equal accuracy may be said to lie to the south of the land. In suggesting that the island of Leif's landing was one of these, Professor Eben N. Horsford and William B. Goodwin ignored the *Flateyjarbók* statement that Leif sailed from the island westward into a "sound." It is also impossible to accept the tortured geography of Edward Reman (1949), who says that the island of Leif's first landing in Vineland is the "island—Grand Manan—which lay *north* of the land mass of southwest Nova Scotia." As can be seen,

Grand Manan does not lie north of any part of Nova Scotia.

Persistent puzzling over the saga text in relation to the charts of the New England coast brought a vision of a possible solution. The words "this land" in the second sentence of the passage quoted from the *Flateyjarbók* obviously carry a larger conception than that of any small stretch of coastline sighted from their ship by Leif Erikson and his men as they made their landfall. Undoubtedly as the saga was handed down through the years, "this land" meant all of Vineland, all that portion of the North American continent ultimately explored by the Norse. But did the phrase "to the north of the land" mean to the north of a portion of the continent? Suddenly, after much study, I realized that "the land" in this phrase referred not to the larger conception of the mainland that the Norsemen had acquired, but to some land that was visible to Leif and his men only for the hour or two during which they remained on the island of their first landing that first morning. What I had to find was a piece of land which is not normally an island and therefore not charted as one, but is actually an island during a northeast storm such as brought Leif to our shores, and which is on the north side of some great island which in a brief early-morning view would have appeared large enough to have been thought part of the continent and therefore to have been called "the land."

Without any forcing of the geographical facts, I finally found it—an island which perfectly answered the saga description.

It was a piece of land, and, so far as may be determined from the charts, it was the only one such piece of land which Leif Erikson, coming from the northeast, could have sighted from the open ocean, and which under the circumstances of his landfall could have been described as an island lying to the north of another much larger land, a land that extended out of sight over the horizon and which therefore he could have assumed to be part of the mainland. It is Great Point,

an elevated area about three-quarters of a mile long and a third of a mile wide, appearing on the charts as the broad northern end of the sand bar which juts out for five miles to the northward from the eastern side of Nantucket. When there is a northeaster such as Leif had experienced, one of at least two days' duration, and at the same time a high tide, Great Point is cut off from the sand bar. It becomes actually a separate island.

It is interesting to note that the U. S. Geological Survey map of 1901, reprinted in 1927, shows as an island the whole sandspit of which Great Point is the northern termination. This area of sand temporarily existed as a separate island after a storm created the gap called "Haulover Break" between the "Head of the Harbor" and the ocean.

In *Famous Lighthouses of New England* by Edward Rowe Snow, 1945, there is an excerpt from a letter by a member of the family of an early nineteenth-century lighthouse keeper on Great Point which states that when the tide was highest it "would come across the road that we had to use to go to town and clear across the galls." The same book goes on to state: "For many years Great Point was entirely cut off from the rest of Nantucket because of a storm which created a substantial channel near the galls." Galls are spots bare of vegetation. On the sandspit in question, they have an elevation of less than ten feet above the ocean and are less than a hundred and fifty yards across. The narrowest and lowest of these galls is over a mile long and is immediately to the south of the high sand dunes which constitute Great Point.

The general picture of Great Point a thousand years ago was very likely much as it is today. Sands shift with every storm and there are changes every year; but against a sea level two or three feet higher in Leif's time than at present, there has been the effect of winds which in any given region tend to build up sand dunes to a certain height above sea level. The height of the highest dune on Great Point was likely not

far from the height of the highest one today. Also, the lowest and narrowest portions of the sandspit were probably at about the same height above mean sea level as today; for they were kept so by being occasionally washed over by waves.

Coming upon an unknown coast with heavy following wind, Leif and his men must have been glad indeed to arrive in daylight and to find temporary anchorage to the lee of an island. They were lucky to have found it. The rips and shoals to the northeast of Great Point must have given them some anxious moments, but the water on the lee side of Great Point was deep enough for them to come in close and go ashore in the afterboat. Their arrival, we deduce from what followed, was soon after dawn. They waited on the island until the sun rose high enough to make it possible to study their surroundings from a greater elevation than the mast height of their ship, so that they might navigate the unknown waters with some knowledge and assurance.

The vegetation of Great Point consists of scrawny, twisted, gnarled cedars, six feet high at most, with wild roses, gooseberries, raspberries, huckleberries, various bushes, much beach grass, and, in one hollow, some ordinary grass.

While waiting for satisfactory visibility, Leif and his men tasted what they supposed was "dew," because they saw it on (or in, or among) the grass, sparkling in the rays of the sun early in the day. Was there some ancient superstition about the virtues of tasting dew? Or did Leif and his men find something quite extraordinary? Was it the same remarkable phenomenon that was discovered by John Martucci, to whom I am indebted for painstaking research at Great Point, during which he used his thirty-six-foot yawl *Iris* to duplicate Leif Erikson's landfall? Mr. Martucci wrote to me on July 5, 1947:

"Had you been aboard as she was wafted by a N.E. breeze towards Nantucket, you would have seen a little islet: Great Point. It was June 21st at dawn, and the tide was on the ebb

but still high.

"The most interesting information I dug out was about the dew. No wonder the sailors got a thrill! The base of the Great Point Lighthouse is one foot below sea level. From a hole in the middle of this hollow among the dunes, the water for the lighthouse is pumped. The water is always sweet, even when in Northeast storms the breakers go over the dunes. . . . In the middle of the hollow among the dunes, there was a little puddle of crystal-clear water. 'What's that?' I inquired eagerly. 'Oh that's where Cap scratched his own well.' Cap is the lighthouse keeper's dog."

A year after Mr. Martucci had been there, I visited Great Point and saw the fresh water in the grass in the hollow. I had this sweet water analyzed, and it was shown to be rain-water, not a welling up of underground water from the mainland. Fresh water from the midst of sand dunes surrounded by the ocean and, at the same time, lashed by a salty northeast blow must have seemed worthy of comment to Leif and his men. That, plus the fact that any source of fresh water was important to explorers, may be why they spoke of it a year later back in Greenland.

"That Cape"

Having found the island on which Leif Erikson landed, it was easy to identify "that cape which went to the north from the land."

The elevation of the highest dune on Great Point is over forty feet. When a man stands on it, his eye level is over forty-five feet above the mean tide level. From Great Point, Leif and his men may have seen to the north of them part of "that cape" which a few days later they learned was a cape. What they actually saw from Great Point was part of Monomoy, the southern hook of Cape Cod. The southern end of Monomoy is less than eight and a half miles from Great Point.

Some of Monomoy's dunes are over twenty feet in height, and one of them is thirty feet in height. From Great Point, Leif and his men may have seen half of Monomoy, which is about nine and a half miles in length.

From Great Point, Leif and his men did not see the hills of Cape Cod, though they may have guessed the presence of land to the north and northwest by the flight of birds, or by the reflected color in the sky or on the clouds hanging over it. It is more likely, however, that they had already seen land to the north of Monomoy. Arriving from the northeast and thus approaching the coast obliquely, they probably had seen some of the higher land on Cape Cod. Being driven ever nearer to shore by the violence of a northeaster, they must have welcomed the first break in the coast that they could find. The opening into inland waters between Monomoy and Great Point may have been their salvation. They may have turned first to get into the lee of Great Point rather than Monomoy because Great Point was a higher elevation, but also it would have been more difficult to round up under Monomoy against the wind rather than to ride downwind to the tip of Great Point and then slip under its lee by turning beam to the wind.

The water level in Nantucket Sound in relation to the southern shore of Cape Cod was two to three feet higher than at present, as will be demonstrated later. This would mean that the heights of the Cape Cod inland hills above sea level were two to three feet less than now. Undoubtedly, those hills were then, as now, topped with trees at least twenty-five feet in height. Old timers on the Cape say the trees centuries ago were much higher than at present. Perhaps Leif and his men on Great Point erected a human tower, raising their look-out man ten feet above the top of the highest dune. In that case it is barely possible that the lookout man saw the treetops on the Cape Cod hills: German Hill (then 135 feet elevation) just over twenty-four miles away, and Shootflying

Hill (then 204 feet elevation) about twenty-six and a half miles away. From a branch of a tree on German Hill I have myself seen the tops of the trees above Nantucket Harbor.

The words "that cape" in the saga refer to more than Monomoy Point, which is an island since a recent hurricane. Although Leif and his men must have seen Monomoy that first morning, the words "that cape" refer to all of Cape Cod, which they were soon to know as a cape with its principal hook extending out to the northward. The saga was not based solely upon the experience of that day. The words of the saga were first uttered in reminiscence a year later, after the explorers had returned to Greenland with all the information they had acquired during their year in Vineland. Less than a mile and a half from the shores of the lake on Cape Cod where it seems certain they established their camp are hills from which they could see the general shape of all Cape Cod.

"A Sound"

Statements in the *Flateyjarbók* story of the expedition of Leif's brother Thorvald in subsequent years leave no doubt that Nantucket Sound was the "sound" which Leif Erikson entered. Thorvald made his winter headquarters in Leif's permanent house at the Vineland camp, and during his first spring there Thorvald "ordered a few men to take the afterboat and explore the coast to the west during the summer." Since a small boat like the "afterboat" was satisfactory only for inland waters, we know that extensive inland waters lay to the west of Leif's camp, waters which took an entire summer to explore. In all the Atlantic seaboard of North America, Nantucket Sound is the only sound to the west of which there are such waters lying in an east-west direction. During the next summer following the afterboat explorations, Thorvald Erikson, desiring to explore the coast in the other direction from the camp site, "went eastward with the trading ship and followed the coast around [along] the north side." He

had to go east to get out beyond Cape Cod, and thence to the north. Here again by the sailing directions the saga points unmistakably to Nantucket Sound as the locale of Leif's headquarters.

While Leif spent an early morning hour or two on Great Point of Nantucket, the weather cleared to a "fine day" after the northeaster. The wind, as it normally does in the northern hemisphere, then veered, or moved clockwise and began to come from the southeast. Infrequently the wind moves around counterclockwise and we say "it backs up." This happens in squalls, which are local disturbances, and very seldom in a real change of wind, particularly in summer. The wind from the southeast in the Nantucket region might temporarily produce some haziness until it veered further around clockwise to its prevailing direction, from the southwest. It was probably coming from the southwest by the time Leif and his men called it a "fine day."

The veering of the wind after the northeaster, and the fact that viking ships sailed effectively only before the wind, together indicate the general direction of the site of Leif's camp. The new direction of the wind meant that Leif steered generally northward from Great Point, got a closer view of Monomoy Point, and then sailed northwestward ("into a sound . . . to the west of the cape"); that is, to the west of that part of Cape Cod which runs to the north. Thus he went towards the hills he soon would see. Halfway across to the south shore of Cape Cod several hills showed above the horizon. The nearest of these was German Hill. If Leif steered towards it, it would have brought him close to the mouth of Bass River. But he may have followed the shore line inside Monomoy, and then westward along and near the south shore.

It is stated in the record that Leif and his men established their camp that very first day. Therefore, the distance that they sailed from the island to the mouth of the river they

ascended is limited by the number of daylight hours of a single day in late summer at the latitude of southern New England.

Melvin Landon, now a professor of science at Nasson College, Maine, made a study based on three facts which I gave him: that high tide had occurred at Nantucket Great Point an hour or so after sunrise on the day of Leif's landing; that wild grapes ripen on Cape Cod near the end of September; and that the grapes were ripe when Leif arrived in Vineland. Seeing the possibility of dating to the day of the month the landing of Leif Erikson, he asked me the year of Leif's visit. I told him it was 1003 A.D. He brought his knowledge of astronomy to bear on the problem and ascertained from the times of the full moon that the day in late September of 1003 A.D. when high tide occurred at Great Point of Nantucket at 6 A.M. was September 28 (by corrected calculations). Mr. Landon thus produced the interesting suggestion that Leif Erikson's landing in America might have been on September 28, or on the day before or the day after this date.

Late in September, Leif and his men had about thirteen hours of sunlight. After sunrise, they spent at least one hour, perhaps two, on the island. They left the island at approximately high tide, as will be demonstrated. It took them about five hours to cross the nineteen nautical miles from Great Point to a position near the mouth of Bass River. The usual southwest wind after a northeaster in that locality would have been strong enough to drive them at a speed of about four knots, but no more.

Leaving Great Point at high tide or within an hour after it, they encountered currents that set at first eastward and then more strongly westward at speeds up to more than two knots, so that currents shortened the crossing by about fifteen minutes. The saga indicates that most of the crossing was made while the tide was ebbing by stating that they went aground before low tide. On the average, low tide at Bass

River breakwater occurs 6 hours and 43 minutes after high tide at Great Point.

It was safer to explore unknown inland waters while the tide was ebbing, since if a ship then went aground it would be floated again when the tide rose. If a ship went aground while the tide was rising, the tidal current would be in the wrong direction and might carry a ship on to a sand bar or ledge so firmly that it could not be readily refloated. As practical seamen, Leif and his men certainly thought primarily of the safety of their ship.

The draft of their ship was between three and three and a half feet, and their distance from land when they went aground may be guessed at from the fact that in many places along the southern shore of Cape Cod the line of three- to four-foot soundings at mean tide now lies from five hundred yards to three-quarters of a mile off shore, and in some places to a mile and a half off shore. A thousand years ago, the line of such soundings may have been where the line of two- to three-foot soundings now is, but it would have been approximately the same distance from what was then the shore as the present shoals are from the present shore. To the east of the channel leading into the mouth of Bass River, Leif's ship could have been grounded (on Kill Pond Bar) anywhere up to two miles off shore; and to the west (on Dogfish Bar), one mile from shore.

Those who rowed ashore from the stranded ship in the afterboat looked for a river large enough to enable them to take their ship inland without running aground again. Only one river in all that coast had formed a channel out into the sound deep enough for their ship, and this was Bass River. The row to shore and up Bass River against the tide for five and a half miles to a place where they found a favorable site for a camp required at least four hours. The afterboat party knew, by the time elapsed between the stranding of the ship and the turn of the tide in the river, how long it would be

after the turn of the tide that the ship would float again, and therefore, as the *Flateyjarbók* says: "As soon as the tide floated their ship, however, they rowed in the boat back to the ship." After the tide floated it, a little more than two hours after low tide, they must have needed about an hour and a half to steer the ship with the entering tide and following wind up the river to their anchorage.

From dawn to the time they anchored in the lake, at least eleven and a half hours had elapsed. They needed an hour of remaining daylight to build temporary shelters, and this they had. All of the thirteen hours from sunrise to sunset are well accounted for. Leif's men spent a very full day.

The time factor limits the possible distance between the island and the mouth of the river. That distance could not have been materially farther than from Great Point to Bass River. There was no extra time in the one day for them to have gone as far west as to the western end of Nantucket Sound into Vineyard Sound or into Buzzards Bay. From Great Point to Vineyard Sound (Nobska Point) the distance is 32 nautical miles, which would have taken them at least seven hours, and to get into Buzzards Bay another hour, and then to a river such as the saga requires, several more hours. There is no river on Martha's Vineyard by which they could have gone "up" to a lake.

Distance from the Ocean

Greenlanders lived in fiords far from the sea. They naturally wished to know how far in from the ocean was the mouth of the river up which Leif Erikson had established his camp. Leif told them in seaman's language. The Icelandic text of the *Flateyjarbók*, in the sentence immediately following the one which says that Leif had sailed into a "sound" (*sund*), tells us that from near the mouth of the river where the ship ran aground, "it was a long distance to look from the ship to the sea." The word "sea" (*sia*) here clearly does not refer to the

salt water of the sound, but to the open ocean.

The mention of the stranding of Leif's ship was made by practical seamen for an audience of practical seamen. When the stories crystallized into the version that is our source, those details which a modern writer might have included and a literary audience might have demanded were omitted as superfluous, while details meaningless to the landsman were retained because of their significance to mariners. A landsman might expect Leif's account to have stated how far from the land they were stranded, or how far across exposed flats from their stranded ship the water had receded at low tide. Not so a seaman. To the men on Leif's stranded ship, the distance to the land was of no importance, nor was it to their listeners a year later in Greenland. It was a matter not deserving of mention in a permanent record. If the ebbing tide had left their ship on a wide flat with no water near it, so that they were at a considerable distance from the edge of the water at low tide, that distance again was of no practical significance. Whatever the distance, they knew that the incoming tide would float the ship again. As a matter of fact, since there is a tide of about three and a half to four feet in Nantucket Sound, and since Leif's ship drew about three and a half feet and went aground about two hours before low tide, at least two feet of water probably remained under his ship at low tide. The statement, "a long distance to look from the ship to the sea," was not an attempt at picturesque description of scenery. Furthermore, it did not imply broad flats exposed at low tide, as De Costa translated it in 1899: "a long way between their ship and the water." The Icelandic text does not justify this misconception.

What was of importance when Leif and his crew related their story for the first time to their Greenland audience was information that would help other Greenlanders find that same river up which Leif had built his camp. "A long distance to look from the ship to the sea" told mariners that the dis-

tance from Leif's ship to the ocean, and therefore from the nearby river mouth to the ocean, was near the limit of visibility.

To the east and southeast of the stranded ship was the narrow spit of Monomoy, on the other side of which Leif's men knew the open ocean to be. Could the men on Leif's ship near the mouth of Bass River see Monomoy?

W. Sears Nickerson, in *Land Ho! 1620* (published in 1931), presents a detailed study of the shifting sands of Cape Cod as indicated by maps and sailing directions of Champlain, Gosnold, and the captain of the *Mayflower*. He says: "All of the earliest maps which are worth considering at all, including the rare manuscript map of 1606-07 by Champlain, clearly show that the representative of what we know as Monomoy Point, or Island, stretched from the very earliest times, relatively as it is shown on the very latest chart of the U. S. Coast and Geodetic Survey." Although Monomoy has lost the eastward extension it used to have, it has not changed position in 350 years. This is as far back as the records go, and it is not unjustified to assume from them that Monomoy is something of a fixture and that it was in the same general position 950 years ago.

The dunes of Monomoy, having an elevation of twenty feet for much of its length, and of thirty feet at a point less than two miles from its southern end, would be visible at sea level for six English miles. A man at the top of the mast of Leif's ship at thirty feet above water would have a visible horizon of over seven miles. Six English miles of visibility for the height of the dunes plus seven for the height of an observer at the top of the mast means that the dunes of Monomoy, gleaming in the afternoon sun of a "fine day," could have been seen from the top of the mast at a distance of thirteen miles.

It is exactly twelve miles from the mouth of Bass River (west side) to the dunes all along the length of slightly curv-

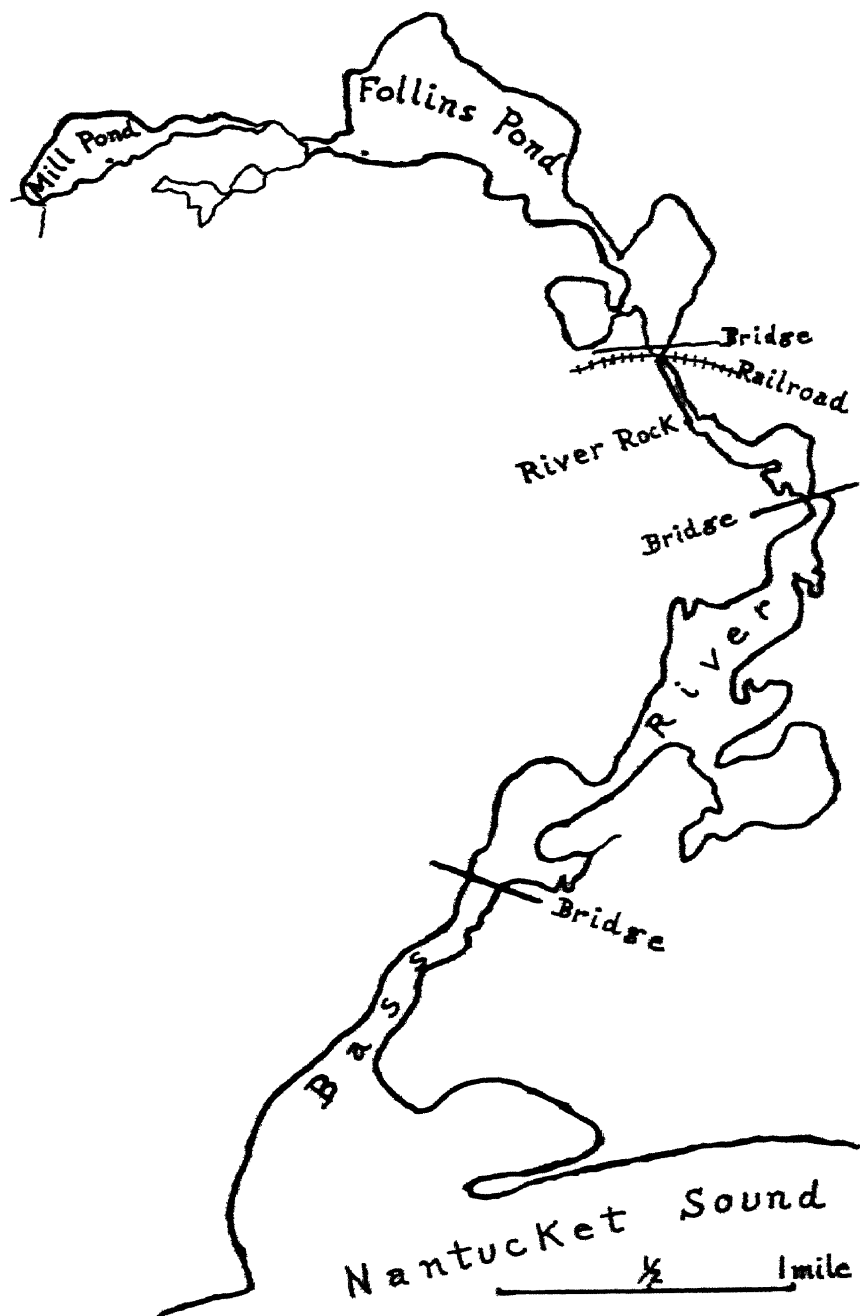
ing Monomoy. Thirty feet above water on the west side of the mouth of Bass River from the second story of her house, Miss Joan Wild writes me, the line of sand dunes of Monomoy may be seen with the naked eye.

The man who climbed the mast of Leif's ship saw Monomoy with only a mile or two of visible horizon to spare. To seafaring Greenlanders, "a long distance to look from the ship to the sea" was a practical, vivid, and unforgettable way of telling how far they must sail into Nantucket Sound from the open ocean to find the mouth of Leif's river.

The River

Does Bass River flow down from a lake? This was the question asked by interested persons who knew where my detective work was leading me. The question was a valid one, for the ordinary maps of Cape Cod presented only the lower half of Bass River. The U. S. Geological Survey map showed that the river is five miles long and that it does flow out of a large lake. But the river has also several lateral extensions, any of which, so far as I could tell from the map, seemed to qualify as a lake. Since a ship entering Bass River would come upon these first, I began considering them as possibilities for Leif's camp site. One factor I kept in mind was that his camp had been called Leif's "Shelters." This, I assumed, meant it was sheltered from winds that might damage the ship.

I first saw Bass River in July, 1947. The lower half of the river offered no shelter from winds, such as Leif must have sought; for the land there lies low, most of it at an elevation of less than twenty feet, and only a little of it at an elevation of thirty feet. The river mouth is flanked by a marshy island, a marshy eastern bank, and a low western bank. Farther in, the winding turns of the river offer vistas of bright-green salt-grass meadows against a background of sandy slopes and tree-covered shores of coves and ponds that seem almost to form part of the river itself. The direction of the Bass River



Bass River

waterway with its lakes and main tributary is a sweeping semi-circle of seven and a half miles, its general course three and a half miles northeast by north, and then two miles northwest to the middle of Follins Pond, then one mile west into Mill Pond, and another southwest across former marshland, now cultivated cranberry bogs, to a reservoir nine feet above sea level. The form of the waterway is that of a question mark.

Grand Cove and the first three and a half miles of the river look windswept. Until one turns into the reaches of the river extending to the northwest from the South Dennis highway bridge, one finds no prospect of real shelter. It seemed certain, therefore, that Leif's ship passed through the narrowest stretch of the river, swept forward rapidly there by the swift tidal current, and entered Kellys Bay. Because of their low shores, Kellys Bay and Dinahs Pond offered unsatisfactory protection from storm winds and would not have appealed to the Norsemen, especially since higher land was in view. When the flooding tide carried the ship into Follins Pond, flanked on its north and south by seventy-foot hills surmounted by bright green pines that cast long shadows in the late afternoon sun, Leif would have seen the shelter he desired. Here was a lake about half a mile wide and just under a mile in length, running east and west, with much of its waters scarcely ruffled by the wind. The gulls swooping and shrieking over its surface were to the practiced eyes of Leif and his men a promise of easy food in the form of fish within its depths.

Most summer residents on Cape Cod cling to the cool areas near its coasts and are little concerned with what lies in the backwoods several miles inland. I met thirty people who had been coming year after year to a boardinghouse only three miles from Follins Pond, as the crow flies, who had never heard of the pond. Follins Pond, named for Thomas Falland, who settled on its shore before 1643, had been practically isolated for many years. Ever since the railroad from Barn-

stable to Orleans was opened in 1865, the lake had not been readily accessible to small boats. The railroad fill from both banks of Bass River, with only a sixty-foot opening, created a passage under the railroad bridge that was difficult and dangerous for small craft when the tide was running. That such a lake as Follins Pond existed was corroborative of my theory. Until I saw the railroad fill, it seemed amazing to me that Follins Pond had never been previously suspected or named as the place where Leif Erikson established his camp site in North America.

The depth of channel in the Bass River at the time of Leif Erikson was, however, much in my mind. The shallowest parts of the channel have about three and a half feet, barely enough for a viking ship. As for the one- to two-foot shallows at the entrance to Kellys Bay immediately north of the railroad bridge, geologists assured me they had been formed since the railroad was completed, since the ice of Mill Pond and Follins Pond (sometimes ten inches thick) when it breaks up in the spring forms an ice jam at the narrowed exit where it melts and deposits the rocks it has carried. But the channel in the tidal river? What change of sea level had there been since Leif's day?

I dared hold to and publish my belief that there had been sufficient depth of water in Bass River for Leif's ship because all reported evidences from Greenland were to the effect that the glaciers there were less extensive in Leif's day than at present: less ice on land—more water in the ocean. Later we shall see whether that belief has been justified.

Time of Sunset on Year's Shortest Day

The *Flateyjarbók* description of Leif's Vineland camp site provides climatic and astronomical clues that support the findings of geographical detection. "There seemed to be excellent country thereabouts in which there might be no lack of cattle fodder for the winter. There came no frost in winter,

and there was but slight withering of the grass. The days and nights were more nearly of equal length there than in Greenland or Iceland. On the shortest day in winter the sun was above the horizon at afternoon mealtime [*Eyktarstad*] and forenoon mealtime [*Dagmalastad*].”

The average winter on Cape Cod is much milder than in other parts of Massachusetts. Lying close to the warm flow of the Gulf Stream, the Cape's light falls of snow are usually melted away in the mild ocean atmosphere within a few hours. Greenlanders accustomed to blizzards and many feet of snow, to glaciers and pack ice, and to being frozen in all winter would necessarily use the word “frost” against the background of their experience. In Leif's Vineland a snowfall of a few inches was something they would scarcely notice. There is, as a matter of fact, a contradiction in the saga, for there would not have been even “slight withering” of the grass if there had been literally no frost.

Given the statement that the sun was just above the horizon at afternoon mealtime on the shortest day in winter at Leif's camp, the approximate latitude can be calculated. Afternoon mealtime among the early Norse is generally supposed to have been at 4:30 P.M. Without clocks, and with only hour glasses and sun dials, people did not regularly sit down to eat exactly to the minute, of course, but hungry stomachs accustomed to a regular time of feeding were fairly reliable timepieces. The latitude of Follins Pond is $41^{\circ} 42'$. At that latitude the sun sets on December 21 at 4:31 P.M.

A Geographical Jig-Saw

To be valid, a theory as to the location of Leif's Vineland camp site must satisfy all geographical specifications which are either plainly stated in the *Flateyjarbók*, or deducible from it. Here are those specifications:

(1) It must place Leif's house in Vineland more than 150 and less than 300 miles (“out for two days”) southwest from

somewhere on the coast of Markland (Nova Scotia).

(2) It must put it north and west of "an island which lay to the north of the land."

(3) It must put it up a river, the mouth of which Leif came to after he "sailed into a sound."

(4) The mouth of the river must be more than seven and less than twenty miles from the ocean.

(5) The camp site must be on the shore of a lake to which the river gave access.

(6) Inland waters extensive enough to keep an exploring party in a small boat busy all one summer (see story of Leif's brother Thorvald) must lie to the west of Leif's camp site.

(7) Since the sun was still above the horizon on the shortest day in winter at afternoon mealtime, about 4:30 P.M., Leif's camp must be south of the latitude of Boston.

(8) As revealed by the stories of Thorvald and of Karlsefni (which see later), Leif's camp must be west and south of a sandy cape "which went to the north from the land."

(9) The distance to the mouth of the river from the island on which Leif first landed in Vineland must be in the order of 16 to 20 nautical miles.

(10) As we shall learn from Thorvald's story, the general direction of the seacoast from the Vineland camp on the opposite side from the inland waters must run to the north ("coast on the north side") and thence "to the east."

Where the specifications are so numerous and mutually dependent, we have a geographical puzzle admitting of only one solution. All these details must fit each other, and in the Bass River-Follins Pond theory they do fit each other, and there is no other place in North America where they do.

The Lake

Since Leif's camp was called Leif's "Shelters," I had assumed it would be on a north shore sheltered from wintry north winds. For days my wife and I poked around in the

bushes along the north shore of Follins Pond, scrambled through the underbrush on the hillsides, getting clothes and hands ripped with brambles and torn with thorns in the thickets of the streamer vines. I expected to find the makings of a proper camp site, with a spring or brook that would have supplied drinking water for thirty-five men. I hoped to find some stone foundation or, fondest hope, a rock with runic characters. All we found were salt-marsh meadows, and dry wooded hillsides with only one possible area for the camp site. But there was no sheltered anchorage anywhere near this spot, and nowhere along the north shore were there large boulders or sizable rocks of any description. It seemed wasted effort and I was deeply discouraged, with heart as leaden as the skies on our first days of fruitless floundering.

But now the weather had turned clear and sunny, the water of Follins Pond was blue and sparkling, and a brisk breeze caused waves to break on the mud and gravel of that northern shore. With the change in weather had come renewed hope and a will to broaden the field of search. A rowboat was on the bank, tied to a tree, and at a house several hundred yards north of the lake we found its owner, who handed us the oars out of the barn and called off a terrifying Great Dane that threatened to end our lives by mouthfuls. That afternoon I started across the lake in the borrowed boat.

Immediately I was made conscious by the hard rowing that I was heading into a stiff wind. When I was halfway across I paused in my rowing and noted several things that should have brought me to the south shore at the outset. The northern half of the surface of the lake had been rough, but now I saw that the water close to the south shore was unruffled by any breath of air. The high ground above the south shore gave perfect shelter against the southwest wind, which I soon learned—as Leif and his men must have learned their first afternoon on Cape Cod—was the prevailing wind of the region, and which I had forgotten was the wind from which

Leif would have sought immediate shelter.

I now saw a feature of Follins Pond that would have instantly caught the eyes of Leif and his men. There were many large boulders along its southern shore. Being experienced mariners, they were looking for likely rocks to which to moor their ship and their afterboat; and for that reason they might well have steered to the left, searching the southern shore. Also, as I soon discovered, along that shore at several places under the high bank, the color of the vegetation revealed the presence of copious springs, where fresh water flowed down over the shore pebbles.

The Search for a Mooring Hole

What was most thrilling was something else I saw from the middle of the lake. There was a rock islet or skerry near the south shore, the only skerry in Follins Pond, an islet not indicated on the U.S. Geological Survey map. "That finally is it!" I said to myself. "There absolutely must be a chiseled hole on the shore side of that skerry!"

Mariners speak of three ways to fasten a ship. When a ship is held sideways close to shore or dock by hawsers at both ends, sailors say it is "berthed." When a vessel off shore is fastened by hawser from one end, with the other end free to swing with currents, tides, and winds, sailors say it is "anchored." When a ship or boat is held off shore or just clear of the shore by hawsers or lines at both ends, it is technically said to be "moored." Often for practical reasons a ship or boat is moored with one end toward shore, with the near end held by a hawser to the shore and the other end held by a hawser to an anchor. Where winds and currents might cause a ship to swing on its anchor, foul its line, and drag, and have its hull stove in against shore rocks, mariners sometimes run the shore line to a pin set in a so-called mooring hole in a rock.

In a wilderness where there were no wharves or docks, the

prow of a vessel would be held by a taut hawser to an anchor off toward midstream or toward deep water, and the stern would be moored by a hawser attached to a peg or bolt inserted in a chiseled hole on the shore side of a sizable rock. The virtue of a mooring hole was that it would hold the peg or bolt fast against any pull at right angles to it, but would release the hawser instantly when the hawser was flipped upward from on board the vessel. Thus the stern of a vessel might be held conveniently yet safely near a rock landing. In case of attack from the shore, an upward flip of the hawser would instantly release the shore mooring, and in a few seconds the vessel could be drawn away from shore by taking up on the anchor rope.

With mounting excitement I changed my course and rowed directly to the islet to see whether it possessed a mooring hole.

The skerry toward which I was headed was about one hundred and fifty feet from the bank, opposite a concave bend of the shore line, about a quarter of a mile from the western end of the lake. The rock was twenty feet long, fifteen feet wide, and eight feet high above water. It seemed too steep to climb. I could step out of the rowboat and onto it only where there was a level place like a doorstep two feet above water on its shoreward side. I let the prow bump against this natural platform, threw the anchor upon it, and stepped out with palpitating heart. Though I was convinced I must find here what I sought, the dread of possible disappointment made me almost afraid to look.

In two seconds I saw it. It was a neat, inconspicuous inch-wide hole on the shore side of the crest of the rock. I shall never forget that moment. I believed I was standing where Leif had first set foot at his Vineland camp—upon this very platform, which Nature had prepared as if to welcome him!

I had found an ancient-looking mooring hole, a piece of evidence that seemed beautifully corroborative of my theory. I turned for a moment and stared at the wooded hillside of

the nearby shore, as I imagined Leif must have done, up through the trees to its level top. Somewhere up there, I guessed, had been Leif's house, with a full view of his ship.

The lake was too shallow near shore for a viking ship to have been brought close enough to be moored to a tree on the hillside or to a boulder at the water's edge. Later I discovered that there are no mooring holes in the boulders on the shore of Follins Pond except at one place near its eastern end. At the present time, there is a depth of water at the skerry of from three to five feet, there being less than two feet of tide in the pond. On the side toward the middle of the lake, not far from the skerry, the water deepens to five and six feet.

Standing on the skerry, I visualized how one of Leif's men held a chisel not quite waist-high and at arm's length against the sloping surface of the rock, and another man with a hammer drove the chisel until there was a hole five inches deep. This was a permanent mooring hole at more than sufficient height above water to hold firm a hawser from the high-curved end of the ship. The hawser from the mooring peg resting in this hole had to pass over the top of the rock about two feet from the hole, and thus some of the direct strain on the peg was relieved. The saga tells us that Leif's ship was anchored the first evening, but the mooring hole on the skerry was, I believe, soon made and used, in addition to the anchor.

Since the time when this mooring hole was made, a chunk of granite three or more inches in thickness has cracked out from the area where the hole is, no doubt by force of winter freezing. Less than two inches of the hole are left. Except at the broken-out places, the surface of the rock shows very great weathering and is covered with lichen on its north and east. The existing bottom of the hole has a diameter of a little more than an inch, and is halfway between round and triangular with the angles rounded.

From the north shore, my wife had occasionally watched the progress of my rowing, but had failed to note my change of course and thought the boat and I had disappeared, until later she saw me standing on the skerry. When I returned in the later afternoon at about the time of day Leif's ship first sailed into the lake, I called out to her from a hundred yards off shore: "I found it—a mooring hole!" As I pulled the row-boat up to the bank, she said with that calmness at which I marvel: "Of course you found it. It had to be there."

The Mooring Hole in the Bass River Rock

That evening in the hotel I realized I should look for a second piece of evidence, double-checking the first. The text of the *Flateyjarbók* spoke of the beautiful salmon "in the river and in the lake." Leif's party fished in both places, and it occurred to me that there should be a similar mooring hole in some large rock at a likely fishing site somewhere along the banks of Bass River.

The next day, on July 2, 1947, my wife and I were driven by our friend Walter Brown to the mouth of Bass River. During that drive we could see that there were no boulders along either bank for the first mile and three-quarters from the river mouth to the bridge between South Yarmouth and West Dennis. From that bridge we saw that the river banks for a half mile to the north were likewise entirely devoid of rocks. From various vantage points near Grand Cove we inspected another mile of the river with equally negative results. The U. S. Geological Survey map showed there could be only one more section of the river to investigate, those reaches visible in either direction from the South Dennis bridge.

Crossing westward over the South Dennis bridge, we saw no rocks along either bank to the south of us, but a third of a mile away to the northwest on the west bank, one huge boulder gleamed brightly against a green background. It was the only boulder along the whole length of Bass River up to

the entrance to Follins Pond, and the map showed that it was at the narrowest part of the stream, where the tidal current runs fast. It was at the ideal site for salmon fishing. I felt confident that this boulder must contain an ancient mooring hole.

We turned into a sandy road and drove to within a hundred yards of the rock. In my eagerness I ran ahead through the woods to the river and followed along the steep bank northward to the rock. It was a granite boulder lying at the foot of the bank, half of it in the river. It was at least twenty feet by fifteen, and its top was eight or nine feet above water level. I later learned that it is locally called the Blue Rock.

In the steeply inclined surface on the landward side, fourteen inches below the top ridge of the rock, was a hole somewhat triangular, with its angles rounded, similar in diameter to the mooring hole in the skerry! Here was exciting evidence because it was exactly where theory said it should be.

The Bass River mooring hole is a trifle more than three inches deep. It is cut in at right angles to the sloping surface. It is perfectly placed to hold the mooring line of a boat being used for fishing. The ridge above the hole would catch part of the strain on the hawser and hold it from slipping sideways. To be held steady in that swift tidal current of six or seven knots, a boat would need both anchor and mooring.

When the question was raised whether a three-inch hole was deep enough to serve as a mooring hole, two friends and I proved by experiment that it was deep enough. We found we could not pull a peg out of the hole by a rope stretched taut across the ridge, even when the rope was supporting a man's weight; but we could invariably and with facility raise a peg out of the hole from below the ridge from the river side of the rock. In fact, it appears that a deeper hole there would not do. A peg such as a metal belaying pin in a much deeper hole would weigh too much to be easily flipped up out of the hole over a ridge of such height from the level of a boat in the river.

How Mooring Holes Were Made

People ask with what metal instruments the vikings could have made mooring holes. My answer had been, "Steel chisels." In 1954 when I visited the National Museum in Copenhagen, I asked: "Did the vikings have steel weapons and tools?" "No," I was told, "no steel, only iron. Consult the metallurgist who tested the viking weapons and tools in this museum." The scholar who had answered me evidently thought my question referred to objects entirely of steel; for the next day the metallurgist Eigil Hoeg in his laboratory laid before me the records of his analyses of percentages of carbon which showed that many iron weapons and tools of the vikings unquestionably had had steel edges welded onto them. Now when asked the question I answer: "An iron chisel with a steel edge."

I am also frequently asked: "How long did it take to chisel out a mooring hole in granite?" I found the answer when for the first and only time I cut a hole in granite. It was on the farm of Carl B. Urann near Middleboro, Massachusetts, far enough removed from water so that no one would ever mistake it for a mooring hole. I used a straight-edged steel chisel about an inch wide. Until the hole was fairly started, I had to reset the chisel to the desired point before each hammer blow. Mr. Urann and his son and I were taking turns. We leisurely cut a hole an inch in diameter and one and one-half inches deep in five minutes. In spite of our efforts to make a round hole by frequent turning of the chisel, what resulted was triangular with the corners rounded.

The location of a chiseled hole in relation to other objects is always a factor in deciding whether it was made as a mooring hole or for some other purpose. It must be near where at some time there had been water, and on what was the land side of the rock, and somewhat near to vertical to that surface of the rock. A hole drilled for blasting purposes is perfectly round, of considerably larger diameter, and usually

vertical to the horizon, and several feet deep. A volume of explosive about one and one-half inches in diameter and eight inches long is required for blasting one cubic yard of granite. Where there are any blasting holes on a large rock the size of the skerry or Blue Rock, there would be several holes in a row, unless a single hole near an edge of the rock would serve to blast off a small piece that was desired. Sometimes one cannot distinguish between a hole made for mooring a ship from one made for mooring one end of a fishing seine. In some shore areas in Maine and elsewhere one finds many holes made for anchoring staircases and docks and summer-house roofs and other structures. A mooring hole is usually isolated.

Most mooring holes nowadays are fitted with ringbolts. It is probable that they were not so fitted in early centuries when iron was scarce. I initiated a search in Norway and Sweden for early mooring holes that show no trace of iron rust or evidence of ever having held ringbolts. I found several in a cove on the island of Langholmen in Stockholm, and one has been reported to me from Laxä, Sweden, slightly over one inch in diameter, seven inches deep, triangular with corners rounded, inclined away from a watercourse on a flat rock. Others have been reported to me from Norway. The land of Sweden has been rising since the last Ice Age, and because we know how much any portion of its coast has risen in the past 1000 years, it should be possible to identify some mooring holes as made by the vikings, if any such are found at the proper height above the present sea level. A Swedish professor has been searching for such holes in one limited area, but as yet he has not reported any of indubitable viking origin.

Can Mooring Holes Prove Anything?

There is no way of proving that any particular hole in North America was made by the vikings. If any man claims that his grandfather made a particular mooring hole, he can

have it, except for one thing, that the unusual height above water of the mooring holes of the Follins Pond skerry and of the Bass River Blue Rock strongly indicate that those two holes were made at a time when the sea level (tidal level in river and lake) was several feet higher than today.

The over-all picture of the many mooring holes that exist all the way from New York to Newfoundland does furnish a reasonable basis for pointing to several as almost certainly of viking origin. Uniformly, almost all of the mooring holes along the Atlantic seacoast are a little more than an inch in diameter, and are triangular with the corners rounded. When I saw the mooring holes which Mr. Holand has found in Minnesota on the presumed route of the fourteenth-century Kensington Stone party, I was impressed with the fact that they were not only of the same size and shape, but that they looked less weathered than the oldest-looking ones of the Atlantic seacoast.

A very convincing evidence of viking origin is the discovery of certain mooring holes in Long Island Sound. As has been stated, Leif's brother Thorvald sent a party in the afterboat that spent a summer in inland waters to the west. An afterboat was about the size of a lifeboat. Whereas a hole of a trifle more than an inch in diameter was customary for mooring a ship, a much smaller hole would hold a pin of sufficient strength to moor an afterboat. Bernard W. Powell of Norwalk, Connecticut, has discovered several very much weathered mooring holes in Long Island Sound, enough to establish a pattern of holes made for a small boat. These holes are only three-quarters of an inch in diameter. I have not seen any so small anywhere else in New England or in the Maritime provinces of Canada.

In identifying the south shore of Follins Pond as the site of Leif Erikson's Vineland camp, I had been a geographical detective. If the *Flateyjarbók* was the trustworthy guide I believed it to be, the story of Bjarni's voyage unraveled back-

wards and the reconstruction of Leif's first day in Vineland logically led only to that one place in all of North America. Naturally I looked for evidence that would support the theory. The mooring holes seemed corroborative, but they were not proof. I had produced a theory that was as yet without confirmation. Would scientific proof ever be found?

House Sites

I knew that I could not expect to find a sword or axe bearing Leif Erikson's name; or, as Gus of Gisholt put it, a metal belt buckle inscribed with the words "From Mama to Leif." In my field searches in 1947 and 1948, I looked for stones in formation suggestive of a house foundation; that is, large rocks which were at the corners of a square or rectangle, on which the logs of what the saga called Leif's "large house" might have been laid. At such a site, if I had found one, I would have looked for a campfire site and a kitchen midden, or heap of refuse containing the bones of animals, and perhaps some metal artifacts. In my more optimistic moments I dreamed of finding a rock bearing a runic inscription. I combed the woods extensively. I knew that any evidence of viking occupancy of the south shore of Follins Pond would be practical proof of my theory. In 1947 and 1948, I examined particularly all likely house sites, the level spots that commanded views. I hoped that some day I could persuade archaeologists of the desirability of excavating in these areas. In those years there were only two such sites occupied by houses, one of them near the most copious shore spring. I happened to remark to the man for whom a house was just being constructed: "My theory is starting a legend. Legends persist, whether or not they are proved true. This Follins Pond theory will raise real-estate values hereabouts."

When I revisited Follins Pond four years later, I learned that the man to whom I had spoken had bought up everything for sale on the south shore of the pond and had set bull-

dozers to work at every likely house site, and had erected fourteen houses. This meant that proof of the precise location of Leif Erikson's house site might never be obtainable. There was small consolation in the fact that the advertising of the housing development declared it was where the vikings had landed in the eleventh century, or that two other housing developments had been started on the north side of the pond with streets named for Leif, his father, his brothers, his sister, and his brother's widow's husband.

I first presented my theory in the *American-Scandinavian Review* for March, 1948. Nationwide interest was awakened by publicity in 1951, in the *Saturday Evening Post* for June 9, and in the September issue of the *Reader's Digest*. Thousands of tourists that summer drove to the south shore of Follins Pond or ascended the Bass River by a boat service that sprang up to accommodate them. They scrambled over the skerry in the lake and put their fingers in the mooring holes in the skerry and in the Blue Rock. A university professor of archaeology in Florida brought some of his students and investigated parts of the terrain without finding the sought-for evidence. Amateur enthusiasts dug surreptitiously here and there, and young men dived into the lake looking for Norse artifacts. People came with flashlights and prowled around at night, some of them just outside the windows of a house, causing its irate owner to post his land against trespassers.

The Products of Vineland

The theory had been widely accepted. If the theory is correct, I said to myself, then it was here at Follins Pond that Leif Erikson in the name of Christ took formal possession of the land in 1003 A.D. Following the description in the saga, it was here that he and his men commented favorably on the tall meadow grass (*Distichlus spicata*) in the river flats that would provide plenty of fodder for winter, so that cattle

would not get thin on slim rations. Centuries later, men from Plymouth Colony came to the Cape to harvest that grass for winter feeding. It was from the shore of Follins Pond that half of Leif's party went forth exploring each day, while those who remained in camp were building a large house. It was here that old Tyrker of the exploring party one day was reported missing, and when Leif, much concerned, found him, the old man at first in German and later in Norse announced the good news of his discovery of grapes. It was hereabouts that the men cut long strands of greenbrier (*smilax rotundifolia*, also called "car brier" and most appropriately "Stay Awhile," which flourishes in large patches through which a man needs a machete to cut his way), from which briers they stripped the thorns, braided the flexible strands together, and made hawsers and withies. Leif said his cargo on his return to Greenland would consist of these useful vines and of timber. Giving the land a name born from its (to him) most unique product, he called it Vineland, Land of Vines.

Of Cape Cod it seemed fair to say that its history did not begin in 1620 when the Pilgrims landed at what is now Provincetown, but that its first chapter began more than 600 years before the arrival of the *Mayflower*.

What the Archaeologists Uncovered

One effect of the publicity was that the Massachusetts Archaeological Society became sufficiently interested to arrange a digging project in the spring of 1952. I can never adequately thank those members of the M.A.S. who welcomed the project and who actively cooperated for what they accomplished.

The M.A.S. had nearly five hundred members, and it was their custom on occasion to meet on a Saturday morning, dig for a day and a half, and return to their homes on Sunday afternoon. Project digging was necessarily therefore rapid

and large-scaled in method, but as it happened, was very appropriate under the particular circumstances. I was told that because of the tremendous publicity there was fear that there would be an overwhelming number of spectators, to prevent which only those members who indicated their willingness to take part in the Follins Pond dig would be informed of the date. Local police would be directed to keep sightseers away. Above all things, the newspapers were not to be told when the dig would occur.

When I was asked precisely where along the south shore of Follins Pond the M.A.S. should dig, I faced a challenge. In all the thousands of miles of our continent, I had turned to that lake shore. Now I must pinpoint the archaeologists to a spot on that mile-long shore where they would in one day uncover positive evidence of viking occupancy. It was a frightening requirement. If I failed, the penalty would be frustration and humiliation.

In what form could underground evidence of viking occupancy exist? I thought of four possibilities: 1) Metal artifacts. To discover any of these with no surface hint as to where they might lie would require more magic than that of a water dowser, and would be practically impossible in a single weekend. Mine detectors had already been used without avail. 2) A house site might be identified by the discoloration of the subsoil where walls of vertical posts (stave construction) had stood. But it was no longer possible to excavate at any likely house site. In a race against time, the bulldozers had won. 3) A kitchen midden might be found near a house foundation, but property owners would not permit the digging up of their lawns. 4) The best possibility for underground evidence of viking occupancy that I could think of was something associated with Leif's ship.

A mental arrow pointed to his ship. There was an apparent contradiction in the *Flateyjarbók* narrative which repeatedly mentioned Leif's Vineland "house" (singular), yet also spoke

of his Vineland camp as Leif's "Shelters" or "Booths" (plural). Had there been more than one building? But of course. There was his house, and also his ship shed. I knew it was the invariable custom of the early Norse to haul a ship on shore for the winter, and to build a shed over it for protection, to keep snow and ice from its interior. In the wilderness of North America, Leif and his men would not have departed from that custom. They would certainly have taken utmost precautions with the precious ship upon which their lives depended. Yes, I knew what to ask the M.A.S. to look for, but would they find it? I felt like a gambler staking everything on a single throw.

The day before the dig, the President of the M.A.S., Howard C. Mandell, went with me to Follins Pond to inspect those areas which I might recommend for the digging. He asked me what one area could be considered most promising. I led him to a gully which was the only place along the entire south shore of the pond where Leif and his men could have brought their ship ashore. Everywhere else along that shore there are boulders and a steep bank 25 to 70 feet high. But at the shore end of the gully there is a gently rising beach, and the floor of the gully rises only 5 feet in the 160 feet of its length. The gully is 35 feet wide, flanked by slopes 25 to 35 feet high. I had observed at the inner end of the gully a definite surface indication of what I believed were the remains of the walls of a boat shed. Crosswise to the gully there was a ridge of earth 18 inches high and 23 feet long, and at either end of it were short ridges at right angles to it in the direction of the lake. One of these side ridges was still visible for more than six feet. If these ridges were the remains of the walls of a boat shed, that shed had been about 22 feet wide inside. I pointed to the middle of the transverse ridge and from there down the middle of the gully towards the water.

"Why should we dig here? What for?" Mr. Mandell asked.

"For evidence that a ship has been stored, not built here, but stored." I had no idea what the evidence might be like. My imagination did not picture it. I did not even know the word "shored," which I should have used.

"How large a ship?" was the next question Mr. Mandell asked.

I believed I knew the width of a viking trading ship, such as Leif Erikson had, and its approximate length, and so I replied: "It should be 18 feet wide, and about 65 feet over-all length."

This was a size extremely improbable on the shore of a pond less than a mile long. Only in view of my theory did it seem sensible to imagine so large a ship as ever having been in that place. A ship of such dimensions would not have been used for fishing in the pond or the river. If I had known what I have since learned, I would have said that the length would be from 65 to 75 feet.

I had in mind a picture of an ocean-going viking ship, with level keel for most of her length, and with a curved dragon's or horse's head on her high curved prow, and an almost equally high stern. She had one mast and a single square sail without a boom, raised by a windlass. Her hull was shaped so that she rarely shipped water, and on long voyages it was protected against teredo worms by a coating of seal tar or other materials. She was clinker-built, sheathed longitudinally with planks riveted over staunch ribs and frame. Each strake or run of planking overlapped on the outer and upper edge of the next lower strake. These planks were only about three-quarters of an inch thick. She was undecked, with space amidship for cargo, and thwarts for rowers only near the ends. She was guided by an outboard, oarlike rudder at the stern on the right side—the steerboard or starboard side. She was double-ended, with graceful lines. I tried to visualize Leif Erikson's ship in the gully.

On the morning of May 10, 1952, about fifty members

of the M.A.S. arrived at the appointed rendezvous. There they were asked to take pickaxes and shovels in hand and stand together while others photographed them. I supposed that the men with cameras were M.A.S. members who were taking this opportunity to get pictures of their fellow members.

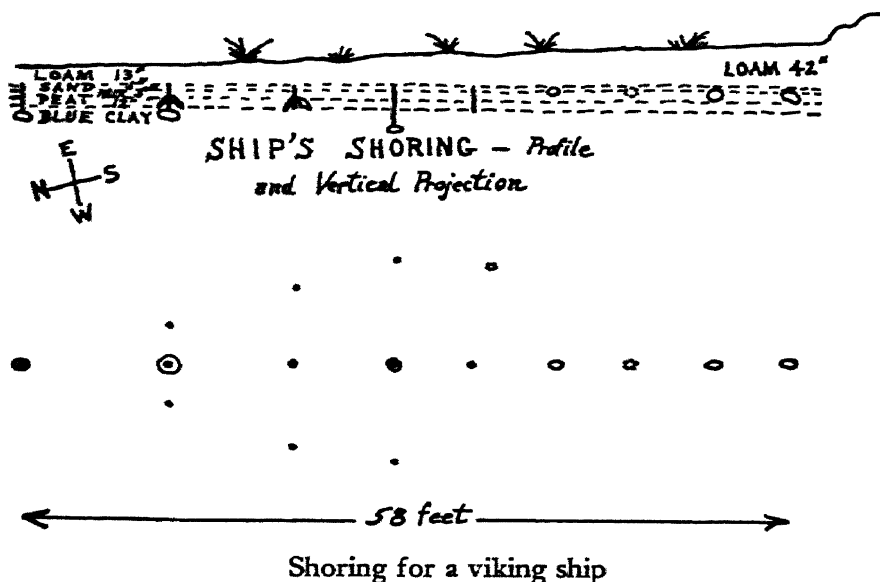
The members were then formed into three groups, the largest of which, led by the Director of Excavations, Dr. Maurice Robbins, went to the gully, where they cut down the trees, with the landowner's permission, to clear the area where they were going to dig. Another group went to explore the high ground near the west end of the pond, and there found an Indian hearth. Another group found a burial pit but no evidence as to what had been its contents. I was watching these other groups for the first few minutes when someone came to me and said the party in the gully had already made an important discovery.

Within twenty minutes after the trees had been cleared away, the first trench dug in the gully had exposed a vertical post 3 inches in diameter. It was along the median line of the gully floor. The top of it was 13 inches underground. Its bottom end was supported by a stone about a foot across, and its sides were flanked with two other stones set slantingly against it. Obviously, it had been set in place to support a weight. Was it a keel-bearing? Over three feet from it towards one side of the gully was a small stake that could have been a prop to keep a ship on even keel. The position of this stake suggested the likelihood that another stake would be found at the same distance away from the post on the opposite side. I measured and marked the spot where the diggers should look for it. That other stake was found within two inches of the marker.

In the light of the shoring theory, a pattern was immediately apparent. If the post was a keel-bearing and the two stakes were props, then the position of all three showed that the

ship at this place was at least six feet wide and that the post had not supported the extreme end of the keel. Therefore, those who were excavating looked for another keel-bearing post in line down the middle of the gully and toward the lake. They found it eleven feet away.

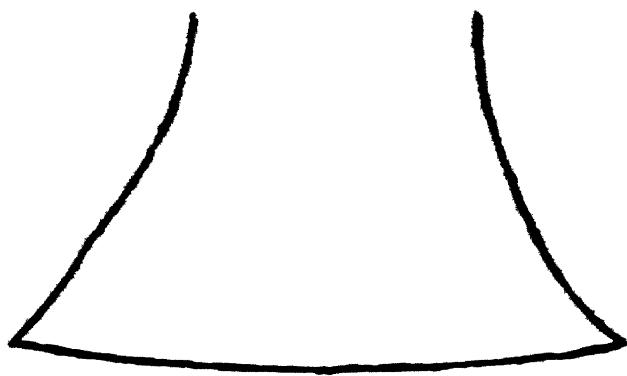
I took out of my pocket a notebook and pencil to record measurements, but was immediately told: "That is unnecessary, Mr. Pohl. A detailed report with a diagram will be published in the *Bulletin* of the M.A.S." Obediently and gratefully, I put away my notebook and pencil and merely watched proceedings.



The two keel-bearing posts gave the line where the keel could have rested. A trench following that line was dug further into the gully, and they soon found three other keel-bearing posts and three more shoring props and two prop molds (discoloration of soil where props had been). Soon also, in line with the five posts, the diggers uncovered four keel-bearing stones. One of these was accidentally removed

in the digging, leaving the hollow where it had lain. The keel-bearing posts varied from 3 to 5 inches in diameter.

The posts and props were in no instance cut square at their ends. Those who had planted them had not used a saw, but had rudely hacked them with a very small axe, patently the best axe available to them. The cleanness of one diagonal slash through a prop 2 inches in diameter showed that the blade of the axe was metal, not stone. Several "bites" where the blade had stopped in one of the keel-bearing posts showed that the blade was slightly curved and less than 3 inches wide. The wood of each post and prop was sound, except for the upper five or six inches, which were spongy.



Axe-blade (actual size) used to cut keel-bearing posts of ship's shoring at Follins Pond, as revealed by "bites" in the wood

The keel-bearings, props, and prop molds indicated the dimensions of the ship that had been shored. However, the width of a ship cannot be determined with absolute accuracy by the distance the props of a shoring are from the keel blocks. Such props slant inwards towards the ship so that their upper ends abut against her hull. The shoring props in the Follins Pond gully are set at a slight angle inward, a slant of about $1\frac{1}{2}$ inches to 2 inches to a vertical foot. The third prop on the east side, which the pattern shows was at the widest

portion of the ship, was 8 feet 6 inches from the center line of the keel-bearings. When it existed its full length, its upper end about three or four feet above ground would have abutted against a ship's hull about 8 feet from the ship's center line; it is a reasonable assumption that the gunwale extended at least one foot beyond that, so that we have 9 feet for half the ship's width, or a beam of 18 feet.

The ship had a keel slightly longer than the 58 feet of distance from the first keel-bearing post to the last keel-bearing stone; and for a ship with a keel of that length, and of the shape the shoring indicated, we should add about ten feet for overhang at bow and stern. The total over-all length was about 69 feet. The published report of the M.A.S. said "about 70 feet."

The chances of anyone's guessing in advance where the M.A.S. would find a ship's shoring, and approximately how large it would be, were extremely small. There are three places on the north shore of Follins Pond where a ship could have been conveniently shored, and at least nine other such places along the upper reaches of the Bass River. For more than a half-mile in from the mouth of the river, the west bank is one continuous shelf where ship shorings might have been. In pointing to the gully on the south shore of the pond, as my theory impelled me to do, I was choosing one of more than fifty possible Bass River shoring sites. In telling the M.A.S. to look in that gully for a ship's shoring, I was choosing one of four possibilities that had occurred to me; for I might have told them to look for metal artifacts, or for the foundation of a house sheltered from the winds, or for a kitchen midden. After the discovery, some persons felt that a ship's shoring had been so logical a thing in that gully that they lost sight of the chances stacked against anyone's guessing it. As for the dimensions of the ship that had been shored, my chances of guessing the exact width of 18 feet were decidedly less than one in ten, and my chances of guessing

within four feet of the actual length were, modestly stated, not better than one in seven. My chances of guessing 1 out of 50, 1 out of 4, 1 out of 10, and 1 out of 7, all at the same time, were only 1 in 14,000.

But I had not been guessing. My prediction was based on a theory, and set up in accordance with it. The finding of the ship's shoring at the exact spot and so close to the size foretold is by arithmetical law of possibilities a very strong argument in favor of the theory.

When the shoring had been completely uncovered, less than two hours after the dig had started, Kenneth Ayres, who was in charge of publicity for the M.A.S., took me aside and said: "If you will give me a statement about this discovery, I will relay it to all these newspapermen."

"Newspapermen?" I asked in astonishment.

"Yes, that group over there."

"And those men with cameras?"

"That one," Mr. Ayres pointed to each in turn, "is from the Associated Press. That one, United Press. That one, a Boston paper. Here are a reporter and cameraman from the *New York Times*."

My statement to Mr. Ayres was: "The evidence certainly seems most corroborative."

The ship's shoring was an exciting discovery and was headline news, the sensation of the day. As could be expected, however, the skeptics that very evening took counsel together.

The next morning Roland Wells Robbins, a member of the M.A.S. who had not seen the work that had been done the previous day in draining water out of the trenches dug in the gully, entered the gully for the first time, and after looking at the shoring for not more than three minutes made the following statement: "Those pieces of wood are above the water table. Therefore, they cannot be more than 150 years

old—200 years at most. If older than that, the wood would have completely rotted away. This is where an American ship was concealed from the British in the War of 1812, or possibly during the War of the American Revolution. That is the end of your theory, Mr. Pohl.”

Mr. Robbins had to admit an age greater than 90 years, because no ship of the size indicated could have been brought up the Bass River to the pond after the railroad trestle was built in the 1860's. His confident assertion of skepticism was now the big news and was widely quoted. It was in the newspapers the next day, and thereafter readers of metropolitan newspapers never heard anything more of the shoring. Many deemed this adverse judgment to be final. It seemed incredible to some that anything in New England could antedate Columbus, or that the ship's shoring might prove to be of early Norse construction. Nails, an adze, and a rusty stove, presumably of nineteenth-century origin, though two nails or spikes may be much older, had been found in the gully. Though none of these objects was in association with the posts and props, they were something for skeptics to talk about. Dr. Maurice Robbins has said of them: “Concerning the late material including nails, etc., which we removed from the excavation in the Follins Pond gully . . . modern materials are often introduced into every early strata by both frost action and human agencies. Extraneous data can be made to tell strange stories unless one is capable of careful analysis.”

The official report of the digging, written by Benjamin L. Smith, appeared seven months later in the *Bulletin* of the M.A.S. in January 1953. It quoted R. W. Robbins. It did not give a diagram of the shoring. When I asked why it did not give the promised diagram, the answer was, “Because the shoring is not old,” and I was told to remember what Mr. Robbins had said. It was then that several friends advised me to make a careful study of the details of the shoring. First of

all, I sought to get hold of the original diagram which Dr. Maurice Robbins had prepared, and he tried to get it for me but was unable to. Therefore, I was compelled to assemble the essential data from various sources, from notes and the memories of four persons who had helped in the digging, supplemented by measurements I made in the gully in April 1953, and by consultations and correspondence with Mr. Smith and with Dr. Maurice Robbins, who kindly made a new drawing for me from his notes. Mr. Smith and Dr. Robbins are agreed that the diagram I have prepared gives a correct picture of the details. The original diagram, which was eventually found and returned to Dr. Robbins, does not conflict with the one I made. My study of the shoring was published in the *Bulletin* of the M.A.S. for April 1955.

The tops of the five keel-bearing posts and of the four stones in line with them were within fractions of an inch on a level, except for the fifth post, the top two inches of which had presumably rotted away. The present surface of the gully is inclined, so that while the end of the shoring nearer to the lake is only 13 inches underground, the end farther from the lake is more than 3 feet under. Presumably, the floor was level at the time the shoring was made, a level of sand on top of a peat bog resting on blue clay. After the original forest in the area was first cut down, the present loam covering could have flowed into the gully in a very few years. It is possible that those who were preparing to shore their ship dug away the top soil so that the keel-bearings would be on a level. The level keel-bearings indicate that the ship had an equal draft fore and aft. A ship with a deeper draft aft is shored on inclined bearings to keep the deck level.

It is customary to beach a ship bow first. The end towards the lake, marked by posts and props, was the stern. The pointed shape of that end is clearly established, and the bow would not have been less sharp than the stern. The pattern of posts and props and stones is undeniable evidence that the

ship for which they were planted was not rounded at either end or "squared" at the stern, but was sharp at both ends. It was a double-enders.

Men with years of experience in shipyards say that the shoring is clear evidence that when the ship was first brought ashore, its keel rested for its entire length upon a row of stones. The stones were adequate support to keep the keel above the surface of the ground, and they were easily laid in a few minutes. On the other hand, considerable labor was involved in planting posts deep in the ground. The existence of such posts is evidence that after the ship had been shored, it was discovered that her bottom along the half of it nearer the lake needed repair. Since the keel-bearing stones held the keel only an inch or two above ground it was necessary, in order to make room for workmen to get at the garboards, to dig away successive sections of soil from under that half of the ship and plant the posts to sustain the keel while the repairs were being made.

A much easier way to expose the bottom of a ship so that planks near the keel could be repaired was to careen her. But for some reason the ship shored in the gully was not careened, perhaps because the mast had been unstepped, or because the men had no effective block and tackle.

The pronouncement that the shoring was not more than two hundred years old and that the posts of the shoring were above the water table would have been met, had I possessed the information at the time, by the statement of fact that they were *below* the water table. As Dr. Maurice Robbins testifies, they "were all immersed or embedded in organic material and sand below the water table." He has written me that "the environment in which we found the stakes in question was very wet. We had to dig ditches to drain off the water from the trenches nearest the pond. The stakes had been subject to moisture ever since they were originally driven and were water-soaked to a high degree."

Wood below a water table, or kept permanently wet by capillary action for a slight distance above the water table, is preserved indefinitely. Wood is destroyed by fungi which can live only in the presence of oxygen. Where oxygen is excluded by water, whether fresh or salt, wood is permanently preserved. For example, in the Viking Ship Museum at Oslo, Norway, there is the Oseberg ship of the early ninth century. It was found in a mound of blue clay and peat. Most of the timbers had been flattened by the subsidence of the mound, but they were so well preserved after 1000 years that it was possible to steam them back to their original shape.

The posts of the Follins Pond shoring could be of any age. Was it possible to date them?

I sought a tree-ring dating, but the largest post, said to be pine, had only twenty rings, and I was informed that a tree must be at least forty years old before its ring thicknesses vary enough to establish a pattern. Since a dendrochronological test was impossible, I sought a dating by Carbon 14 count, which I was told would take two years, because of a backlog in the laboratories.

Radiocarbon Dating

The theory of radiocarbon dating may be simply stated. Carbon loses its radioactivity at the rate of one-half of its strength in about 5570 years. If the carbon in wood from an Egyptian tomb makes a Geiger counter click only half as fast as carbon from a living tree, the Egyptian wood is dated as 5570 years old. While the theory is simple, the laboratory equipment is very elaborate and the physical and chemical processes entailed in making a count are extremely complex, sensitive, and protracted. Dating of 5000-year-old samples can be accurate to within 10 per cent of their actual age. Very much younger samples, less than 1000 years old, and samples more than 30,000 years old, present a much larger chance of error. The laboratory physicists are hoping to create a pre-

cision science.

There are conditions which can invalidate results. One is radioactive fall-out from an atomic bomb explosion, a situation which occurred when all the samples in the Lamont Geological Laboratory of Columbia University awaiting testing—including wood from the Follins Pond ship's shoring—were contaminated. Also, improper collecting of samples renders them useless for valid dating, as we realized later after another sample was submitted to Yale University Geochrometric Laboratory. In this connection Dr. Maurice Robbins wrote me: "You will recall that at the time the stakes of the ship's shoring were recovered there was no thought, at least on my part, of using them for radiocarbon samples. Consequently, they were not protected in any special way from contamination. In fact, during several months which ensued between my taking them to the Museum and sending them to you, they were immersed in fresh water to prevent shrinking and cracking. This treatment would have tended to contaminate them with fresh carbon from the water or from dust which may have accumulated." In "Radiocarbon Dating: A Brief Appraisal" in the *Bulletin* of the Massachusetts Archaeological Society, January 1957, Mr. Frederick Johnson, an archaeologist who has been associated with Dr. Willard F. Libby of the University of Chicago in the selection of samples and the interpretation of results, says: "It is impossible to secure a satisfactory date on samples which have not been properly collected." Libby in *Radiocarbon Dating*, 2nd. ed., 1955, p. 144, says: "Controversy is likely to arise over dates on samples which were not specially collected. . . . Another curatorial problem is prevention of contamination by noncontemporaneous C-14." Dr. Charles B. Hunt, Executive Director of the American Geological Institute, pinpointed a frequent cause of invalidation of samples. He observed that in regard to the Wisconsin Ice Age, dates for samples from wet environments are consistent among them-

selves and indicate a time scale only about half as long as samples from dry environments, which are equally consistent among themselves. Both cannot be correct. Samples from wet environments are highly suspect, because such environments favor contamination from younger, intrusive organic matter. Downward percolating solutions maintain the C-14 content of soil, and contamination is greatest in humid, temperate regions. These objections apply to samples from the shoring in the middle of the Follins Pond gully, which is a very wet area because of drainage run-off from the surrounding hills.

I have the highest respect for the devoted physicists in the dating laboratories in their efforts to obtain accurate results. Many of the younger dates they have published, however, are extraordinarily indefinite. An extreme instance is a dating of the bones of a horse in lake silt associated with a moraine in Iowa. The age of the bones, published in 1956, is given as 100 ± 250 . That is, we have the death of the horse occurring from 350 ($100 + 250$) years before 1956 to 150 ($100 - 250$) years after 1956, or from 1606 A.D. to 2106 A.D. If this were a reliable dating, the horse might still be alive!

Johnson says: "In the age range of about B.C. 2000 to A.D. 500 there has been great progress," meaning progress toward accuracy. He says nothing of younger samples. I computed the average of 31 dates up to 1000 years of age, published by the University of Michigan in 1956, and found it to be 668 ± 261 . This is an indefiniteness of $37\frac{1}{2}$ per cent (261 is $37\frac{1}{2}$ per cent of 668). The plus-minus spread is too large to encourage enthusiasm. Five of the dates are younger than the time of Columbus. They average 257 ± 240 , an indefiniteness of 93 per cent.

There is a continuing controversy among geologists, archaeologists, and physicists as to the percentage of reliability in radiocarbon dating. Johnson says: "About 80 per cent of the 378 dates determined by the Chicago laboratory are essentially correct." In other words, according to Johnson,

20 per cent of those dates are in error. Dr. Hunt thinks 70 per cent of all dates thus far published are in error.

The wood of the Follins Pond ship's shoring is in a very wet gully bottom, and not only the two stakes that were removed, but also the others that were left in the ground cannot furnish reliable samples for a valid radiocarbon dating. The historical evidence for the ship's shoring is too strong to be cast out by something that has a 20 per cent chance of error, to say nothing of a 70 per cent chance of error.

For What Kind of Ship Was the Shoring Made?

Meanwhile, several men familiar with shipyards urged me to study the shoring to see whether it could tell us for what kind of ship it was set up.

The shoring is in every detail more primitive than would be typical in the late eighteenth or early nineteenth century in New England. During an excavation of a site at Titicut in Bridgewater, Massachusetts, Dr. Maurice Robbins did some work in connection with a Colonial shipway which was found there. He writes: "In this instance its presence was substantiated by historical data, and is known to have existed about 1790. It was located in a natural gully which had been somewhat altered for the purpose. Two large timbers, extending the length of the gully upon which the cradle of the ship supposedly rested, sets this shipway apart from that at Follins Pond. There were no stakes which outlined the plan of the ship as at Follins Pond. At Titicut the ship was built in and launched with a supporting cradle which, in turn, rested upon the large timbers placed to receive it. The two shipways, Follins Pond and Titicut, are of similar dimensions. Why then, if they are both from the same period, are they so different in fundamental design?"

As for the assertion by R. W. Robbins that a vessel of 69 feet over-all length could have been "concealed" from the

British by hauling up, Howard I. Chapelle, a distinguished marine architect and called by many the leading authority on early American sailing craft, wrote me: "Common sense would suggest that it was far safer to sink a vessel for concealment or preservation; it is quite apparent that a vessel hauled up could be easily burned if seen by the enemy. And, as far as I am concerned, our forefathers had adequate common sense for the solution of this problem."

What does the Follins Pond shoring reveal as to the weight of the ship which rested upon it? How much weight could the primitive keel-bearings have supported?

It was a question of "bearing values." A bearing value of a support is the maximum weight it can hold without being pushed down until its top is flush with the ground. The presence of the laboriously planted posts is evidence that the keel had indeed been held clear of the ground. Therefore, the ship for which the shoring was made weighed less than the total bearing values of the keel supports.

The bearing value of a support depends chiefly upon its diameter, and the kind of soil in which it is embedded. To a slight extent, its length is a factor. Bearing values are ascertainable with close accuracy. They are in the field of definite knowledge, used by those who plan foundations and drive pilings.

The original notes made by Dr. Maurice Robbins supplied the horizontal diameters of the keel-bearing stones and posts:

Stone under first post	13" x 14"
Stone under second post	19" x 19"
Third post	4½"
Stone under fourth post	7" x 11"
Fifth post	3"
Fourth stone	7" x 9"
Fifth stone	c. 7" x 9"
Sixth stone	13" x 10"
Seventh stone	c. 13" x 10"

The seven stones have a total horizontal area of a little less than 7 square feet. As for the two posts not planted on stones, Professor Donald M. Burmister, of the Department of Civil Engineering and Soil Mechanics at Columbia University, considered the kinds of soil and the lengths of all the posts, which average more than 2 feet. He said it would be both a fair and a generous assumption, as the basis for an estimate, that the total areas of the keel-bearings were 9 square feet. Professor Burmister, an authority in his field, allows 2 to 2½ tons to the square foot for the bearing values of the keel supports. This gives the total immediate and temporary values as 18 tons, and the total after "setting," which occurred in two or three weeks or certainly under two months, as 22½ tons.

The bearing values of the shoring in the Follins Pond gully tell us that without cargo, ballast, mast, oars, anchor, and gear, stripped for hauling up, the ship for which the shoring was made weighed less than 22½ tons. This means that it was not made for any known type of American ship. Every known type of American ship of the size indicated was two to three and a half times too heavy to have been supported on the keel-bearing posts and stones in the Follins Pond gully. This is not a matter of opinion. It is a fact based upon all the records as shown in Henry Hall's *Report on the Shipbuilding Industry in the United States*, published by the Department of the Interior, 1884, and in the exhaustive and authoritative studies by Howard I. Chapelle in *The History of American Sailing Ships*, 1935, and *American Sailing Craft*, 1936.

A ship 69 feet long and 18 feet wide, of any of the types known to have been in use in New England waters in post-Columbian times and down to the present, would weigh from 40 to 70 tons. Any of the types known to have been in use in New England in the late eighteenth or early nineteenth century (sloops, schooners, and late-type, decked chebacco boats) of the size indicated would weigh 60 to 70 tons. Some earlier (seventeenth century) types of open or half-decked

shallops, and some ketches and some later types (eighteenth century), such as pinkies, of the size indicated, would possibly weigh as little as 40 tons. So would a more recent faster-sailing type of New England fisherman, but her draft would bar the latter from this discussion. A large whaleboat might have been 60 feet long, but certainly not more than 10 feet in beam.

Because Americans in the nineteenth century built clipper ships and racing yachts which outsailed British ships and made world records, there has been a smug assumption that American ships were always superior in construction. This was not so. At first there were no trained boat builders in America. Ships of the early Colonies were makeshift vessels from European models, built with crude methods, with experience acquired by trial and error. In planning vessels of ocean-going size, American shipbuilders had three aims: speed, cargo capacity, and seaworthiness. As a generality, speed calls for lightness of hull, lightness of draft, sharp bows and narrowness of beam. Large carrying capacity requires fuller lines, marked breadth of beam, and rather deep, strong hulls. The demands of seaworthiness tend to tip the scales in favor of construction of somewhat greater weight than would be necessary or desirable where speed alone is the objective.

New England ships of the late eighteenth and early nineteenth centuries, and of the dimensions indicated, were heavy because they were stiffened against longitudinal bending and transverse racking, and because they were decked. The deck of an ocean-going vessel must be strong enough to withstand the crashing weight of waves that may break upon it. A deck adds more than fifty per cent to the weight of a ship; for in addition to deck beams and stanchions and heavy knees to hold the beams, and the weight of a hatchway, which requires strong bracing, the hull itself must be built with greater solidity to be rigid enough to support the knees and deck beams. A decked ship is also more heavily masted.

To get a vessel of 69 feet over-all and 18 feet in beam, of any heavy American type, into position on a shoring would call for timber work, such as cross members, and possibly a "marine railway" with some crib work; in any case, timber in such quantity that the use of less suitable material like stones would be, to say the least, unlikely.

Is there any type of vessel in the history of shipbuilding which, of the size indicated, could have been supported on the shoring in the Follins Pond gully? The answer is yes. There was one such type and, so far as is known, only one.

A vessel of the given dimensions, of the ancient Norse type, of lap-streak or clinker-built construction, with her hull planks only $\frac{3}{4}$ inch thick, would weigh, without her equipment, as little as 10 to 13 tons. The ninth-century Gokstad ship in the Oslo Museum, 76½ feet over-all, 17 feet in beam, fully equipped, weighed (according to Professor A. W. Brøgger's estimate in *The Viking Ships*, 1951) 20.2 metric tons, about 22½ short tons. Stripped, it weighed less than 15 tons.

Open viking ships were thus lightly built to give them wave-riding qualities. One feature of clinker-built ships was that they lacked rigidity and were actually flexible.

A vessel of the viking type of trading ship, stripped, would be hauled up with very simple gear by thirty men. Blocking to preserve her shape would be of the simplest kind. The stones with small thins or wedges of wood would be logical to take up the irregularities of the gully floor.

The keel-bearing posts and stones in the Follins Pond gully were set up for a ship that weighed as little as a viking ship. We know of no other type of ship in all the history of shipbuilding that could have been supported on the shoring. Was the shoring for Leif Erikson's historic ship? Who can say? It was for some viking ship. Leif Erikson's ship was shored at his Vineland camp for at least four winters, for according to the saga Leif lent his ship to his brother Thorvald, who had it at the Vineland camp for three winters. If the same ship

formed part of the three-year expedition of Thorfinn Karlsefni, who had married the widow of Leif's brother Thorstein, and whose large party included Leif's sister Freydis, then as a matter of course it would have been shored under the shed and on the shoring originally prepared for it. If the same ship spent an additional winter at the Vineland camp when Freydis came on her own expedition, it probably would have occupied the same shed and shoring. In this connection it is interesting that there is no evidence that the size of the shoring in the Follins Pond gully was modified to receive a ship of different dimensions from that for which it was originally made.

Depth of Bass River Channel

R. W. Robbins in *Hidden America*, 1959, writing in collaboration with Evan Jones, generously devoted a whole chapter to me, a flattering amount of space. Although he had already been effectively answered by the testimony of Dr. Maurice Robbins, he repeated his assertion that the posts of the shoring had been above the water table. He also declared that there could not have been sufficient depth of water in Bass River for Leif Erikson's ship to have ascended to Follins Pond. Mr. Robbins had observed at the site of the Saugus Iron Works that 300 years ago the sea level had been 3 feet lower than at present. From this correct observation he had drawn the conclusion that the sea level had been rising at about one foot per century, and he confidently hazarded the assertion that 1000 years ago the sea level was 10 feet lower than today. Mr. Robbins is not the first archaeologist by whom I have been told: "In Leif Erikson's day, Bass River was only a brook."

My belief that the sea level was higher in Leif's day than at present has been justified. It is now known and positively established that there have been great oscillations in sea level. Our knowledge of sea-level changes goes back 400,000 years,

and with fairly detailed accuracy during the last 10,000 years. It is based in part on the ages of fossil mangrove and barnacles, which can grow only between high and low tide levels, and of coral which grows only up to the low-tide level. The Report of Sea Level Changes presented by Dr. Rhodes W. Fairbridge of the Department of Geology, Columbia University, on September 7, 1959, to the International Oceanographic Congress, in session at the United Nations gave many facts of great historical significance. For example, the sea level was 5 feet above the present at the time of the birth of Christ, which was a comparatively cool period. Between A.D. 500 and 800 it rose, and was again above the present level for several centuries. In the last 800 years it has been below the present level, with three major oscillations. See Dr. Fairbridge's article, "Recent World-Wide Sea Level Changes and Their Possible Significance to New England Archaeology" in the *Bulletin* of the Massachusetts Archaeological Society for April-July, 1960. It gives a diagram of oscillations during the past 7000 years.

The sea level 1000 years ago was 2 to 3 feet higher than today. Dr. Fairbridge has also specifically stated this in a personal letter to me. Leif Erikson's ship could have sailed up the Bass River with several feet of clearance.

Location of Leif's House

In 1947 when I first went to Follins Pond, and again in 1948, the area was for the most part undisturbed by roads or houses. Along the almost-a-mile length of its south shore, there were only three houses, one belonging to Frank C. Lyon on low ground at the east end of the lake, one in process of completion for the occupancy of Herbert J. Kaiser on high ground at the west end, and the house occupied by Mr. and Mrs. S. A. Canty, about one hundred yards west of the gully. The chances seemed strong that there might be some visible surface evidences of Leif's house site, and I searched for these,

but in vain, as I have already said. I assumed that Leif's house commanded a view of the skerry and let it go at that. Not until the shoring was found did there seem to be a definite clue as to its location, but during the four years previous to the uncovering of the shoring, every desirable house site, including the one most likely to have been Leif's, was bulldozed and was occupied by a driveway, a house, and lawn. The possible evidence had been destroyed. I continued to give thought to the problem, however. The saga gave me scanty hints. The vikings carried their gear "up" to Leif's house. It was therefore presumably on high ground. It must have been near a source of fresh water. And the shoring argued that it may have been close to the gully. Also, about seven or eight years after Leif built his house in Vineland, Karlsefni erected a palisade around it for protection against the Indians.

These considerations narrowed the search down to two possible sites. The less likely one was where the Canty house stands, close to the most active spring, but not commanding a view of either skerry or gully, and only about fifteen feet up the steep bank from the lake. The far more likely site was just a few feet east of the gully, at the brow of the hill at 70 feet elevation, with the second-best water supply at the shore in front of it. These two possible choices were supported by aerial photographs which fortunately had been made in pre-bulldozer days, in 1939 and 1947. These photographic maps (made by Aero Service Corporation, 236 East Courtland Street, Philadelphia) showed a distinct oval 75 feet long at the site at 70 feet elevation, and a possible semicircle around the Canty house and the very active shore spring.

I procured an enlargement of the 1947 aerial map, and William L. Smyth of Winsted, Connecticut, with his son Alan, drove with me to Follins Pond, where we dug trenches across the line of the semicircle around the Canty site, looking for dark post molds in the yellow soil, such as the rotting

away of Karlsefni's palisade would have left. Negative results left us with a positive conclusion. I believe Leif's house stood on the brow of the hill just east of the gully on the site marked by the oval on the aerial maps, but where there is now a large house with breezeway, garage, lawn, paved driveway and parking area, from the front of which one can look directly down into the gully, and enjoy also the most extensive view of the lake, wider than that obtainable anywhere else.

Leif's Activities in Vineland

The *Flateyjarbók* tells us: "After the house was built, Leif divided his followers into two groups, one half to remain at the house, while the other half, which would explore the country, must not go so far away that they could not return home the same evening." (From German Hill, visible from Follins Pond and only $\frac{3}{4}$ of a mile from Mill Pond, Leif and his men could overlook Nantucket Sound, see Martha's Vineyard and the trees on Nantucket Island. From Black Ball Hill, elevation 159 feet, $1\frac{1}{8}$ miles from Follins Pond they could overlook Cape Cod Bay, see the coast almost as far north as Plymouth, and see the northern end of Cape Cod curving toward the west.) "The members of the exploring party were to keep in sight of each other. Leif took turns going with the exploring group and remaining at the house. He was a large, powerful man, with a manner that commanded respect, and he was sagacious and fair in all his dealings.

"One evening the group that had been out exploring reported that one man was missing. He was Tyrker, the Southerner. Leif was painfully distressed, for Tyrker had long been a retainer of his and of his father, and had been greatly devoted to Leif when he was a child. Leif sharply reproached his companions, and went in search of him, with twelve men. But very near the house they were met by Tyrker, whom they welcomed most heartily. Leif at once observed that his foster father was excited. With his large forehead, restless

eyes and small freckles, Tyrker was a puny, insignificant-looking fellow, although most skillful in martial sports. Leif asked him, 'Why art thou so late, my foster father, and separated from thy comrades?' For the first few moments Tyrker spoke in his southern tongue, rolling his eyes, and making wry faces, and they could not understand him. After a little he explained to them in Norse: 'I did not walk far beyond the others, but I have news for you. I have found grapevines and grapes!' 'Are you certain, foster father?' asked Leif. 'Most certain,' said he, 'for I was born where there is no lack of grapevines and grapes.' After a night's sleep, Leif in the morning said to his shipmates: 'From now on we have two things to do, and every day we shall either gather grapes, or cut vines and chop down trees to make up a lading for my ship.' This they did, and it is said their afterboat was filled with grapes. Enough vines and timber were cut to load the ship. When spring came they made their ship ready, and sailed away. Leif gave the land a name born from its products; he called it Vineland." See *The Lost Discovery*, pp. 94-97 for discussion of grapes, timber and vines of Vineland.

Leif the Lucky

Here is the story of Leif's return from Vineland to his home at Brattahlid in Greenland. An inexcusable confusion has resulted here because many writers, copying from each other, have placed the incident which occurred during this voyage at the end of his voyage from Norway in the year 1000, instead of where it properly belongs two or three years later.

From Vineland Leif and his men "sailed to sea and held a fair wind until they sighted Greenland and the fells under the glaciers. Then one man spoke for the others to Leif: 'Why steerest thou the ship so much under the wind?' Leif replied: 'I am taking care of my rudder, but of more than that besides. What remarkable thing do you see?' They answered that

they saw nothing remarkable. 'I do not know,' said Leif, 'whether I see a ship or a skerry.' Now they saw it, and said it was a skerry; but he saw sharper than they; for he discerned men on the skerry. 'Now I will, that we beat against the wind,' said Leif, 'so as to get near to them, to see if they want to be found by us, and whether there is need of giving them assistance. If they are not peacefully inclined, then we shall have the advantage [of the wind] over them.' Now they sailed to the skerry and lowered the sail, cast anchor, and put out another little boat which they had with them. Then Tyrker, who was the leader of the small-boat party, asked: 'Who is the leader of your party?' The leader replied: 'I am called Thorer, and am a Norseman. But what is thy name?' Leif gave his name. 'Art thou the son of Erik the Red of Brattahlid?' Thorer asked. Leif replied that he was. 'Now,' said Leif, 'I propose to take you all on my ship, and all of your property that the ship will hold.' They accepted those terms, and they sailed afterwards to Eriksfirth with the lading, until they came to Brattahlid. They unloaded the ship, and afterwards Leif invited Thorer to dwell with him, and Gudrid, his wife, and three other men, but provided other quarters for the other men, both Thorer's and his own. He was afterwards called Leif the Lucky. He had now great wealth [a shipload of timber in treeless Greenland made him a rich man] and was highly honored. That winter came much sickness among Thorer's men, and Thorer and a great part of his crew died. That winter died also Erik the Red."

Long Island Sound and Somes Sound

With Leif's Vineland camp at Follin's Pond on Cape Cod as starting point, we find a clear trail in following the saga stories of subsequent explorations. There was a logical pattern in the viking investigations of North America. First had been an accidental sighting of the coast by Bjarni, who gave sailing directions for finding it again. Then came Leif Erikson to

spend nearly a year at one sheltered spot where the only exploring was done on foot with extreme caution. Next came Leif's brother Thorvald Erikson who after a winter at Leif's Vineland camp, the first summer sent a small boat in exploration of inland waters to the west, and the following summer went in the ship in a coastal exploration to the north and down east. Then came a three-year expedition with at least three ships that made a thorough exploration of the country for hundreds of miles, went into bays and rivers, and attempted a permanent settlement. Lacking means of overpowering the Indians, the leader of this expedition concluded that colonization was impracticable, and he withdrew, and in so doing erected a psychological barrier against subsequent attempts at settlement. Thereafter, there did venture to Leif's camp a commercial expedition of two shiploads of fortune seekers whose jealous rivalry led to conflict, criminal use of force, and horrendous murder.

It is ten years since I identified the geography of the down-east exploration by Leif's brother Thorvald, and later shaped the material into the chapter called "The Hasty Grave" in *The Lost Discovery*, and in all that time no objections or criticisms have been advanced to require withdrawal or modification of any statement therein, except for the discussion of sea-level changes. The reader will find the detailed commentaries in that chapter useful and valid.

Here is the saga story of Thorvald's voyage to Leif's Vineland, and his explorations in two summers. With maps to illustrate, the reader will not go astray in following the unavoidable geography.

The *Flateyjarbók* says: "There was now much talk about Leif's voyage to Vineland. When Thorvald, his brother, said that country had not been sufficiently explored, Leif said to Thorvald: 'Thou shalt go out with my ship, brother, if Thou wilt go to Vineland; but I order, though, that the ship is to

go first for the wood which Thorer had on the skerry'; and so it was done.

"Now Thorvald prepared for their voyage with 30 men, under Leif's advice. Nothing is said of their voyage until they arrived at Leif's Shelters, and laid up their ship and kept quiet that winter and caught fish for their eating. But in the spring Thorvald had the ship made ready and ordered a few men to take the afterboat and explore the land to the west during the summer. These men found it a pleasing, well-wooded country, with the woods near the white sands. There were many islands and shoals. They found no dwellings of men or lairs of beasts, but in one of the islands to the west they found a corncrib [cornshed] of wood, but no other work of men. They returned to Leif's Shelters at harvest time.

"During the next summer Thorvald went eastward with the trading-ship and followed the coast to the northward. Then outside the cape they had a hard storm, and being thrown upon shore there, broke the keel under their ship, so that they were long delayed while they repaired their ship. Then Thorvald said: 'I want us here to erect the old keel on this Cape and call it Kialnar Ness [Cape Keel],' and this they did.

"After this they sailed away from there and to the eastward in the offing [*austri firir landit*—"down east further from land"]. They sailed into the mouths [plural] of a fiord which was near there [near the open ocean], and to a headland which extended out there and was entirely overgrown with trees. There they berthed their ship, and put out a gangplank to shore directly from the ship, and Thorvald and all his companions went up on the land. He then said, 'Here it is attractive, and here I should like to set up my abode.' They later returned to the ship, and on the sand within the headland saw three mounds. They approached and saw there three skin canoes with three men under each. Dividing their party [fanning out], they captured them all except one who escaped in his canoe. They killed the eight men, and thereafter

ascended the headland and looked around, and saw within the fiord several mounds which they surmised were human habitations. Thereafter such great weariness befell them that they could not keep awake, and all fell asleep [except naturally one watchman who kept lookout on the heights above]. Then came a shouting above them such that they all awakened. This was the call: 'Wake up, Thou, Thorvald, and all Thy men, if Thou wouldst save Thy life, and go to Thy ship, Thou and all Thy men, and get clear of the land with all speed!' At that moment countless skin canoes were coming from within the inner reaches of the fiord. These made at them. Thorvald then said, 'We will mount the gunwale storm shields and defend ourselves as best we can, but attack only slightly.' So they did, but the Skraelings ['shriekers', 'screechers', 'war whoopers'] shot at them for a time, and then afterwards fled, each one as fast as he could. Then Thorvald asked his men whether they were at all wounded, and they replied, 'None wounded.' 'I have received a wound in my armpit,' he said. 'The arrow flew in between the ship's gunwale and the shield under my arm, and here is the arrow, and this may be my death! Now I advise you to prepare to sail as soon as possible on your return passage, but carry me to that promontory which seemed to me most habitable. It may be that a true word came out of my mouth when I said that I would like to dwell there for a while. There you are to bury me, and place a cross at my head and at my feet, and call it Cape Cross forever after.' Now Thorvald died. And they did everything he had ordered, and then returned to their comrades [at Leif's camp] and told them what had happened, and they dwelt there that winter and gathered grapes, and vine-wood for their ship. In the spring they prepared to sail to Greenland, and their ship came to Eriksfirth, and they had much to tell Leif.

"In the meantime in Greenland, Leif's other brother Thorstein had married Gudrid, Thorbjorn's daughter, who had

been the wife of Thorer the Eastman. Now Thorstein Erikson desired to go to Vineland for the body of his brother Thorvald, and he fitted out the same ship. He selected a crew of twenty-five men, strong and tall. With Gudrid his wife, he sailed to sea, as soon as they were ready, and out of land-sight. They were driven this way and that all summer, and lost all reckoning of their whereabouts, but at the end of the first week of winter [mid-October], they came to land at Lysufirth in the Western Settlement of Greenland."

That winter Thorstein took sick and died, and in the spring Gudrid sailed to Eriksfirth and dwelt at Leif's house at Brattahlid.

Leif was now the only son of Erik left to hold his father's place as leading man of the Greenland Settlements. Further exploration of Vineland would have to be undertaken by other men, and by his half-sister Freydis.

CHAPTER 6

Thorfinn Karlsefni

A VIKING voyager to North America whose name deservedly rivals that of Leif Erikson is Thorfinn Karlsefni, because of his daring, perseverance, sagacity, and accomplishment. Karlsefni saw more of our continent than any other viking. Three manuscript sources tell his story: the *Flateyjarbók*, or what is sometimes called "The Greenland Saga"; the "Karlsefni Saga" in *Hauk's Book*, which now is in the Arna Magnaeon Collection in the Library of the University of Copenhagen, and is an Icelandic saga written down by the lawman Hauk Erlendsson, who died in 1334, and was a ninth lineal descendant of Karlsefni; and a variant of the *Hauk's Book* version in a manuscript known by its Arna Magnaeon Collection number, A.M.557.4-to, and sometimes called "The Saga of Erik the Red."

Confusion has stemmed from contradictions in minor details in the three sagas. Each of the principal sources omits much of what the other tells, rather obviously because the Erikson family and the Karlsefni family each wanted to push the fame of its own hero. The *Flateyjarbók*, of Erikson family and Greenland inspiration, tells only what Karlsefni did at Leif's Vineland camp, as though he merely duplicated what Leif had done. The *Hauk's Book*, slanted toward Iceland and Karlsefni favoritism, skips Karlsefni's stay at Leif's Vineland

and tells of his larger adventures and important explorations elsewhere.

The synthesis of the two principal sources in the chapter "Karlsefni's Three Camps" in *The Lost Discovery* cleared away most of the confusions. I now see that Karlsefni spent four winters in North America, two at Leif's camp, one up the Hudson River, and one at the mouth of the Hudson. Let us see how the sagas get him started on his voyage and as far as Leif's camp, though one of them omits mention of that camp.

The *Flateyjarbók* says: "That same summer [when Gudrid returned to Eriksfirth] there arrived in Greenland from Norway a ship whose skipper was Thorfinn Karlsefni, son of Thord Horsehead. A man of great wealth, he spent the winter with Leif Erikson at Brattahlid, where he soon had in his heart to marry Gudrid. When he asked for her hand, she referred him to Leif for her answer, and they were betrothed and married that winter. There was again talk of a voyage to Vineland, and Gudrid and others urged Karlsefni to attempt one. He decided in favor of the undertaking, and gathered a company of 60 men and 5 women, entering into an agreement that each one should have an equal share in any wealth acquired by the colony; for they intended if possible to settle in Vineland, and for that reason carried with them all kinds of domestic animals. Karlsefni asked Leif for his house in Vineland, but Leif said he would lend it, not give it. They put to sea and arrived safely at Leif's Shelters and set up their hammocks on shore there. Soon they had plenty of good food; for a large and excellent whale was driven ashore there and they secured it and stripped off the blubber and so had no shortage. The domestic animals were turned out to graze. The males soon became very frisky and wild. They had brought a bull with them. Karlsefni had trees cut down and shaped into timbers to make a shipload, and this wood was

stacked upon a cliff to dry. They gathered a supply of all the good things which the country produced, wineberries and game and fish."

The phrase "their hammocks on shore" shows that so numerous a company could not all be accommodated in Leif's house. Observe also the almost proprietary praise of the fruitfulness of the Cape Cod area.

Here is the beginning of Karlsefni's story in *Hauk's Book*: "Thorfinn Karlsefni was a prosperous merchant who had made various trading voyages. One summer he fitted out his ship to sail to Greenland. Snorri Thorbrandsson of Alptafirth in Iceland and forty other men were with him. Bjarni Grimolfsson from Breidafirth and Thorhall Gamlinsson from Eastfirth, also with forty men, fitted out their ship the same summer for the same purpose. The two ships put to sea together and both arrived at Eriksfirth in the autumn. The inhabitants of the country rode to the ships and there was much good trading. Gudrid was invited by the owners of the ships to help herself to whatever of their wares she desired, and Leif Erikson ["Erik," the family name, in the text], not to be outdone in generosity, offered the hospitality of winter quarters for both crews at Brattahlid. The cargoes were carried to Brattahlid, where there were storehouses of sufficient size, and the merchants were well cared for and pleasurably entertained throughout the winter. Great preparations were made for the Yule feast, which was about the most magnificent ever seen there. [A slur at the sparseness of life in Greenland?] After Yule, Karlsefni, who had fallen in love with Gudrid, asked for her hand in marriage. She referred him to Leif for her answer, through whom they were formally betrothed, and that same winter their bridal was drunk.

"And now at Brattahlid there was much talk of exploration of Vineland the Good, for men said that land must have many good qualities. Thus it came about that Karlsefni and

Snorri and their crew prepared to sail in search of Vineland in the spring. Bjarni and Thorhall [Thorhall Gamlinsson, not Thorhall the Huntsman who had been Erik's steward] and their crew decided to accompany them with the other ship.

"Bjarni Grimolfsson and his shipmates were driven out into the Irish ocean [between Iceland and Ireland], and their ship became infested with worms, and before they knew it, it was all worm-eaten beneath them and began to sink. They had an afterboat which had been protected with seal tar so that the teredo worms would not attack it. They began to take their places in this boat, but found that it would not hold more than half their number. Then said Bjarni, 'The men who are to go in the boat should be chosen by lot, not by rank.' This appealed to everyone as being such a manly offer that no one said nay to it. They adopted this plan and drew lots, and Bjarni was thus chosen to go into the boat with half of the men, but when they were settled in the boat and about to cast off, a young Icelander who had remained in the ship and who had come out from Iceland with Bjarni, said, 'Bjarni, are you going to leave me here?' 'It must be,' Bjarni answered. 'That is not what you promised my father, when I left Iceland with you. You told him that we should share the same fate.' 'So be it,' said Bjarni. 'We will exchange places. You come into the boat and I will go to the ship, for I see you are eager to live.' Bjarni then boarded the ship and the boy took his place in the boat, and the boat sailed away until they came to Dublin in Ireland and there they told this tale. It is generally believed that Bjarni and his men were drowned in the worm-infested sea, for they were never heard of again."

The variant text says that when Karlsefni sailed for Vineland: "There was a man called Thorvard; he married Freydis, a natural daughter of Erik the Red; he went also with them . . . and Thorhall who was called the hunter; he had long been with Erik, and served him as huntsman in summer and steward in winter; he was a large man, and strong, black and

like a giant, silent and foul-mouthed in his speech, and always egged on Erik to the worst; he was a bad Christian; he was well acquainted with uninhabitable parts. He was in the ship with Thorvard. They had the ship which Thorbjorn had brought out [from Iceland]. They had in all 160 men when they sailed."

Hauk's Book says: "Karlsefni and his companions sailed first to the Western Settlement and from there to Bear Island [across Davis Strait to Baffin Land?] and thence across the open sea to the southward for two days' sailing distance, and saw land [Labrador]. They put over a boat and explored the country and found there large flat stones, many of them twelve ells in width, and many Arctic foxes. They called this country Helluland. They then sailed with northerly winds for two days' sailing distance, and then land lay ahead [the region of the St. Lawrence], and it was well wooded, with many wild animals. There was an island [Newfoundland, Leif's Helluland] off to the southeast of this land, and because they found a bear they called this Biarney [Bear Island], while they called the wooded land Markland. From there they sailed southward along the land for a long time and came to a cape. The land was off to the starboard, with long beaches and sand dunes. They rowed ashore there and found on the cape the keel of a ship [presumably the keel Thorvald had erected on Cape Cod], and therefore called it Cape Keel. They called the beaches *Furdurstrandir* [Wonder-strands], because they were so long to sail by. Beyond these Wonder-strands, the country was indented with bays, into one of which they sailed." That is as near as *Hauk's Book* comes to telling that Karlsefni entered Nantucket Sound and so to Leif's camp.

First Child of European Parentage Born in America

We resume with the *Flateyjarbók*, which gives Karlsefni's experiences at Leif's camp: "During the summer following their first winter, they became aware of the presence of the

Skraelings, a great band of whom came out of the forest. The cattle were near at hand and the bull bellowed and roared mightily, at which the savages took fright and fled with their bundles of gray and sable furs and all kinds of fur skins. As they fled toward Karlsefni's house and endeavored to enter it, Karlsefni and his men held the doors to keep them out. Neither side understood the speech of the others. Then the savages put down their packs and opened them and offered their wares in trade, especially evincing eagerness for weapons, but these Karlsefni forbade his companions to sell. He got the idea of having the women take some milk out to the savages, who the moment they saw it, wanted to buy it, and it only. Thus the conclusion of the savages' trading was that that they carried their goods away in their stomachs, while they left their bundles and fur skins with Karlsefni and his men. Following this occurrence, Karlsefni had a strong palisade of logs erected around the house. And now Gudrid, Karlsefni's wife, gave birth to a male child, who was called Snorri.

"Early in the second winter the savages came again, in larger numbers, with the same sort of wares as before. Karlsefni then told the women to carry outside to them the same food, for which they previously made so profitable a trade, and nothing else. When the savages saw this, they threw their bundles in over the palisade. While Gudrid was seated inside the doorway beside the cradle of her infant son, Snorri, a shadow fell upon the door and a woman in a black, short, narrow skirt [*nam-kirtle*] entered. She was a short woman with a band about her head, and light chestnut hair and pale skin, and such large eyes as had never before been seen in a human head. The woman stepped up to Gudrid and asked [by sign language?]: 'What is your name?' 'My name is Gudrid,' said the Norsewoman, 'and what is your name?' 'My name is Gudrid,' repeated the savage woman. The housewife, Gudrid, pointed with her hand to a seat beside her, but

at that instant there was a loud crash, and the woman disappeared. One of the savages who had tried to seize some weapons had been felled by one of Karlsefni's men. Instantly the savages fled, leaving garments and goods behind them. No one save Gudrid had seen the savage woman. 'Now we shall have to plan against them,' said Karlsefni, 'for I think they will return a third time to attack us in great force. This is what we shall do. Let ten of our men go out upon the cape and show themselves, while the rest of us will slip into the woods and hew a clearing for our cattle, when the savages advance from the forest. We shall take our bull also and let him precede us.'

"The site of the chosen battlefield was between water on one side and woods on the other side. Karlsefni's plan of strategy was followed. The savages advanced to the place that Karlsefni had selected for the battle, and in the fight there many savages were killed. Among the savages was a large man of distinguished bearing who Karlsefni believed was their chieftain. One of the savages picked up a Norse axe and after examining it, swung it up and tried it on one of his fellows, and chopped at him, and instantly felled him. At this the big fellow seized the axe, and after looking at it for a moment, hurled it with all his might out into the water. Then they fled in every direction into the forest, and thus the battle ended. Karlsefni dwelt there throughout the winter, but in the spring he said he would remain no longer, and would return to Greenland. They prepared for the voyage and brought away great quantities of vines and wineberries and fur skins. They set sail upon the open ocean and arrived safely at Eriksfirth, where they spent the winter."

Long Island Indian Corn

The *Hauk's Book* saga, it will be remembered, said that "beyond these Wonder-strands, the country was indented with bays, into one of which they sailed." It carries on the

story of Karlsefni after he had spent two winters at Leif's camp, and tells us, somewhat repetitiously, that he sailed past Wonder-strands:

"When Leif had visited King Olaf Tryggvason, the king had given him two Gaels [Irish], advising him to make use of them if speed were ever required, for they could run faster than deer. Of these two, the man's name was Haki and the woman's Haekia. Leif had loaned this couple to Karlsefni, and when Karlsefni's party had sailed past Wonder-strands, they set the Gaels on shore and ordered them to run to the southward to scout out the nature of the land, and to return before the end of the third half-day. The Gaels when set ashore were attired in a garment called *kiafal*, open at the sides and sleeveless, with a hood at the top, and held between the legs with buttons and loops. Except for this they were naked. Karlsefni and his people lay at anchor while they were gone, and when the Gaels returned, one of them had a bunch of grapes, and the other an ear of new sown wheat."

Karlsefni's ordering the Gaels to scout out the land for three half-days "to the southward" means that he was following a north shore, and since it was between Cape Cod and the mouth of the Hudson, it can have been none other than the north shore of Long Island.

As for the product of the country which one of the Gaels brought to the ship, the *Hauk's Book* text has *bveitíax nýsáit*, which Professor Jón Helgason of the Arna Magnæan Institute assures me is correctly translated as "an ear of new sown wheat," while the variant (A.M.557) text has *bveiti sjálsáit*, meaning "self-sown wheat." "New sown wheat" had meaning for Karlsefni and his men, but before the saga was written down, "new" and "sown" were thought to be one hyphenated adjective, and in writing down were brought together as "newsown" (*nýsáit*), an expression without sen-

sible meaning. But given the laconic nature of Old Icelandic, "new sown wheat" has a clear meaning for us today. It was "new" in that it was a new species to the vikings who had never seen it before, and it was "sown," which meant sown by human hands instead of wild or self-seeded. As Reeves, Beamish, and Anderson say in *The Norse Discovery of America*, p. 220, it was "no doubt maize or Indian corn." One of the Gaels had crept into a corn field planted by squaws of one of the thirteen tribes who inhabited Long Island, and unseen by the natives had extracted an ear of the ripe or nearly ripe vegetable. The "grapes" show that it was in the early autumn.

The Vikings Up the Hudson

"After the Gaels got on board, Karlsefni and his companions sailed along until they came to where the shore was indented with bays."

The western half of the north shore of Long Island has Smithtown Bay, Northport Bay, Huntington Bay, Cold Spring Harbor, Oyster Bay, Hempstead Harbor, Manhasset Bay, Little Neck Bay, and Flushing Bay.

Continuing on their way, *Hauk's Book* says: "They sailed their ships into a bay [New York Harbor] at the mouth of which was an island [Governor's Island, as they entered the harbor from the East River] in the midst of strong currents, for which reason they called it *straumey* [Stream Island]. There were so many birds there, it was scarcely possible to step between the eggs. [Since there is no species of bird which nests in the autumn, this observation was not made until the following spring; and the rookery must have been on one of the very small islands like Bedloe's Island, inaccessible to predatory animals.] They sailed through the fiord and called it *Straumfjord* [Stream Fiord], and transported their goods from the ships to the shore, and set up camp. They had brought with them all kinds of livestock, and it was a splendid country there. There were mountains thereabouts. They did nothing

except to explore the country. They remained there during the winter."

The Hudson River is tidal for seventy miles and therefore technically an inlet of the sea, and that section of it which passes through the Highlands of the Hudson is a true fiord, and the only fiord on the Atlantic seacoast of North America to the west or southwest of Cape Cod. "Through the fiord" means that the vikings sailed up the Hudson at least past West Point and Storm King Mountain, and in all probability in keeping with their custom they sailed as far as the river was navigable, to the site of Albany. North of the Highlands they saw the long range of the Shawangunk Mountains to the west and southwest, the lordly Catskill Mountains to the north and west, and the Berkshires to the east. Indeed "there were mountains thereabouts."

The variant text, after telling us as *Hauk's Book* does that "they remained there for the winter," goes on to say: "They had taken no thought for this during the summer. The fishing began to fail, and they began to fall short of food." The northern part of the Hudson River froze and made fishing impossible, and the winter there was almost too much for them. As soon as the ice melted, they sailed out to the mouth of the river.

The Vikings in New York Harbor

We continue by turning to the variant text: "Then Thorhall the Huntsman disappeared. They had already prayed to God for food, but it did not come as promptly as their necessities seemed to demand. They searched for Thorhall for three half-days, and found him on a projecting crag. He was lying there and looking up at the sky, with mouth and nostrils agape, and mumbling something. They asked him why he had gone thither; he replied that this did not concern anyone. They asked him then to go home [to camp] with them, and he did so. Soon after this a whale appeared there [New York Harbor, not in the northern Hudson], and they cap-

tured it, and flensed it, and no one could tell what manner of whale it was; and when the cooks [women] had prepared it they ate of it, and were all made ill by it. Then Thorhall, approaching them, said: 'Did not the Red-beard [the God Thor] prove more helpful than your Christ? This is my reward for the verses which I composed to Thor, the Trustworthy; seldom has he failed me.' When the people heard this they cast the whale down into the sea, and made their appeals to God. The weather then improved, and they could now row out to fish, and thenceforward they had no lack of provisions, for they could hunt game on the land, gather eggs on the island, and catch fish from the sea."

Thorhall had escaped illness by not having eaten of the whale meat, and he ascribed his good luck to the protection of his god Thor. We, however, who have surmised that the *Flateyjarbók* was defensive of the reputation of Leif's Vineland the Good, understand why the *Flateyjarbók* says that the whale which Karlsefni and his men caught when they were at Leif's camp was "large and excellent." Was the New York Harbor whale of an unknown poisonous variety, or were they made ill by stuffing themselves after near starvation? As for the difference between the whales, Thorhall would have said that the good Nantucket Sound whale was a heathen, and the poisonous New York Harbor specimen a Christian whale.

Thorhall's Complaint

Vineland meant not only Land of Vines but Land of Wine, and was often called "Wineland the Good." With an anticipatory thirst unquenched because he could not find any intoxicating beverage around New York Harbor, Thorhall composed two ditties which slurred at the name given the country by Leif Erikson, and he departed in high dudgeon.

The Arna-Magnaean Manuscript 557 says: "It is said that Thorhall wished to sail to the northward beyond Wonderstrands in search for Wineland, while Karlsefni desired to

proceed to the southward, off the coast. Thorhall prepared for his voyage out below the island, having only nine men in his party, for all the remainder of the company went with Karlsefni. And one day when Thorhall was carrying water aboard his ship, he recited this ditty:

When I came, these brave men told me,
Here the best of drink I'd get.
Now with water-pail behold me,
Wine and I are strangers yet.
Stooping at the spring, I've tasted
All the wine this land affords;
Of its vaunted charms divested,
Poor indeed are its rewards.

And when they were ready, they hoisted sail; whereupon Thorhall recited this ditty:

Comrades, let us now be faring
Homeward to our own again!
Let us try the sea-steed's daring,
Give the chafing courser rein.
Those who will may bide in quiet,
Let them praise this chosen land,
Feasting on a whale-steak diet,
In their home by Wonder-strand.

"Then they sailed away to the northward past Wonder-strands and Cape Keel, intending to cruise to the westward around the cape. They encountered westerly gales, were driven ashore in Ireland, where they were grievously maltreated and thrown into slavery. There Thorhall lost his life, according to that which traders have related."

No doubt his death was considered punishment for his anti-Christian attitude.

What Karlsefni Discovered

Coining a new phrase, we might speak of Karlsefni's Vine-land the Large. His great achievement was the extension of

the concept of Vineland to continental proportions.

The *Hauk's Book* says: "Now it is said that Karlsefni sailed southward along the coast with Snorri and their people. They sailed for a long time and went on until they came all the way to where there was a river that flowed down from the land into a lake and thence into the sea. There were great bars there so that the mouth of the river could be entered only at flood tide. There Karlsefni entered in, and called it *Hóp* [meaning a bay or inlet—probably Chesapeake Bay]. In that country they found fields of self-sown wheat [*sjálfsána bveitiakra*] in the lowlands, and vines on the hills. Every brook there was full of fish. They dug pits on the flats where the tide rose highest, and when the tide fell, halibut were in the pits. A great many wild animals of all sorts were in the woods. They remained there half a month and enjoyed themselves, without keeping watch. They had their livestock with them. Early one morning when they looked out they saw a great many skin canoes, and staves being swung about on the boats with a noise like flails, and they were being revolved in the direction in which the sun moves. Then Karlsefni said, 'What is the meaning of this?' Snorri Thorbrandsson answered him, 'Possibly this is a peace signal, and so let us show them a white shield.' They did this, and the strangers rowed toward them and stared with wonderment at those they saw before them, and then came up on the land. They were swarthy and ill-looking men, and had ugly hair on their heads. They had large eyes and broad cheeks.. They stayed there for a while staring at those they saw before them, and then rowed away to the southward beyond the point.

"Karlsefni's party had built their shelters above the lake, some near it and some farther off, and there they spent that winter. There came no snow at all [contrast with Cape Cod and the Hudson River region] and all of their livestock lived by grazing. Early one morning in the spring they saw a great many skin canoes rowing around the point, looking

like coals flung out beyond the bay, and staves being swung about on every boat. Then Karlsefni's men showed their shields, and they came together and began to trade, and those people especially wished red cloth, for which they exchanged fur skins and all-gray skins. They wished also to purchase swords and spears, but Karlsefni and Snorri refused them. In return for unblemished skins, the savages would accept a span length of red cloth and bind it around their heads. Thus the trading continued. When Karlsefni's people began to run short of cloth, they ripped it into pieces so narrow that none were broader than a finger, but the savages even then gave as much for it as before, or more. This continued until a bull of Karlsefni's ran out of the woods bellowing loudly. This terrified the savages so that they ran out to their canoes and rowed away southward along the shore.

"Nothing was seen of them for three weeks, but at the end of that time, such a great number of the boats of the savages appeared that they looked like a flowing stream, and their staves were all revolving in a direction opposite to the course of the sun, and they were all whooping with great outcries. Then Karlsefni's men took red shields and held them up to view. The savages leaped from their boats, and they met and fought. There was a heavy shower of missiles, for the savages had war slings. Karlsefni observed that the savages had on the end of a pole a great ball-shaped object almost the size of a sheep's belly, and nearly black in color, and this they flung from the pole up on the land above Karlsefni's men, and it made such a terrifying noise where it struck the ground that great fear seized Karlsefni and all with him, so that they thought only of flight and of making their escape up along the river bank. It seemed to them that the savages were driving at them from all sides, and they did not make a stand until they came to some jutting rocks where they resisted fiercely.

"Freydis came out and seeing that Karlsefni and his men were retreating, called out: 'Why run from these wretched

creatures, such worthy men as you are? It looks to me as though you might slaughter them like cattle. If I had a weapon, I believe I would fight better than any of you!’ They heeded her not. Freydis wanted to join them, but fell behind, for she was pregnant. She followed them, nevertheless, into the woods, the savages pursuing her. In front of her she found a dead man, Thorbrand Snorrason, whose skull had been split by a flat stone. His drawn sword lay beside him. She took it up and prepared to wield it in self-defense. Then the savages came at her, and she uncovered her breast and slapped it with the naked sword. This sight so terrified the savages that they ran down to their boats and rowed away. Karlsefni and his men joined her and praised her courage.

“Only two of Karlsefni’s men had been slain, but a great number of the savages, although Karlsefni’s men had been outnumbered. They now returned to their shelters, and bound up their wounds, and discussed what sort of men that great host had been that had seemed to sweep down upon them from the land. It was realized that there could have been but one host of savages, the one which came from the boats, and that the other had been a deception to their eyes. [The screeching sound from the skin-bladder contraption flung from the pole had made them imagine that there were savages on both sides of them.] The savages had found a dead man, and his axe lying beside him. They had taken up the axe and had struck at a tree, all and sundry trying it, and it seemed to them a treasure, for it bit well. Later on, one of them had taken it and had struck at a slab of rock so that the axe broke, and they thought it useless, since it would not split stone, and threw it away.

“It now seemed obvious to Karlsefni’s party that, although the surrounding country appeared attractive, they could live there only with fear and warfare, because of the natives. Accordingly, they prepared to depart, and decided to return to their own country. They sailed northward along the coast,

and found five savages in skin doublets, asleep near the sea. They had dishes of animal marrow and blood beside them. Karlsefni's party thought that these men had been exiled, and slew them. Afterward they found a cape where there were a great number of animals, and this cape appeared to be one cake of dung from the droppings of animals which lay there at night. Now they came again to Stream Fiord where they soon had plenty of all the things they needed.

"Some men say [admitted uncertainty, the same text having already said Karlsefni spent a winter at Hóp] that Gudrid remained here [New York Harbor] with ten times ten men and went no further, and that Karlsefni and Snorri went further south with forty men, but that they did not tarry at Hóp longer than two months and came back the same summer. While most of the men remained behind, Karlsefni with one ship sailed to the northward around Cape Keel and from there bore off to the westward [as one must do to keep in sight of the coast], with land on the larboard. As far as they could see, it was a forested wilderness there with almost nowhere an open space. After they had gone a great distance, there was a river that flowed down from the east to the west [mouth of the Penobscot?]. They sailed into its mouth and lay to at its southern bank. Then they sailed away to the north and believed they were getting a glimpse of Unipedland [land of one-legged men], but were unwilling to risk their lives any longer.¹ They concluded that the mountains of Hóp [the Blue Ridge seen from some river up from the Chesapeake] and those which they had now found [White Mountains seen from off the Maine coast] formed one chain, and this seemed to be so since both sides were the same distance from Stream Fiord.

"They spent the third [?] winter at Stream Fiord. Then

¹ Mallery (see Bibliography) thinks the name *Einfoetin* ("One-Footers") arose from the characteristic Copper Eskimo dance on one foot described by Jennes, *Life of the Copper Eskimo*, 1913-18, p. 148, and by Franklin, *Narrative of a Second Expedition*, 1828, p. 189.

the men began to form factions because of the women, and those without wives sought to possess the wives of those who had them, and this caused the greatest trouble. The first autumn Snorri, the son of Karlsefni, was born, and he was three winters old when they departed. When they sailed away from Vineland they had wind from the south and bore in upon Markland and found five savages there, one bearded, two women, and two children. Karlsefni seized the children, but the other savages got away and disappeared as though they had sunk into the earth. The two boys they took away with them, and taught them the language, and they were baptized. They said their mother's name was Vethildi and their father's Evege. They said kings [tribal chiefs] ruled over the Skraelings, and that one of them was named Avall-dama and another Avilldudida, and that there were caves, but no houses, and the people there lived among the rocks or in holes. They said there lay a land over against their land, the inhabitants of which wore white clothes [priests?] and carried poles before them festooned with rags [ecclesiastical banners?], and yelled loudly [chanted?]. People believe this must have been White Man's Land or Great Ireland.

"Karlsefni arrived in Greenland, and the next summer sailed with Gudrid to Iceland, and went to his home at Reyniness. His mother thought that he had not made a satisfactory marriage, and Gudrid was not at their home the first winter. But when his mother became convinced that his wife was a very estimable woman, Gudrid went to his home and they got along kindly together."

Gudrid, the Widely-Traveled

From the preceding account, one might suppose that Gudrid lived happily ever after with her mother-in-law, but the *Flateyjarbók* carried her story to its conclusion:

"Now should be told how after Karlsefni [in Iceland] got his ship ready and sailed out on the high seas, all went well

and he reached Norway hale and well-fleshed. He remained there over the winter, and sold his cargo, and he and his wife were both well favored by the most worshipful people of Norway. The next spring he prepared his ship to go to Iceland, and when all was ready and his ship lay at the wharf biding a fair wind, there came to him a Southerner, from Bremen in Saxonland, who wished to purchase his house-neat-wood [carved figurehead on the ship's prow, sometimes used on a house as a weathervane]. 'I am not willing to sell it,' said Karlsefni. 'I would give you half a gold mark for it,' said the Southerner. Karlsefni thought this a good offer and sold it accordingly. The Southerner went off with the carved piece and Karlsefni did not know of what wood it was, but it was *masur* [see *The Lost Discovery*, p. 104] which came from Vineland. Karlsefni sailed out on the high seas and arrived with his ship in the north country in Skagafjord [in Iceland], and there set his ship up for the winter. In the spring he bought Glaumboeiarland, and set up his house there and lived there for the rest of his life. He was a most worshipful man, and from him and Gudrid, his wife, came many worthy descendants. When Karlsefni died, Gudrid took charge of the farmstead, and with her, her son Snorri, born in Vineland. When Snorri was married, Gudrid journeyed abroad and went to the South [pilgrimage to Rome], and came back to the home of her son Snorri, who had built a church at Glaumboer. After that, Gudrid became a nun, an anchorite."

Gudrid seems to have been the most widely-traveled woman of the eleventh century. From Iceland (or Norway?) she sailed with her husband Thorer and was shipwrecked on a skerry off the coast of Greenland, to be rescued by Leif Erikson. Married to Leif's brother Thorstein, she was lost for a summer in the ocean and landed in the Western Settlement of Greenland. Returned to Brattahlid, she married Karlsefni and went to Leif's Vineland in North America and thence to

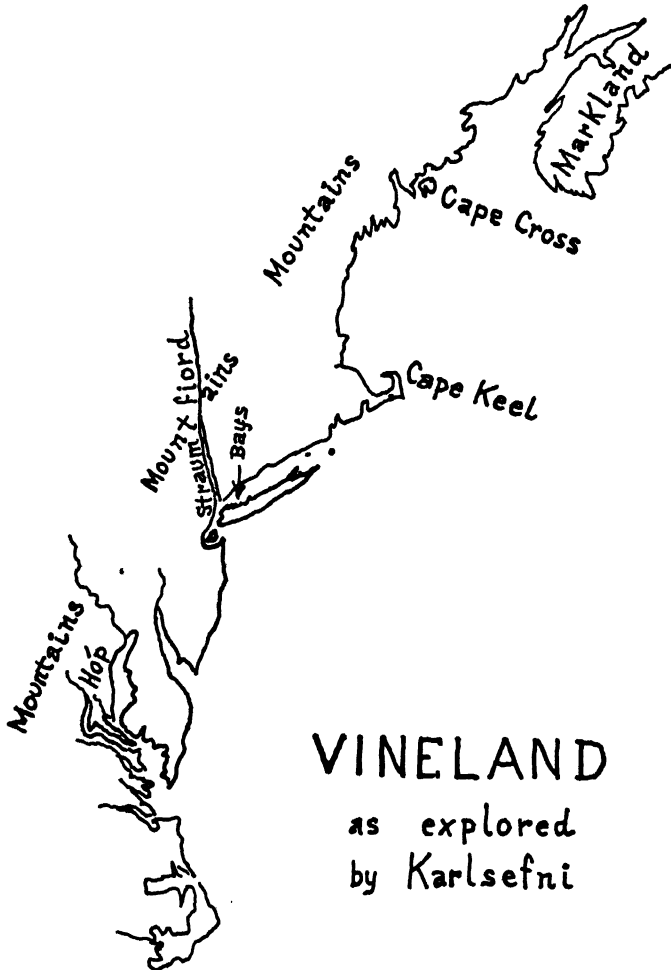
New York Harbor and the Hudson River, and from the harbor sailed to Greenland, then to Iceland, then to Norway, and back to Iceland, and then from Iceland traveled "abroad" (to the continent of Europe) and "South" (to Rome, Italy), and returned to Iceland.

Karlsefni the Explorer

The discussion of Karlsefni's exploration in *The Lost Discovery*, pp. 156-166, is, I think, a permanent contribution, but it requires two corrections. 1) Karlsefni sailed along the north—not south—shore of Long Island, and entered New York Harbor through the East River, not the Narrows. 2) Snorri was born the first autumn, but the *Flateyjarbók* says that was after "the summer following their first winter." The statement that Snorri "was three winters old when they departed" for Greenland is convincingly factual, the kind of statement which is likely to be correct, and so Karlsefni may have spent not three but four winters in North America, two at Leif's camp and the two which the *Hauk's Book* says were at Stream Fiord. A possible alternative would be, if Snorri was born in the autumn before Karlsefni's first winter in North America, that Karlsefni spent only one winter at Leif's camp, and his second up the Hudson, moving down to the mouth of the Hudson before the end of winter, and his third at New York Harbor.

In addition to his exploration of about 1000 miles of coast between the Chesapeake and eastern Maine, Karlsefni saw ranges of mountains in three sections of the country extending from the southwest to the northeast—the mountains west of the Chesapeake, the mountains seen from the northern Hudson, and the mountains seen from off the Maine coast, and he concluded that these formed "all one mountain chain." This discovery of the Appalachian Mountains was the outstanding geographical fact uncovered by Karlsefni. In its ex-

tent and in his realistic appraisal of what he saw, his work compares favorably with that of most of the discoverers in the Great Age of Exploration.



CHAPTER 7

Freydis

THE two women featured in the viking voyages to Vineland were absolute opposites: the affectionate, maternal, faithful gentlewoman, Gudrid, and the brutal, treacherous, unpredictable Freydis. Gudrid was described as “a stout woman to see, and a wise woman” who was tactful in meeting strangers (“knew well how to behave among unknown people”). She lived in a tough society. After summer-long exposure on the high seas, when her sick husband Thorstein and she arrived at Lysufirth in the Western Settlement of Greenland, Thorstein procured lodgings for all his crew, but he and Gudrid were not at first taken into anyone’s house and “were left on the ship for two nights,” because as the saga neatly explains, “then was Christendom still young in Greenland.” Leif Erikson’s half-sister, the fearless Freydis, was also of heroic mold, but only in the warrior tradition. We have already met her when she turned the tide of battle and frightened the superstitious redskins by the spectacle of a pregnant woman slapping with a sword her bared breast.

Observe in what follows that Freydis is the only witness as to what happened at some little distance from Leif’s house in Vineland in her meeting at dawn with the Iclander named Finnbogi. She alone reported on what he and she said to each

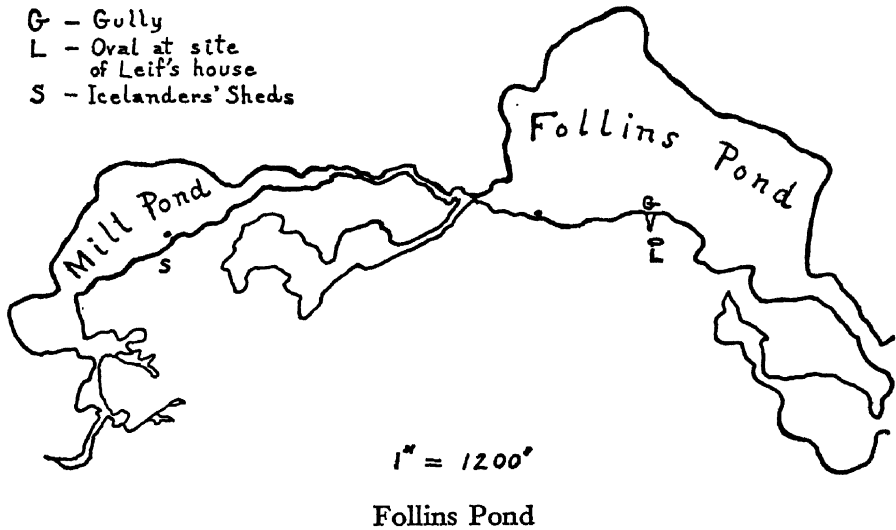
other, and did or did not do, in the morn's early light. There are those who maintain that America is a country where everything runs to excess. If so, Freydis was the first person to demonstrate the trend, with an orgy of murder that achieved an almost record number of victims. The *Flateyjarbók* story of her crime is most deplorable, abhorrent, and gruesomely delectable.

"There was much new talk in Greenland about voyaging to Vineland, an enterprise now considered both profitable and honorable. The same summer that Karlsefni returned from Vineland, a ship arrived from Norway under the command of two brothers, Helgi and Finnbogi. They wintered in Greenland. These brothers were of Icelandic stock from the Eastfjords. This is now to be told, that Freydis, Erik's daughter, went forth from her home at Gardar to have a talk with the brothers Helgi and Finnbogi, and invited them to voyage in their ship to Vineland [Leif's camp] and to go halves with her on all the profit that might be obtained there. They agreed to this. She went thence to her brother Leif and asked him to give her the house he had built in Vineland. He gave her his former answer, that he would lend the house, not give it. It was agreed that each ship should carry 30 warriors, and women besides. But Freydis immediately violated this and took five men more, concealing them so that the brothers were not aware of this until they reached Vineland.

"They now put to sea, having a previous understanding that they would sail in consort, if circumstances permitted, and they kept near each other on the voyage, but the brothers arrived somewhat before, and had carried their belongings up to Leif's house. When Freydis came to land, her crew unloaded her ship and carried their possessions up to the house. Then Freydis remonstrated: 'Why did you bring your luggage in here?' 'We supposed,' the brothers replied, 'that all the terms of our agreement would be kept.' 'To me Leif

loaned the buildings,' she said, 'and not to you!' Helgi remarked, 'We brothers bear you no ill will.'

"Then they carried their belongings out and built their shed and then constructed a shed on [the] bank of [a] lake farther from [the] sea, and trimmed up everything well around there. Meanwhile Freydis had trees cut down for her ship's cargo. Then as it drew toward winter, the brothers



proposed that they engage in games and sports. This they did for some time, until the men began to maltreat each other and their meetings were broken off and the games stopped, and visiting ceased between the houses, and thus the winter dragged on for a long time.

"Early one morning Freydis got up out of bed, dressed except for shoes, even though the weather was such that a heavy dew had fallen. She took her husband's cloak, threw it around her, and then walked to the brothers' house and to the door which had been left halfway open by one of the men who had gone out a little before. She pushed open the door and stood in the doorway for a time without speaking. Finnbogi

lay on the far side of the house and was awake, and he asked, 'What do you want here, Freydis?' She answered, 'I want you to get up and go out with me. I want to talk with you.' He did as she asked, and they went to a log which lay against the wall of the house and sat down on it. 'How do you like everything hereabouts?' she asked. He replied: 'I think well of what this land produces, but am ill pleased with the enmity that there is between us, for I gave no cause for it.' 'Just as you say,' said she, 'and that goes for me too. And so I have come to propose something. I desire to trade ships with you brothers, for yours is a larger ship, and I want to leave this country.' 'I may do it,' said he, 'if that will make you happy.'

"Then they parted, she going home, and Finnbogi back to rest. When she climbed into bed, she awakened her husband Thorvard with her cold feet, and he asked why she was so chill and wet. She spoke with great rage: 'I have been,' said she, 'to the brothers, to ask to purchase their ship, for I wish to buy the larger ship, and they took it so ill that they struck me and handled me roughly. But you, spineless man that you are, will not avenge my shame or your own! And this I have to learn, that I am no longer in Greenland! I shall separate from you unless you avenge this!'

"At this he could endure her upbraidings no longer, and ordered the men to get up at once and take their weapons, and this they did. Then they went straightway to the house of the brothers, and inside, and seized them sleeping and tied them up tightly, and led each one out when he was bound, and as he came out, Freydis had each one put to death. Now all the men were slain, and only the women remained, whom no one would kill. Then Freydis spoke up: 'Hand me an axe!' And when she had it, she went at the five women there and left them dead.

"After this damnable deed they returned to their own house, and it was apparent that Freydis believed everything had worked out well. She spoke as follows to her compan-

ions: 'If it be our lot to return to Greenland, I will take the life of any man who talks about what has happened. What we shall say is that they simply stayed on here when we left.'

"Early in the spring they loaded to its utmost capacity the ship the brothers had owned, and with all the good things they could get hold of. They sailed out on the high seas, and after a good voyage arrived in Eriksfirth early in the summer. Now Karlsefni was there and had his ship ready for departure, and was waiting for a fair wind. Men say that no more richly-laden ship ever left Greenland than the one he steered.

"Freydis now went to her home, as it had stood in the meantime unscathed. She gave very great gifts to all her companions, to help persuade them not to reveal her guilt. She now resumed her life at home. But all did not keep their pledge to remain silent about their crimes and wickedness, so that the story leaked out eventually. It came at last to the ear of Leif, her brother, and he thought it an altogether atrocious tale. He took three of the men who had been with Freydis and tortured them to confess the whole incident, and they all told the same story. 'I cannot find it in me,' said Leif, 'to do that to my sister Freydis which she deserves, but I foretell this of her and her husband, that their offspring will thrive but little.' From this it followed that no one thereafter thought them capable of anything but evil."

See the discussion of the crime of Freydis on pages 171-173 in *The Lost Discovery*. Her motivation was obviously complex. One element may have been her boredom with the long winter of inactivity, a subconscious craving for excitement to break the monotony. Also, no doubt, the brothers were sexually attractive to her. Her husband Thorvard was of little personal force and less of a man than either of them, and she may have had the subconscious desire to prod him into an action that would make him appear more capable than he really was. It would seem that she had no intention of swap-

ping ships with the Icelanders, but was more avaricious than that, and wanted to return, and did return, to Greenland with both ships loaded with timber, twice as wealthy as Lief had been with one shipload. She immediately did some highly profitable trading with Karlsefni, whose ship departed from Greenland so richly laden because it bore some of the things she had brought from Vineland. As to the murders, she had the typical mind of a criminal in that she imagined herself justified; for it "was apparent that Freydis believed everything had worked out well."

In his public condemnation of his sister, Leif expressed what he conceived to be the proper reaction of a Christian and a gentleman, and in bringing religious indignation to bear upon her, he caused everyone in Greenland to treat her as a moral leper.

Would it be possible to find the murder site? The Icelandic text of the *Flateyjarbók* is extremely sparing of words, generally omitting "a" and "the," so that all I had to go on was the stripped phrasing: "on bank of lake farther from sea." This might mean on the shore of the same lake with Leif's camp, but I made a thorough search of the west end of Follins Pond in 1947 and 1948, and thereafter many persons combed that area without finding any surface markings indicative of the Helgi-Finnbogi camp site.

I also searched most of the south shore of Mill Pond, which lies to the west of Follins Pond and is tidal, and is farther up the Bass River waterway, and so farther from the sea both in direction and in travel distance. With the sea level two to three feet higher in Leif's day, there were some recessions in the shore of Mill Pond from the present shore line, but not in two places along the south shore where there is a steep bank at the water's edge. There was one short section of the shore of Mill Pond which I failed to search, and while I can explain this lapse, I do not now feel that it should be excused. I had suffered three bouts with poison ivy, and when I saw

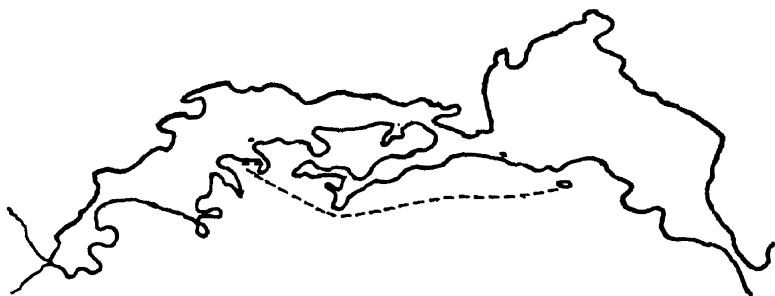
the thickness of ivy and the tangle of thorny briers which it seemed I would have to penetrate, I lost courage. Single contour lines on the Geological Survey map showed that the bank in that unsearched area while over ten feet was less than twenty feet in height, and I had a fixed idea that Helgi and Finnbogi would have chosen to build their house on the highest hill at the shore, the hill that rose to over thirty feet above the lake. Since that hill bore no surface indications of the Helgi-Finnbogi house site, I assumed that the evidence I sought had been obliterated during the construction of the house now on it.

The thicket of briers which I had chosen not to enter was entered in 1957 by my friend Charles Boland of New Canaan, Connecticut, a man who had lived for several months in Iceland and had there seen house sites of the viking period. He found at the shore of Mill Pond a long narrow rectangular hollow that seemed to him to resemble viking sites in Iceland.

When a newspaper reporter interviewed Boland over the telephone, the published story erroneously placed his activities in another town, where Boland happened to be lodging. He counted this error as fortunate since it held off the public and diverted attention from Mill Pond. Three years later, in May 1960, I first learned from Boland that he had found a house site on the shore of Mill Pond. He proposed to show me where it was, but when the time came other commitments made it impossible for him to go, and so I went without benefit of his guidance.

Armed with ankle-protecting boots and wrist-protecting gauntlets, and fortified by an anti-poison-ivy injection in which my physician had little faith since he also gave me a prescription to use if I caught the poison, I went to Mill Pond with a former student of mine, an ex-army man, George McGrath. With a machete we cut our way through dense briers, which in one place compelled us to spend 20 minutes in advancing 100 feet. "Now you know why the vikings called

it Vineland," I said to George, and thought of the *Flateyjarbók* phrase: "trimmed up everything well around there." This was in June 1960, only a few months after I had learned how much higher the sea level had been in Leif's day, and in view of all I now knew as to where the shore line of Mill Pond had been, and provided with compass and contour map, I aimed for the only spot where logic said the Helgi-Finnbogi house site could have been. Pushing laboriously through the woods, we found a rectangular hollow in that precise spot. This Charles Boland and I later identified as the one he had found.



Trail between Icelanders' Sheds and Leif's house

Shoreline as in Leif's day

0 $\frac{1}{2}$ 1 mile

The hollow is a perfect rectangle, and is slightly more than 43 feet in length and over 18 feet in width. I believe those who dug it made its dimensions 7 by 3 Norse fathoms. The fathom was the unit of measure used by Norse sailors, and was approximately 6 feet 2 inches, so that the house was probably 43 feet 4 inches by 18 feet 6 inches inside. It is just the right size for the number of persons in the Helgi-Finnbogi company to have slept on platforms 6 feet deep along the sides with a corridor $6\frac{1}{2}$ feet wide between the platforms. The platforms, probably about 18 inches above the floor,

served as seats in the daytime. They could have had stone or wood foundations with poles across, covered with mats of plaited salt grass on which were laid animal skins. Space beneath the platforms was undoubtedly used for storage.

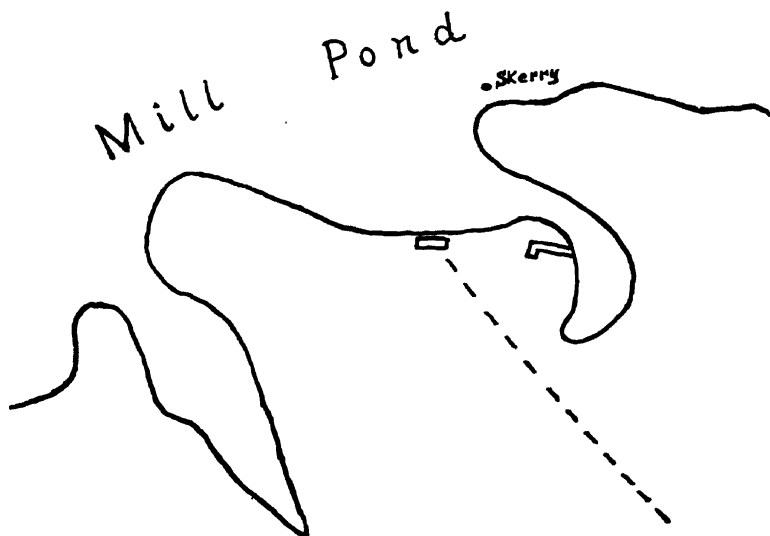
From the site, which had taken us a strenuous hour to reach, George and I followed along the top of the bank some fifty yards back from the present lake shore, and a short distance to the west we came to a path which took us out to the road in three minutes. Bearing scratches from head to foot, we were glad to get out so easily, and had no stomach for further searching. It was not until some days later, when I had made a new study of the pertinent passage in the *Flateyjarbók* text, that the strange repetition in it acquired significance: "built their shed and then constructed a shed." Icelandic is usually too laconic to permit unnecessary repetition. The word "shed" (*skala* meaning shed or hut) is the same in both instances. The two different verbs which I have translated as "built" and "constructed" are interchangeable in meaning. Why did the Helgi-Finnbogi party build two sheds? For the same reason that Leif Erikson's party built two: first a building for themselves to live in, and then a shed over their ship to protect it from water and snow and ice. This reasoning led me to believe that what had seemed to be an apparently needless repetition was a literally accurate report by those who had stood around and observed the Icelanders at their labor. I was so firmly convinced of this that I said I would have full faith in the house site only if a ship-shed site existed near it.

A friend, John C. Mobyed, was going to spend his vacation on Cape Cod in September and volunteered to search the woods for such a site. I told him that if the ship shed had existed, the evidences of it would be in the bank which had been at the shore of the lake in Leif's day, and somewhere to the east of the house site, since George McGrath and I had seen nothing of the kind to the west of it. John went into

the woods on two separate days, wearing old clothes which got torn to shreds. He telephoned the exciting news that he had found an excavation which was in a proper location to have been the site of the ship shed. He said it was "about 400 feet" to the east of the house site.

That distance, however, seemed to me too great to be accepted; for I believed the Icelanders would have wanted the ship shed to be no more than a stone's throw from their house, where they could keep an eye on it and reach it in a few seconds to protect it in an emergency. I remembered that what I had surmised to be the remains of the land end of Leif Erikson's ship shed had been only about 100 feet from the oval around his house site. When John returned from his vacation, I asked him to mark off along the sidewalk the distance, as he remembered it, between house and ship-shed sites. His estimate this time seemed to be less than 150 feet. The distance actually proved to be 130 feet.

I corresponded with Dr. Maurice Robbins, who had con-



Helgi-Finnbogi Sheds

ducted the dig which uncovered the ship's shoring in the Follins Pond gully, and he wrote me that if I should come to feel that the Mill Pond discovery warranted field work, he would arrange to bring a sizable number of members of the Massachusetts Archaeological Society to dig.

Through the good offices of Norman H. Cook, Secretary of the Cape Cod Chamber of Commerce, I procured the services of several boy scouts and on October 14th, which luckily happened to be a school holiday in Barnstable County, the boys and I studied both sites. The location and size of each, perfect for what we assumed to have been its purpose, and above all their proximity, led me to report favorably to Maurice Robbins, and on November 11th he brought a party of seventeen members of the M.A.S. (fourteen men and 3 women), with two other men as visiting spectators.² The boy scouts had already cleared a trail to the house site.

Several trenches were dug. It was ascertained that the floor of hard pan within the house site was about 6½ feet below the ground level on the south side of the house. That hard-pan or packed clay surface was covered by at least 14 inches of loam which had been built up since the site was abandoned. Such thickness of loam would seem to be representative of a considerable period of time, even up to ten centuries.

All who were present at the dig agreed that the sites were not Colonial. They yielded no nails or other artifacts, as they would have if they had been Colonial.

The ends and south wall of the house site had been vertically excavated in the bank; on the north side was loam and brown and yellow and gray soil laid up from the excavation, and there remained a sizable ridge which terminated short at

² The members of the Massachusetts Archaeological Society who participated in the dig at Mill Pond were Professor Ralph S. Bates, James Caron, Arthur M. Hall, Robert O. Hall, Ronald Haskell, R. E. Heino, Clifford Kiefer, Alfred LaBrie, Lloyd P. Leonard, Arthur Lord, Pete Martin, Viggo Petersen (President of the M.A.S.), Dr. Maurice Robbins, and Arthur Staples. The wives present were Mrs. Bates, Mrs. Caron, and Mrs. Kiefer. The visiting spectators were Frank Kremp and Raymond Lewis.

the east end of the house site, leaving a gap at what presumably had been the doorway. It would have been logical to place a doorway on the low north side at the east end, nearest to the boat-shed site.

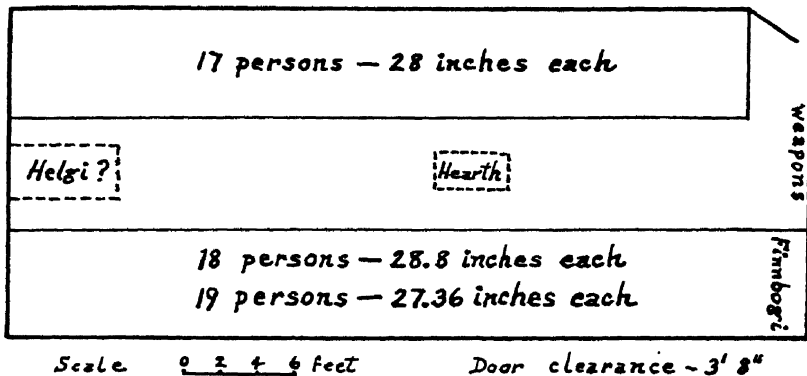
The door, hinged near the end of the sleeping platform on the north side, would have opened inward, for defense and so that it could not be blocked outside or impeded by snow-drifts. The *Flateyjarbók* tells us that Finnbogi, who "lay on the far side of the house," saw Freydis standing in the open doorway. He therefore probably lay at the east end of the south-side platform, and Helgi may have occupied a separate one-berth platform in the middle of the corridor at the west end, with adequate space at either side of it to give access to the west ends of the long platforms. If this was the arrangement, the two brothers were in commanding positions to keep their eyes on their followers.

Allowing a more-than-ample 3-foot 8-inch clearance for the door, the north-side platform was 39 feet 8 inches in length, while the south-side platform ran the full length of the house, 43 feet 4 inches. It is generally accepted that 27 inches is a fair allowance of width for sleeping space per person. A double-bed mattress is 54 inches wide. If the two brothers are counted in among the "30 warriors" of their party, the total number in their company was 35. If not, the total number was 37. If 17 persons slept on the north-side platform, they had precisely 28 inches width of sleeping space each, and 18 persons on the south-side platform had 28.8 inches each. If the total number of persons in the house was 37, with Helgi occupying a separate one-person platform at the middle of the west end, then 19 persons on the south-side platform had approximately 27½ inches each.

If there had been a total of only 30 in the party there would have been no need for so large a house. For 40 persons, it would have been too small for comfort.

The boat-shed site was an excavation into the bank. It was close to 20 feet wide, and with visible remains of at least $53\frac{1}{2}$ feet in length. Its longitudinal axis, like that of the house site, was east-west. The house site was parallel with the edge of the bank, but the boat-shed site was located where the bank curved around so that its length was at right angles to the edge. At the inner or west end of the boat-shed site there is an excavated area extending southward. This could have been a storeroom for gear removed from the ship.

By instrumentation, Maurice Robbins determined that the top of the hill, 25 feet south of the house site, is only 12 feet above Mill Pond, and therefore very definitely "on bank of lake."



Probable plan of Helgi-Finnbogi house interior

An alternative to the Icelander theory of origin was presented by Arthur Lord of Bridgewater, Massachusetts, who thought both sites might have been originally excavated long ago with shovel and wheelbarrow by cranberry-bog builders. This might seem to be a possible theory, but it is extremely improbable. The bog-builder theory would require the presence of rewarding quantities of sand (to spread over a bog) or clay (to build dikes), but test pits dug on November 12th in the slope of the bank between the two sites argue against

the bog builders.³ One pit was 16 feet to the east of the east end of the house site, and another was 29 feet to the east of that site. These pits showed 7 and 8 inches of loam, 21 inches of brown-and-yellow soil mix, and 3 to 3½ inches of gray soil scarcely acceptable as clay. There was a total in each case of 31½ inches of soil above hard pan. It would seem that there was not enough sand or clay in that bank to cause bog builders to make the original excavations, but the greatly disturbed soil conditions in each site might indicate that bog builders had entered the already existing excavations and had done some digging in each.

Against the bog-builder theory of origin are these arguments:

(1) How could so much of the house site be clean of sand if there had been quantities of sand in it in the first place? Some of the sand would have spilled from the shovels of the excavators, and would have been thoroughly spread about.

(2) If excavated for clay down to hard pan, the inner slopes of the soil shoveled aside from above would have left accessible only a narrow strip of clay, scarcely wide enough to justify the effort.

(3) It would be most improbable that an area excavated for the purpose of using removed material would be left as a perfect rectangle.

(4) The age indicated by as much as 14 inches of soil accumulated above hard pan inside the rectangle, as against 31½ inches in undisturbed soil in that bank outside the rectangle (as revealed by test pits) strongly argues that the rectangular hollow was there for a very long time, long before the earliest cranberry bogs were developed on Cape Cod. The first cranberries were planted on the Cape about 1816.

³On October 14th I was assisted by Fred Walters of Brewster, and by Allen Dee and Blaine Titus of South Yarmouth. The boy scouts at the dig on November 11th were Allen Dee, David Keefe, and Blaine Titus. These three were also with me on November 12th, along with David Gardiner and Dennis Ward (all of South Yarmouth).

On the other hand, the case for the Iclander theory of origin seems overwhelming:

(1) Neither of the two hollows was the site of a Colonial building.

(2) The perfectly rectangular shape of one hollow indicates a house site. Near the east end of the boat-shed site three large boulders have slid down from near the top of the vertically cut walls, but enough remains of the two long sides and the west end to show that this site was also a perfect rectangle, to which was attached the square-cut area that could have been a storeroom.

(3) The size of the house site (7 by 3 fathoms) points to Norse origin.

(4) The house was just the right size to accommodate the number of persons in the Helgi-Finnbogi company.

(5) The depth was just right for an earth-walled house covered with poles supporting a roof of sod or of reed or grass thatch. There were no windows in such a house. The only light came from the fire in a central hearth and from a hole in the roof above the hearth, through which smoke was expected to leave. There is a large tree on the longitudinal median line of the house site, about five feet nearer to the door end than the west end. One would have to procure the landowner's permission to cut down that tree to investigate beneath it, but Maurice Robbins and I agree from our experience in digging in house sites that it is usual to find a large tree growing above a hearth. The presence of carbon helps in the breakdown of soil and in the formation of bacteria which provide food for plant roots. A sapling that starts its growth in a charcoal bed has an advantage over its competitors and tends to survive them.

(6) The location of the sites, accessible by direct trail from the site of Leif's house over high ground without having to cross water, fits perfectly with all other geographical details in the *Flateyjarbók* story.

(7) The proximity to each other of the two "shed" sites further supports the Iclander theory of origin.

If the Helgi-Finnbogi warriors stacked their swords and spears along the east-end wall where they would be handy near the door, we see how Thorvard's men, swiftly pouring into the house and getting between the sleeping men and their weapons, were instantly in command of the situation and were able to subdue all resistance.

A final question remains to be answered. What would Freydis have done with the bodies of her victims to conceal evidence of their having been murdered? To have cremated them would have amounted to giving them a pagan heroes' funeral, which she and her husband's warriors would probably have opposed. The easiest thing would have been to dump them in Mill Pond or have them carried down the Bass River to be dropped overboard in Nantucket Sound, depending on whether Freydis wanted them eaten by little fish or big fish. But her superstitions would undoubtedly have dictated a more laborious disposal. She probably believed that the wandering spirits of those whose bodies remained unburied would forever haunt her unless she gave them burial. Since her husband and his men came from Christianized Greenland, they would have wanted it to be a Christian burial, to ease their consciences and to improve their own chances of going to Heaven. Freydis might have consented to let the mass grave be marked with crosses, if the grave were located some distance back in the woods and away from the trail where there was a fairly good chance it would never be found.

When Charles Boland was exploring the vicinity and got lost in 1957, his son Barry, who was with him, crawled on hands and knees under thorn bushes trying to find a way out, and saw on the ground two crosses about "six paces" apart, each consisting of rows of stones. I have searched for the crosses with boy scouts, and again with two men, but have

not found them. As soon as his time schedule permits, Boland says he will go with me to relocate the crosses, which I should like to see thoroughly investigated. He tells me that in 1958 he dug a small pit between the crosses and finding "bits of plaster," dug no further, on the assumption that the plaster was a modern intrusion.

His uncovering of plaster made me wonder whether Freydis might have placed quicklime on the bodies of her victims to expedite their disintegration and render them unidentifiable. The properties of quicklime were known in ancient times, but would Freydis in Vineland have been able to procure it? Seeking an answer, I learned that Freydis could have made it with the greatest of ease—by calcining shells. Seashells, subjected to intense heat in a fire, will crack and crumble into powder, and that powder is quicklime. Its chemical property is a thirst for moisture.

But after quicklime has effected its chemical reactions in a grave, removing flesh from bones, would any evidence of it remain? I telephoned an archaeologist at the American Museum of Natural History, Dr. Junius B. Bird, who said evidence of quicklime would remain except in two regions he could name, one of them in Asia, where acidity of the soil would cause it to disappear. "How about the soil on Cape Cod?" I asked. "On Cape Cod," said Dr. Bird, "it would remain for centuries." "In what form would the evidence of quicklime remain?" was my last question, and Dr. Bird replied: "In the form of plaster."

A careful dig according to the orthodox archaeological method of uncovering successive horizontal layers, with a photographic record of all steps in the process, should reveal how many bodies were buried in a mass grave. This would be indicated by discolorations in the soil, even if no bones remained. Any other method of digging would be inexcusable, since it would destroy evidence. If, not far from the two "shed" sites, a mass grave were found which had received 35

bodies—or 37 if the two leaders, Helgi and Finnbogi, were not counted in among their “30 warriors”—there would seem to be positive proof that this was the grave of the victims of Freydis. However, human nature being what it is, some skeptic would probably bring up the possibility that the grave could have contained 35 Colonial victims of smallpox, or 35 plastered Indians.

Even without such findings, my identification of Leif Erikson's Vineland camp site is supported by seven evidences:

- (1) The mooring hole in the Bass River Blue Rock.
- (2) The mooring hole in the Follins Pond skerry.
- (3) The remains of the end of a ship shed in the Follins Pond gully.
- (4) The shoring for a viking ship in the Follins Pond gully.
- (5) The oval in aerial photographs showing where Karlsefni built a palisade around Leif's house on the top of the hill above the gully.
- (6) The site of the Helgi-Finnbogi ship shed.
- (7) The site of the Helgi-Finnbogi house.

These evidences seem to be more than enough to support the contention that the Leif Erikson Vineland camp-site problem has been solved.

CHAPTER 8

Prince Madoc of Wales

THE story of two expeditions across the Atlantic led by Madoc the Welshman was told by Sir Thomas Herbert in his *Relation of Some Years Travaile* (an account of his travels in Persia in 1626), which was published in 1634. The last section of the book dealt with Madoc's expeditions to the West, and was based, Sir Thomas said, on records of "200 years agoe and more." A version of the story of Madoc had been written by Gymoric ap Grono, Guntyn Owen, who lived in the time of King Edward IV (1442-1483). It has also been said that Meredith ap Rheise, who died in 1477, gave an account of Madoc's voyagings.

Madoc was one of nineteen children of Owain, Prince of Gwynedd. When Prince Owain died in 1169, conflicts over the inheritance arose between his sons, and Madoc, disgusted at the dissensions among his brothers, went exploring in search of more tranquil scenes. The poet Lywaic wrote of him: "Two princes, of strong passions, broke off in wrath. . . . One on land in Arvon, allaying of ambition, and another, a placid one, on the bosom of the vast ocean, in great and immeasurable trouble, prowling after a possession easy to be guarded, estranged from all for a country." According to Sir Thomas Herbert, Madoc sailed with a fleet from Abergwili, Carmarthen, in 1170.

Before the time of Columbus, Jenan Brecva, writing of the genealogy of Owain, said: "Madoc and Riryd [one of Madoc's brothers] found land far in the sea of the west, and there they settled." Sir Thomas Herbert said that Madoc established a settlement, fortified it, and after some years left 120 men in it and returned home. In 1190 he led a second expedition with seven ships, and found most of the 120 men gone, presumably through the treachery of the natives. Madoc remained in the western land and died there.

Sir Thomas Herbert has a good reputation as a realistic narrator of what he had observed in Persia, and it is therefore likely that his story of Madoc was equally objective and was honestly based on things he had read. Unfortunately we cannot check his manuscript sources, which were in a library later destroyed by fire. It is a fair assumption that the pre-Columbian records did exist, and that Welshmen long before Columbus believed that Madoc crossed the Atlantic in the twelfth century.

There has been much speculation as to where in the new country Madoc settled. Sir Thomas Herbert pointed to Florida. There is evidence for Florida in that a tribe of Indians who had lived there and later fled north from the Spaniards were people who on the testimony of several witnesses spoke Welsh. Various travelers in the Mississippi and Missouri Valleys over a period of more than two centuries came upon Welsh-speaking Indians.

The first of these witnesses is David Ingram of Barking, Essex, who was among one hundred men who were set ashore in 1568 by Sir John Hawkins, because loss of a ship in a fight with the Spaniards had left Sir John with more men than his remaining ships could accommodate. Ingram and the others were landed "about 100 leagues west and by north from the Cape of Florida" and in "about 12 months" Ingram and two companions succeeded in reaching "the river called Garinda [St. John River, New Brunswick] 60 leagues west

of Cape Britton," whence he was carried in a French ship to Newhaven, England. In his *Relation* of his toilsome journey, Ingram met natives who used Welsh names for various objects, "and other Welsh words, a matter worthy the noting." Ingram was a careful observer, as we see from his description of Indian corn: "Graine, ear as big as man's wrist, grain like a flat pease, maketh good bread and white." His statement that in that country he saw elephants seems recently to have been confirmed by the finding of a skeleton of a mastodon in the Middle West under circumstances that indicate it was living as late as the sixteenth century.

The second witness is a clergyman, Morgan Jones of Basaleg near Newport in County Monmouth, who in 1660 in country "west of Virginia" (Kentucky?) was captured by Indians, and knowing he was to be slain, prayed aloud in Welsh. The Indians, hearing him use their language, gave him honors and released him.

During the following century the Welsh-speaking Indians moved west; for about 1750, a Mr. Binon of Coyty, County Glamorgan, an Indian trader from Philadelphia, found Welsh-speaking Indians beyond the Mississippi. The French heard of these Indians and, thinking they might be French, sent three priests to investigate. According to a letter one of the priests wrote in 1753, the Indians were not French but Welsh. William Owen in 1791 said that the French in Louisiana (not the present state of Louisiana but the Louisiana Territory) called the Welsh-speaking Indians the Matocantes, and they were known to the Creeks as the Madawgwys or people of Madawg. This phonetic evidence scarcely requires the reminder that a variant of Madoc is Madog. William Owen also said that a Mr. Bowles had with him a Welshman who passed (beyond) the country of the Padoucas, and found to his surprise people speaking his own language. Also, he told of a Mr. Price who said his father conversed with Indians in his native Welsh. Finally, a Mr. John Evans found Welsh-speak-

ing Indians about 700 miles west of the mouth of the Missouri River.

Such a number of witnesses in agreement cannot lightly be thrown out of court. We must be cautious in taking testimony, however, for we have in this case a beautiful illustration of how an unimpeachable observation by an eyewitness may get twisted by an enthusiast into a patent falsehood. Bowles said the Welsh-speaking Indians "had some books which were wrapped up in skins, and religiously preserved, and considered to be some kind of mysteries." Under the pen of an eighteenth-century writer these "books" became "some old Welsh Bibles." What change could be more innocent? But the change caused a skeptic to point out that the Bible was first translated into Welsh in 1588. The earliest eyewitness description of the "books" is as follows: "rolls of parchment, tied in otters' skins, written in large characters in blue ink." They may have been in Latin, but more likely in Greek. The Welsh-speaking Indians had no knowledge of the language in which they were written, and were very sad when a party of visitors could not tell them what the writings meant.

In the early years of the United States of America there was much lively questioning about Welsh Indians, and President Thomas Jefferson ordered the leaders of the Lewis and Clark Expedition, when going up the Missouri, to keep an eye open for them, though the President himself said of their presumed existence: "I neither believe nor disbelieve where I have no evidence." The fact that no official scientific expedition ever proved that Welsh Indians existed does not disprove their existence, for like several other small tribes they may have been exterminated by war or disease.

An attack on the Madoc story was made by Thomas Stephens in the late nineteenth century. Stephens thought there never were any Welsh Indians, and he argued that all we have are "pretended facts." He invoked national prejudice against the imaginative Celtic temperament and asked of

his fellow Englishmen: "When we look at men of eminence in Cambrian literature, can we help being surprised at their inability to discern between fact and fiction, and their utter want of critical capacity? The Cambrian mind has here given . . . a name to a mere figment of the mind." In a classical voicing of the objections formerly held to the idea that there were pre-Columbian crossings of the Atlantic, Stephens gives three arguments against acceptance of the Madoc expeditions:

It is not probable that America was ever discovered by accident.

It is improbable that the existence of land to the west was suspected in the twelfth century.

It is not probable that Welsh ships could have crossed the ocean.

In support of this third negation Stephens says: "The voyages of the Phoenicians and Greeks were equally long and dangerous, but this is a weak argument; for these voyages were made by sailing in sight of land, and along known coasts."

Known to whom, one wonders.

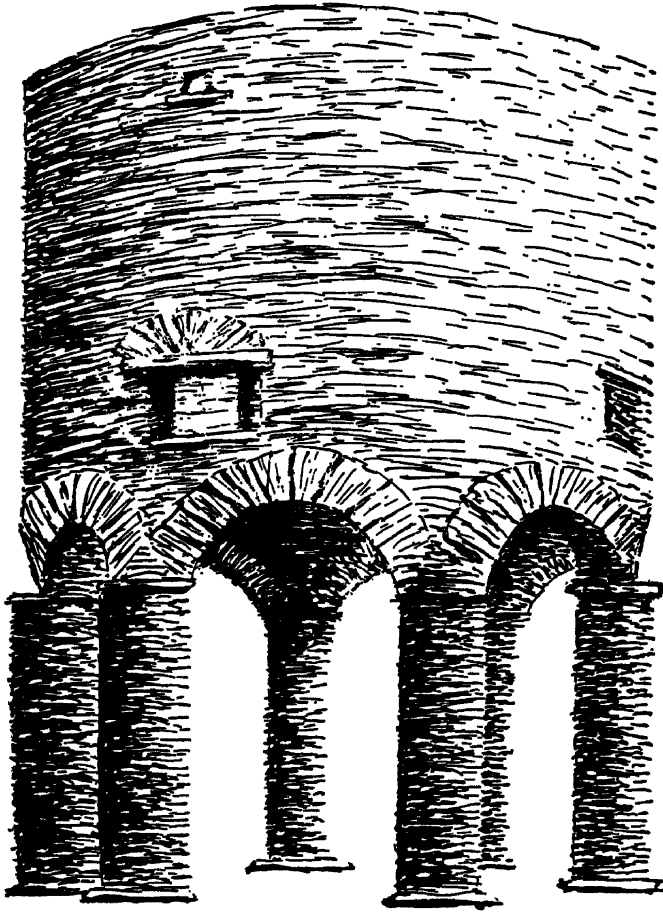
CHAPTER 9

The Round Stone Tower at Newport, Rhode Island

IN THE round stone tower at Newport, do we have evidence of the coming of pre-Columbian Europeans into Narragansett Bay? The tower is a gray shell of wall rising above arches that span eight columns. The centers of these arches are about 10 feet above the ground; the tower is about 18 feet in diameter inside; 24 feet outside; and the wall is about 3 feet thick. The masonry consists of stone of miscellaneous shapes, some partly worked, held together by mortar, the enduring quality of which has impressed all observers. Its surfaces were once covered with plaster inside and out, and sizable patches still remain on the inner sides of some of the columns.

The tower formerly had two floors above the tops of the arches, connected by an internal staircase. The lower floor was about 12 feet from the ground. I say "was" because the wooden flooring no longer exists, but there are sockets in the masonry for the ends of beams which supported the first floor, and a recessed shelf for joists for the second floor, and the masonry reveals where the ends of stair treads were supported inside the wall between the two floors. In the wall of the first floor there is a large fireplace with two small flues

which rise through the wall for seven feet and then turn horizontal to vents on the outside. The structure stands in a park at the brow of the hill, and once upon a time occupants of the tower's upper stories could look down to the southwest to the waterfront and harbor, or to the south to the ocean. Houses and trees now cut off these views, but when the hilltop was an open meadow, as appears in some of the earliest drawings of the tower, the tower was a distinct landmark of the region, visible against the sky for many miles.



Newport Tower

The tower has a strange pattern, unlike anything else in New England, and has long excited curiosity. There have been diggings beneath it by treasure hunters. Visitors who might not otherwise have known what to make of it used to be informed by a signboard nearby that it was "The Stone Mill."

There are two theories as to when and by whom the tower was built. One is that Norsemen built it before 1360 as the beginning of a church; if so, it is the oldest building in New England, and something of a jolt to Puritan traditions, a Catholic church from before the Protestant Reformation. The other theory is that it was a Colonial windmill erected about 1675.

Many features of the tower are incompatible with the windmill idea. Its 18-inch deviation from a true circle at the top shows that it was not planned to support a round wooden collar upon which the axis of the vane of a windmill could be rotated to keep the vane headed into the wind. The fireplace in the first story also shows that the tower was not intended to be a windmill, since an open fire in a flour mill would be disastrous. Furthermore, a stone tower standing on columns is not in keeping with a proper design for a windmill, which should be as sturdy as possible to resist the vibrations of the revolving vane. There is further weakening of the circular wall by its being obliquely undercut on the outside where it rests on the columns. These undercuttings were obviously to receive the ends of the joists of the roof of a surrounding structure. There is no evidence that the spaces and archways between the columns were ever filled in with walls, and it is neither customary nor practicable to have the ground floor of a mill open to all the winds. No New Englander in his right mind who was building a windmill would have included such errors and absurdities. The tower, we may safely say, was not intended to be a windmill, and so we will call the Colonial theory of origin not the windmill theory,

but, for lack of a better term, the seventeenth-century theory.

The basis for that theory is the earliest Rhode Island reference to the tower, which formerly was held to be the earliest written reference to it. In a deed for a cemetery dated February 28, 1677, it was mentioned as "the Stone Mill." The second Rhode Island reference was the phrase "stone wind mill" in a record of the death of Damaris Golding, and the third was on December 24, 1677, in the will of Governor Benedict Arnold of the Rhode Island Colony, which called the tower "my Stone-built Wind-Milln." From these references we may properly conclude that the governor was using the structure as a windmill tower, but not that he had built it. We know that there was at the time an emergency need for a windmill tower in Newport; for the first and presumably only windmill there, one built of wood in 1663 by Governor Easton, had been destroyed in a hurricane on August 28, 1675, eighteen months before. There is no question that the tower was at that time converted for use as a windmill. We also know it was later used by the British as a powder house, but no one has ever suggested that it was built to be a powder house.

E. A. Richardson, in a published study of the Newport Tower, after showing from stresses and the permanence of the structure that its builder was a competent engineer, says: "If this engineer knew better designs for fireplaces, it seems reasonable to believe he would have used one in a building showing the character of this stone structure. As he used a fireplace commonly accepted in or before 1400 A.D., but very inferior in design and concept in 1675 A.D., it seems necessary to place the construction of the tower near the earlier date. . . . Certainly nothing about the tower suggests that the client ever instructed the designer that it was to be constructed for flour-milling." Richardson's summation of arguments against intention of use as a windmill are conclusive: The floors were of insufficient strength, since millstones and

attendant machinery would have weighed too much to be supported by horizontal beams of such size as was permitted by the masonry sockets about twelve feet above ground; installation of such machinery would have entailed a foundation resting on the ground inside the tower; the fireplace is where it would be most dangerous in a flour mill. "There was no adequate means of getting machinery into the structure; there is no reason for a surrounding one-story structure which might interfere with the use of a mill wheel; and no protection for the flour milling operation is available, and no adequate means of getting meal in and flour out. But if the time came when the tower was needed as a mill, certainly a reasonable adaptation could have been made at a cost, slight when compared with that of building an entirely new supporting tower."

Believers in the seventeenth-century theory of origin had high hopes when William S. Godfrey dug beneath the tower in 1948 and 1949. His finding of three seventeenth-century artifacts several feet underground inside one of the foundations, and his immediate claim (1950) that these "permit the absolute dating," cannot be accepted, because these objects could have been introduced in a refill after digging by treasure hunters of historic record. Only if the ground under the tower had never been dug into between the time the tower was built and the time when Godfrey dug, could Godfrey's finds support his claim. In 1954 Godfrey wrote more cautiously, and reduced his "absolute dating" to a "presumption" of seventeenth-century origin.

Three engineers—Arlington H. Mallery, of wide experience in bridge and construction engineering; Gardner C. Easton, formerly City Engineer of Newport; and John Howieson, Chief Engineer of Newport—examined the foundations in 1954 and in their Report to the City Council in 1955 said that "every joint and opening in the foundations was carefully and thoroughly caulked with refill clay containing particles

or fragments of plaster" to prevent the formation of ice pockets that would break up the foundations; and since most of that plaster had broken off from the superstructure of the tower, the plaster-carrying clay "could not have been placed inside the joints and crevices of the present foundations unless those foundations had been installed as underpinning after the tower was built." Mallery said they found in the underground underpinnings "under each column a combination of five independent piers, each built up of selected stones of the proper shape to fit a pit dug to receive a pier." Only one pit was dug and filled at a time.

Mallery, Easton, and Howieson concluded from the fragments of plaster found all the way down to the bottom of the trench refills by Godfrey as well as by themselves, which fragments I saw in Godfrey's trenches in 1948, that the plaster surfaces of the tower had been exposed to weathering and had been breaking off for several centuries before trenches were dug, about the year 1675, to plant the underpinnings which gave the tower firm foundations in its conversion to a windmill. The three engineers effectively negate Godfrey's claim because all Godfrey's artifacts which were presented as evidence of seventeenth-century origin were "found in close contact or in close association with plaster that could only have come from the tower."

Godfrey had classified the site as "undisturbed." An archaeologist in Europe, a young man prone to challenge misconceptions, said to me: "Archaeology is not a science, but an art. It is sometimes impossible to distinguish between 'disturbed' and 'undisturbed' soil." He illustrated this with an entertaining account of his excavation of a Bronze-Age burial mound, in which he found typical remains, by all standards completely undisturbed since the burial took place three thousand or more years ago. In the midst of the remains was a piece of a Stockholm newspaper two weeks old. He paused to let me ask in astonishment, "How did that get there?" and he ex-

plained in one word: "Rat." The ground under the Newport Tower is certainly "disturbed"; for it was deeply dug up by a community treasure hunt, and again when the underpinnings were planted. A thorough clean-up undoubtedly was made when British soldiers took over the tower to use it as a powder house. In any case, all construction debris, stone chips, and possible artifacts left by the builders have long since been removed.

The principal bastion for belief in seventeenth-century origin has been the momentum provided by many persons who without thinking have been repeating to each other what they have heard from each other. This state of mind has existed despite the weight of evidence, and is perfectly illustrated by the words of a distinguished European archaeologist who in 1948 stood beside me inside the tower and said: "This is fourteenth-century architecture. There would be no question as to its age if this were in Europe. But it is in America—" I do not name this archaeologist because his statement was made to me privately. His name does not matter; for the value of the statement is the significant point it makes, which would be there even if I had manufactured it, which I did not.

The Newport Tower is of fourteenth-century architecture, unquestionably, and that is a fact which the few remaining believers in the seventeenth-century theory would have to explain. Why in Newport less than forty years after the town was founded would an early settler have moved, architecturally speaking, three or four centuries into the past to build a tower, even as a summerhouse or "Gentleman's Folly," with antiquated and outmoded details? Here was a new country with the spirit of newness, and those seventeenth-century houses and churches of New England which were in "classical" architectural styles were in the seventeenth-century interpretation of those styles. Early New England did not imitate mediaeval or classical styles accurately enough to deceive

a modern architect. The Newport Tower, I repeat, is of fourteenth-century architecture, and is not a seventeenth-century attempt to imitate mediaevalism. After Godfrey's first report, Professor Kenneth J. Conant of the Department of Architecture at Harvard made the acute comment that the architectural features of the tower were still to be explained.

The Governor Arnold windmill theory of origin is completely invalidated by the fact that the first Rhode Island reference to the tower is not the earliest written reference to it. Newport was founded in 1639, but there is mention in 1632 of an existing "rownd stone towre" in America. This, which was first brought forward when two of my friends called it to my attention, is in a document among the Colonial Papers in the Public Records Office in London. The manuscript is written on both sides of two sheets of laid paper, without date but with "about June 1632" penciled in. "New York," under which colony name the document had first been filed, is crossed out and "Virginia" written in below it, though the document relates to Sir Edmund Plowden's Province of New Albion. It is entitled: "The Commodities of the Island Manati or Long Isle within the Continent of Virginia." It is a list of twenty-nine commodities to be found in a wide region which included eastern Long Island, a sizable section of the neighboring continent, a part of New England "60 miles to the northwards" from eastern Long Island, and "all . . . islands . . . within ten leagues of the shore of the said region."

A "Commodity," by definition and in seventeenth-century usage, is anything which affords convenience and profit. A commodity in America in the reign of King Charles I was an object existing in America which would be of advantage to settlers. The twenty-nine listed commodities were presented as incentives to persuade men from the British Isles to emigrate to Plowden's proposed colony.

Among the commodities ready for the use of prospective

eastern Long Island settlers were good cod fisheries, and a bank on the New England coast "60 miles to the northwards" of the east end of Long Island where the salted cod fish could be laid out to dry in the sun. Also in the list of twenty-nine commodities was "a rownd stone towre" across water from eastern Long Island, which could be used as a watchtower and a trading post with the Indians. Since eastern Long Island was protected against surprise and large-scale Indian attack by the Virginia (Jamestown) Colony to the south, and by the Dutch (New Amsterdam) to the west, and the New England Colony (Plymouth) to the east, the only direction in which the eastern Long Islanders would have to maintain "intelligence with the savages" was to the north (Narragansett Bay), where fortuitously there was a stone structure ready for their need. The colonists who might settle the eastern end of Long Island, the prospectus said, were to send as guard "30 souldiers or gent" to be resident in the round stone tower who were "by tornes to trade with the savages and to keep their ordinance and armes neate," and in their "trucke and trafficke by torne with the Savages" they were to go "never above tenn of them abroad at once in a pinnace planqued against arrowes." Thus for the entire colony the guard of thirty at the tower would "free all danger."

The record is now clear that the Newport Tower was built by Europeans who came to southern New England before the English Colonists (the Pilgrims). There seems to be further evidence of this in the fact that William Wood, a young Englishman who visited the Massachusetts Bay Colony and the Narragansett Bay Region between 1629 and 1634, made a map (reproduced on page 136 in *A Book of Old Maps* by Fite and Freeman) called "The South Part of New England" and published in 1635. On this he placed "New Plymouth" at the site of Plymouth, Massachusetts, and "Old Plymouth" on the eastern shore of Narragansett Bay. Obviously,

William Wood had seen the remains of some abandoned settlement at or near the site of the future Newport.¹

The Pattern of the Tower

While the area under the tower has undergone much movement in repeated diggings and refillings, the mortared stones of the walls and columns have not moved closer towards each other or farther apart since the tower was erected. They were set in a pattern, essentially unchanged since the day the tower was built, a pattern which is there for anyone to measure and study.

An article by Professor Conant (*Rhode Island History*, January 1948) gave me an idea which I believed might solve the riddle of the Newport Tower. Professor Conant had written: "The window frames were of almost the same dimensions as those which were currently used in seventeenth-century construction at Plymouth." "Almost the same" meant nearly the same but different. I asked myself whether it was possible that the Newport Tower had been built according to a unit of linear measure different from the English unit of feet and inches that had been used at Plymouth. If so, the unexpanded and uncontracted pattern of mortared stones would show it.

Go into any room in any house and measure its length and breadth and height, and the width and thickness of the doors and door jambs and window frames, etc. Allow for the fact that some wooden parts may have been planed down to fit into a space, or may have shrunk a bit, or may have the thickness of several layers of paint on them. (In masonry construc-

¹ Mallery says the evidence of "Old Plymouth" on William Wood's map is confirmed by a chart of before 1614 in the Dutch Archives in the Hague and used by Cornelis Hendriex of the *Onrust*, which shows a small area on the east side of Narragansett Bay marked "New England." The maker of the Dutch map saw something on the east side of that bay which made him assume that English people had formerly resided there.

tion such allowances do not have to be made.) When you have a few reliable measurements in a room, you will have positive proof that its builders used a certain linear unit. If the measurements show English feet and inches or half-inches or quarter-inches, there can be no doubt as to the unit used. If the measurements do not show English feet and inches, you may find that they show meters and centimeters, as of course they will in a modern room in the continental countries of Europe or in Latin America. Every carpenter and mason will agree that the unit of measurement used in a building can be precisely determined.

With this in mind, I wondered what the answer would be from the Newport Tower. Would the measurements show a linear unit of English feet and inches? If they did, I would have conclusive proof that English Colonists had built the tower. Would they show the mediaeval Dutch unit of linear measure? Then Professor Conant's suggestion that the Dutch of New Netherlands had built the tower would be proved correct. Would they show the mediaeval Portuguese unit? Then those who said that the ship-wrecked Portuguese under Cortereal had built the tower might be right. Would they show the mediaeval unit used by Scandinavians before the introduction of the Metric System? Then the theory that fourteenth-century Norsemen had built the tower would be established, unless the seventeenth-century theorists could show that Scandinavian masons had been employed in Newport in Governor Arnold's day.

After I made my measurements of the tower, I learned that I was not the first person to ascertain the linear unit used by its builders. The saying that there is nothing new under the sun was well illustrated by the fact that C. S. Peirce, in 1884, had found the length of that unit. However, he had not gone on to inquire as to the nationality represented by that unit. As you may guess, the unit was not the English foot.

It was a unit longer than the English foot by approxi-

mately a third of an inch. It was even farther from the mediaeval Dutch unit, which was only slightly over 11 inches, and so it made untenable Professor Conant's suggestion that New Netherlanders had built the tower. The Newport Tower unit was very different from any mediaeval Portuguese unit.

My measurements (published in *Rhode Island History*, July 1948) were corroborative of those made by Mr. Peirce. My measurements showed that the diameter of the practically perfect circle touched by the outside of the eight columns at ground level was 24 of the units, and the internal diameter between opposite columns at ground level was 18 units. Each column was 3 units in diameter. Other measurements of the breadth of the fireplace and the width of window openings showed simple multiples of the same unit. Measurements made by H. R. Holand (published in *Nordisk Tidende*, August 19, 1948) and other measurements he later made, as well as twenty-nine measurements made by Richardson all confirmed those of Mr. Peirce and my own.

The unit of linear measure used by the builders of the Newport Tower was precisely the mediaeval Rhineland-Norse foot, introduced into Scandinavia in the thirteenth century, and used there until the introduction of the Metric System. The exact length of this unit is 12.3543 English inches (0.31374 meter). Six Norse feet make a *fathmur* or fathom, which was the common unit used by Norse mariners.

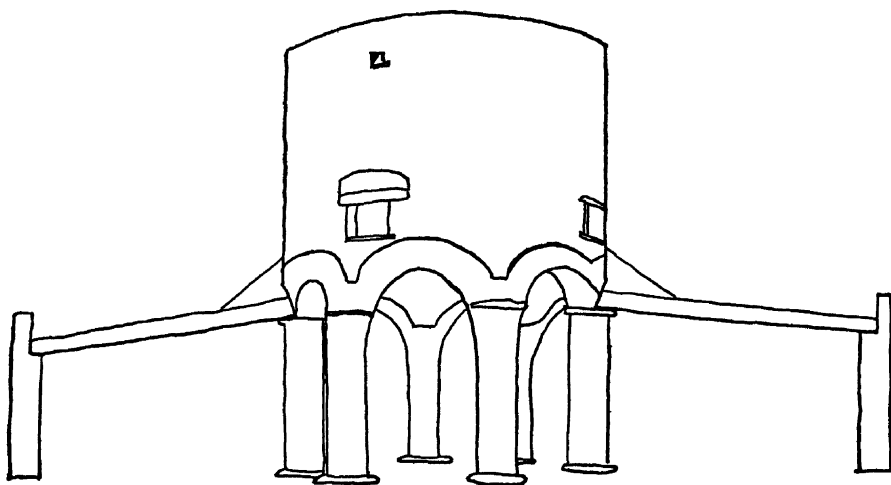
So far as the seventeenth-century theory was concerned, I assembled data that showed that the English linear measure had been standardized by the time of the seventeenth century and according to all available evidence was consistently used by carpenters and masons in the Rhode Island Colony. (See pages 187-194 in *The Lost Discovery*, 1952.)

Mr. Holand called attention to the wall at the south side of the tower in which there is a recess to hold an altar forty-two inches above the floor of the first story, and below the

middle of the altar a niche for relics. The round stone tower in Newport with its outside walls obliquely undercut just above the columns had the form of the beginning of a church, the central tower around which a larger church could be constructed as need arose. The circular form in churches has been used frequently in Italy and in various countries of Europe since the earliest days of Christianity, and it may be that the very earliest Christian church in Rome was circular.

Richardson shows that with the added weight of the ends of the joists of the ambulatory roof, each of the eight columns of the tower would have been centrally loaded, and such loading must have been what the builder planned. A parapet above the outside wall of the ambulatory would have been a defense feature. Access to the first story of the tower was obviously, Richardson says, through a trap door within the crossing of the four beams that supported the first floor.

Patently the beginning of a church, the tower was also a fortified watchtower and an effective lighthouse. In a detailed study Richardson, allowing for horizon visibility, shows that the placing of the small windows in the upper story of the



Newport Tower with ambulatory added

tower enabled the occupants to keep watch over all the land and sea approaches—and especially the hills at distances varying from $1\frac{1}{2}$ to 16 miles from the tower, from which fire signals might give timely warning of enemy attack. Richardson suggests an archaeological search for artifacts on the hill tops from which such signals might have been sent.

The first story of the tower served as a lighthouse. The larger windows of that first story were so placed in relation to the fireplace, or the fireplace was so positioned in relation to the windows, that light from the fire at night seen through the south window would be a guide to a ship approaching the entrance to Narragansett Bay, and full fireplace light through the two-foot-wide opening of the west window would be seen by the steersman of a ship that had entered Narragansett Bay, and would guide him to the harbor landing at the bottom of the tower hill. The bottom of that window was only eighteen inches above the floor, so that the fireplace light would shine out and down into the harbor. The ingenious builder of the tower had obviously had considerable experience in designing churches and lighthouses.

The weight of stone in the tower is over two hundred tons, and the man-hours of hand labor required for its erection argue a sizable population in the Norse settlement it was built to serve. As a church it could accommodate about two hundred persons standing close together on the ground inside the circle of columns, and the provision for its enlargement with an ambulatory meant that its builders foresaw the possibility of several times that number of worshippers.

Is there any possibility that there was a large settlement of Norsemen in Narragansett Bay in the fourteenth century? Yes, the disappearance of the Western Settlement of Greenland about 1342, with many farm buildings and churches left intact and no evidence of slaughter by Eskimos, means that the people had gone somewhere else. They had moved away, almost certainly somewhere farther south, and pre-

sumably to "Vineland." They could have built the tower. Holand is convinced that the tower was built by the Paul Knutson Expedition (1354-1364) which visited "Vineland" before 1362, and which had as its purpose the restoration of the faith of the removed Greenlanders and which therefore must have included educated ecclesiastics. We have no proof that the Paul Knutson Expedition built the Newport Tower, but it is extremely probable. Verrazzano's report of his fifteen days in Narragansett Bay in 1524 points to there having been a European settlement there some time before; for the report says of the natives found there (who by that time would have been the product of intermarriages between the Indians and the Europeans): "This is the most beautiful people and the most civilized in customs that we have found in this navigation. They excel us in size; they are of bronze color, some inclining more to whiteness. . . ."

CHAPTER 10

Inscriptions, False and Genuine

WHEN we look at inscriptions on rocks we should be able to recognize the difference between Indian petroglyphs and alphabetic writing. For example, here are portions of the markings on two rocks in America:

X X L } S + T

V ^ (N Y Z T

One of these consists of Indian petroglyphs from Eastern Long Island; the other is from the Yarmouth Runestone in Nova Scotia. Confusing? A brief word as to the evolution of writing will not be amiss.

Petroglyphs are largely indecipherable because they throw together not only pictures but unpictorial forms which had meaning only for their makers and members of their tribe. Later generations could not understand them. When the white men came, American Indians could very rarely tell what the petroglyphs signified, and in their ignorance of them the Indians stood in awe of them, venerated them, or sometimes were so much in fear of them that they refused

to go near them.

Most of the unpictorial forms in petroglyphs require a specialist's explanation. Yet what looks most indecipherable to us is evidence that in man's struggle to express his meaning he was seeking surer and quicker ways of doing it. He was learning to make abbreviated signs, or what we call symbols, to take the place of pictures. Many ancient symbols are so far changed from the original picture that they do not bring that picture to mind. You will probably not recognize the meaning of such a form or symbol as this:



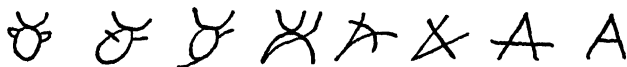
You will understand it, however, when you see how it evolved:



What the human race was working toward was a series of symbols each of which would have a meaning accepted by many other men. As civilization advanced, many people clung to their ancient picture symbols, and to idea symbols (ideograms or ideographs) developed from them. With some people, a hand came to represent the idea of power; a leg came to mean swiftness; an eye came to mean sight, etc. The Chinese clung to picture and idea symbols. The Egyptians used picture symbols, but also used some of these symbols to represent some of the individual sounds in their language. For 2000 years before a pure form of alphabetic writing was invented, Egyptian priests in their inscribed writing on stone (hieroglyphs) used sound symbols or phonetic signs mixed up with ideograms. Some of the phonetic signs stood for syllables and some for separate, individual sounds. Hieroglyphs were thus partly alphabetic. Some very ancient written

languages had an undesirable number of syllable signs. One of them, Uruk, had 2000 syllable signs, and early Sumerian script had 900 characters. Early Canaanite (about 1500 B.C.) had 125 to 150 signs.

It remained for the Phoenicians to develop the first complete and satisfactory short alphabet. The symbols in their alphabet were evolved from the writing of the Canaanites, from the inhabitants of the Sinai Peninsula, and from the Egyptians. As mariners sailing their ships from one port to another in the Mediterranean, Phoenicians knew the importance of efficiency and trimness in rigging their gear. With the same practical mindedness, in the course of time they devised an alphabet of quickly written symbols. Not for them the absurdly slow labor of drawing or carving a reclining lion with front and rear legs, or a bird with its wing and tail feathers, every time they wished to represent certain frequently appearing sounds. Their alphabet, which originally consisted of pictures of objects, became abbreviated and simplified. For example, a picture of an oxhead with horns was drawn more and more rapidly until it became the form of a letter familiar today:



The alphabet of the Phoenicians had one symbol for each of the individual sounds in their spoken language—22 in all. Professor W. F. Albright says that the Greek alphabet, from which the Roman alphabet was developed, was adapted from the Phoenician in the late ninth or early eighth century B.C. When the Goths in the third century of our era became exposed to Greek and Roman culture, they developed for themselves an alphabet which we call runic, which they gave to the Norsemen and which evolved into later forms.

Runes

The few persons among the early Goths, the Germans, the English, and the Norse who could write with runes frequently enhanced their feeling of superiority by making their inscriptions difficult for even the initiated to decipher. They did this by omitting parts of letters, or combining letters in a peculiar way, or writing in reverse, or by other methods. In Denmark there is a runic inscription of three lines which must be read in the following order: the second line from left to right; then the third line from right to left; and then the first line from left to right. A runemaster was looked upon as almost a sorcerer, and he played the part by creating puzzles, so that a synonym for "rune" is "mystery," and another is "magic."

Various strange markings on stone in North America have been thought to be runes by many people, especially by those who have not known what a rune looks like. The runic alphabet was called a "futhork" from the order of its first six letters ("th" being represented by one runic letter). An inscription in runic letters on a cliff in Jackson County, Missouri, contains the name "Arthur," not with the rune for "th," as it would were it genuinely old, but with "t" and "h" runes separately; and there are other evidences that the inscription is in modern English spelling carved by someone with a partial knowledge of early English runes.

The 24 runes of the Continental "futhork" were used from the third century on, almost down to our times. The Scandinavian 16-rune alphabet is found from the ninth century on. Dotted runes were added in the twelfth century. Changes were made to obtain alphabets better adapted to different sounds in the several languages. A one-page illustration allows no space to indicate phonetic developments. Letters in parentheses give only a hint of a few of the different sound values. I wanted to list runes in A-B-C order for the reader's

	Continental Germanic	English 28-rune	English 33-rune	Scandinavian 16-rune	Kensington Runestone	Variations from other sources
f	ƿ	ƿ	ƿ	ƿ	ƿ	h v w l
u	u	u	u	u	u	K D I H
th	th	th	th	th	th	* φ ⊕
o	o	o	o	o	o	Я C
r	r	r	r	r	r	
g	g	g	g	g	g	
K	K	K	K	K	K	
g _(v)	g _(v)	g _(v)	g _(v)	g _(v)	g _(v)	
h	h	h	h	h	h	1 A A
n	n	n	n	n	n	1 1
i	i	i	i	i	i	1 1
j	j	j	j	j	j	1 1
e	e	e	e	e	e	1 1
p	p	p	p	p	p	1 1
x	x	x	x	x	x	1 1
s	s	s	s	s	s	1 1
t	t	t	t	t	t	1 1
b	b	b	b	b	b	1 1
e	e	e	e	e	e	1 1
g	g	g	g	g	g	1 1
d	d	d	d	d	d	1 1
l	l	l	l	l	l	1 1
m	m	m	m	m	m	1 1
ö	ö	ö	ö	ö	ö	1 1
a	a	a	a	a	a	1 1
æ	æ	æ	æ	æ	æ	1 1
ä _(y)	ä _(y)	ä _(y)	ä _(y)	ä _(y)	ä _(y)	1 1
ea	ea	ea	ea	ea	ea	1 1
eo	eo	eo	eo	eo	eo	1 1
io	io	io	io	io	io	1 1
o	o	o	o	o	o	1 1
æ	æ	æ	æ	æ	æ	1 1
st	st	st	st	st	st	1 1
R _(y)	R _(y)	R _(y)	R _(y)	R _(y)	R _(y)	1 1

Runes: Variations

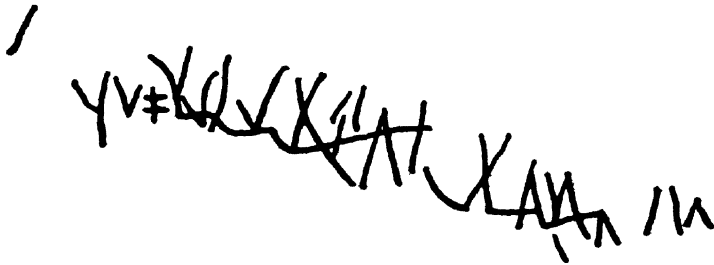
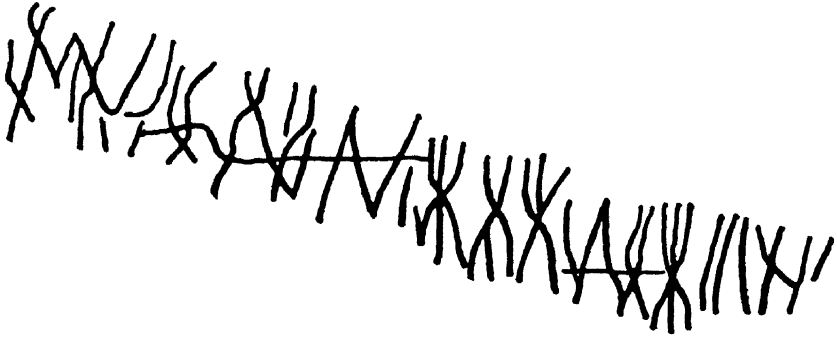
convenience, but was persuaded by Professor Kemp Malone of Johns Hopkins to use the "futhork" order. Another eminent scholar warned against the problems raised by my attempt at simplification, and I therefore disclaim any intention of entering into philological controversy with my presentation of variations in runic forms. I have omitted from the Variations column runic forms unmistakably similar to or identical with modern letters; such as L and T.

Manana-Monhegan Markings

Whether the Manana-Monhegan markings are runes, or merely the work of nature, you must judge for yourself. They were found in 1808 on Manana, a small island close to Monhegan Island, Maine, on the side where the two islands make a small sheltered harbor. The markings are above a large spring, and on the top of the rock above them there are three holes, about a foot apart triangularly, each 2 to 3 inches in diameter and about 1 inch deep, as if made to hold the legs of a tripod. The markings consist of irregular grooves about 6 inches in length and $\frac{1}{4}$ inch to $\frac{1}{2}$ inch deep. They are remarkably linear, but in 1885 a geologist, G. H. Stone wrote: "It is evident that the inscription is a freak of surface erosion."

On the other hand, in 1930 Mrs. Ida S. Proper argued: "If the inscription is the work of nature, surely in seventy-five years nature would have continued her work and cracks would have appeared at each end of each supposed character, which would have entirely changed its appearance. This is not the case. . . . If this be the work of nature, why are there no other signs of like character on the adjacent rocks?" Mrs. Proper stated that another supposed inscription of similar characters had been found on a ledge on the Maine shore north of Monhegan Island, but had been destroyed by vandals.

The top drawing herewith, made from a photograph of a



Manana-Monhegan markings

plaster cast taken in 1855, shows the Manana-Monhegan markings as accepted in 1939 by Olaf Strandwold, who made a reading of them with fourteen pages of analysis; and the second drawing (below), shows the same markings with only part of them chalked in, in accordance with a new reading by Mr. Strandwold in 1948. In this drawing the markings look more like runes than they do in the original.

The English equivalents of the letters as Strandwold presented them in 1939 are:

AUNIR IUUG RUR HHH IUN IUL K

and as he presented them in 1948 are:

IK VAGLI LA SIAU ARA AR IUA IIU

Strandwold's translation of his first reading did not make clear sense. His translation of his second reading was: "I, Veigle, lay seven years, year of Jesus 32" (1031 A.D.).

A man is free to change his mind and to read all the supposed letters in two different ways, but if he does, he cannot expect us to place much confidence in either interpretation. Markings which have been chalked in on a rock cannot be evidence as to the actual forms of the grooves on a rock. The chalking-in itself is an expression of choice, and can be accepted only as the interpretation of the man who did the chalking.

As far as we know, Strandwold, who puzzled over the Manana-Monhegan markings for at least ten years, is the only man who has ventured a transliteration or a translation. If they are some form of runic letters, they have probably been deciphered as well as they ever will be. If they are intended to be runes, they are the poorest attempt at runes ever made, and as Strandwold's translation implies, perhaps some Norseman was shipwrecked on Monhegan without adequate tools to cut or scrape out better grooves, and without perfect knowledge of the runic alphabet. A photograph of a new plaster cast of the markings, as compared with the photograph of the plaster cast of one hundred years ago, should make it possible to decide whether they are nature-made or man-made, by showing whether the individual grooves have lengthened and broadened and deepened, as they would have if they are the work of natural erosion.

Nomansland Inscription

On a boulder on the shore of Nomansland, an island south of Martha's Vineyard, was an inscription that bore the name of Leif Erikson. Strandwold in 1939 accepted the version of it as chalked in and shown on a photograph taken by Professor Delabarre. In 1948 Strandwold presented a very different version, which seems to be justified in most of the

changes involved. Strandwold's later translation is: "Leif Erikson's Island Thirty Men." Strandwold's 1948 reading eliminates spelling errors in Delabarre's chalked-in version. There is much suspicion, however, that the inscription is a hoax. A reputable archaeologist says the daughter of a man who once owned the island before the Navy took over has repeatedly declared that her father made the inscription as a joke on an Englishman who had developed a theory that Leif Erikson and his men had spent a winter on Martha's Vineyard. Another story, told by a commercial fisherman, is that in the spring of 1913 he and the cook of a schooner went ashore on Nomansland to hunt rabbits. The cook, he said, chiseled the inscription, doing it "just for pastime, I think. He didn't do it exactly for a hoax or to fool anyone. He's dead now. Went back to Norway in 1914 and I've never seen him since."

Since the hurricane of 1938, the boulder bearing the runic letters has been under water with the carved face down. Someday the Navy may raise the boulder, and the inscription may be subjected to scientific examination.

Oak Bluffs Boulder

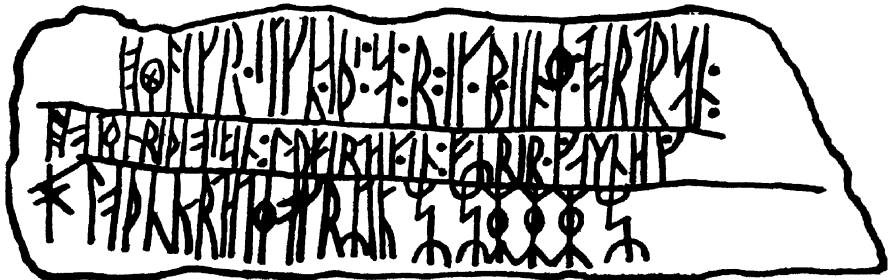
A similar situation has occurred with regard to a boulder about six and a half feet long at Oak Bluffs on Martha's Vineyard. A clergyman in the late nineteenth century found a runic inscription on this boulder, but his copy of the lettering, if he made one, has not survived. Originally the boulder stood in a prominent position on the top of the bluffs, where it was visible to ships sailing west into Nantucket Sound. As the shore line was gradually worn away, the boulder toppled forward down to the foot of the bluffs where it lay with its inscription face uppermost in the middle of a busy bathing beach. The boulder was called Lover's Rock at the time, and young couples carved their initials on it. As the tidal action and storms ate away more of the shore, the boulder gradually

tilted forward and lay half in the water, and tilted further through the years until it had accomplished the equivalent of a half-roll, so that now it is entirely under water except at very low tide. It forms part of a jetty about two hundred feet to the south of the steamship pier. An official in the Navy became interested, and an inspection was made for the U. S. Navy Bureau of Yards and Docks, and it was reported that to bring an adequate floating derrick from the mainland to Oak Bluffs and to lift and turn the boulder over would cost at least \$2,000. Perhaps some philanthropist will not think this too much to spend on the chance of finding a runic inscription.

In addition to hoaxes, and natural markings mistaken for runes, and runic inscriptions reported but never seen, some genuine ancient runic inscriptions have been found.

Kingiktorsuak Runestone

In a cairn at 72° 57' North on the island of Kingiktorsuak off the west coast of Greenland, there was found a small stone bearing an inscription shown in two-thirds of its actual size in the drawing. Holand translates it: "Erling Sigvatsson and Bjarne Thordarson and Endridi Oddsson raised these beacons April 25, 1291." Far as it was to the north, its April date indicates that the three men had wintered at that latitude, and so we may say that the Kingiktorsuak inscrip-



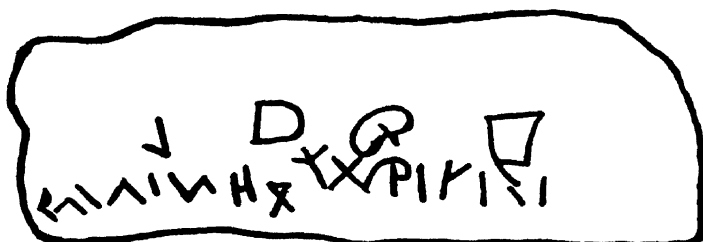
Kingiktorsuak Runestone

tion was found at the place where it was made. It is in a showcase in the Natural History Museum of Copenhagen and when I saw it there it was on display upside down.

Genuine early runic inscriptions were made also in at least a half-dozen places on the continent of North America, and here are some of them:

Aptucxet Runestone

This is one that is believed to have originated near where it was found. The earliest record of it is its use as a doorstep to the Christian Indian meetinghouse about four miles north of Aptucxet at the western end of Cape Cod. The local Indians said their tribe had treasured it as a sacred relic for many generations.



ʁʌi ʌ' jɪʌnɣɣxɪɪɪɪ
 JUIVS LIUSOM AUTHIKIRI

Aptucxet Runestone

Strandwold gives as a liberal translation: "Jesus amply provides for us here and in heaven," but he confesses that "translations will vary somewhat."

Runestones in West Virginia

A runestone on Cape Cod could be readily accepted, but a runestone three hundred miles west of the Atlantic seacoast seemed incredible. In the field of the history of viking voyages,

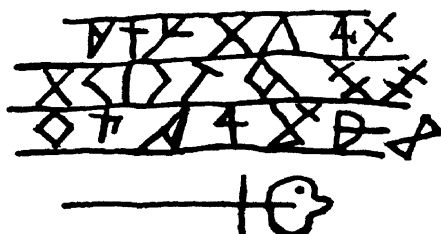
scholars were familiar with the idea that the vikings had touched the eastern shore of North America, but their minds had not been opened to the possibility that the vikings had also penetrated far inland. Historians thought of the interior of the continent previous to Columbus as a great forested hinterland through which only Indians had roamed, and where no white man had ever been. Runic inscriptions that evidenced the visits of Norsemen to the Middle West seemed too fantastic to receive serious consideration.

But facts are forever upsetting fixed ideas and confounding limited assumptions. Two small runic stones were found in West Virginia under conditions that practically exclude the glib cry of "hoax."

The first, known as the Grave Creek Tablet, is only $1\frac{7}{8}$ inches in length. It was discovered at Moundsville, West Virginia, in 1838, years before anyone dreamed of Norsemen that far inland, although the saga story of Karlsefni's three years of exploration of North America did indicate that he sailed up the principal rivers from Virginia to Maine and discovered the Appalachian Mountain chain. While 1838 was just at the time when the theories of C. C. Rafn had awakened interest along the Atlantic Seacoast in the viking voyages to America, and while it is conceivable that the Grave Creek Tablet could have been transported from Greenland to the Chesapeake and carried inland, the circumstances of its discovery during exploratory digging into the Grave Creek Indian mound, and the indifference at first accorded it, argue against its having been planted by someone in the year of its discovery. No one in West Virginia valued it enough to preserve it for the public, and its present whereabouts is unknown.

Again, there seems to be no basis for suspicion of a hoax in the stone discovered in 1931 by Ord Blaine Wilson near Triplet Creek in Braxton County, West Virginia. Mr. Wilson used the Braxton sandstone tablet, which is $4\frac{3}{8}$ inches in

GRAVE CREEK



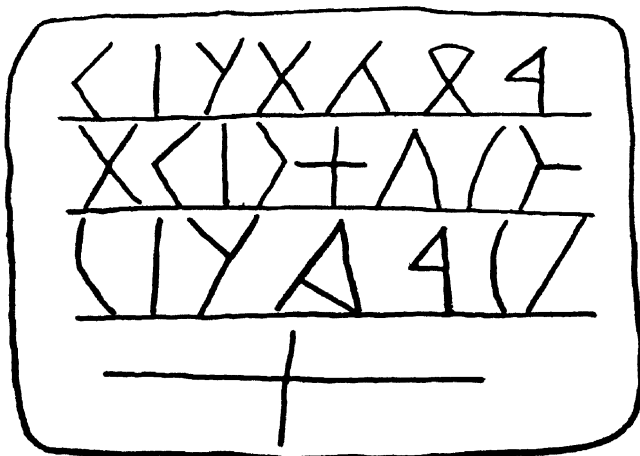
Christ's Cross and Thorshammer

IY THX A 4
 IK HMA A U, ON-
 X< I>T <I, * *
 AR IUL RA, A A-
 O 4: A 4 + XDN
 NG O: NU O HODD

Literal translation:
 "I knelt on island, On-
 ar's Yule-site, on mead-
 ow island; now a hodd."

Free translation: "I knelt on meadow island, Aun's Yule-site, which is now a sanctuary that hoards holy things."

BRAXTON



Christ Cross

< I Y X h X O
 R I K A R O O
 Y h < I > T h I E
 K U R I > E R I E
 R I K N O O L E

Literal translation:
 "Richard owns island
 Kuri husband in E-
 rik now Ole."

Free translation: "Richard owns the island; Guri (Gudrid) had husband in Erik; now Ole."

Grave Creek and Braxton Runestones in West Virginia

length, as a paper weight and door stopper for ten years until a local schoolteacher brought it to the attention of the director of the West Virginia Department of Archives and History. It is now in the State Museum at Charleston.

In the West Virginia inscriptions one can observe several instances in which two letters are combined in a single carving, in what is called a "bind-rune." The translations were made by Strandwold.

Yarmouth Stone

One of the greatest mysteries is an inscription found on a rock weighing about four hundred pounds, at the base of high ground at the northwest corner of the harbor of Yarmouth, Nova Scotia. The rock is now in the Yarmouth Library. The inscription, about 21 inches long, consists of 14 characters. It has been known since the eighteenth century, and is undoubtedly a genuine relic of antiquity. The question for us is, of what alphabet is it?

Two very large stones with inscriptions in similar characters were reliably reported in the nineteenth century as having been seen elsewhere in the same county. These, if found, should throw light on the Yarmouth Stone.

The Yarmouth inscription is certainly not Indian. What is it? There have been various theories: that it is Phoenician, Cyprian, Etruscan, Tartessian. Is it Norse?

Four of the 14 characters are perfect Norse runes, and several others rather obviously might be runes. The inscription is closer to Norse runes than to any other alphabet. For this reason a Harvard professor has pronounced it "bastard runes."

If this assumption is to be accepted, the Yarmouth inscription was made either by a man extremely ignorant of or forgetful of correct runic forms; or by a runemaster who intended to baffle the beholder. The theory that its maker was forgetful would seem unlikely, for there were not so many

letters in the Norse runic alphabet that a normal person would not remember them if he had once known them. It is possible, however, that in the absence of a qualified runemaster among the members of an early exploring party in a day when there was almost complete illiteracy, the maker was a man who had never before made an inscription and who did the best he could with such letters as he knew or thought he knew. For us to say that the maker was ignorant of correct forms is a convenient way of excusing our own ignorance of the forms he attempted. There were many variations of some of the letters in Norse runes.

Strandwold, who greatly enjoyed deciphering runes where no one else could, believed the Yarmouth inscription was the work of a runemaster who sought to "mystify the reader by taxing his ingenuity." Strandwold set himself the task of solving the mystery. To present his reading of the Yarmouth inscription does not commit one to acceptance of it.

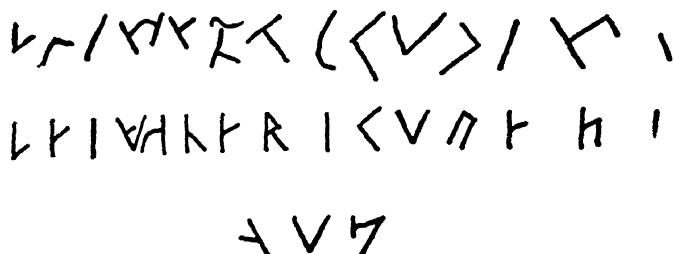
Since Strandwold believed that the fourth character is a "bind-rune," he numbered it 4 and 5, and thus counted a total of 15 runes. He interpreted the curved line over the sixth character as indicating that the character which precedes it should exchange places with it. These two characters he therefore numbered 7 and 6. According to Strandwold, "r" occurs four times, in four different forms. He wrote: "Judging by the spelling of the word and the context, as is sometimes necessary . . . we may safely call this rune [Number 12] r." Our question must be whether the context established the uncertain runes, or whether Strandwold was forcing the runes to fit a context already established in his mind. Perhaps he was guessing and did not himself know which.

In his reading of the runes, Number 1 is inverted, ten of the fifteen runes are incomplete, and Number 8 is somewhat rotated. Only four runes, Numbers 10, 11, 14, and 15 are correct forms.

The "f" in Leif was often pronounced "v." Leifur (pro-

nounced "Layvur") is the nominative form of the name. The accusative form of Erik is Eriku.

In the illustration, the first line shows the characters as they appear on the Yarmouth Stone. The second line shows Strandwold's regularizing of some of the runic forms and his rearrangement of them in consecutive order according to his numbering. The third line is from a photograph of another inscribed rock found one mile to the south of the Yarmouth Stone and bearing an inscription identical with it, but with these three additional characters below the others. The exact whereabouts of this other inscribed stone is now unknown; for its owner, annoyed with curiosity seekers, concealed it in the building of a stone wall.



Yarmouth inscription

Strandwold in 1939 gave his transliteration of the Yarmouth inscription: LEIVUR ERIKU RESR. His translation is: "Leif to Erik raises [this monument]." If he is correct in this translation, then the ingenuity of the runemaker in attempting to mystify the reader was met by the equally great ingenuity of Strandwold. His translation is a challenge to runeologists.

It seems significant that without Strandwold's having been aware of it, his translation fits perfectly with the saga narrative of Leif's relations with his father Erik the Red. The old man had enticed many settlers to Greenland by coining its far-from-accurate name. Previous to Leif's voyage to Greenland, Leif had become a Christian, while old Erik re-

mained a heathen. No doubt a majority of Leif's men were Christians, and so Leif and his men had two counts against Erik—his deceptive naming of Greenland, and his obstinacy in holding to the old gods. When, therefore, they landed on the coast of the heavily wooded Nova Scotia, so dramatically different from their treeless homeland, and Leif said to his men: "This land shall have a name in accordance with its nature and shall be called Forestland [Markland]," Leif may have been consciously slurring at his father's invention of "Greenland," and his men, who probably had some Christian prejudice against the heathen, must have been fully appreciative of the contrasting honesty of their leader. Leif's naming "Forestland" was a good joke on Erik, and so a rune-maker's inscription: "Leif to Erik raises [this monument]" could have been equivalent to saying, with caustic irony, that Leif here had immortalized Erik.

Norse Axe in Nova Scotia

I visited a farmer who lives on the shore of Tor Bay, Nova Scotia, who told me how his mother, when she was walking in the woods a little distance from shore, stubbed her toe on some object lying among the pine needles, and pushed it out into view with her foot. It was a rusted axe head with a short broken-off length of wooden handle. She brought it to the house and her son thought little of it. He threw away the broken piece of handle as of no use to anyone. A surveying engineer living in a shack nearby became interested in the axe head, and the farmer sold it to him for two dollars. The engineer cleaned the axe head and uncovered a runic inscription which reads: "Inscribed for divine protection," and which by its characters dates the axe head as of about the year 1000 A.D. The engineer sold it to William B. Goodwin of Hartford, Connecticut, whose widow now has it. It is to be hoped that she will arrange for its ultimate placement in the Provincial Museum in the Citadel, Halifax, Nova Scotia, where it will be given an honored place and will be seen by many tourists.

Kensington Runestone

A SUITABLE subtitle for this chapter would be "Human Nature Revealed in the Search for Truth," since the way men are motivated in their thinking is as interesting as what they discover. Previous chapters on "The Heavener Runestone" and "Inscriptions, False and Genuine" furnish a background for an informed approach to the Kensington Runestone, but there is need also of thorough knowledge of the controversy that has raged since the runestone was unearthed.

In August 1898, near Kensington, Minnesota, a Swedish-American farmer, Olaf Ohman, was clearing timberland on the east edge of his farm a half-mile from his house. He and his ten-year-old son Edward were cutting trees and grubbing out stumps on the brow of a hill thirty feet above a little valley meadow which lay between them and the house of neighbor Nils Flaten. One aspen tree which had a diameter of about nine inches had roots that were extraordinarily resistant to their efforts to dislodge them. They dug away the soil and found the reason. Two of the largest roots enclosed a large flat stone. One root went almost straight downward at the edge of the stone and the other crossed the stone before it turned downward. Both were flattened where they touched the stone. Farmer Ohman had to chop through these roots

before he and his son could draw out the stump. Then after they got the stone out of the ground and tumbled it over to one side, the boy called his father to come and look at strange markings on it.

The father found the markings unintelligible, and that afternoon he called neighbor Flaten to come and look at them. Flaten stated in an affidavit: "The two largest roots of the asp were flattened on their inner surfaces and bent by nature in such a way as to exactly conform to the outlines of the stone. I inspected this hole and can testify to the fact that the stone had been there prior to the growth of the tree, as the spot was in close proximity to my house. I had visited the spot earlier in the day before Mr. Ohman had cut down the tree and also many times previously." Roald Bentson, another farmer neighbor, and S. Olsen, a businessman of Kensington, also came and saw the hole in the ground where the stone had lain, and the flattened aspen roots.

There was much speculation in the neighborhood about the ancient and weathered-looking inscription. Someone suggested that robbers had buried treasure under it, and many persons dug in the hillside industriously but in vain. The stone was placed on exhibition in a window of the Kensington bank, where many came to see the curiosity.

It was observed that the letters were similar to Scandinavian runes. About four months after the discovery, a copy of the inscription was sent to C. J. Breda, Professor of Scandinavian Languages at the University of Minnesota. He was able to make a translation of the major portion of it, but he could not read any of the numerals. His conclusion was that it probably was of the time of the Vineland voyages of the vikings in the eleventh century.

Newspapers published Professor Breda's partial translation and his statement that the inscription seemed to him spurious, because he said Swedes and Norwegians never traveled together to Vineland, and the language was "not Old Norse

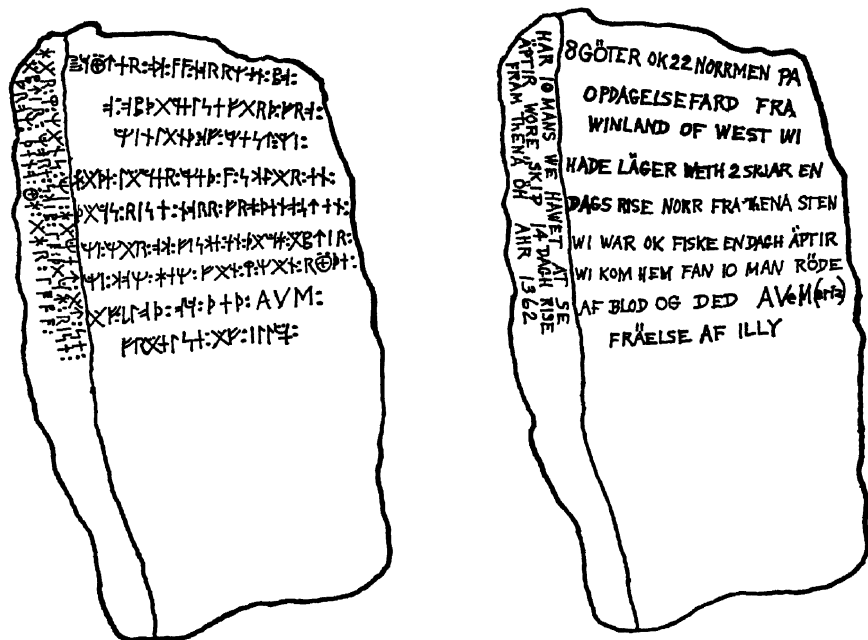
but a mixture of Swedish, Norwegian, and English," which could not have existed among the vikings of the Vineland voyages. He said the "English" words were: "of West," "man," "we," and "from."

This first adverse judgment was widely disseminated. Then a professor of another university sent a photograph of the inscription to scholars in Scandinavia, who promptly from that distance called it a fantastic forgery, and a very clumsy one at that. This seemed to settle the matter, and the stone was returned to farmer Ohman. He called it a "lying rune-stone," and expressed his scorn for it by leaving it in his yard with its inscription face down. It remained thus dishonored for nine years until in 1907 a young Norwegian-born college student interested in the history of Scandinavian Immigration, Hjalmar R. Holand, from Ephraim, Wisconsin, came to the region, heard of the stone, and went to look at it. Holand wanted to buy it as something interesting to study, and offered five dollars for it. Ohman thought it worth ten dollars but when Holand said he could not afford more than five dollars, Ohman said he liked to help young students and insisted on giving it to Holand.

The stone was 31 inches long, 16 inches wide, and 6 inches thick. The grooves of the letters were much weathered, showing that after they had been made, the inscription face had been many years in the open air before the stone had fallen over and was buried. Holand estimated from the reported diameter of the trunk of the aspen tree that the tree was over seventy years old, and had started growing at least twenty years before white settlers began to come into Minnesota.

After making a comparative study of inscribed stones in Scandinavia, Holand discovered that he had in his possession the longest runic inscription on stone ever found. He made a complete translation, including the numerals. They gave not an eleventh-century, but a fourteenth-century date.

The illustration shows the inscription as it appears on the stone, and the equivalent in English letters. Following it is Holand's translation.

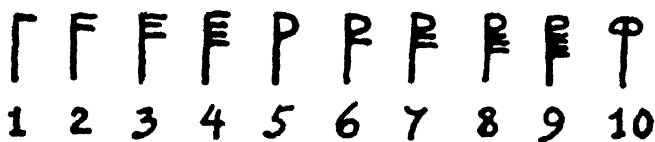


Kensington Runestone

[We are] 8 Goths [Swedes] and 22 Norwegians on
 exploration journey from
 Vineland throughout the west. We
 had camp beside 2 skerries one
 day's journey north of this stone.
 We were out fishing one day. After
 we came home, found 10 men red
 with blood and dead. AV[e] M[aria]
 Deliver [us] from evil!

Have 10 men by the sea to look
 after our ship, 14 days' journey
 from this island. Year 1362.

Numerals in the inscription are indicated according to this system:



"Göter" means Gothlanders or Swedes. A skerry is a rocky islet or outcropping. Professor S. N. Hagen thinks the word is not skerries but "sheds," which could have been Indian sheds, or sheds erected by the exploring party for a prolonged stay at their fishing camp. The words "came home" would seem to support Hagen's idea that the explorers had built sheds for a camp headquarters, since "home" would be less applicable to a mere two-night campfire site. Hagen differs from Holand in translating "tortured" instead of "dead," but the men "red with blood and tortured" were dead in any case.

A day's-journey was a Norse measure of distance. In inland waters like the Nelson River, Lake Winnipeg, and the Red River, by which route the Kensington Stone party had presumably reached central Minnesota from Hudson Bay, a day's journey was 75 miles.

The use of the words "this island" is a strong argument for authenticity; for the hill where the stone was unearthed had actually been an island before Minnesota was drained for agriculture. Geologists say the draining lowered the water table fifteen feet. What is now the "Land of Ten Thousand Lakes" was in the fourth century crossed by chains of lakes and waterways.

"Deliver [us] from evil" was from the Lord's Prayer. Imagination is stirred by the story the inscription tells of massacre and of the terror of the survivors. It is clear that they recognized that their situation was hopeless. Fleeing for their lives from hostile savages, they had gone into hiding on the small island where in desperation they left a record of their plight, a message to any who might search for them. They identified themselves, told of the horrible thing that had

happened to ten of their number, invoked divine assistance, and gave the year as though they foresaw it would be a long time before the stone would be found.

Did these survivors on the tiny wooded island that gave them temporary shelter succeed in escaping from the Indians? Are there any further traces of them?

We have three hints as to their fate. First, their small number. The thirty mentioned ("8 Goths and 22 Norwegians") was the right number for the crew of one ship. It was too many for an afterboat such as was used in inland waters. The small boat could have held, at maximum, twenty, in waters that were not rough. The word "ship" could be either singular or plural. If it meant plural, two ships, then there would have been at least fifty men in the expedition, and since 10 had been left with the ships at the salt-water shore, 40 would have filled two small boats to capacity for the inland exploration, and after the massacre of 10, a party of 30 able-bodied Norsemen with weapons and two boats would have felt itself strong enough to fight its way back to the ships. But the men who took time to put their tragic story on a stone were in a mood of terror and resignation, and were leaving a record that would identify their expedition to those of their countrymen who knew that it had set out with a total of 8 Goths and 22 Norwegians. There was therefore probably only one ship, and 20 men started the inland voyaging in one small boat, and after 10 were found red with blood and dead, there were only 10 survivors. So small a party could be easily overwhelmed by the natives, and they knew it, and knew that the natives knew it.

That they did not escape is evidenced by the finding of what was probably their boat at the north end of Grant's Lake in the village of Holmes City, less than six miles from the Kensington Stone site. A man who was excavating in a hill-side, the former lake shore, to lay foundations for a stable, "found the decayed remains of one end of a boat which he

believed must have been of large size judging by its stout ribs and heavy stern post. It had a round bottom." (Holand, H. R., *Westward from Vinland*, note page 211). This was very different from the boats of the early settlers in Minnesota, which had flat bottoms.

If the Kensington Stone party did succeed in escaping in their boat much farther to the east, as mooring holes of their probable camp sites would indicate, the presence of the remains of their boat on the shore of Grant's Lake would imply that they were either driven back, or killed, or captured and brought back westward with their boat.¹

Holand sent his translation to European scholars, who without hesitation—and of course without study of it—pronounced it a fraud. The idea that fourteenth-century Norsemen had penetrated the North American continent to Minnesota was to them so incredible that they called it "impossible." They charged that the circumstances of the discovery of the runestone were unreliable, although supported by the son of the farmer who had dug it up and by neighbors who were witnesses to his finding of it. They expressed doubt that the

¹ Holand thinks they were not all killed, but that some were captured by the Mandan Indians, with whom they intermarried. The Mandans moved west to near the site of Bismarck, North Dakota. Certain it is that many Mandan Indians had fair hair and blue eyes, and their dwellings and customs were very different from those of all other Indians of North America, and they are said to have had some knowledge of the Christian religion. The French explorer La Verendrye, who visited them in 1738, found that they treasured as a tribal heirloom a stone about 14 inches long set into a large pillar. This stone was covered on both sides with what the Jesuits, unfamiliar with Norse runes, called a "Tartarian" inscription. The Tartarian and Norse runic alphabets are very much alike, with a number of the letters identical. Will the Mandan-Verendrye inscription tell the conclusion of the story of the Kensington Stone party? No copy of it exists, but the stone itself has been traced to the basement of a church in Rouen, France, where it was stored with many other archaeological objects during World War II. A corner of that church received a direct bomb hit and the Mandan-Verendrye inscription is buried under tons of rubble. Let us hope that someone will provide funds to excavate that church basement on the chance that the inscription stone may have survived destruction, and, if found, may prove to be a record of extraordinary historical value.

stone had been found underground wrapped in the roots of a seventy-year-old tree.

Holand had a lifetime assignment on his hands. He began a long battle for acceptance of belief in the genuineness of the Kensington inscription. When he gave his reasons why he believed in it, one of his scholarly opponents belabored him with sneers and personal insults. Holand persevered for fifty-five years, with a tenacity that has rarely, if ever, been duplicated in the history of scholarly debate. In answer to a professor who said "Ave Maria" is never *AVM* in Scandinavia, he showed that this combination of letters was actually used there in the fourteenth century on a gravestone and on a seal. He patiently found evidence which answered every argument against the stone; made extensive researches which the skeptical philologists should have made but did not; he took the stone to Europe at his own expense to show it to scholars there; he wrote numerous articles and a book, *The Kensington Stone*, 1932, which silenced the arguments of those who could not believe there had been a Norse exploration of North America in 1362. In this book attention was called to the record of the ordering by King Magnus of Norway and Sweden in 1354 of an expedition under the leadership of Paul Knutson, to restore Christianity to the lost Greenlanders. Paul Knutson was ordered to take with him some men of the king's bodyguard, who were Goths (Swedes), and also sailors of his own choosing, and this meant Norwegians, since Knutson was a Norwegian. Thus his expedition was one in which Swedes and Norwegians traveled together. The record indicates that Knutson was instructed to search for the people of the Western Settlement of Greenland who had departed to the southwest or west. Survivors of the Paul Knutson Expedition returned to Scandinavia in 1364.

Holand's first encouragement came when a Committee of the Minnesota Historical Society brought in a report recom-

mending acceptance of the Kensington Stone, and again when the committee maintained its favorable opinion after hearing a scholar assail it with objections.

Holand presented two other books, *Westward from Vinland*, 1940, and *America, 1355-1364*, in 1946. In these he presented his belief that the Newport Tower had been built by the Paul Knutson Expedition, but the air of complete conviction with which he pushed his theory linking the Newport Tower, the Paul Knutson Expedition, and the Kensington Runestone, without being able to prove their connection, caused question to be raised as to his reliability as a scholar, and may have helped rearouse opposition to the runestone.

Professor Sven B. J. Jansson of the University of Stockholm in 1949 attacked every word of the inscription, its runic forms, its grammar, and its unorthodox combination of Swedish and Norwegian.

When Dr. Vilhjalmur Stefansson wished to have an article on the Kensington Stone written for an encyclopedia, he selected Dr. Sievert N. Hagen (of Franklin and Marshall College, Lancaster, Pennsylvania). Professor Hagen had a profound knowledge of Icelandic, and could also bring a fresh, unprejudiced approach to the inscription, since he had not previously given any scholarly attention to it. He made a thorough philological study of the inscription, which was published in *Speculum*, July 1950, pp. 321-356. In this, Hagen upheld the theory of fourteenth-century origin. He supported the work of Holand, who had found that every word in the Kensington inscription except one—*opdagelse*—occurred in fourteenth-century manuscripts and inscriptions. Any skeptic may assert that *opdagelse* had not yet been introduced into Scandinavia by the fourteenth century, but there is no proof that it had not been. Hagen says: "Mere absence of a word from the surviving records of any language does not by itself prove its non-existence." He says of the skepticism of philologists in the first half of the twentieth century: "A

future generation of scholars will find it hard to understand how an older one could have been so blind."

In support of Holand and Hagen, a professor of Germanic Languages at Yale remarked to me: "Every word in the Kensington inscription except *opdagelse* has been proved to have been used in Scandinavia in the fourteenth century, and I am willing to take *opdagelse* on faith." No one is ever going to prove that *opdagelse* was *not* used in Scandinavia in the fourteenth century, and someone someday may find proof that it was. See Holand's findings in regard to the word in *Explorations*, pp. 314-316. Thomas C. Lethbridge of the University of Cambridge said of the Kensington inscription in *Herdsmen and Hermits*, 1950, p. 129: "The betting is hundreds to one against it being a fake." Further answer to the skeptics came from a distinguished Danish authority, Dr. William Thalbitzer, who for twenty-five years had been opposed to accepting the fourteenth-century origin of the Kensington Runestone, but had the courage to reverse himself. With regard to the mixture of Swedish and Norwegian words in the inscription, Dr. Thalbitzer showed that the language of the inscription was what it had to be, "the composite language of the camp" of men of two nationalities who had been living together in the wilderness for several years. ("Two Runic Stones, from Greenland and Minnesota" in *Smithsonian Miscellaneous Collections*, Vol. 116, No. 3, August 30, 1951, pp. 1-71.)

Another Danish philologist, Dr. Erik Moltke of the National Museum, Copenhagen, made a new attack on the Kensington inscription which, like every one of the earlier attacks, revealed its maker's ignorance of fourteenth-century usages. Moltke ("Kensington-Stenen" in *Information*, Copenhagen, Nov. 9, 1949; reprinted in *Antiquity*, 1951, pp. 87-93. Also, "The Ghost of the Kensington Stone" in *Scandinavian Studies*, 1953, pp. 1-14) ventured to assert that the rune for "n" in the Kensington inscription became extinct in 1100 A.D.,

but he later shied away from this assertion when it was shown to be ill-founded. He further asserted that the system of numerals used in the Kensington inscription was of the late sixteenth century, but later admitted: "Holand has succeeded in finding in the parchment literature examples of very early use of Arabic numbers." (Another scholar, Helge Gjessing, pronounced the use of numerals in the Kensington inscription to be in perfect accord with numerals used in the Middle Ages.) Moltke declared that the use of the symbol for ö umlaut, with cross and two dots, was uncharacteristic of the Scandinavians of the fourteenth century, and also cited the use of the j-rune, because "it happens that the letter 'j' is a recent addition to the Latin alphabet, as is also the letter 'v.' Both of these letters were invented by the French philosopher, Petrus Ramus, in the sixteenth century." However, Holand showed that the umlaut with two dots was in common use by the Hanseatic League in Scandinavia, and among shipping circles there in the fourteenth century, and he not only found the j-rune in general use in the fourteenth century, but also showed (*Explorations in America Before Columbus*, 1956, pp. 332-334) that it was used twenty-two times in a letter signed by Queen Margaret in 1370.

Holand subsequently presented ("An English Scientist in America 130 Years Before Columbus" in *Wisconsin Academy of Sciences, Arts and Letters. Transac.* Vol 48, Madison, Wisconsin, 1959) persuasive evidence that the English friar, Nicolas of Lynn, was a member of an expedition that entered Hudson Bay at the time the Kensington Stone party must have entered it. Presumably, therefore, Nicolas of Lynn was a member of the Paul Knutson Expedition, and, if so, we have further evidence that the Paul Knutson Expedition was international and partly clerical in its personnel.

A half-century of studies of the Kensington inscription had demolished all philological objections. Ever since the

stone was found in 1898 it had triumphed over all detractors, and the case logically should have closed. But the ill-informed are often swayed by a confidently asserted doubt, and even those who should know better will jump on a skeptic's bandwagon. When I came home from abroad one October, many friends independently greeted me with the announcement that the Kensington Runestone had been proved to be a hoax. I traced their news to its source, an editorial on September 6, 1954, in one of New York City's leading newspapers, which had told a million readers that the Kensington inscription was now known to be a fabrication because it was devised as an advertising stunt. The editorial said: "It puzzled scholars for years until modern Norse linguists worked out the mysterious 'message.' It was the slogan for a patent medicine popular among Minnesota Scandinavians at the turn of the century."

Nothing that had been published in thirty-five years of controversy gave a clue to this charge, and the only thing in the inscription that it was possible to imagine as a mysterious slogan for a patent medicine was the expression *AVM*. I went to the newspaper building and through the Librarian learned the name of the reporter who had written the editorial. He was a young man, pinch-hitting as science reporter in the absence of the regular science editor. Another young reporter for the same newspaper, a personal friend, told me that he had been offered the position of science writer but had wisely declined, because, as he said, he "did not know enough." I met the editorial writer and asked him his source for the patent-medicine slogan idea. He said: "I don't remember. I'll have to look through my notes. Give me a week and I'll let you know." I surmised that a week would mean forever, and after two weeks had gone by, I went over his head, and the secretary to the editor of the Science Department of the newspaper sent me the following letter. Names that would identify the newspaper have been omitted.

March 1, 1955

Dear Mr. Pohl:

Although I promised to give you an answer much sooner than this I was not able to reach Mr. — because he was out of the office. Today I spoke to him and showed him your letter. His answer to me was as follows:

"I wrote this editorial long ago and when I got my information I threw away my notes; but I got my information from the Department of Anthropology of the Museum of Natural History. I generally speak there to Dr. Harry Shapiro or Mr. Walter Fairservice. I have no other authority. What I said in the editorial may well be wrong but I got my information from one of them and I accepted what they told me without question. Unfortunately at this late date I don't recall exactly to whom I talked."

I know this is not very adequate but it seems to be about the best we can do.

Sincerely yours,
(Signed by Secretary
to Science Editor)

The day after the receipt of this letter, I went to the American Museum of Natural History, where Dr. Shapiro told me he "had never heard of the patent-medicine idea." I also obtained the following statement:

4th of March 1955

To Whom It May Concern:

Not until today when Mr. Frederick J. Pohl brought the question to me, had I ever heard of the "patent medicine" idea in connection with the Kensington Runestone.

Walter A. Fairservice, Jr.

So much labor to expose one young reporter's brainstorm! His irresponsibility is, I am glad to say, not typical of the newspaper he served.

Hint of a more poisonous attack was contained in a statement in a nationally popular magazine that Professor Erik Wahlgren of Los Angeles had proof that the farmer Olaf Ohman had carved the Kensington inscription. I wrote in

inquiry to Professor Wahlgren, who replied by sending me a copy of the telegram he had sent to the editors of that magazine demanding a retraction. Wahlgren's feelings as a scholar had been incensed. His telegram demanded that the editors make clear to their readers that he, Wahlgren, did not have proof that Ohman had fabricated the inscription; nor, he said, was he able to specify who did. Wahlgren said that he felt he would be satisfying the requirements of science in limiting himself to the assertion that the Kensington inscription could be a modern fabrication. He wrote me that the magazine editors agreed to carry a retraction in their foreign editions, but refused to do so in the American edition, and he bitingly commented that American readers were not to be allowed to chew the cud of truth.

Since the magazine had misused the word "proof" and had downgraded a scholar's fair request to have his position stated accurately, I telephoned to its Science Editor, who sanctoriously said: "Two years ago we carried an article in favor of the Kensington Stone. This time we had an article against the Kensington Stone. We think that is fair." This in the name of Science!

Wahlgren's scholarly scruples commanded esteem and his telegram and letter expressed an accurate self-appraisal, but his position seemed less commendable when he published his book, *The Kensington Stone, a Mystery Solved* (University of Wisconsin Press, 1958). For a man who had protested the use of the word "proof" when he had only a supposition, the publication of the unwarranted subtitle was surprising, to say the least. Charitable persons have suggested that his publisher may have suggested the subtitle, but in any case Wahlgren accepted it.

Wahlgren's book offers no proof, but makes endless innuendos. It is full of implications that everyone who had claimed to have uncovered the Kensington Stone or who had testified to its having been found wrapped in the roots of a

tree was dishonest: the farmer Ohman, his son Edward, his farmer neighbors Flaten and Bentson, and the Kensington businessman Olsen. Wahlgren more than insinuates that the stone's principal promoter, Holand, is likewise dishonest. The specific assumption of Wahlgren's book is that all these men could have been participants in foisting upon the public a hoax. Now this is a *possible* position to take in regard to any human beings, and it is precisely parallel with the *logically possible* position of saying that Matthew, Mark, Luke, John, Peter, James and his mother were all liars and therefore Jesus never existed. A sample of Wahlgren's argument by insinuation occurs on pp. 54-58 of his book, where he raises doubt as to whether the affidavits made by five men of Kensington and published in 1932 in Holand's first book ever existed. The documents were lost when Holand's house at Ephraim was completely destroyed by fire in 1934. In his book Wahlgren of course avoids mention of the extensive pattern of mooring holes across Minnesota, the existence of which he cannot deny.

There are two features of his book which are new in the Kensington Runestone case. One is the *wholesale* flinging of accusations. The other is the presentation on pages 132 to 137 of some information regarding runes. This was excerpted from an edition revised in 1882 of a one-volume book of knowledge on miscellaneous subjects, or what the Swedes called a "Conversation Lexicon," a copy of which the farmer Ohman possessed. The book was *Den Kunskapsrike Skolmästaren* ("The Well-Informed Schoolmaster") by Carl Rosander. Wahlgren presents those portions of the runic information therein which are closest to what he wants us to believe a forger of the Kensington inscription might have needed, and his presentation, coming from a philologist in his position, seems very persuasive to those who have no means of ascertaining the facts. The Rosander book is not easy to find. There is no copy in the New York Public Library, in

the Library of Congress, or in the British Museum. The Union Catalog in the Library of Congress shows there are two copies available in the United States, one of them in the possession of the American-Swedish Historical Foundation in Philadelphia, which I was generously permitted to borrow. It has the same text, revised in 1882, as the copy Wahlgren used. Actually, there is nothing in the section on Swedish history in Rosander, or in *Swedish History* by Oscar Montelius, a copy of which Ohman also possessed, which would give information that Goths and Norwegians traveled together in the 1360's when King Magnus of Norway for a time ruled also over the Swedish province of Westgothland.

Wahlgren, however, goes farther than accusations and the planting of implications. He makes positive statements which are not supported by the facts, and surely there can be no unfairness or discourtesy in applying to these misstatements the words Wahlgren himself applies (p. 87) to some errors made by Holand: "audacious" and "breathhtaking." Undeniably, Wahlgren's argument would be greatly strengthened if the much-disputed expression *AVM* could have been found by Ohman ready-made in Rosander. He therefore ventured to put it into Rosander!

In his Index, p. 223, Wahlgren has this entry: "*AVM*: in Rosander, 137." It is undeniable that the three capital letters *A*, *V*, and *M* do appear on many pages of Rosander, but unfortunately for Professor Wahlgren they never appear consecutively in that order. The expression *AVM* is not in Rosander. Even if we say that perhaps Wahlgren did not make the index to his book but paid to have it professionally made by someone who innocently introduced the misstatement, Wahlgren cannot be excused; for at the University of Wisconsin Press, as elsewhere, the items in an index are the author's responsibility, whether he makes the index himself or employs someone else to make it. Wahlgren cannot evade responsibility for this misleading statement that *AVM* is in

Rosander; and all the more since he forces the misconception on the unwary in his own referred-to page 137, where after quoting the phrase *AVM fräelse: af: illu* from the Kensington inscription, he pushes his argument to an unjustifiable conclusion: "Comparing the phrase found on the Kensington stone with the parallel in Rosander, it is obvious that we need look no further." Wahlgren does not say that the "parallel" in Rosander includes *AVM*, but readers of his page 137—and certainly those who come at the page through the *AVM* reference in the Index—are likely to think that it does.

What is obvious is that scholars who have let themselves become persuaded by Wahlgren's book now very much owe it to truth in research to look further than into Wahlgren.

The fact is that in Rosander there are only 13 of the 30 symbols in the Kensington inscription. The symbols in that inscription which are *not* in Rosander are the nine runes for *U* (*W*, *V*), *Y* (*J*), *P*, *Ö*, *A*, *AE*, *Ü*, *K*, and *G*; the expression *AVM*, and the seven numerals.

In "The Case of the Kensington Rune Stone" in *American Heritage*, April 1959, Wahlgren writes with reckless assurance: "The Arabic system can no more coalesce with the runic than with the Roman," and he concludes, after applying this stricture on the use of the pentadic numerals in the Arabic system in the Kensington inscription, that the inscription is unquestionably a forgery. This categorical condemnation is confuted by what Holand (*Kensington Stone*, pp. 124-129, and *Westward from Vinland*, pp. 177-183) had previously found of mediaeval uses of the pentadic calendar numerals, in form sufficiently different to demonstrate that the Kensington inscriber did not copy them from a book; and by Hagen's acceptance of the fourteenth-century genuineness of these numerals, and his giving a reason for their having been used, since they were "better adapted for cutting into hard stone." In summary Hagen says: "The inscriber's runic alphabet is a combination of runes and Latin letters. His sys-

tem of numerals is a combination of the pentadic numerals and Arabic place value. The parallelism is obvious."

With his dust cloud of accusations Wahlgren blinds his readers to the most significant fact in regard to the Kensington Stone. It is a fact which requires perspective, and here it is: It has been amply demonstrated by over sixty years of philological study stimulated by the existence of the Kensington Stone that no scholar, no specialist known to the scholarly world in the nineteenth century in America or even in Scandinavia knew enough about fourteenth-century usages to have fabricated the inscription. The Kensington inscription has held up under the keenest analysis by the world's leading specialists in linguistics, and those who have attacked it have themselves been proved ignorant of the usages in respect to which they had been presumed to be authorities.

Since it is practically impossible to create a successful textual hoax purporting to be several centuries old, it would seem little short of miraculous that there would have been anyone in Minnesota in the nineteenth century with knowledge of fourteenth-century Swedish and Norwegian usages beyond that of all the scholars in the world. But Professor Wahlgren does not concede this, and after establishing that the farmer Ohman had also a history of Sweden by Oskar Montelius which showed some basic runes, and a grammar of Swedish by Almquist, he asserts (in his book p. 136) that "a self-taught man's application—or misapplication gleaned from a highly limited source" could have created what he would have us believe is a hoax.

There you have your controversy. Is the Kensington inscription a hoax concocted by some unique genius with almost superhuman prescience (containing one detail which Wahlgren, p. 136, calls "a brilliant synthesis"), or is it genuine? Let your own considered judgment tell which belief is more in keeping with all the probabilities.

The Kensington Runestone was exhibited in the Smith-

sonian Institution for a year, but its owners wished it to be returned to them, and the Smithsonian thereafter displayed a replica. The original is in Alexandria, Minnesota, the county seat of Douglas County, in which Kensington is located, and it is forever the property of the people of that county.

CHAPTER 12

Sinclair the Sea-King

THE earliest crossings of the Atlantic are entirely undocumented, or are established only by brief references. The best we can say for them is that they probably occurred or that we have reason to believe that they did. As for the voyages about one thousand years ago, we are without knowledge of certain facts; for example, with regard to Leif Erikson's voyage to Vineland, we guess at the month, but do not know the day, and have only a reasonable conjecture as to the year when it took place. So also with all the other viking voyages. As for the Paul Knutson Expedition in the fourteenth century, we know the year when the king of Sweden and Norway ordered it, but we do not know whether the Expedition set sail that same year or the next. By contrast, the pre-Columbian Sinclair Expedition across the Atlantic is one of which we have certain knowledge; for we know the year and month and day when it landed in the New World. In a further respect it is unique among pre-Columbian crossings, since it is the only one of them of which we have a written record by a participant.

Our knowledge of the Sinclair Expedition has gradually unraveled. The initial European record was uncovered in a palace in Venice by a small boy who came upon some maps and old letters written one hundred and thirty years before

by two members of his family, one of them his great-great-grandfather. The child ripped to pieces most of the letters, but when he grew to manhood he realized the importance of what had survived destruction; he pieced together what remained, and published what is known as the Zeno Narrative, in 1558.¹

In the Zeno Narrative we are told of a voyage from Venice by Nicolò Zeno who in 1390 sailed northward in the Atlantic, met "a Prince" (*un Prencipe*) who ruled over many islands north of Scotland, and became admiral of the prince's fleet. The prince conferred knighthood on Nicolò. The next year, Nicolò's younger brother Antonio joined him. In 1395, after a visit to the east coast of Greenland, Sir Nicolò died, and Antonio, as admiral of the fleet, sailed with the prince across the ocean, and wrote a record of the voyage.

Young Nicolò of the sixteenth century, who did his best to read the handwriting of his fourteenth-century forebears, garbled the name of the prince, and the names of islands. For two hundred years the Zeno Narrative excited curiosity, but no one knew how to connect it with actual persons and places. Did the expedition reach the continent of North America? No one could say. In the last two hundred years, however, the authenticity of the narrative has been established; geology has proved that the transatlantic expedition landed on the coast of North America; the landing has been precisely dated as a result of detective work; and we now know where the leader of the expedition traveled in the great land on the western side of the Atlantic, what regions he explored, where he spent a winter in the "New World," and by what route he returned home.

¹The Zeno Narrative bore the title: *The Discovery of the Islands of Frislandia, Eslanda, Engronelanda, Estotilanda, and Icaria; Made by Two Brothers of the Zeno Family, Namely, Messire Nicolò, The Chevalier, and Messire Antonio. With a Map of the Said Islands.* The Italian text of the narrative and an English translation are to be found in "The Voyages of the Zeno Brothers," *Hakluyt Society Works*, Vol. 50, 1873.

Since our exploring prince was a prominent person in the political field, the question immediately asked is why his discovery of the "new world" did not become known throughout Europe. One reason is that Europe was not yet ready for the discovery of America, and another is that there was no effective means, before the invention of printing, of giving publicity to his accomplishment. Other reasons will appear in due course. Now at last and for the first time, the essential details of his story have been reconstructed.

Our hero was born in 1345 in Roslin Castle, eight miles south of Edinburgh, and was christened Henry. His father, Sir William St. Clair, was of a family that had come into Great Britain with William the Conqueror.

When Sir William St. Clair left home to go to Prussia to fight against the infidel Lithuanians, and was soon afterwards reported dead, his son was only thirteen years of age, and upon the boy fell the responsibility of the barony of Roslin, though his family—his uncle, his mother, and other relatives—made the decisions for him during the first few years.

Henry, whose surname is better known as Sinclair (accent on the first syllable), was trained in sports and martial exercises, in use of sword and spear and bow and arrow. He was well-educated, speaking French at home, and able to speak Latin also. He was knighted at the customary age of twenty-one.

In addition to the barony of Roslin, Henry laid claim to the earldom of Orkney through his mother, to whom it had been bequeathed by her father, Malise Sparre, the last earl. At about the time Henry was born, the earldom had reverted to the crown of Norway. Henry's claim to the earldom of Orkney was in dispute, because his mother was the second daughter of Earl Malise and by a second wife; while there was no question that the Earl had formally bequeathed the earldom to Henry's mother and her heirs, there was a first

daughter by the Earl's first wife, whose son Alexander de Ard, Henry's cousin, claimed the earldom on grounds of seniority. However, the right of seniority was not yet universally recognized in the fourteenth century, and Henry's bequeathed heirship was undeniable.

At first, while the cousins were still young boys, it looked as though the earldom would come to neither of them; for a Swedish opportunist, Erngisle Sunesson, who had married the youngest daughter of Earl Malise, proclaimed that she was the rightful heir, and by political maneuvering got control of the Orkneys and persuaded the king of Norway to give him the title of earl. But Erngisle opposed King Magnus of Sweden who, when he became regent of Norway, sequestered Erngisle's Norwegian estates and declared his title forfeited.

With Erngisle eliminated, it was reasonable to expect that the Norwegian king's choice would be either Alexander or Henry, but as time went on it became apparent that the question of their rival claims was subordinate to another consideration in the Norwegian mind. The king of Norway was concerned as to whether or not Norway could continue to hold the Orkney Islands which lay so far from his own shores and so close to Scotland. The people of the Orkney and Shetland Islands were predominantly Norse, but the increasing influx of Scotsmen was disturbing to Norway. Above all, Norway did not want the Orkneys to be seized by Scotland as the Hebrides had been one hundred years before. The real issue, after the cousins had grown up, was which of the two would be the man better qualified to meet all the problems of the earldom. Disorders that had arisen in the islands during the years when there was no effective leadership, the disregard there of the king's law, the snarled-up land and tax situation, the nationalistic conflict, the corruption of selfish officials—all these complexities called for a man of strong personal force who with tact and skill could bring disputants into agreement, a man capable of reestablishing respect for the king's

law and obedience to it, and a man who, as ruler of what would be a buffer state, would be able to maintain friendly relations with Scotland and at the same time remain unswervingly loyal to Norway.

While Henry was yet a boy, a manifesto was issued to the people of Orkney by Alexander's guardian, warning them that Alexander was the true and legitimate heir of Earl Malise, and that the earl's revenues must go to him. When Henry was eighteen, however, his family procured for him from the kings of Norway, Denmark, and Sweden, "a confirmation of the lands of Orkney," and Henry's uncle was appointed the king's agent in Orkney. The Sinclair family subsequently displeased the Norwegian king by giving preferment in the Orkneys to too many of their Scottish relatives and friends, and the king reacted by appointing a Norwegian to be governor, and by persuading the king of Scotland to forbid Scotsmen to pass into Orkney except for lawful commerce. The bishop of Orkney was a Scot and had been favoring Scotsmen, but the Sinclair family wisely veered and began to oppose the bishop, and even helped bring about an agreement between the bishop and the king's governor to resolve their differences and keep the peace.

The Sinclair family had sought to further Henry's cause when he was eighteen by arranging a marriage for him with an infant daughter of the king of Denmark, a political marriage of a kind that was quite customary. The child princess, "by whom he had no issue," died before she was old enough to be bedded with him. This marriage into royalty and relationship to royalty had not procured the coveted earldom. The queen of Scotland, Euphemia, wife of the Stewart King Robert, was Henry's great-aunt, but this very fact gave the Norwegian king pause, since he questioned whether it would be good policy to let anyone become earl of Orkney who was so closely bound to the throne from whose encroachments Norway sought to preserve the Orkneys. Perhaps Sir

Henry realized this, and in any case, being his own master and ill-disposed to another political and fruitless marriage, he married a girl of his own choice, Janet Halyburton of Dirleton Castle, twenty miles from Roslin. (Sir Walter Scott was a descendant of the Sinclairs and Halyburtons.) With Janet, Henry had three sons, Henry, John, and William, and three daughters, Elizabeth, Helen, and Beatrix.

Alexander's agents in the Orkneys intrigued against the Sinclairs and created problems which the Sinclairs failed to solve to the Norwegian king's satisfaction, so that the king lost patience with the Sinclair family and appointed Sir Alexander de Ard governor of Orkney and commissioner for the king. This was a dark day for Henry, but there was one ray of light in that the appointment of Alexander was for one year only.

At the end of that year, the king of Norway had become dissatisfied with Sir Alexander's governing of the islands, and he recalled him. Not long thereafter the king, making a final decision, chose Sir Henry on the basis of his character as a man, and set before the lawmen the task of drawing up the terms under which Sir Henry Sinclair was to be installed as earl. The text of the Installation of Earl Henry is most interesting, and it is unique among documents of feudal investiture in that it testifies against the widespread assumption by historians that an overlord dictated the terms and a vassal merely acquiesced. Earl Henry's Installation shows unmistakably that it was the work of Scottish as well as Norwegian lawmen. For one thing, it gave Earl Henry royal sanction for opposing the bishop of Orkney, a detail which Henry's advisers probably suggested. It also required that two of Henry's trouble-making cousins, Sir Alexander de Ard and one named Malise Sparre, be held as hostages in Norway for such time as would be sufficient for Henry to establish himself firmly in the Orkneys.

The Installation ceremony was held at Marstrand, Sweden,

on the 2nd of August, 1379. Henry was separately required by a bonded promise to make payments "of good gold" to fulfill the terms of his infecture. That same year in Scotland he obtained the formal resignation of King Robert to any right in the earldom, and also got the most powerful Scots nobles to line up as supporters of his infecture by having them affix their seals as witnesses to his pledge not to alienate or deliver as security any of the islands of Orkney away from the king of Norway.

Henry now sailed into troubled waters. There were more than 170 islands in the earldom, in the Orkneys and Shetlands, 53 of them inhabited, and they extended over an area 170 miles in length from north to south. Disorders were rife and the seas swarmed with pirates. The Installation did not give Henry control of the islands, but merely presented him with the legal right to take control, which in view of the prevalent lawlessness, he could do only with force, or a show of force.

The confusion in Orkney matched the confusion in all Christendom. For 73 years the Papacy had been captive at Avignon under the dictatorship of French kings, and the year previous to Henry's Installation saw the beginning of the Papal Schism, with one pope at Avignon and a new pope in Rome. Nations took sides in support of these Holy Fathers. Scotland, Spain, and the Kingdom of Naples stood with France and Avignon; England, Portugal, and Norway acknowledged the Roman pope. The Church in Orkney stood with Scotland, but the people of the Orkney and Shetland Islands agreed with Norway. Henry was committed to opposition to the Orkney bishop, and this was the situation until, a few months after the Archbishop of Canterbury had been beheaded by the followers of Wat Tyler in London, the bishop of St. Magnus Cathedral in Kirkwall, the capital of Orkney, was slain by his "flock."

The Church in the fourteenth century presented a problem

that was more serious than the Papal Schism. Because the Church possessed about one-third of all the land in Europe, which had in the course of centuries been bequeathed to it by pious souls, an impossible state of affairs had been created in which the too-powerful clergy were able to tyrannize over the laity, and nobles and even some kings were deprived of so many land rents that they were forced to live in comparative poverty. "Take their lands, ye lords!" said William Langland in *Piers Plowman*. For a time the land problem had been relieved, in a horrible way, by the plague called the Black Death which in 1348-50 killed more than half of the population in England, and at least a third of the people of Scotland, but before the end of the century the reproductive powers of the survivors made the land problem acute once more.

The title with which he had been invested made Henry a power in Scandinavia, because there was only one earl in the Norwegian kingdom, and by Norwegian law the "jarl" was next in rank to the royal family. In the Orkneys Henry was empowered to stamp coins, make laws, remit crimes, and with a crown on his head and a sword carried before him, he had legal right to act, within the limits of fealty to Norway, as an independent ruler. Theoretically he was a sovereign prince in the Orkneys, but in hard reality his power there went no further than his ability to push it by persuasion or force.

A year after his Installation, Henry was building a castle in Kirkwall, for which, in absence of any record to the contrary, we may assume he had by that time obtained the Norwegian king's permission. His castle was just off shore about one hundred yards north of the cathedral, with which it was connected by a drawbridge, and in addition to serving as armory and barracks for soldiers and as rallying center for loyal men, one of its most important functions was to give cover to the landing of ships. While the castle was a stout and necessary stronghold, it was only a beginning of power, for it was stationary. In order to extend effective sway over

many islands, Henry needed a fleet as well. And so while he was sovereign in the Orkneys in theory, it took him years to become their ruler in practice.

He conceived it to be the duty of a lord to labor night and day to cause disorders to cease, and to redress wrongs, and defend all honest men against robbers. Many Orkney men were fishermen. The Wat Tyler Rebellion in England, which had started among Kentish fishermen, showed what would happen if proper authority were not exercised to prevent injustices. Henry was to fulfill the hope honest men had in him by giving the Orkney earldom the period of greatest prosperity in its history. The islanders had been almost out of control before he took over. In his efforts to reestablish respect for the king's law, Henry was slowed down by the difficulties of gaining control over so many sea channels between the islands, places where fishermen with their boats could so easily engage in smuggling and share the profits of piracy. After erecting his castle his next concern was to build a fleet of war vessels.

Henry's Fleet

Since the Orkneys were treeless, his shipbuilding had to be done along the shore of his well-forested Scottish barony. Oak was the accepted wood for the hulls of ships. Before the invention of the circular saw, the hand-axing of trees into the shape of keels, beams, ribs and planks was most wasteful—from one tree only two planks could be obtained, and 60 oak trees were required for one small ship. Shipbuilding through the centuries in Norway had used up oak trees faster than they could be grown, and now the available stands of timber in Norway were exhausted.

Ten years after his Installation, Henry had a larger fleet than Norway, but he never used his power to the detriment of Norway. Without his castle he could not conceivably have begun to establish order in the Orkneys, and while it gave him

an impregnable position from which he might have defied Norway, he consistently used it in the service of Norway. Even though his naval might was greater than that of his overlord, he never swerved from his sworn fealty, and we know this because as earl he was the leading non-ecclesiastical elector of the kings of Norway, Sweden, and Denmark. During the years before his transatlantic expedition, he was frequently in Scandinavia on political business, where he was always welcomed as a trusted and loyal vassal and friend.

He was proud of his war vessels, so much so that when he adopted a new heraldic coat-of-arms, retaining the Roslin Sinclair family's engrailed cross in the 2nd and 3rd quarters, he had in the 1st and 4th quarters, *azure*, an armed Orkney galley, *or*, within a double tressure counter-flowered, *or*. The galleys spoke of his sea power, and the double tressure indicated affinity to royalty.

Henry wanted to make his fleet invincible, and to do that he dreamed of placing cannon on board his ships. Cannon, called bombards, had for more than forty years been used in land battles, but only very recently in a naval battle. The City of Venice had been almost strangled by a blockade set up by the Genoese, but the great hero of Venice known as "Carlo the Lion" came to the rescue with galleys armed with cannon called mortars, and broke the blockade. The fame of Carlo the Lion had spread throughout Europe, and Earl Henry at long distance admiring him, wished that he could get from Carlo the Lion certain information about the installation of cannon on ships; that is how to mount them so that they could be maneuvered to aim at a target, and so that the recoil from their firing would not interfere with steering.

Henry had not yet been able to extend his control over more than the Orkney island group. The king of Norway had given him time to develop his fleet, but by 1389 had decided that Henry was properly prepared to make the attempt to bring the rebellious Shetlanders into submission. On the 9th

of July of that year at Helsingborg, Sweden, the king required Earl Henry to bond himself to the royal bailiff of Norway to make four money payments, each at a place which was in the middle of the main island of the Shetlands, at the Church of St. Magnus the Martyr at Tingwall. The four payments were to be made on St. Lawrence's Day, the 10th of August, the first of them in 1390, and the other three in the three years following. These payments, all to be made at the specified place, required Henry to be in physical possession of the main Shetland island, so that he or his fiscal agent and the king's fiscal agent could safely journey to that place. This requirement paralleled the two separate payments specified in the bond given on the day of his Installation, which had required Henry to take physical possession of Kirkwall. The penalty if he was unable to make the payments at Tingwall was to be the loss of Sanday and Ronaldsay, two islands in the Orkney group.

And so, early in the summer season of 1390, Henry set sail towards Shetland with his fleet of thirteen war vessels and as many soldiers as he could crowd on board. He anticipated a desperate struggle, and regretted the limitations of his knowledge as to the proper mounting of ships' cannon. He thought wistfully of Carlo the Lion and determined, like Carlo, to venture his all.

He sailed first to Fer Island, slightly more than halfway between the Orkneys and Shetlands, and belonging to a parish of the main Shetland island.² He went ashore to win the support of the inhabitants. While he was on Fer Island a terrible storm arose, and he saw many of the inhabitants running all in one direction with weapons in hand. When he heard what was happening, he swiftly led his soldiers in the same direction. Because Fer Island is only 3½ miles long, nobody had very far to run.

*The Zeno Narrative called it "Frislanda." The words "Fer Island" run together are, by the dropping of one letter, "Frisland."

Henry came upon a harrowing sight. Amidst thundering breakers a large decked vessel had been driven upon a reef, and its crew were clinging to the rails and fallen rigging. The natives of the island, brandishing fish knives, were prepared to butcher any of the crew who might succeed in swimming ashore; for a stranded ship was in Shetland considered fair game. Henry drove off the loot-hungry natives, and brought the ship's crew safely to shore. He observed that they were shorter than Orkneymen and swarthy, and he guessed they might be Gascons or from Marseilles, but when in Latin he asked their captain whence they came, he learned they were from Italy, and when he asked from what city, he was delighted to hear they were from—of all cities—Venice! The captain said his name was Nicolò. Henry repeated the name and introduced himself, and with eagerness asked Captain Nicolò how well he knew the captain of the Venetian fleet, the master of the galleys, Carlo the Lion. Captain Nicolò smiled and proudly replied that Carlo Zeno was his brother.



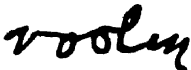

Henry could scarcely believe his good fortune in having saved from shipwreck and slaughter a brother of the great naval hero, who must know all the secrets of naval warfare and who with his well-trained crew would be of invaluable help in the precarious attack on Shetland.

He soon learned that Captain Nicolò, like himself, was an elector (of the Doge), that he was one of the "Orators" sent by the Venetian Senate with five galleys to Marseilles to transport the Pope and his court to Rome, and that he had captained a galley in the war against the Genoese. The return on his loans to his native city for that war had made Captain Nicolò one of the richest men in Venice. He had been Venetian ambassador to Ferrara and one of the three City Magistrates elected to take possession from the Lord of Padua of the city and territory of Treviso. Henry was curious to know why such a man had come into the northern seas, and Nicolò told him it was "a very great desire to see the

world and to travel and make himself acquainted with the different customs and languages of mankind." The whole incident of the shipwreck and rescue and fortuitous meeting, as published in the Zeno Narrative, is as follows:

"Messire Nicolò . . . passing the Strait of Gibraltar sailed some days on the ocean, steering always to the north, with the object of seeing England and Flanders. Being, however, attacked in those seas by a terrible storm, he was so tossed about for many days with the sea and wind that he knew not where he was; and at length when he discovered land, being quite unable to bear up against the violence of the storm, he was cast on Fer Island. The crew, however, were saved, and most of the goods that were in the ship. This was in the year 1390. The inhabitants came running in great numbers with weapons to set upon Messire Nicolò and his men and they would doubtless have been very badly dealt with, had it not fortunately happened that a certain chieftain was near the spot with an armed retinue. When he heard that a large vessel had just been wrecked upon the island, he hastened his steps in the direction of the noise and outcries that were being made, and driving away the natives, addressed our people in Latin, and asked them who they were and whence they came; and when he learned that they came from Italy, and that they were men of [Venice], he was exceedingly rejoiced. He took them under his protection. He was a great lord, and possessed certain islands called Porlanda [the sixteenth-century Nicolò's misreading of 'Orkney' or 'Pentland'], lying not far from Fer Island to the south, being the richest and most populous of all those parts. His name was Zichmni [sixteenth-century misreading of 'Sinclair'], and besides the said small islands, he was Duke of Sorano [sixteenth-century misreading of 'Roslin']."

Nicolò wrote home to Carlo that the lord of the island had come with his men to attempt the conquest of a much larger

In 14th-century handwriting	Sinclair	
In 16th-century handwriting	Zichmni	
In 14th-century handwriting	Roslin	
In 16th-century handwriting	Soran	

island, and "seeing that Messire Nicolò was a man of judgment, and very experienced in matters both naval and military, he gave him permission to go on board his fleet with all his men, and charged the captain [thereof] to give him all respect, and in all things to take advantage of his advice and experience." Henry's fleet sailed up the west side of the main Shetland island, landed Henry and his soldiers, who fought their way to an assigned meeting place with the supporting ships, and thence went on.

Messire Nicolò wrote of the fleet's activities: "Making our course still westwards, and then turning again we fell in with certain islands and lands which we brought into possession of Zichmni. This sea through which we sailed, was in a manner full of shoals and rocks so that had Messire Nicolò and the Venetian mariners not been their pilots, the whole fleet, in the opinion of all who were in it, would have been lost, so inexperienced were Zichmni's men in comparison with ours, who had been, one might say, born, trained up, and grown old in the art of navigation. Now the fleet having done as described, the captain, by my advice, determined to go ashore . . . to learn what success Sinclair had had in his wars, and there to our great satisfaction we heard that he had fought a great battle and put to flight the army of the enemy; in consequence of which victory, ambassadors were sent from all parts of the island to yield the country up into his hands,

taking down their ensigns in every town and village. We decided therefore to stay in that place to await his coming, taking it for granted that he would be there shortly. On his arrival there were great demonstrations of joy, as well for the victory by land as for that by sea; on account of which we Venetians received from all such great honor and praise that there was no talk but of us. Whereupon the chieftain, who was a great lover of valiant men, and especially of those that were skilled in nautical matters, caused me to be brought before him, and after having honored me with many words of commendation, and complimented my great zeal and skill, by which two things he acknowledged himself to have received a very great and inestimable benefit, viz. the preservation of his fleet and the winning of so many places without any trouble to himself, he conferred on me the honor of knighthood, and rewarded my men with very handsome presents. Departing thence we went in triumphant manner towards . . . the chief city [Lerwick] of that island, on the southeast of it, lying inside a bay in which there is such great abundance of fish that many ships are laden therewith to supply Flanders, Brittany, England, Scotland, Norway and Denmark, and by this trade they gather great wealth."

Earl Henry made his payment at Tingwall on the 10th of August, probably through his fiscal agent; for he himself no doubt attended the coronation of King Robert III at Scone on the 15th of August. Sir Nicolò sent for his younger brother Antonio, who joined him the next year.

Also in that next year, at Tingwall, the meeting place of the Shetland legislative and judicial assembly called the Lawting, Earl Henry faced a problem presented by a cousin of his, Malise Sparre, who had refused to give up lands he had seized in defiance of the Norwegian king's ruling. When Henry "was about to hold a court to settle the legal rights of the parties concerned," Malise started a conflict which constituted rebellion against the Lawting and the king, and Henry

was compelled to use force, with the result, as we are told in *Icelandic Annals*, that "Malise Sparre, with seven others, was slain in Hjaltland [Shetland] by the Earl of Orkney." From the point of view of the Lawting it was a legal execution.

In 1392 Earl Henry was given a safe-conduct by King Richard II "to come into England with 24 persons in his retinue." This safe-conduct specified that no one who was a fugitive from English laws should be of the company. It seems that Margareta, as queen of Norway, was reduced to leasing from England, since she had no means to buy, three war vessels to replace the Norwegian fleet that had been a long time ruined, and Earl Henry, possessing the latest knowledge as to ships and the mounting of naval guns, was the logical man for her to send. It is very likely that he took Sir Nicolò Zeno and some of his seamen with him, and that is why the English, not knowing who these Italians might be, added to his safe-conduct the specification regarding fugitives from English laws.

Norway did not have ships enough to defend her own coasts against Baltic pirates who in 1393 sacked Bergen. In this year Earl Henry with his fleet apparently intended an attack on the Faeroe Islands, to restore them to Norway, but upon receiving a report that a huge pirate fleet was coming to attack the Shetlands he withdrew and his fleet suffered losses in a storm north of the Shetlands. Later he seems to have made an attempt to land on "Islanda" (Iceland), which would have been at the request of Queen Margareta, since the "best men" there the year before had refused a new tax she had levied, but when Henry found Iceland "well-fortified and defended" and too much for his reduced fleet to conquer, "he was fain to give up that enterprise," and instead took possession of the northern and lesser islands of the Shetlands, and built "a fort in Bres." Bres was Bressay, the island east of the Shetland main island, with which it forms Bressay Sound, and "in Bres" means within the shelter of Bressay. Sir Nicolò remained in charge at this fort over the winter, and in 1394

Nicolò set sail with three ships and visited the east coast of Greenland to about 74° North Latitude, where there was a monastery of Black Friars close to a volcano. He wrote an interesting account of how the friars used boiling water from a hot spring to heat the monastery and do their cooking, and he gave a very accurate description of Eskimo kayaks. He told how the warm water maintained a small ice-free harbor all winter. Sir Nicolò, ill from winter exposure, returned to Orkney in 1395, and there died. Antonio in turn became admiral of Earl Henry's fleet.

In 1395, in an exchange ordered the year before by Pope Boniface IX in Rome, Bishop Henry of Orkney was transferred to Greenland, after which Bishop John of Greenland was brought to Orkney. This transfer was not connected with Sir Nicolò's visit to Greenland. The episcopal seat and cathedral of the Diocese of Greenland was at Gardar on the west coast. The exchange of bishops, which must have been carried out by a ship provided by Earl Henry, is of significance because it explains why Antonio Zeno gave Earl Henry credit for exploration of "the coasts of both sides of Greenland." Earl Henry did not go in person to Greenland, but the fairly accurate map of both sides of Greenland which Antonio incorporated into the Sea Chart and which his great-great-grandson found among his letters had undoubtedly come into Antonio's hands from Earl Henry. That map shows that whoever drew it was following a compass in latitudes where there were progressively larger declinations as he explored farther North. The clockwise shift of Greenland and "Estotiland" (Newfoundland) on the Zeno Map are further evidence of its fourteenth-century origin, since it was obviously made before the declinations of the compass were discovered, as they were by the time of Columbus.

Ocean Crossing

The idea of a transatlantic expedition first came to Earl Henry in about the year 1397 when he heard the tale of a

fisherman who, as Antonio recounted it, "six and twenty years ago," driven by a storm, landed on "an island called Estotiland . . . a little smaller than Iceland . . . lying to the westwards above 1000 miles" from the Orkneys. Newfoundland is about 1800 miles west of Kirkwall and it is close to the size of Iceland, though slightly larger. The fisherman, contrasting it with Iceland, said: "It is more fertile; in the middle of it is a very high mountain, in which rise four rivers. . . . The inhabitants . . . possess all the arts like ourselves; and it is believed that in times past they have had intercourse with our people; for I saw Latin books . . . which they at the present time do not understand. . . . Their foreign commerce is with Greenland, with which they trade in furs, brimstone, and pitch. . . . Towards the south [from Estotiland] there is a great country. . . . They have woods of immense extent. . . . They [the inhabitants] have not the loadstone, nor do they know the North by the compass."

The fisherman spent five years in Newfoundland, after which in a country to the southwards "which they call Drogio," most of his companions were slain by savages, but as he "and his remaining companions were able to show them the way of taking fish with nets, their lives were saved." With hook, line, and sinker a man was lucky if he could catch enough fish to feed a family; but with nets, a small group of natives could bring in enough fish to feed the whole tribe. Evidence uncovered by Dr. William S. Fowler of the Massachusetts Archaeological Society seems to indicate that Indians of the Atlantic seacoast first began to fish with nets in the fourteenth century. Dr. William A. Ritchie tells me in a letter of March 15, 1961, which does not conflict with Fowler's findings, that he cannot adduce any special evidence to show the prehistoric use of the fish net along the Atlantic Coast, but that notched pebble net sinkers show that the use of net fishing goes back into the Archaic cultural stage in New York State near Lake Ontario.

The fisherman spent thirteen years among coastal tribes who he said are "very rude and uncultivated" and "live by hunting." Finally, he managed to return to Newfoundland, where he built himself a vessel and sailed home to Orkney. Antonio in Italian wrote to Carlo what the fisherman had to say of the land to the southwards from Newfoundland: "It is a very large country, and, as it were, a new world" ("*grandissimo e quasi un nuovo mondo*"). This was the earliest appearance of the phrase "new world," and it was used to describe North America.

Antonio wrote that Earl Henry, "being a man of great enterprise and daring, had determined to make himself master of the sea," and accordingly proposed to avail himself of his (Antonio's) services by sending him out with a few vessels to the westwards to the great land the fisherman had described. As Henry, however, thought about that land which was "very large" and "fertile" and where there were "woods of immense extent," which meant ample material for shipbuilding, with trees of all kinds close to good launching sites, he saw how he could add to his naval power, and so "he resolved to send forth with a fleet towards those parts." The expedition promised to be of such major importance that Henry made a decision which Antonio thus recorded: "I set sail with a considerable number of vessels and men, but had not their chief command, as I had expected to have, for Sinclair went in his own person." Henry was no slave to comfort, and in pursuit of his ambition he chose danger and adventure, and rose to heroic stature as a discoverer and explorer.

They sailed first to the main island of Shetland where they remained seven days to take on fresh food and water, and thence departed on the 1st of April. They encountered an eight-days' storm in mid-ocean, but eventually they entered a harbor on the coast of Newfoundland where the inhabitants, we deduce from what Antonio wrote, were of Irish

ancestry. These people and the people everywhere along the coast of the island, fearing Henry's fleet, "stood constantly prepared to beat us back if we should attempt to come on land, wherefore Sinclair, seeing that if we were to persevere in his attempt the fleet would fall short of provisions, took his departure with a fair wind and sailed 6 days to the westwards, but the wind afterwards shifting to the southwest, and the sea becoming rough, we sailed 4 days with the wind aft, and finally sighted land.

"As the sea ran high and we did not know what country it was, we were afraid at first to approach it, but by God's blessing the wind lulled, and then there came on a great calm. Some of the crew pulled ashore and soon returned with great joy with news that they had found an excellent country and a still better harbor. We brought our barks and our boats to land, and on entering an excellent harbor, we saw in the distance a great hill [*monte*] that poured forth smoke, which gave us hope we should find some inhabitants in the island. Neither would Sinclair rest, though it [the hill] was a great way off, without sending 100 soldiers to explore the country, and bring an account of what sort of people the inhabitants were.

"Meanwhile, they took in a store of wood and water, and caught a considerable quantity of fish and sea fowl. They also found such an abundance of birds' eggs, that our men, who were half famished, ate of them to repletion.

"While we were at anchor here, the month of June came in, and the air in the island was mild and pleasant beyond description; but as we saw nobody, we began to suspect that this pleasant place was uninhabited. To the harbor we gave the name of Trin, and the headland which stretched out into the sea we called Cape Trin.

"After eight days the 100 soldiers returned, and brought word that they had been through the island and up to the hill, and that the smoke was a natural thing proceeding from

a great fire in the bottom of the hill, and that there was a spring from which issued a certain substance like pitch, which ran into the sea, and that thereabouts dwelt a great many people half wild, and living in caves. They were of small stature and very timid. They reported also that there was a large river, and a very good and safe harbor.

"When Sinclair heard this, and noticed the wholesome and pure atmosphere, fertile soil, good rivers, and so many other conveniences, he conceived the idea of founding a city [settlement]. But his people, fatigued, began to murmur, and say they wished to return to their homes, for winter was not far off, and if they allowed it once to set in, they would not be able to get away before the following summer. He therefore retained only boats propelled by oars, and such of his people as were willing to stay, and sent the rest away in ships, appointing me, against my will, to be their captain.

"Having no choice, therefore, I departed, and sailed 20 days to the eastwards without sight of any land; then, turning my course towards the southeast, in 5 days I lighted on land, and found myself on the island of Neome [in the Shetlands?] and knowing the country, I perceived I was past Islanda [Iceland?]; and as the inhabitants were subject to Sinclair, I took in fresh stores and sailed with a fair wind in 3 days to Frislanda, where the people, who thought they had lost their Prince, in consequence of his long absence on the voyage we had made, received us with a hearty welcome."³

Thus ends Antonio's personal record of the expedition. It is tantalizing because it leaves untold so many things we wish to know. Where, upon what coast, did the expedition land? In what year was it? What did Earl Henry do after Antonio departed? Where did he spend the winter in the New World? Did he return home, and if so, how?

³ Lucas, p. 69, says: "Neome probably represents Fair Isle," but logic in keeping with the Zeno Narrative would have it as one of the northern islands of the Shetlands, at a distance of three days' sail from Fair Isle.

All of these questions have now been answered, either by modern science, or geographical detective work, or archaeology, or by information found in another record which was discovered by chance.

First, what can be deduced from what Antonio did write?

Smoking Hill and Flowing Pitch

Since Earl Henry retained only the small undecked row boats, we know that he intended to explore the coast and inland waterways, and planned to keep his men occupied during the winter in the building of a ship in which he would sail home. For this reason he must have provided a good supply of nails, spikes, rivets, carpenter's axes, gouges and augers, and frieze-cloth with needles and yarn and reefbands for the making of sails.

Antonio called the land where he left Earl Henry an "island." We shall soon see that it was not an island, but a peninsula which the soldiers, when they saw the sea on the other side of it, assumed to be an island. That is all Antonio knew about it before he left. But in his description of the smoking hill and a black substance like pitch (bitumen, asphalt) flowing down from the top of the hill, he gave clues by which we now know positively what land it was. Dr. William H. Hobbs, geologist of the University of Michigan, in 1950 in a lecture at the Explorers' Club in New York authoritatively pointed to the Stellarton area in the Pictou region of Nova Scotia as the place the 100 soldiers visited, because nowhere else in all the New World within 1000 miles of the Atlantic were those two phenomena in juxtaposition. Since Dr. Hobbs did not say precisely where in Stellarton it was, and I felt it was important to find out, I went to Pictou County, Nova Scotia, and made local inquiries of many persons. All of those I talked with knew where there had been a burning coal seam at the bottom of Stellarton Hill, but none of them knew where there had ever been a spring of viscous

pitch.

On that first visit to Nova Scotia, I traveled by train. This was fortuitous, since it meant that I had with me a Canadian National Railway's timetable, in which I happened to notice the name of a flag stop called "Asphalt," less than a mile from Stellarton Station. This seemed to be a hint worth following, but the railroad had no record as to the origin of the name of the flag stop. An assistant librarian in the Public Archives of the Province of Nova Scotia, in Halifax, expressed the opinion that the flag stop on the hill above Stellarton had received its name because it was on the "Asphalt Road," and that this road was so named because it had been the first road in the province paved with asphalt. It looked as though the road I was on had reached a dead end. However, in Stellarton I took a bus to the top of the hill, which has an elevation of 180 feet, and got off where the road crossed the railroad tracks. The flag stop was indicated by a level strip of gravel beside the tracks. It was at the corner of a community of miners' houses which was three blocks square. Two miners with whom I talked did not know why the place was called Asphalt, but they beckoned to an older man who told me he thought the name had a geological origin, since there was "oil shale" underneath. His knowledge seemed vague.

Roland H. Sherwood of Pictou thought my query as to the origin of "Asphalt" should be addressed to the readers of the New Glasgow *Evening News*, and he took action for me. The following explanation was received in reply on the 1st of August 1950:

"The 'Asphalt' district of this town got its name from a deposit of asphalt or tar-like material which used to lie just above the present Receiving Home [Birch Hill] of the Children's Aid Society. That was the information conveyed to *The News* by Dan MacKenzie who came here in 1882 as a boy of ten. At that time the main road to Westville went

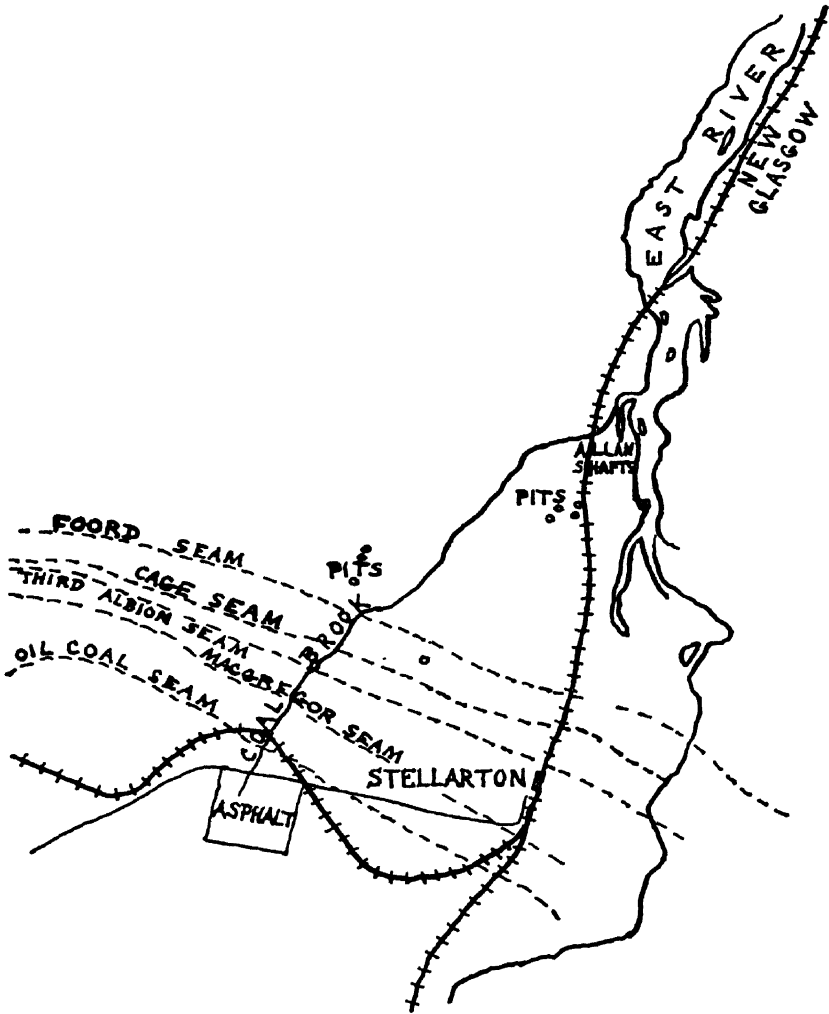
along Bridge Street in Stellarton and was known as 'the post road.' The present route was the 'Asphalt' road. The deposit of pitch was hardened and could be walked on, extending out about 100 yards. It was spongy and gave beneath a man's boots—but sprang back into place. It burned and a good many people in the neighborhood dug it up and used it in their stoves like the peat they knew in the old country."

Here then at Asphalt on the top of Stellarton Hill, according to the testimony of a surviving eye witness, had been a spring of pitch. When melted by heat from subterranean fires the pitch had flowed down what is called Coal Brook, and had crossed a burning coal seam at the bottom of the hill.

The proof adduced by geology is incontrovertible. Open deposits of viscous pitch are rare. In the New World, the two best known, one on Trinidad and the other in Venezuela, were over 2000 miles south of Newfoundland, and could not have been visited by the Sinclair Expedition. Geological reports show that there were deposits of asphalt in several parts of the United States, but of these the nearest to the Atlantic seacoast were in Alabama and Kentucky. There were oil seepages in Eastern Canada (G. S. Hume, "Oil and Gas in Eastern Canada"), but none of these, except the one at Stellarton, was associated with an open burning coal seam, and was near a river and a harbor.⁴ As for the burning coal seam at the

⁴Pictou County contains more coal fields for its area than any other part of the world. The first discovery of coal in the Stellarton area was made on the MacGregor farm in 1798. Poole says it was made "on what is known as the Deep seam cropping out on the brook a little above where the Main seam was deeply burnt in the unknown past to a distance of 1000 and 500 feet along the crop on either side of Coal Brook."

Stellarton received its name (from the Latin *stella*, star) from the material known as stellar coal, which underlies the town. Stellar coal is an oil coal which when it burns emits short, bright flames like stars. Dawson says Stellar coal is "of the nature of an earthy bitumen, and geologically is to be regarded as an underlay or fossil soil, extremely rich in bituminous matter, derived from decayed and comminuted vegetable substances. It is,



Stellarton, Nova Scotia, showing "Asphalt"

in short, a fossil swamp-muck or mud. . . . It yields 50 to 126 gallons of oil per ton." Poole says picked examples of oil coal have given 190 gallons to the ton. Even the shale or bat yields 44 gallons to the ton. Gesner says: "This most extensive and important collection of bituminous matter has been greatly disturbed in its original bed, several dykes and faults are known, which often confound the miner, and afford strong evidence of the former existence of subterranean fires, by which the substrata have been melted and elevated, or have produced faults."

The oil coal is highly charged with gas. "Boys used to hold a puncheon

bottom of the hill at Stellarton, the so-called Foord seam there has been on fire repeatedly; for its bituminous coal is exceptionally rich in oil and gas. It was on fire three times between 1828 and 1830, and a fire in it that began in 1832 burned for more than a year until the East River was turned into it to extinguish it. After 1860 it was on fire several times, and again there was a fire in it which burned continuously from 1870 to 1901. ("Report on the Pictou Coal Field" in *Geological Survey of Canada*, Annual Report for the Year 1901). George Patterson in *A History of the County of Pictou* says that the local Micmac Indians spoke of an opening in the ground there that had burned and smoked for a long time.

In all of the New World, only at Stellarton in the Pictou region of Nova Scotia did the two phenomena of smoking hole and spring of flowing pitch exist together. It was undoubtedly at Stellarton that Earl Henry's 100 soldiers saw what they reported to him.

The smoking hole was interesting, but the spring "from

over a small stream (Coal Brook) near Dr. MacGregor's house, and when the puncheon was full of gas, uprighted it and threw into it a lighted paper. The ignited gas would burn with a bright and brilliant blaze." (Clara Dennis.) Even in the East River, bubbles of gas arising from the outcrop "could be lighted in winter by cutting a hole in the ice." In this manner wives used to boil water for washing clothes. Poole says gas from freshly cut coal "has been known to flow so pure as to put out the flame of a safety lamp held in it, and that too where there was a current passing of 10,000 cubic feet of air per minute. . . . Gas roared as a miner struck coal with a pick; it would go off like the report of a pistol. The noise which the gas and water made in issuing from the coal was like a hundred snakes hissing at each other. . . . Putting flame to the firedamp at East River on a calm day, it would spread over the river, like what is commonly called setting the Thames on fire."

Pitch or bitumen or asphalt, as it is variously called, is a black or brownish-black substance, which melts at 90° to 100° C. It contains resins, nitrogenous compounds, and oils vaporable at varying temperatures. From the heat of an underground burning coal seam, which in one instance at Stellarton was so intense it melted the iron chains used for hoisting coal out of a pit, pitch might have melted into a liquid and have flowed out of the ground through a fissure, crevice or fault, to form a superficial deposit. An earth seepage of viscous pitch may also be induced by hydrostatic pressure or by gas pressure.

which issued a certain substance like pitch" must have had a very special and personal meaning to our Henry, inevitably reminding him of Saint Katherine's Oily Well near Roslin, and making him feel that his expedition was under the guidance and protection of his family's patron saint.

The soldiers said that the pitch "ran into the sea." It flowed into the East River, which is tidal to Stellarton. The bottom of the river, exposed at low tide, is black with oily wastes beginning at Stellarton and from there down the river. Below Stellarton, the East River is as broad as the River Thames above London, England, and would have seemed "large" indeed to men from the Orkneys and Shetlands. It is one of three rivers which flow into Pictou Harbor.

Pictou Harbor, perfectly land-locked and the best harbor on the north shore of Nova Scotia, was the one Antonio called "the very good and safe harbor." With the site of the smoking hill unquestionably established, it became possible to deduce which harbor was the one to which the expedition gave the name Trin. It was a problem involving distance and direction. The 100 soldiers took 8 days to walk overland to Pictou Harbor and to return to Trin Harbor, and allowing one of these days for inspection of the smoking hill, flowing pitch, East River, and Pictou Harbor, they were about $3\frac{1}{2}$ days on the march each way. The average distance they would have traveled each day through primeval forest where there would be very little undergrowth was at least 15 miles. The distance between Pictou Harbor and Trin Harbor was therefore somewhat more than 50 miles. Since the expedition had approached the land from the southwards, with "wind . . . southwest . . . aft," Trin Harbor was on the southeastern side of the Nova Scotia peninsula. We also know that if the smoking hill near Pictou Harbor had been seen to the eastward from near Trin Harbor, Sinclair would have sent the inspecting party to it not overland but by ship, since he knew that the ocean was to the east. Trin Harbor was

therefore somewhere to the eastward of the smoking hill. Also, Trin Harbor was near a long headland which they called Cape Trin.

With these geographical data in mind, there can be no doubt as to the identification of Trin Harbor. It was Guysborough Harbor at the head of Chedabucto Bay. From the head of Guysborough Harbor to Stellarton is 51 miles. Cape Canso is the long headland which the ships had rounded and in the shelter of which, Antonio noted, "there came a great calm." There is a large cape like Cape Canso on the Zeno Map of Drogio. Trin Harbor was a "better" than "excellent" harbor, and Guysborough Harbor was so recognized by the Acadian French and also the early English. There is further evidence that Trin Harbor was Guysborough Harbor in the fact that the ships were anchored at first outside the harbor and very near to it without awareness that there was a harbor in the vicinity; for those of the crew who "pulled ashore" returned "soon with great joy with news" of finding it. This happened because there is a bar in front of Guysborough Harbor high enough to conceal it even at high tide; when the men pulling ashore came abreast of the harbor mouth, its existence was with dramatic suddenness revealed to them.

According to Antonio, the memorable sight as they entered Guysborough Harbor was the smoke rising "in the distance." It was visible to them from the waters of Chedabucto Bay, and as soon as they had brought their ships to safe anchor in the harbor, Henry, like all explorers, naturally ascended the highest hill nearby to have a better look at the smoke. That hill, the highest for forty miles, excluding those on Cape Breton, was Salmon Hill, 820 feet elevation, only $2\frac{1}{2}$ miles from shore. Its ascent took less than two hours. From it on a clear morning, I have seen smoke from a locomotive pulling into Stellarton Station, and because Mount Adams, 920 feet elevation and 42 miles away, seen from Salmon Hill is in direct line with Stellarton, the smoke appeared to be rising from the

visible Mount Adams. Mount Adams was the *monte* from which Antonio and Earl Henry thought the smoke was rising.



Nova Scotia, showing the smoking hill

Date of Landfall

What Antonio wrote seemed deplorably disappointing, since it did not give the year in which the expedition crossed the Atlantic. After some reflection on the matter, however, I realized that the name of the harbor might be a clue to the date. I knew it was the custom of explorers from Christian countries to name a harbor or river from the day in the Church calendar upon which they entered it and took formal possession. The name "Trin" appeared to be an abbreviation of Trinity, and a careful scrutiny of the text made me feel certain that it was; for after the sentence in which we read: "While we were at anchor here" (before discovering the harbor), "the month of June came in," the very next sentence states what naturally followed: "To the harbor we gave the name of Trin." Obviously, June and Trinity bore some connection.

I asked an Anglican clergyman in Guysborough whether there was in the Church calendar a day devoted to the Trinity. "Yes," he replied, and then he surprised me by establishing the very connection at which I had guessed, for he added: "This year (1950) it was the first Sunday in June."

It was exciting to feel that Antonio's sparse record might after all reveal the date. I learned that universal observance of Trinity Sunday had been enjoined on all Christians by Pope John XXII in 1334. Trinity is the eighth Sunday after Easter, and because the date of Easter varies, the date of Trinity Sunday differs from year to year and may fall anywhere from May 17 to June 20.

Trin Harbor was named in a year when Trinity Sunday occurred on or immediately after the 1st of June. The year in which the Sinclair Expedition took place had to be one of the nine years between 1395, when Sir Nicolò died and Antonio succeeded him as admiral of the fleet, and 1403, because in 1404 Antonio returned to Venice. In the years from 1395 to 1403 was there only one year in which Trinity Sunday fell on or close after the 1st of June, or were there two or more years in which Trinity Sunday was so dated, in consequence of which we could not know when the expedition had occurred? With hope, but also with fear of being frustrated, I sought the answer in *The Book of Almanacs* and also by inquiry directed to the Vatican Library. Both sources gave the dates of Trinity Sunday in the nine years as follows:

June 6, 1395; May 28, 1396; June 17, 1397; June 2, 1398; May 25, 1399; June 13, 1400; May 29, 1401; May 21, 1402; and June 10, 1403.

Fortunately, in only one of the nine years did Trinity Sunday come immediately after June 1st. The ships of the Sinclair Expedition were "at anchor" on the 1st of June, "when June came in." Earl Henry entered the harbor and landed and took formal possession of the continent of North

America, as belonging to the Earldom of Orkney, on Trinity Sunday, the 2nd of June, in 1398.

Glooscap Legend

There are several reasons why Henry, as soon as he could after sending Antonio and the ships home, moved from Trin Harbor to Pictou Harbor. The absence of natives in or near Trin Harbor meant it was not a good region for hunting, while the presence of natives in and around Pictou Harbor meant that the hunting there was far better. Most of the trees around Guysborough Harbor are evergreens, while Henry's men must have reported to him of the greater variety of trees, including hardwood, in the Pictou region, which held promise of better opportunity for shipbuilding. Since Henry wished to do some exploring, he wanted to be where he could pick up natives to act as guides. Above all, belief that he was under the special protection of Saint Katherine made him eager to see whether the spring of flowing pitch in any way resembled her Oily Well near Roslin. His men in a very few days must have discovered the easy water route via the Strait of Canso and west along the north shore to Pictou Harbor.

This seems to be all that we can learn from Antonio's record supplemented by all we know of the geology and geography of the region, and the customs and motives of explorers.

Further reconstruction of the story, however, was made possible by the fortunate discovery of another record. Antonio did not give any hint as to where Sinclair spent the winter in North America, whether at Pictou Harbor or in some other region. The Province of Nova Scotia is 350 miles long, containing so many square miles that to search for Sinclair's winter camp site seemed utterly futile. I concluded that it would never be found unless by accident. Two years later and quite by chance, I came upon a fresh clue.

I was rereading everything that had been published about the Micmac Indians of Nova Scotia. The authors I read were

S. T. Rand, A. L. Alger, W. R. Bird, D. G. Brinton, J. S. Clark, J. C. Webster, and C. G. Leland and J. D. Prince. The studies of the Micmacs by these writers and translators had all been published before Nova Scotia was identified by Dr. Hobbs, the geologist, as the land which Henry Sinclair explored, and therefore the geographical details in their writings, having been recorded directly from the lips of the Indians, were for my purposes objective, unprejudiced, and not warped by any preconceived geographical or historical theory.

In all that was written on the traditions of the Indians of Nova Scotia, there loomed large the Micmac saga of a "culture hero" who had come among them as a visitor. It was a legend in the form of songs or chants preserved in tribal memory and handed down by oral transmission. The version of it given in English poetry in 1902 by Charles Godfrey Leland of Harvard, revised for strict literalness by the Amerindian linguistic scholar John Duneley Prince of Columbia University, contains several passages of a higher order of poetry than we have generally credited to American Indians. The first translator, the great missionary to the Micmacs, Silas Tertius Rand, apparently had failed to recognize that the tales of the culture hero which he heard chanted were poetry and deserved a metrical translation. Perhaps Rand was put off by the fact that, to use Professor Leland's words, the primitive rhythms of the chants were "quite irregular, following only a general cadence rather than observing any fixed number of beats in each line. . . .Amerindian metres are not all like that of *Hiawatha*."

Webster said this legendary hero was "involved, in a number of tales, with the encroachments of Europeans." All the scholars agreed that he was a European, and while none of them had any opinion as to when he crossed the Atlantic, they assumed that it was after Columbus.

Quotations hereafter are from Rand, except as otherwise

specified.

The Indians had added mythological elements to the historical tales of the hero, enlarging him to the dimensions of a Paul Bunyan. "He could do anything and everything." Supernatural feats and conversations with birds and animals were interwoven with what must have been the original realistic narrative. Clark said: "Of the 87 stories in Dr. Rand's collection" (*Legends of the Micmacs*, 1894), "many are pure and simple myths; some are mythical with an evident purpose to teach some practical lesson, and so may be considered fables or parables; while still others are merely records of history, somewhat mythical perhaps, and yet no doubt largely the record of facts."

In the stories which Rand first "learned from the unlettered past," the legendary hero was described by the Indians as a leader who "came from the east, far across the great sea." It seemed that he might have been the leader of any European expedition, until I read that he was a "prince," and that his first meeting with the Micmacs was at Pictou. Here was an arresting fact, that the legendary hero's first meeting with the Micmacs was at the same place where Sinclair's 100 soldiers first apprized the natives of his existence, and where he soon afterwards in person met them. Was this mere coincidence? Or had Prince Henry Sinclair actually been the visiting prince of the Indian tradition?

When I discovered seventeen places where the story of the prince of the Micmac legend was identical with that of Prince Henry Sinclair, it became obvious that so many parallels could not be coincidences. By mathematical law of chances, the equating of Prince Henry with the prince of the Micmac legend became more than a theory. There could be no hesitation in accepting the two as the same person.

Here are some of the parallels: The visiting hero was a "prince." He was a "king," who had often sailed the seas. His home was in a "large town" on an island, and he came with

many men and soldiers. He came across the ocean via Newfoundland and first met the Micmacs at Pictou. His principal weapon was "a sword of sharpness." (Because a sword was his principal weapon, we know that he came to the Indians before the advent of firearms.) He had three daughters. His character was unusual, and was precisely that which biographical study of Sinclair reveals. He explored Nova Scotia extensively. He slept for six months in the wigwam of a giant named Winter. He remained in the country only from the sailing season of the year of his arrival to the next sailing season.

The prince had "made long trips across the ocean with his feet on the backs of whales." (From the context of the Indian tradition we know that the "whales" were decked ships.) He was entertained by the playing of "flutes." He possessed "money, iron, and a store."

The Micmac chief presumably became ambitious to marry a daughter of the handsome, powerful visitor, and his inquiry yielded the information that the prince had "three daughters." This fact was of greater interest to the chief than the number of his sons. Three is the number of daughters Sinclair had.⁵

The prince and his men were not accustomed to building a small fire, Indian fashion, to warm themselves. The Micmacs observed critically: "They build up a roaring fire, and at midnight it is all out." This was the white man's wasteful, over-energetic way of making a fire.

The arrival of a ruler like Henry Sinclair, with a large company, and his stay among the Indians of Nova Scotia for nearly a year, was an extraordinary event which would in-

⁵Nisbet gives the names of Henry's three daughters as Elizabeth, married to Sir John Drummond, brother of Queen Annabella; Helen, married to John Stewart, Earl of Athol; and Beatrix, married to John Douglas, Lord Aberdeen. In *The Sinclair Expedition to Nova Scotia in 1398*, I quoted a genealogist who said that Henry Sinclair had nine daughters; but later study revealed that Henry and his son Henry, the second Sinclair Earl of Orkney, had by that genealogist been dealt with as one person. I relinquished six daughters who were our Henry's granddaughters.

evitably become a legend. The tribal tales of the natives would recount the essential facts. If Prince Henry Sinclair was not the prince of the Micmac legend, where is the Indian story of Sinclair's visit?

The Indians would, above all, transmit by word of mouth to succeeding generations the geography of the stranger's visit. They would remember the place where they first saw the white chief. They would tell their children where he traveled while among them, where he dwelt during the one winter in their land, and by what route he left them. The principal points made in his farewell speech to them, especially in its prophetic aspect, would be retained in memory. These, indeed, were the outstanding matters in the Micmac story of the visiting prince.

Generations of retelling expanded the legend. Indian imagination added many elements, some inevitably supernatural; but with insight based on the Sinclair-Zeno narrative, we can separate the original facts from the added mythological details.

The Micmac name for this prince was "Glooscap," of which a variant spelling is "Kulóskap."

In *Kulóskap the Master and Other Algonkin Poems*, translated by Leland and Prince, we are told in the Introduction: "Among the poems are selections taken from the Passamaquoddis, Penobscots, Abenakis, Micmacs, and Delawares—all of the Wabanaki branch of Algonkin." Although the Glooscap legend spread for a thousand miles and was treasured by several tribes, appearing "in the legends of the entire Algonkin family, though often under another name," the geography of it was all in Nova Scotia.

Here is a factual passage from the above-named translation:

Kulóskap was first,
First and greatest,
To come into our land—
Into Nova Scotia. . .

When the Master left Uktakumkuk,
Called by the English Newfoundland,
He went to Piktook or Pictou,
Which means "the rising of bubbles,"
Because at that place the water
Is ever strangely moving.
There he found an Indian village,
A town of a hundred wigwams.
Kulóskap being a handsome
And very stately warrior
With the air of a great chief,
Was greatly admired by all,
Especially the women;
So that every one felt honored
Whose wigwam he deigned to enter.

The Micmacs described Glooscap as "sober, grave, and good." Rand further shows that the character of Glooscap was like that of Henry Sinclair: "He seems to have been, on the whole, a noble-minded, generous sort of personage. You do not often meet with any mischievous exercise of his power. Strangers were always welcome to his wigwam, and the necessitous never failed to share in his hospitality, until some act of treachery on their part, or some distrust of his ability, called for castigation." The prince who visited the Micmacs was obviously not one of the vikings, since the vikings were habitually antagonistic to Indians and fought with them almost as a matter of course.

Some scholars, misled by supernatural elements in the Glooscap legend, assumed that the visiting prince was a religious teacher. Bird wrote that the Micmac conception of him as "their man-god, was very near the form of Christian belief." But though the myth-making imagination of the Indians in some of the stories made him the Creator of the World, analysis of the legend reveals the less extravagant realities. While the visiting prince did speak of angels and the devil, and possessed a prayer book, the Micmacs said of Glooscap: "He looked and lived like other men. He ate, drank,

smoked, slept, and danced along with them." The visiting prince was a secular individual, not a divine personality.⁶

An echo of what the Prince's soldiers told the Indians of their distant sighting of the smoking hill and of the eight-days' march to it and back, is in a passage given by Rand in *Legends of the Micmacs*, page 257: "Morning dawns. Glooscap puts on his belt and leads off. About the middle of the forenoon they reach the top of a high mountain. From thence they can discern another mountain away in the distance—its blue outlines just in sight above the horizon. The men conclude it will take them at least a week to reach it."⁷ It is only when the sun is behind one, in "the middle of the forenoon," and not late in the morning, that one gets a clear view from Salmon Hill of Mount Adams in the distance to the westward in line with Stellarton.

Professor Prince tells us that Glooscap's character, "in spite of his name, was essentially benevolent. His name means 'the liar.' This appellation, uncomplimentary as it sounds to our ears, was not meant in this sense by the Indians." He "is called the deceiver, not because he deceives man, but because he is clever enough to lead his enemies astray, the highest possible virtue to the early American mind." D. G. Brinton says Glooscap's enemies were night, darkness, and a serpent that represented storm, rains, and the water. These he "conquers not by brute force but by craft and ruses." The admiring natives ascribed to powerful medicine his triumph over adverse elements, and his coming into possession, they knew

⁶Since there seemed to be some question as to whether W. D. Wallis and R. S. Wallis had equated "Glooscap" with "Jesus Christ, or the Thunder Christ," on page 392 of their book on the Micmac Indians, published by the University of Minnesota Press, I wrote to these authors and received the categorical reply: "We had no intention in the book on the Micmacs to equate Glooscap with Jesus Christ."

⁷Another reference to a smoking hill in Micmac legend is given by A. L. Alger (see Bibliography), p. 51: "Seeing a smoke come from the top of a mountain, the children asked the elders what it was, or who could live there." This seems to be a definite echo of Sinclair's sighting of a distant smoking hill and his curiosity to learn who lived there.

not how, of a large decked "canoe" in which he could sail at night as readily as by day, and could surmount "the current's swirling waves" that would have swamped their canoes. This was to their minds sheer magic. On one occasion, the Micmacs noted, he "withdrew far up the rushing stream where no canoe may pass," save only one as large as his and with a top like the back of a whale.

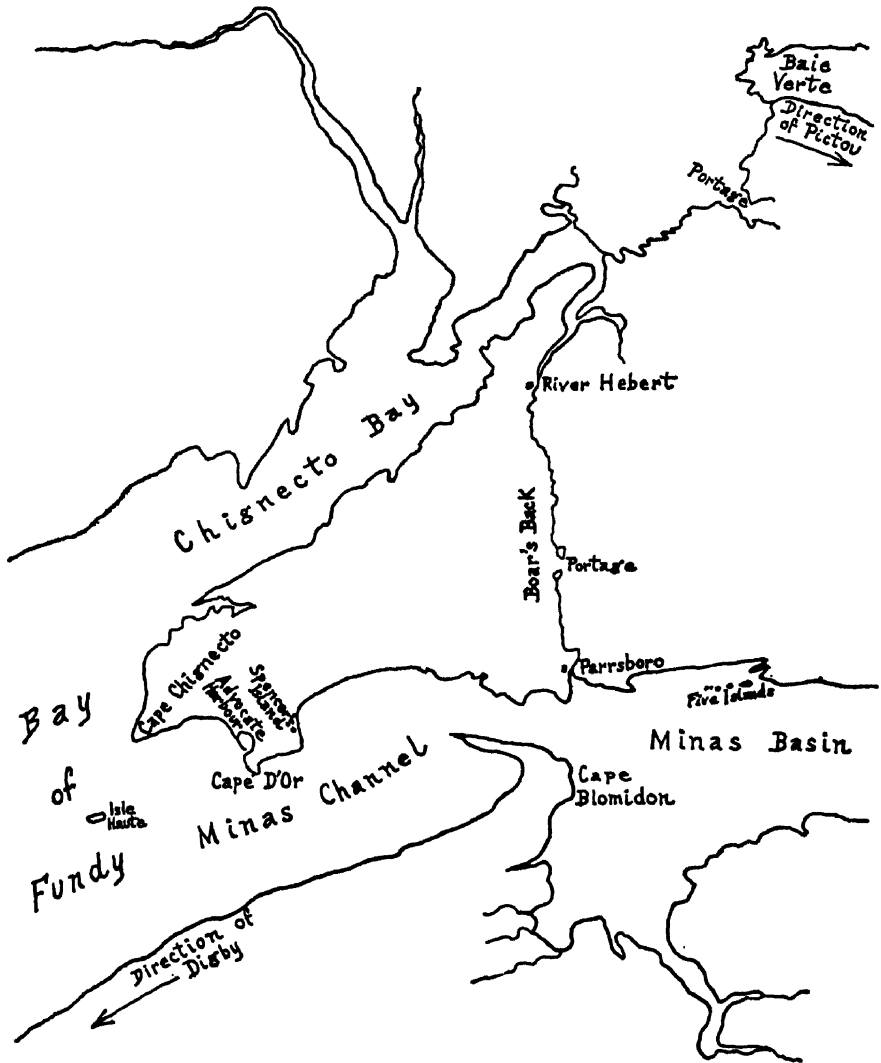
Rand tells us that the sound of "r" was impossible to the Micmac tongue, that it does not occur in the Micmac language, and that "l" replaces it. I therefore venture the following phonetic interpretation. When the Micmacs heard Sinclair's men call him the Earl, pronounced "Jarl," with an initial guttural, they could not duplicate the sound. While they retained the guttural as "G" or "K," they could not manage the "r" except as "l," thus strengthening the other "l." The result was "Gl" or "Kl." If we add the initial consonants "s" and hard "c" ("k" sound) of the two syllables of "Sinclair," we see the probable origin of "Glooscap" or "Kulóskap." Knowing as we do that the Micmac attempt to pronounce "Jesus Christ" was "Sasoo Goole," it seems tenable that "Jarl Sinclair" by direct phonetic change became "Glooscap."

The Micmac Indians lived by hunting and fishing. They wore breech-cloths and cloaks of animal skins, and had moccasins and long leggings. They wore no headdress. Their weapons were bows and arrows, and wooden clubs. One of the games they played was called *cumugesjokouk* ("to play little sticks"), which H. Piers says was "almost the counterpart of jack-straws, maybe of European origin." Presumably Sinclair's men taught the game to them. They had another game called *altestakun* or *woltestakun*. This was "a dice game, undoubtedly of pre-Columbian origin. . . . It was played on a circular wooden dish about one foot in diameter. . . . Mr. Hagar states that the game was taught by Gloo-

scap.”⁸

Antonio Zeno's statement that Sinclair "explored the whole of the country with great diligence" parallels the Indian record of Glooscap's extensive traveling in Nova Scotia. After meeting the Micmacs at Pictou, Glooscap under their guidance went northwestward by small boat through Northumberland Strait and "came to Baie Verte and crossed the portage to Cumberland Bay." Nova Scotia is part of the continent of North America, with which it is connected by a neck of land 16 miles wide, but canoe streams from either side of that neck of land leave one short portage of 3 miles. From Cumberland Bay, Glooscap went south to Parrsboro, which the Indians thereafter called "Glooscapweek," or "Home of Glooscap." The canoe route from Hebert River to Parrsboro runs parallel to the "Boar's Back," a north-south ridge in Cumberland County, and in this comparatively straight passage of 22 miles, there is only one portage of about four hundred yards in length. Glooscap explored the shores of Minas Basin and visited Cape Blomidon, which thereafter was also called "Home of Glooscap." He naturally wished to ascertain the distance from Minas Basin to the ocean, and so from there he crossed the peninsula to the site of the town of Liverpool on the south shore, where the Micmacs said he met with an adventure with the "Sorceress of the Atlantic." To accomplish this crossing he no doubt followed the Indian canoe route from Advocate Bay across to the south shore and westward to Digby, and thence to the site of Annapolis and up the Lequille Stream. A short portage then put the canoes into Liverpool Head Lake, whence the Mersey River carried them through a series of lakes to the ocean at Liverpool. Having returned to the north shore of Minas Basin, Glooscap visited places between Partridge Island (near Parrsboro) and the shores of Cumberland Bay. The Micmacs picturesquely

⁸ Bureau of American Ethnology. 20th Annual Report, 1902-3, pp. 49-50.



Map showing places in Glooscap legend

called the Minas Basin his "beaverpond." He attended the gathering of Micmacs held in October on Green Hill, West of Pictou Harbor, when "'twas the time for holding the great and yearly feast with dancing and merry games" (Leland and Prince).

Winter Camp Site

The Micmacs said that after Glooscap did all this extensive traveling, "his next halt was at Spencer's Island," at the site of the present village. "There Glooscap engaged in a hunting expedition on a somewhat large scale. A large drove of animals was surrounded and driven down to the shore, slaughtered, and their flesh sliced up and dried. All the bones were afterwards chopped up fine, placed in a large kettle, and boiled so as to extract the marrow, which was carefully stored away for future use." It seems clear that Glooscap had chosen a winter camp site not far away.

Where did he settle for the winter? It was not at Spencer's Island, for the Indians specifically said it was farther to the west: "He remained all winter near Cape D'Or, and that place still bears the name of his wigwam." They said the name of the place where he wintered was "Owokun," which means "Crossing-over Place," or "Portage." They also said of his winter camp site: "He resided near salt water, on a high bank against which the deep sea dashed." While these few geographical details eventually proved to be sufficient clues, they did not seem to be so at first.

Since the Indians had canoes with which they could follow the shore, why did they have a portage or need a portage "near Cape D'Or"? The high bank was there, by contrast with the usual 50-foot height of the bank at many places for miles along the shore of Minas Basin; for the bank from Horseshoe Cove westward to the point of Cape D'Or is from 100 to 150 feet high, and from the point northward it is from 200 to 350 feet high, a palisades that is one of the scenic features of the cape promontory.

The Micmac statement as to the location of Glooscap's winter camp site presented one detail, however, which seemed absolutely incompatible with the observed geography. It seemed impossible to accept the Micmac description of the

bank upon which Glooscap set up his camp near Cape D'Or as one "against which the deep sea dashed." How could this detail apply to any coastline near Cape D'Or, when the cape was on the shore of an inland body of water, many miles from the ocean? I admit that I was tempted to discard the troublesome detail, but confidence that the Indian record was realistic and my hope that it was accurate sustained my belief that the implausible phrase was somehow factually descriptive. And so it proved to be. My first two visits to the point of the cape had not been at the right hour to view the dashing of the deep sea, but one day as I approached the Cape D'Or lighthouse, I witnessed a spectacular and tremendous phenomenon that made all clear.

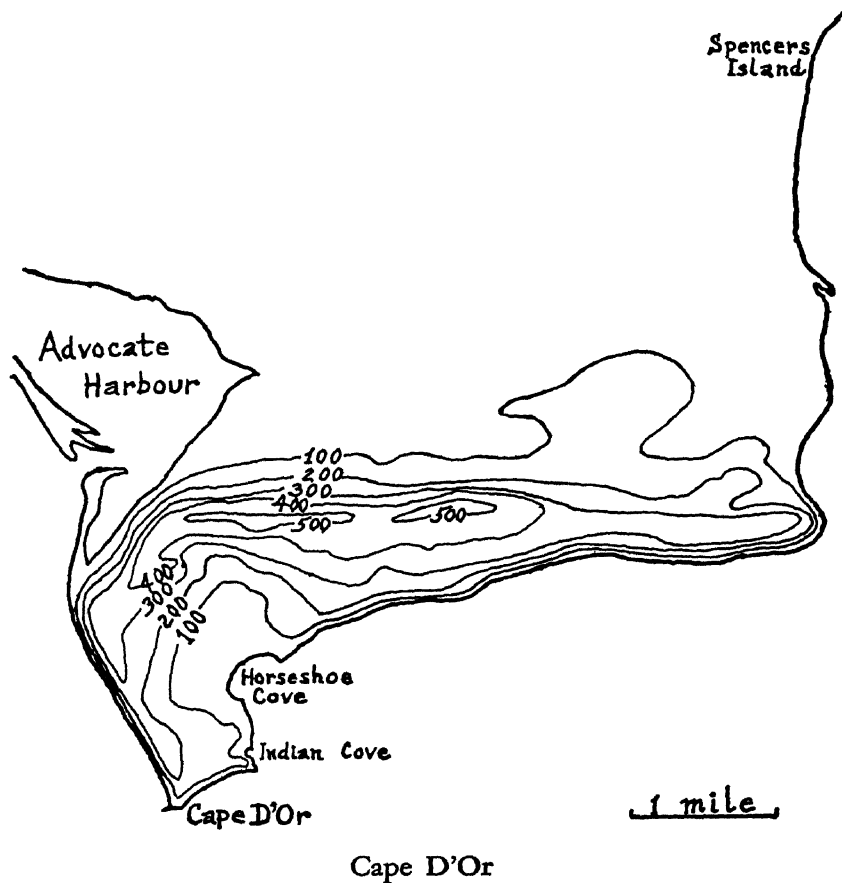
It was the greatest tidal rip in the world. Bay of Fundy tides are 28 feet, and in certain places in the Minas Basin they rise to 50 feet. More than two cubic miles of water pour through Minas Channel at every tide into and out of the Minas Basin. The coastline of the western side of the Cape D'Or promontory, lying obliquely athwart the incoming tide, forces the water sideways toward the point, where it churns up waves six to eight feet in height, and whence it is flung out from the point for two miles in a swiftly-racing white semicircle. When I asked the lighthouse keeper how fast the tidal rip tears around the point, he said: "Twelve to fourteen knots." Perfectly descriptive of this speed of fourteen to sixteen miles an hour were the Indian words "the deep sea dashed."

The seemingly inapplicable phrase had become strikingly corroborative of the geographical identification of the locale of Glooscap's winter camp site. A portage at Cape D'Or? Of course. There had to be. Indian canoes could not make headway against the tidal rip, and the natives would never attempt to round that cape. Their way of passing it would be to land on the east side of the promontory in a cove sheltered from the tidal currents, cache their canoes, and carry their belongings up a trail to a height of 350 feet, and down on the west

side to the near end of Advocate Harbour (local spelling). With other canoes cached at the harbor, they would paddle for two miles inside the harbor to its western end, and there carry their canoes over a narrow bar less than two hundred feet wide (it is narrowest at the west end), to the shore of Advocate Bay. Thence they would hug the coast to the west, unhampered by the tides, and when far enough to the west would cross the open water to the south shore and follow the coast to Digby.

Somewhere along the portage on the Cape D'Or promontory was Sinclair's fourteenth-century camp site.

It would have taken Sinclair and his men only a few hours



to become acquainted with the physical features of the promontory up to the 500-foot ridge that encloses it on the north. From the heights he would have been able to look down into the great harbor just to the west of the promontory, a harbor which Champlain entered in 1604, and which the Acadian French soon thereafter occupied. Antonio Zeno mentions the fact that Sinclair had an eye for the harbors in the new country, and we have proof that Sinclair knew of Advocate Harbour since he traveled west from Cape D'Or, for the Micmacs said: "In the spring, Glooscap went hunting to the west as far as to Cape Chignecto." We do not know whether Sinclair chose to build his ship on the shore above tide levels on the east side of the promontory, or in Advocate Harbour, but it is quite certain that he anchored the ship in the harbor after its launching, where, while it was riding in smooth water, his men stepped the masts and finished it. The high ground near the western edge of the promontory was only a quarter of an hour from Horseshoe Cove by trail, and was near enough to Advocate Harbour to be an ideal site for Sinclair's residence, whence he could quickly descend to inspect his men's activities on either side. If he at first assumed that fresh water in sufficient supply for all his men might be lacking on such high ground, he was soon apprized of adequate springs.

Two other considerations must have entered into Sinclair's choice of a site for his winter residence. He undoubtedly wanted it to be in the midst of the winter hunting field. We note that the autumn round-up of animals at Spencer's Island had left the animals on the promontory untouched, and as a hunter Sinclair probably foresaw that deer and other animals would come to winter on the promontory where conditions would be milder because of its proximity to the surrounding tidal waters. Also, as earl, prince and ruler, Sinclair would have chosen the heights of the promontory because of the lordly views they afforded. Eastward, he could look down

into Horseshoe Cove and off to Cape Spencer and Cape Blomidon; southward, across nine miles of water, he could see the shore of Minas Channel and the high ridge that shelters Grand Pré and the Annapolis Valley; westward was the Bay of Fundy, with Isle Haute in the offing, and the bold cliffs toward Cape Chignecto, resembling Orkney cliffs. The Indians said Glooscap was "guarded by sentinels." With the placing of sentinels in or near Horseshoe Cove and at Advocate Harbour, Sinclair would have made the whole promontory his mighty fortress; for it had unscalable cliffs on the south and west, and was protected at the north and northeast by a 500-foot ridge, about a mile and a quarter from the point of the cape. It was a royal domain, as magnificent a hunting park as any king could boast.

Being an amateur archaeologist, or becoming one in the process of the search, I sought to identify the Sinclair-Glooscap winter house site. I began by looking for house sites and a portage trail on the high ground along the western side of the promontory. I there found a trail which is obviously old because in most places it shows hard-trodden earth without vegetation. Also, it all but runs into the trunk of a large tree, the huge roots of which have grown over it. Unless one steps off the trail he will bump against the trunk of the tree; the tree must have begun its growth long after the trail had been deeply worn. It is a black spruce, which a corer shows is close to one hundred years old. We know that the trail is a very ancient one because in following the edge of the cliff up to 350 feet above the water, it disappears into midair in several places where erosion fallouts of the cliff have removed several hundred feet of the trail.

This early trail, undoubtedly from Indian times, began in a tiny cove near the southeast corner of the promontory. I had assumed that the principal Indian portage trail began at Horseshoe Cove and climbed directly toward Advocate Harbour. Perhaps in foggy weather the Micmacs may have

used such a direct trail. But on clear days they would have preferred the roundabout cliff-edge trail. When I asked whether the little cove where the cliff-edge trail started had a name, several old men at East Advocate said, "Yes. We don't know why, but it has always been called 'Injun Cove.'" The Indians would have been attracted to the cliff-edge trail because it was in easy gradient and because the views from it were inspiring and aroused in them the feeling of mastery over their environment which aboriginal men experienced when they looked down from a height.

A search of the high ground of the promontory, undertaken for me by Ronald Barkhouse, revealed nine or ten house sites in the form of visible ridged rectangles, though they were not cellar holes. Several of these were less than 200 feet from the cliff edge, apparently too close to it for shelter from the strong cold winds from the west and northwest, and I did not see why any early settlers had built their houses so near the edge.

Misled by this failure in understanding, I turned from them and investigated a four-acre plateau immediately to the south of Indian Cove at the southeast corner of the promontory, where the ebbing tide dashes. That plateau, 100 feet above the water, is sheltered by higher ground on every side except to the east, even by a ridging at the cliff edge on the south. I became so enamored of the idea that Sinclair's winter house site was on that plateau while his men were building his ship in the gully at Indian Cove, that I made a preliminary investigation of the plateau and gully in 1957 with a trained archaeologist, Edward V. McMichael, and conducted an archaeological expedition in 1959, which completed the search of gully and plateau. The expedition included three men from the University of Maine: a professor of geology, Dr. Harold W. Borns, and Lamont W. Curtis, and Forest W. Meader. Funds were provided through the generosity of Kermit Fischer of Hatboro, Pennsylvania.

Negative results forced the positive conclusion that the Sinclair-Glooscap house site must have been after all on the bank on the western side of the promontory. I returned to the cliff-edge house sites where we made a significant meteorological discovery; for we dug one morning at a site 175 feet from the cliff edge and suffered stifling heat with no breath of moving air, but when we stopped to eat lunch 100 feet farther from the edge, we encountered a stiff breeze from the west. We were thus forced to realize that the wind from off the Bay of Fundy when it hits the cliffs cannot pass downward nor to right or left but only upward, and the updraft passes over the first 200 feet of upland before it descends to ground level. The house sites close to the western bank were in a windless zone.

We found that the loam inside each ridged rectangle into which we dug had been formed after the house was abandoned, and was invariably of less depth than in test holes outside the rectangle. The houses at all of these sites, except for one which had been a cabin with floor at ground level, were of half-sod construction with the floors 3 or 3½ feet below the surrounding surface, and with the walls consisting of loam and gravel (hardpan) dug from the interior excavation. Each house was built for the most part with a shovel, and only the top two or three feet of the walls were of timber, now turned to loam. A trench through the highest ridge (west-side ridge) in each case revealed a ton or more of flat fieldstones where the chimney had stood. A typical finding was several feet of loam in the ridge from the decayed wall, under which were pockets of hardpan mixed with flowed clay from the mortar from between the chimney stones; then below the hardpan pockets more loam which had originally been laid up in the wall; and finally basic hardpan at the level of which, or two or three inches above it, we found the charcoal bed of the fireplace. Artifacts were seventeenth-century (French-Acadian) or eighteenth-century (early English) ceramic

pieces, some rusted iron, bones, etc.

These house sites were too far from the lighthouse point to answer the Micmac description; for only along the first 300 yards of cliff edge can one see immediately below one the dashing visible race of water toward the point.

There seems to have been another house site, however, in a location which would satisfy the Micmac description in every particular, and we have found no other which does. It was within 200 yards of the lighthouse point, and where the cliff is about 200 feet high, and one can look down on the "rushing stream" of dashing tidal rip directly below. The site was about one hundred yards from the spring from which the lighthouse gets its water, one of the two best springs on the promontory. I refer to it as the "S" site, to indicate both "spring" and "Sinclair." In 1951 a road to service a copper-mining enterprise was bulldozed parallel with and about 200 feet from the western cliff edge. Unfortunately this road crossed the "S" site and seems to have completely obliterated it. Two men who had observed the site before 1951 as a hollow of rectangular shape cannot now tell—at least more closely than to within about one hundred feet—where it had been. The two are local men, Ronald Barkhouse of East Advocate, and Merton Morris, assistant lighthouse keeper.

We looked for an accumulation of large flat fieldstones in the area, but found none, and it may be that some early Acadian found them and removed them for his own chimney, or it may be that the Sinclair chimney was built in primitive Orkney fashion with "sticks and clay." The land on the promontory was under cultivation for more than a century, and the plow greatly reduced surface evidences. I believe the "S" site was the principal winter house site of the Sinclair Expedition.

With an eye to growing tourist interest, the Province of Nova Scotia should name the spectacularly scenic road from Parrsboro to Advocate Harbour the "Sinclair Trail." Some-

day the road out to the point of the Cape D'Or promontory should be paved and made passable for passenger cars. In addition to the Sinclair-Glooscap interest, it would be justified by the phenomenon of the greatest tidal rip in the world.

The Micmac story supports the theory that Sinclair resided on the western side of the promontory. Since the Indians could not use their canoes when the waterways were frozen and they did not travel, they did not visit Sinclair's camp during the winter months when his men were felling trees and shaping timber into beams and planks, and building a decked ship. In the spring, coming from the east, the Indians revisited the Cape D'Or promontory and were met by Glooscap's sentinels, who told them that they would be shown Glooscap's "canoe." This indicates that the ship Glooscap had built was not visible at that moment, as it would have been were it in Horseshoe Cove or Indian Cove. The ship was almost certainly at that time on the other side of the promontory in Advocate Harbour. When the Indians ascended the portage trail to a spot where they could look down into Advocate Harbour and behold the ship riding there at anchor, they marveled at the strange sight, and the only way they could interpret it was in terms familiar to them.

Thus goes the record: Failing to understand what it is, the Indians "look for his canoe, but near the shore there is a small rocky island with trees growing on it. This Glooscap tells them is his canoe." The ship was motionless like an island, either because it was moored off shore in the harbor, or stranded there at low tide. The prince courteously invited the Indians to visit his ship. "They go on board, set sail, and find the floating island very manageable as a canoe. It goes like magic."

In the Indians' experience, the only means of transportation over water was a craft of birchbark, fragile and open. Here was a huge "canoe" as large as a whale with a hard top

on which men could walk. How else could they describe the hull except as a floating island, and its masts as "trees." The ship probably had two masts, and was about forty to fifty feet in length.

The Micmac legend of Glooscap says that "when about to go away and leave the Indians, he called up a whale to carry him off on its back. The sound of the words and the chanting tone of voice he used as the ship set sail are still handed down. The words were these, repeated thrice: *Nemajeechk numeedich*."

Could these words, or the sounds which they imitated, have originated in some sea chantey of the Orkney sailors, used when raising sail or anchor? Did the refrain of such a chantey suggest to Indian ears the words they gave to it in their own language? I called on my Scandinavian friends for help, and one of them, William Williamson, at that time Curator of the Marine Museum of the City of New York, dragged out of memory words of Old Icelandic which he had heard sung in a seaport in Norway in his boyhood. These words, from the refrain of a Norse chantey, mean: "Now must I, now must you." Observe the close parallel with the Micmac words:

Nu mo jag, nu mo deg
Nemajeechk numeedich

Any philologist will tell you that the gutturals "chk" and "ch" and "g" are phonetically interchangeable, and that the consonants of the expressions from both languages are the same.

Rand says the Micmac words mean: "Let the small fish look at me." A friend in Nova Scotia has suggested that the equating might be more certain were the Micmac words gibberish. Is it likely, however, that aborigines would use, or retain for centuries, meaningless phonetic syllables? Primitive men closely imitated bird and animal cries, but did they not

tend to use equivalent sounds which also formed words, or in course of time became words, like our "whippoorwill"?

In the Norse words remembered by Mr. Williamson, and in the Micmac words, I believe we have a pre-Columbian phonetic bridge between Europeans and North American Indians.

In another version of the record, the Micmacs said Glooscap "proposes a removal, he and his comrades will leave. . . . The first step is to construct a canoe for the voyage; in due time they are ready for a start."

Clark quotes the Micmacs as saying that Glooscap sailed away "on Fundy's ebbing tide." He could have sailed only with a following wind; for while the ebbing tide from Advocate Harbour into the Bay of Fundy would carry a ship southwestward for twenty miles without benefit of wind, if there were no wind the incoming tide would promptly bring it all the way back again.

The Bay of Fundy looks like open ocean, as seen from Cape D'Or. The tides of course showed Sinclair that its waters led to, or were part of, the ocean.

When Glooscap was ready to set sail he said to those Micmacs who were gathered at his departure: "I shall not return to rule over you." Surely these were the words of a nobleman of princely rank. Glooscap is said to have added: "Sometime men will come to teach you religion" (Webster).⁹ This prophecy is positive evidence that Glooscap was not a missionary, but that he came from a civilization that sent forth missionaries. It seems fair to conclude that the individual about whom the Glooscap legend grew preceded the coming of the first Jesuits.

Beatrice M. Hay in *Canadian National Railways Magazine*,

⁹ Paraphrased into direct discourse from the original given by Webster, pp. 187, 188, as follows: "He prophesied the coming of the Europeans and the baptism of the Micmacs. The last people he lived with, he told he was not coming back to rule them. He told them that sometime they would get religion."

December 30, 1927, said of the Micmacs: "Their missionaries believe that they had learned something of Christianity before the arrival of the first French priests, and that they acquired this knowledge from the Norsemen who are known to have visited the shores of North America long before. . . . The Norsemen were followed by the Basques who frequented from a very early date the fishing banks adjoining the coasts of Newfoundland. Dionne, in his study of Champlain, states that, during a voyage made by this intrepid pioneer, he discovered in an inlet north of Cape Forchu a moss-covered decayed cross. Laclerc also states that the Micmacs were very devoted to the Cross."

There is no reason to suppose that Henry Sinclair had been motivated to any degree by a missionary impulse. His prophecy that men would come to teach the Micmacs religion shows that in his opinion they had not yet received instruction in religion as he knew it. It is therefore deducible that the Micmacs first learned of Christianity, not from the early Norsemen, but from European contacts in the early fifteenth century.

In character, personality, and genius for governing, Prince Henry Sinclair expressed the finest flowering of Norman-French culture. The Micmac Indians of Nova Scotia were exposed to it. The effect it had on them, as recorded in the Glooscap epic, should be of great interest to historians. The equating of Glooscap with Sinclair provides us with a unique situation, that of a full-blown legend in which it is possible, with certainty, to disentangle the historic facts which gave rise to it from the additions made by myth-making primitive tribesmen.

At his departure, Glooscap

Invited all to a parting banquet
By the great Lake Minas shore
On the silver water's edge.
And when the feast was over,

Entered his great canoe
And sailed away over the water,
The shining waves of Minas;
And they looked in silence at him
Until they could see him no more,
Yet, after they ceased to behold him
They still heard his voice in song,
The wonderful voice of the Master,
But the sounds grew fainter and fainter,
And softer in the distance,
Till at last they died away.

Homeward Bound

In order to sail out to the southwest through the Bay of Fundy, Sinclair would have waited for a wind from the northeast, and a wind from that direction usually blows for two or three days. A northeaster would have carried his ship to the New England shore, where he would have landed and waited for a west wind before beginning his crossing of the ocean. He knew just about how far south from Minas Basin the land of Nova Scotia extended, since he had visited the south shore of Nova Scotia at the site of Liverpool, and therefore he knew about how far south he should follow the New England shore so as to clear Nova Scotia when he sailed with a fair wind eastward.

While on the southern New England coast waiting for such a wind, he evidently seized the opportunity to do a little exploring. He and some of his men apparently followed an Indian trail to the summit of a lookout hill, the highest hill in eastern Massachusetts. It was what is now called "Prospect Hill" at Westford, from whence there is an unobstructed view of from thirty to sixty miles in all directions. Sinclair may have seen Prospect Hill when he came into Boston Harbor, just as sailing-ship captains later used to take sighting on it. An Indian trail twenty-five miles long led to it from that harbor, but it is more likely that Sinclair ascended the Merrimac River by small boat to a place a little above the site of

the city of Lowell, and thence up Stony Brook to the ford where a trail from the site of Tyngsboro crossed the brook about a mile north of Prospect Hill.

The walk up the 465-foot hill on a warm day may have given one of Sinclair's attendant knights a heart attack, especially if he was wearing his armor. In any case, as we shall see, one of them died on the trail. Sinclair's most loyal friends had chosen to remain with him over the winter, and the death of one of his knights called for a memorial. And so then and there he had his armorer cut a representation of the deceased knight on an exposed ledge which was underfoot on the trail.

As long ago as 1883, E. R. Hodgman in *History of the Town of Westford*, p. 237, mentioned markings on that ledge: "A broad ledge which crops out near the house of William Kittredge has upon its surface grooves made by glaciers. [Professor Gunning, who once visited the spot, said it is a remarkably well-defined instance of glacial action.] Rude outlines of the human face have been traced upon it, and the figure is said to be the work of Indians." The ledge shows more than fifteen parallel glacial striations to a foot. Most of them are less than an inch apart. The surface looks as though a giant comb had scraped it. As glacial ice a mile thick advanced southward over it, the slightly-tilted ledge forced the ice to rise about one foot in ten, and sharp rocks held under the ice cut deeply into the surface. The grooves run from 12° West of North to 12° East of South. Many persons have already gone to see for themselves the man-made markings on the ledge, and more will wish to do so, and so for them here are specific directions. Westford is 10 miles west of Concord, and the ledge lies within 20 feet of the Tyngsboro Road on the east side, and one-half mile north of the library at Westford Center.

Most of us see only what we know and understand, or what our minds condition us to observe. Some Westford inhabitants long ago saw on the ledge only the figure of an

Indian, 20 inches long. Many saw a great sword more than 50 inches in length. Some saw a "face," but thought it was separate from the other markings. In 1946, William B. Goodwin, who had made a drawing of the sword, used it as an illustration on page 54 of *The Ruins of Great Ireland in New England*. Frank Glynn, President of the Connecticut Archaeological Society, in 1950 sent a copy of this book to T. C. Lethbridge, Curator of the University Museum of Archaeology and Ethnology, Cambridge, England. Glynn had never seen the Westford rock, but assuming that the drawing showed a viking sword, asked for Lethbridge's opinion of it. Mr. Lethbridge replied that it was not a viking sword, but a "large, hand-and-a-half wheel pommel sword" of the fourteenth century, and he asked Glynn to look at the decorated rock. He wrote Glynn that such a sword on rock markings in Great Britain was customarily shown as held in the hands of an armored knight. That Lethbridge could believe that such pre-Columbian rock decoration of European origin might exist in Massachusetts seemed utterly fantastic to Glynn, but in May of 1954, Glynn made a visit to the ledge, and to his amazement found upon it a representation of a knight complete with sword, helmet, shield and armor!

The Westford rock decoration is of the type known as a "Military Effigy." Most of the pattern consists of punch holes, in a technique which, unknown in England, is not unique; for Arhus runestone 6, listed as Number 68 in *Danmarks Runeindskrifter* by Lis Jacobsen and Erik Moltke, was made by that method. The representation of the knight at Westford is in large part composed of man-made markings, but the maker, who may have had only a limited time to complete his task, saved labor by accepting marks made by nature where they would serve his purpose. The unity of the whole pattern persuasively argues that we also should accept them. These marks include streaks and patches of coloration in the gneiss (various shades of gray, green, pink, red, brown, white,

and bluish-black), and several of the more deeply grooved glacial scratches. Glynn spent ten hours making a drawing of the effigy and when Lethbridge received it he wrote (with no knowledge of my studies of the Sinclair Expedition) that the arms, armor, and heraldic emblems were those of a late fourteenth-century knight, North Scottish—and “a kin to the first Sinclair Earl of Orkney”! This was one of the most exciting statements I ever faced; Glynn told me of it some months later, after he had first studied enough heraldry to become convinced that Lethbridge was correct.

Parts of the pattern are so weathered as to create a problem for the viewer. It is immediately apparent that man-made punch holes form the pommel, handle, and guard of the sword, and below the guard the break in the sword indicative of death, the crest above the pommel, the point of the sword, the jess lines attached to the legs of the falcon, the bell-shaped holes, the corner of the shield touching the pommel, the crescent on the shield, and the decorative pattern on the pommel. The face or head with raised basinet requires close scrutiny, preferably with a magnifying glass. It is also not easy to absorb some of the other details at first glance.

About twenty minutes after Professor Donnell B. Young stepped with me upon the ledge and studied the sword, I said to him: “There is also the knight’s face.” He surprised me by replying: “I saw the face the moment I stepped upon the ledge.” An hour later, when I said to him: “Frank Glynn sees a falcon above the knight’s left hand,” Donnell Young responded: “I have seen the falcon for the last hour.” It was reported to me that on an occasion when I was not present, two specialists from an armorial museum had for some time been studying the pattern when one of them suddenly asked: “Do you see the lion?” and the other replied: “Sure I see the lion.” The knowledge of the specialists that the most frequently-appearing decoration on a sword pommel is a rampant lion caused them to look for it, and when their identification

of a rampant lion with its body formed by natural lighter coloration in the Westford ledge and the four legs and up-curling tail formed by man-made punch holes was pointed out to us, we saw it also.

Most of the punch holes are too small to be marked by a stick of chalk. In preparing to make an accurate drawing of the pattern, I touched the bottom of each hole with white water-color paint applied with a very thin brush. This was no vandalism, since rain removes such paint. Having thus marked all the holes, I copied them on tracing paper, from which I transferred the pattern to graph paper. My drawing shows every punch hole in its precise location with respect to all the others.

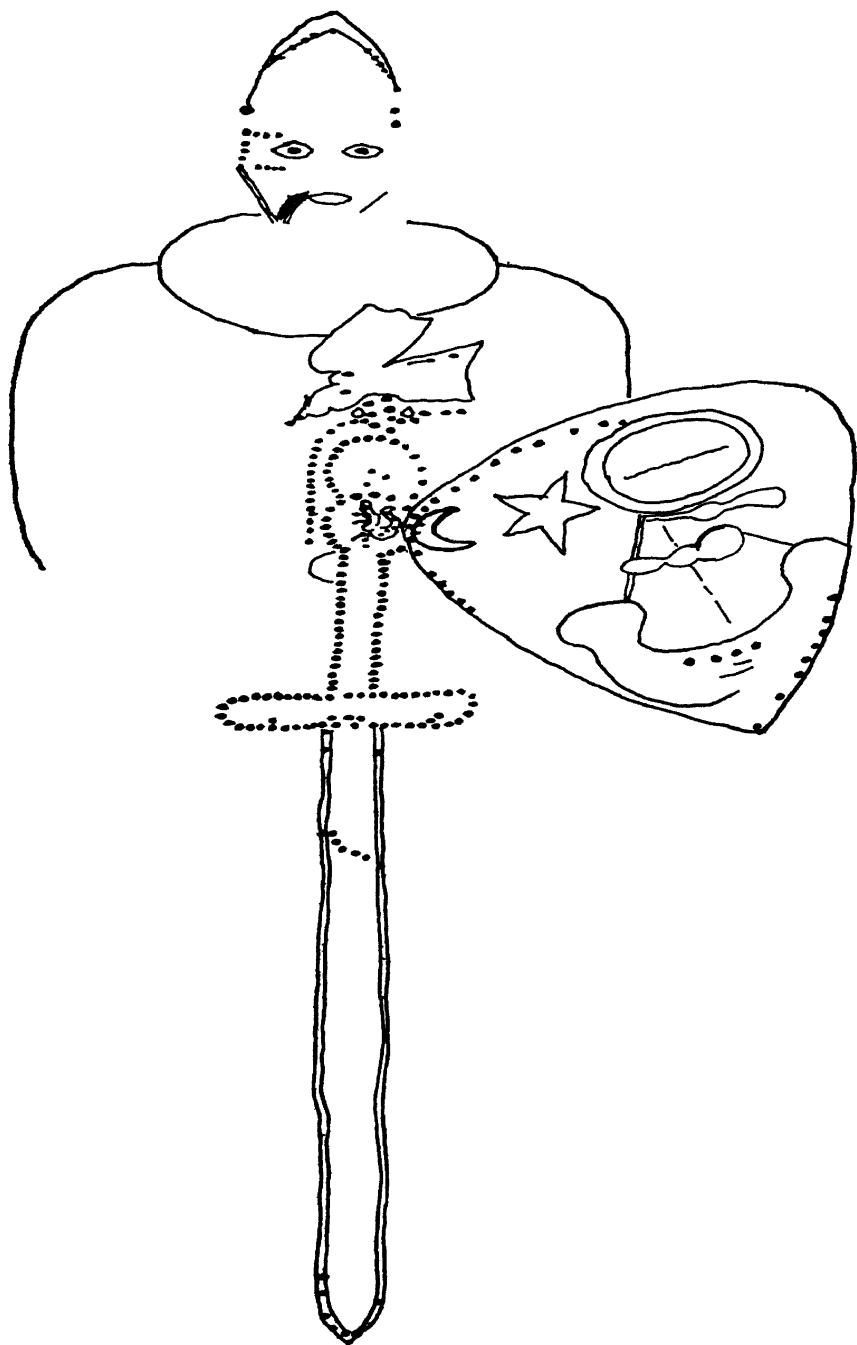
After many hours of study of the heraldic emblems on five separate visits I feel certain that not only the crescent, but the galley and buckle, are on the shield. In agreement with Frank Glynn, I feel least sure of the five-pointed mullet.

One of the most obvious facts is that the punch holes vary in size from that of a finger tip down to the head of a pin. But where even the smallest holes are in lines that contribute to the pattern, there is no doubt that they were man-made. It would seem from differences in the sizes and depths of the holes that the punch or spike or tool the pattern maker used became blunted, and while the first holes he made were comparatively large and deep, those he made later were progressively smaller. This argues the genuineness of the pattern. A modern hoaxer would have brought several tools to work on the resistant rock at Westford and would certainly have had with him means of resharpening them, but Sinclair's man on a trail far from the ship had no effective sharpener, and was pushed for time. If the gradation in size of holes means anything, it tells us that the first punch holes made were those that delineate the sword, and eyes and mouth of the face, and the edges of the shield near the pommel. The positioning of these things determined the positions of all the rest of the

pattern. The heraldic emblems on the shield, the falcon, and whatever the knight is holding in his right hand were put in with the blunted tool.

Here is a description of most of the things in the pattern:

The pommel, hilt, guard, and break in the blade of the sword are outlined with large punch holes. Two parallel glacial striae form the edges of the blade. The hilt is 8 inches long, and the length of the guard is about $10\frac{1}{2}$ inches. The length of the sword, which was no doubt determined by measuring off the knight's actual sword laid on the rock, is $52\frac{1}{2}$ inches from the top of the pommel to the tip of the blade. The blade itself is 39 inches long, and its greatest width is between $2\frac{1}{4}$ inches and $2\frac{1}{2}$ inches. The head of the effigy, with eyeballs formed by elevations in the middle of hollows which represent eyesockets, with mouth and drooping mustache, but nose area eroded or broken out, is surmounted by a raised, pointed basinet, the eyeholes of which are represented by natural dark spots in the gneiss. On the armor just to the right of the knight's right eye is a rectangular hinge to fasten the basinet when lowered over the face. The knight seems to be wearing a great surcoat. At the right armpit there is a lance rest in the form of a rosette, and there may be a dagger in the right hand, of which four fingers seem to be indicated, with the thumb behind the handle; but being uncertain of these, I have omitted them from my drawing. The left hand resting upon the pommel of the sword is concealed behind the base of a falcon crest. Suspended from the left arm is a convex-curved triangular shield, an upper corner of which overlaps part of the wheel pommel. As Glynn and I see it, the heraldic emblems on the shield "in the chief" (across the top) are a crescent, a mullet (five-pointed, it seems, and not a star, which would be six-pointed), and a buckle; and in the base, a boat with high ends like a galley or lymphad, with a natural line in the gneiss which the pattern maker apparently accepted as a mast, and which I therefore believe we should



Military effigy on ledge at Westford, Massachusetts

accept.

All the details support the identification and dating by Lethbridge. (1) The long sword with large wheel pommel is of a late fourteenth-century type, and has been identified by various armorial experts as a Scottish claymore of unqualified 1350-1400 date. (2) Armorial scholars say that the basinet is of a form that was in fashion for only twenty-five years, from 1375 to 1400. (3) Observers who have had much experience with rock markings and who have made comparison with the oldest gravestone inscriptions in the vicinity agree in estimating that the weathering of the human workings on the Westford ledge, which is a fine-grained gneiss extremely resistant to erosion or cutting, much more so than granite, indicates an age of decidedly more than four hundred years. Their estimate takes into account that gneiss weathers much more slowly than granite, and that the ledge lies almost horizontal and is only slightly inclined, so that it is somewhat protected from wind erosion and is exposed to only a very gentle flow of run-off from rain water and melted snow.

The genuineness of the Westford Military Effigy is further substantiated by the failure of the arguments raised against it. After English students of heraldry had asserted that the buckle was never used "in-chief," Sir Thomas Innes, Lyon King of Arms, pointed out that the arms of the Leslie and Sterling families showed the buckle-in-chief. After critics had expressed doubt as to the falcon crest, Frank Glynn found a record of a falcon crest used in Scotland in the last twenty years of the fourteenth century. After English heraldic experts, familiar with halving and quartering coats-of-arms, had questioned a shield with three devices in-chief, record was found that some Orkney families about the year 1400, following Scandinavian examples, had used three-device shields. After English writers had protested that the sword in military effigies was always aslant, and never vertical and central to

the knight's figure as at Westford, a monument in the Orkney cathedral was found to show a great sword held as vertical and central. When all the details which specialists have declared to be inadmissible are found to be in conformity with correct usage, we see not only that the specialists were ignorant of the fourteenth-century usages they impugned, but also that we have good reason for accepting as fact that the Westford ledge was decorated by a contemporary of the usages he depicted.

In the final hours before sailing home from North America, Sinclair's men filled the fresh-water casks and from their last day's hunting replenished the food stocks on board to replace what they had eaten since leaving Advocate Harbour; for the chief hazard in an ocean crossing was the length of time it might take, during which water and food might fail. The men had reached Nova Scotia almost starved when they came westward, and they would have been most concerned about avoiding a repetition of that hardship.

Henry Sinclair's voyage home from the coast of New England to Orkney in 1399 was probably not the last pre-Columbian crossing of the Atlantic, but it is the last of which we know with certainty thus far. It is true that Andrea Bianco's map of 1448 with its "Island authenticated is distant to the west 1500 miles," seems to indicate a discovery of the Brazilian elbow in the mid-fifteenth century, but while that discovery presumably occurred shortly before Bianco drew the map, it may have occurred many years earlier and Bianco may have copied the words from some map he saw in the archives of Portugal. We cannot tell, because most of the Portuguese records were lost in the fire that accompanied the Lisbon earthquake.

An attempt was made to give publicity to Earl Henry's explorations. He himself was no writer, but Antonio Zeno, as Antonio said in his last letter to Carlo from Orkney, took

upon himself to write a description of the Orkney and Shetland Islands, Iceland, Norway, Newfoundland, and "Drogio" (continental North America), "all in a separate book," which he said he would bring home when he returned to Venice. He further said: "I have also written the life and exploits of Sinclair, a prince as worthy of immortal memory as any that ever lived."

As for Henry himself, he may have chosen to say nothing to other rulers about the land to the west so remarkably rich in resources, until he had an opportunity to strengthen his hold on it. That opportunity never came, however. Only a few months after his return home, the Orkneys were invaded by "Southerns" (the English) in the summer of 1400, and Henry, fighting in their defense, was slain in an obscure skirmish. Had he lived for several more years he might have brought to all of Europe the realization that there was a new continent to be added to the map of the world.

Henry's son and heir was not disposed to undertake the hardships of ocean voyaging, and did not have our Henry's vision, but was satisfied with enjoyment of the pleasures and luxuries possible to him in the position he inherited from his ambitious father. As for Antonio Zeno's description of the New World and his biography of Henry Sinclair, which he took with him when he returned to Venice, we must remember it was before the introduction of printing into Europe, and Antonio had no time to have manuscript copies made for circulation, for he himself died a few months after he reached home. His brother Carlo failed to appreciate the importance of Antonio's papers; for in his day there was no means of judging the accuracy of maps and no means of ascertaining the true geographical relationships of the islands or lands in the North Atlantic and on both sides of it. Having been told by Antonio that the new land had been reached across the North Atlantic, Carlo in Venice naturally assumed, as who

would not, that in order to reach the new land one must first sail to the islands north of Scotland, and there take on fresh supplies before venturing across the ocean. The idea of setting sail directly west from the Mediterranean had not yet been born, and so Antonio's papers were left in some drawer or chest to fade and crumble until the destructive fingers of the boy Nicolò finished off the pages which we most wish we had.

Henry Sinclair's body was taken to Roslin and was buried in St. Matthews Church, whence it was subsequently removed to Roslin Chapel, the architectural masterpiece built by his grandson William.

In the years to come it will be more and more a matter of interest and pride to the people of the United States, Canada and Great Britain that a fourteenth-century expedition across the Atlantic was conceived by and led by a man born in Great Britain.

Even if there had been the opportunity for wide publicity which printing would have given, Europe was not yet ready for the discovery of the New World. The idea that there was a vast new continent inhabited by savage tribesmen would have meant little to Europeans, who were concerned with the land and Church problem. Even in 1493 when Europe was deeply stirred, it was the mistaken belief of Columbus that he had found a direct passage to Asia which caught the imagination of men, so that when nine years later Amerigo the Florentine first brought to Europe the fact that there was a new continent across the Atlantic, the idea that Columbus had not reached Asia but only a New World was a shocking disappointment to Europeans. It is the lesson of history that discoveries have to come at the right time, or they do not come at all.

The story of Henry Sinclair's transatlantic expedition was once perilously close to being completely destroyed, but

enough was saved to enable us to reconstruct it and establish it factually. It has been a rewarding labor to bring to his proper place a man who, because of his accomplishment in discovery and exploration, is, as Antonio Zeno said, "worthy of immortal memory."

Acknowledgments

The studies and searches over a period of twenty-five years during which I have gathered the material in this book have brought many delightful personal relationships. I hope I have not inadvertently omitted any persons who should be in the list of my principal helpers and encouragers. There are many not named, in the United States, Canada, the British Isles, and in Scandinavia, who have been consultants and who have contributed fruitful suggestions, and many who have given assistance of time and effort, and many more who have wished to do so.

First, I am most grateful to Josephine Pollitt Pohl, whose constant companionship and challenging reactions have been invaluable. I extend thanks for unstinting help given by scholars and librarians in Bergen, Oslo, Copenhagen, Stockholm; Edinburgh, London, Wicks, Thurso, Kirkwall, Lerwick, Dublin; the American-Scandinavian Foundation in New York City; the American Swedish Foundation in Philadelphia; the Library of Congress, the New York Public Library, the Brooklyn Library, Yale University Library, the Indianapolis Public Library; Peabody Institute of Archaeology at Harvard; the New Brunswick Museum; the University of Pennsylvania; Metropolitan Museum of Art; American Museum of Natural History; the Smithsonian Institution. I am grateful to all fellow members of the Ship Lore Club of Brooklyn, and particularly to Captain "Bob" Bartlett, Captain Victor Slocum, Captain Steven Moodie, Frank O. Braynard, John Martucci, Samuel G. Mellor, Moulton Farnham, Townsend J. Smith, Ralph C. Urban, and William Williamson. I am grateful also to many members of the Massachusetts Archaeo-

logical Society, the Connecticut Archaeological Society, and the Eastern States Archaeological Federation.

I owe special thanks to Chesley L. Allen of Port Greville, Nova Scotia; Malcolm Allen, Night News Editor, A.B.C.; Ronald Barkhouse, East Advocate, Nova Scotia; Dr. Walter Bell, Director of Geological Survey, Canada; Dr. Junius B. Bird, American Museum of Natural History; Glenn A. Black, archaeologist in charge of the diggings at Angel Mounds; Miss Phyllis Blakeley, Archives, Halifax; Mrs. Bolhouse, Newport Historical Society; W. T. Borden, Independence, Missouri; Dr. Harold W. Borns, Jr., University of Maine; Dr. Johannes Brøndsted, Curator of National Museum, Copenhagen; Gerald Brymer, Guysborough, Nova Scotia; Professor H. L. Cameron, Acadia University; Mrs. S. A. Canty, South Yarmouth; Thomas W. Carr; Howard I. Chapelle, Cambridge, Maryland; Norman H. Cook, Cape Cod Chamber of Commerce; Harold C. Cooper, Gettysburg College, Pennsylvania; Calvin Crawford, Cotuit, Massachusetts; Professor Elliott V. K. Dobbie, Columbia University; Professor Charles W. Dunn, New York University; Mrs. J. Ray Farley, Heavener, Oklahoma; C. B. Ferguson, Archives, Halifax; Kermit Fischer, Hatboro, Pennsylvania; James A. Ford, American Museum of Natural History; Dr. William S. Fowler, Rumford, Rhode Island; Dan B. Gaylord, Publisher of *Standard-Times*, Hyannis; Lille Gjerløw, *Norsk Historisk Kjeldeskrift*, Oslo; Frank Glynn, Clinton, Connecticut; Arthur Godfrey, Editor of *Pictou Advocate*, Pictou, Nova Scotia; Benjamin L. Hadley, Superintendent Acadia National Park, Bar Harbor; Donn K. Haglund, Department of Geography, University of Wisconsin, Milwaukee; Dr. Daniel C. Harvey, Archives, Halifax; Professor Jón Helgason, Arnamagnæanske Institut, Copenhagen; Mrs. Frederick L. Hickman of Newton Center, Massachusetts; Dr. William H. Hobbs, University of Michigan; Eigil Hoeg, Civilingenier, Copenhagen; Hjalmar R. Holand, Ephraim, Wisconsin; Dr. Wilhelm Holmqvist, Historical Museum, Stockholm; Miss Carol Houck, editor; Carl Christian Jensen, Brooklyn; Herbert J. Kaiser, Ipswich; Donald R. Keller, Philadelphia; Professor Melvin Landon, Nason College, Maine; Thomas C. Lethbridge, Seaton, Devon; George W. Longmuir, Lerwick; Ralph E. Loper, Swansea, Massachusetts; Professor Kemp Malone, Johns Hopkins University; Evan MacGillivray, Kirkwall; Arlington H. Mallery, Washington, D.C.; Burt McConnell, Explorer's Club, New York; Dr. George

E. McCracken, Drake University, Des Moines; George McGrath, Brooklyn; Count Morozzo della Rocca, Director of Archives, Venice, Italy; Philip Morris, Lighthouse Keeper, Cape D'Or; Merton Morris, his assistant; John C. Mobyed, Brooklyn; Professor R. L. Page, Nottingham University; Karl G. Parchert, Dearborn, Michigan; Arthur Petzold, Andover, Massachusetts; Calvin Philips, Seattle; Holiday Phillips, Coatesville, Indiana; Bernard W. Powell, Norwalk, Connecticut; Dr. Gad Rausing, Lund, Sweden; Dr. Konstantin Reichardt, Yale University; Edward A. Richardson, Bethlehem, Pennsylvania; Herman L. Reid, West Advocate, Nova Scotia; Dr. Maurice Robbins, Attleboro, Massachusetts; John H. Rogers, Editor, *Standard-Times*, Hyannis; Eber L. Russell, Perrysburg, New York; Frederic Sanborn, Greenwich, Connecticut; Thomas W. Sears, Hyannis; Benjamin L. Smith, Concord, Massachusetts; William L. Smyth, Winsted, Connecticut; Dr. Vilhjalmur Stefansson; Dr. W. Albert Strong, Akron, Ohio; Dr. William Walker Strong, Mechanicsburg, Pennsylvania; Erich Stirnemann, Los Angeles; Harry Sutherland, Editor *Evening News*, New Glasgow, Nova Scotia; Eric P. Swenson, editor; Joseph M. Trefethan, University of Maine; Maurice P. Webb, Moorestown, Pennsylvania; Dr. Robert K. Zuck, Brothers College, Madison, New Jersey.

Selected Bibliography

- Alger, Abby Langdon, *In Indian Tents; stories told by Penobscot, Passamaquoddy and Micmac Indians to Abby L. Alger*, Boston, 1897.
- Babcock, William Henry, "St. Brendan's Explorations and Islands," *Geographical Review*, New York, vol. 8, 1919, pp. 37-46.
- Barbaro, Marco, *Discendenze Patrizie* (manuscript in Museo Correr, Venice), 1536.
- Barry, George, *The History of the Orkney Islands*, Kirkwall, 1867. (gives *Diploma*, 1446)
- Beamish, North Ludlow, *The Discovery of America by the Northmen, in the Tenth Century, with Notices of the Early Settlements of the Irish in the Western Hemisphere*, London, 1841.
- Beauvois, Eugène, *Les Colonies Européennes du Markland et de l'Escociland (Domination Canadienne) au XIV^e siècle*, Nancy, 1877.
- "La veracité des Zeno et l'authenticité de leur carte," *4th International Geographical Congress, Paris*, 1889, vol. 1, pp. 431-441.
- *Les Voyages Transatlantiques des Zeno*, Louvain, 1890.
- Bird, Will R., "The Micmacs of Canada," *The Pictou Advocate*, July 29, 1927, p. 6.

- Brinton, Daniel Garrison, *The Chief God of the Algonkins, in his character as a cheat and liar*, Chicago, 1885.
- Brögger, Anton Wilhelm, *Winlandfahrten* (German tr.), Hamburg, 1939.
- Brögger, Anton Wilhelm, and Haakon Shetelig, *The Viking Ships. Their Ancestry and Evolution*, Oslo, 1951.
- Calendar of Charters*, vol. 1 (1142-1406); vol. 2 (1406-1460).
- Clark, Jeremiah S., *Rand and the Micmacs*, Charlottetown, 1899.
- Clouston, Joseph Storer, "The Battle of Tankernes," *Proc. of the Orkney Antiquarian Soc.*, vol. VI (1927-8), p. 22.
- *A History of Orkney*, Kirkwall, 1932.
- "The Orkney Lands," *Proc. of Orkney Antiquarian Soc.*, vol. II (Session 1923-1924), 24 April, 1924.
- Records of the Earldom of Orkney. 1299-1614, printed for the *Scottish Historical Soc.*, 2nd ser., vol. 7, 1914.
- Conant, Kenneth J., "Newport Tower or Mill," *Rhode Island History*, Jan. 1948, pp. 2-7.
- Dawson, John William, *The Geological Structure, Organic Remains, and Mineral Resources of Nova Scotia, New Brunswick, and Prince Edward Island*, London, 1868.
- Fairbridge, Rhodes W., "Recent World-Wide Sea Level Changes and Their Possible Significance to New England Archaeology," *Bulletin of the Massachusetts Archaeological Society*, April, 1960.
- The Flatey Book and Recently Discovered Vatican Manuscripts Concerning America as Early as the Tenth Century*, Norroena Society, London, etc., 1908. (gives for each page, a facsimile of Icelandic Manuscript, the Icelandic Text, a Danish Translation, and English Translation)
- Flateyjarbók*, AM544, Royal Library, Copenhagen.
- Forster, Johann Reinhold, *History of the Voyages and Discoveries made in the North*, B. 11, sect. 13, 1786.
- Gathorne-Hardy, Geoffrey Malcolm, *The Norse Discoverers of America. The Wineland Sagas Translated and Discussed*, Oxford, 1921.

- Gaudet, Daniel, *Moeurs et coutumes des anciens Souriquois ou Micmacs*, College St. Joseph, New Brunswick, 1895.
- Gesner, Abraham, *Remarks on the Geology and Mineralogy of Nova Scotia*, Halifax, 1835.
- Glynn, Frank, "A Unique Punched Portrait in Massachusetts," *Eastern States Archaeological Federation Bulletin*, no. 16, Jan. 1917.
- Goodwin, William B., *The Ruins of Great Ireland in New England*, Meador, Boston, 1946.
- Great Britain, Public Record Office, Calendar of State Papers, Colonial Series, vol. I: America and West Indies, p. 154 (Plowden "Commodities of New Albion").
- Hagen, Sievert Nielson, "The Kensington Runic Inscription," *Speculum*, vol. 25, no. 3, July 1950, Cambridge, Mass.
- Hauk's Book*, Arnamagnaeon Library, Copenhagen.
- Hay, Father Richard Augustine, *Genealogy of the Sainteclaires of Rosslyn*, Edinburgh, 1835.
- Hencken, Hugh, "The 'Irish Monastery' at North Salem, New Hampshire," *New England Quarterly*, vol. XII, no. 3, Sept. 1939.
- Hobbs, William H., "The 14th Century Discovery of America by Antonio Zeno," *Scientific Monthly*, Jan. 1951.
- "Zeno and the Cartography of Greenland," *Imago Mundi*, vol. 6, 1950, pp. 15-19.
- Hodgman, Edwin Ruthven, *History of the Town of Westford, County of Middlesex 1659-1883*, Lowell, Mass., 1883.
- Holand, Hjalmar R., *America 1355-1364*, New York, 1946.
- "An English Scientist in America 130 Years Before Columbus," *Wisconsin Academy of Sciences, Arts and Letters. Transac.*, vol. 48, 1959.
- *Explorations in America Before Columbus*, New York, 1956.
- *The Kensington Stone*, Ephraim, Wis., 1932.
- *Westward from Vinland*, New York, 1940.
- Hume, G. S., "Oil and Gas in Eastern Canada," *Canada Depart-*

- ment of Mines, Geological Survey, Economic Geology Series*, no. 9, 1932.
- Hunt, Charles Butler, "Radiocarbon Dating in the light of stratigraphy and weathering processes," *Scientific Monthly*, vol. 81, no. 5, Nov. 1955, pp. 240-247.
- Jelic, Luka, "L'évangélisation de l'Amérique avant Christophe Colomb," *Congres scient. internat. des Catholiques, Compte rendu*, vol. 2, 1891, part 2; vol. 3, 1894, part 2, Yale University Press.
- Kenny, James F., "The Legend of St. Brendan," *Royal Society of Canada, Proceedings and Translations, series 3*, vol. 14, 1920, pp. 51-67.
- Koch, Lauge, "The Geology of East Greenland," *Grönland. Kommissionen for videnskabelige undersøgelser i Meddelelser om Grönland*, vol. 73, 1929.
- Krause, Wolfgang, *Runeninschriften im älteren futhark*, Halle, 1937.
- Larsen, Helge, "Dödmandsbugton, an Eskimo Settlement on Clavering Island," *Grönland. Kommissionen for videnskabelige undersøgelser i Meddelelser om Grönland*, vol. 102, 1934.
- Leland, Charles Godfrey, "The Mythology, Legends, and Folk-Lore of the Algonkins," *Royal Soc. of Lit. of the United Kingdom. Transac.*, series 2, vol. 14, pp. 69-91. (Read in June 1886.)
- Leland, Charles Godfrey and John Dyneley Prince, *Kulóskap the Master and Other Algonkin Poems*, New York and London, 1902, 370 pp. Translated metrically by Leland and Prince.
- Lelewel, J., "Tavola di Navicare di Nicolò et Antonio Zeni," *Geog. du Moyen-Age*, vol. 4, 1852, pp. 77-108.
- Little, George Aloysius, *Brendan the Navigator, an interpretation*, Dublin, 1945.
- Lucas, Fred W., *The Annals of the Voyages of the Brothers Nicolò and Antonio Zeno in the North Atlantic about the End of the Fourteenth Century and the Claim Founded Thereon to a Venetian Discovery of America*, London, 1898.
- Major, Richard Henry, *The Voyages of the Venetian Brothers, Nicolò and Antonio Zeno, to the Northern Seas, in the XIVth*

Century, ed. by Richard Henry Major, Hakluyt Society Works, no. 50, London, 1873. (Italian text and English translation)

——— *The Voyages of the Venetian Brothers Zeno*, Massachusetts Historical Society, Boston, 1875.

Mallery, Arlington H., "The Pre-Columbian Discovery of America: A Reply to W. S. Godfrey," *American Anthropologist*, vol. 60, 1958, no. 1, pp. 141-152.

Marcus, G. F., "The Navigation of the Norsemen," *Mariner's Mirror*, London, vol. 39, no. 2, May 1953.

Moorehead, Warren King, *The Merrimack Archaeological Society. A Preliminary Survey. With Supplementary Notes by Benjamin L. Smith on the Concord Valley*, Peabody Museum, Salem, Mass., 1931, p. 13 (drawing of copper Bronze Age dagger?).

New York Historical Society Collections, vol. II, 1869, pp. 214-218.

Nunan, Rev. Francis, *Kerry's Ancient See and Shrine Ardfert-Brendan*, Tralee, 1950.

O'Donoghue, Rev. Denis, *Brendaniana; St. Brendan the Voyager, in Story and Legend*, Dublin, 1893.

Old-Lore Miscellany of Orkney, Shetland, etc., vol. 1, part 1, Jan. 1907.

Orkney and Shetland Records, vol. 1, part 12, Index, 1914.

Patterson, George, *A History of the County of Pictou, Nova Scotia*, Montreal, 1877.

Peirce, C. S., "The 'Old Stone Mill' at Newport," *Science*, vol. 4, Dec. 5, 1884, pp. 512-514.

Piers, Harry, "Brief Account of the Micmac Indians of Nova Scotia and their remains," *Nova Scotia Institute of Science. Proc.*, Session 1910-11, pp. 90-125.

Plummer, Charles, "Some New Light on the Brendan Legend," *Zeitschrift für Celtische Philologie*, vol. 5, 1904, pp. 124-141.

Pohl, Frederick J., *Amerigo Vespucci*, Columbia University Press, 1944.

——— "A Key to the Problem of the Newport Tower," *Rhode Island History*, July 1948, pp. 75-83.

- *The Lost Discovery*, New York, 1952.
- *The Sinclair Expedition to Nova Scotia in 1398*, Pictou, Nova Scotia, 1950. (privately printed, out of print)
- *The Vikings on Cape Cod*, Pictou, Nova Scotia, 1957.
- "Was the Newport Tower Standing in 1632?," *New England Quarterly*, Dec. 1945, pp. 501-506.
- Poole, Henry S., "Report on the Pictou Coal Field, Nova Scotia," *Geological Survey of Canada, n.s., Annual Report*, vol. 14, for the year 1901, pp. 1m-38m.
- Prest, Walter Henry, "Report of Cave Examinations in Hants County, Nova Scotia," read 13th November, *Nova Scotia Institute of Science, Proc.*, vol. 13, 1910-14, pp. 87-94.
- Ramusio, Giovanni Battista, *Secondo volume delle navigationi et viaggi*, pp. 230-233, Venice, 1559.
- Rand, Silas Tertius, *A Dictionary of the Micmac Language*, Charlottetown, P.E.I., 1902.
- *Dictionary of the Language of the Micmac Indians*, Halifax, 1888.
- *Legends of the Micmacs*, New York, 1894.
- *Micmac place-names in the Maritime Provinces and Gaspé peninsula recorded between 1852 and 1890*, Surveyor General's Office, Ottawa, 1919.
- *A Short Statement of Facts relating to the History, Manners, Customs, Language and Literature of the Micmac Tribe of Indians in Nova Scotia and Prince Edward Island*, Halifax, 1850.
- Reeves, Arthur Middleton, Extracts from the sagas describing the voyages to Vinland (translation), *American History Leaflets, Colonial and Constitutional*, ed. by Albert Bushnell Hart and Edward Channing, *Leaflet* no. 3, New York, 1892.
- *The Finding of Wineland the Good*, London, 1890.
- Beamish, North Ludlow, and Anderson, Hon. Rasmus B., *The Norse Discovery of America*, translations and deductions, Norroena Society, London, etc., 1906.
- Richardson, Edward Adams, "The Builder of the Newport Tower," *Journal of Surveying and Mapping Division. Proc. of Amer. Soc. of Civil Engineers*, vol. 86, no. SUL, Feb. 1960.

- Saga of Erik the Red, AM557. 4to., Arnamagnaean Library, Copenhagen.
- Saint-Clair, Roland William, *The Saint-Clairs of the Isles, being a history of the sea-kings of Orkney and their Scottish successors of the surname of Sinclair*, Auckland, N.Z., 1898.
- Sinclair, Alexander, *Sketch of the history of Roslin, and its possessors*, Irvine, 1856.
- Sinclair, Thomas, *Caithness Events*, Wick, 1899.
- "Orkney and Caithness" (clippings from newspaper articles, in County Library), Kirkwall, 1901.
- Sinclair, William, *An Account of the Chapel of Roslin, built by William St. Clare, Prince of Orkney. To which is added a particular description of the costly housekeeping kept up by the said Prince*, (1790?).
- Smith, H. L. Norton, *A Collection of Armorial of the County of Orkney*, Galashiels, 1902.
- Speck, Frank Gouldsmith, *Penobscot Man*, London, 1940.
- "Some Micmac Tales from Cape Breton Island," *Beotuck and Micmac, Indian Notes and Monographs*, New York (City) Museum of the American Indian Heye Foundation, vol. 22, 1922, pp. 1-187.
- Strandwold, Olaf, *Norse Inscriptions on American Stones*, Weehawken, New Jersey, 1948.
- *Norse Runic Inscriptions Along the Atlantic Seaboard*, Prosser, Washington, 1939. (privately printed)
- Tavel, Emilie, "Rock Sketch Hints Scottish Invasion of America in 14th Century," *Christian Science Monitor*, Oct. 2, 1957.
- Thalbitzer, William, "Two Runic Stones, from Greenland and Minnesota," *Smithsonian Miscellaneous Collections*, vol. 116, no. 3, 1951, pp. 1-71.
- Torfaeus, Thormodus, *Orcades seu rerum Orcadensium historia*, Hauniae, 1697.
- The Voyages of the Venetian Brothers, Nicolò and Antonio Zeno, to the Northern Seas, in the XIVth Century*, ed. by Richard Henry Major, Hakluyt Society Works, no. 50, London, 1873.

Wahlgren, Erik, "The Case of the Kensington Rune Stone," *American Heritage*, April 1959.

——— *The Kensington Stone. A Mystery Solved*, University of Wisconsin Press, 1958.

Wallis, Wilson D. and Ruth Sawtell Wallis, *The Micmac Indians of Eastern Canada*, University of Minnesota Press, 1955.

Watkin, Hugh R., "The Use of a Norse Standard of Measurement by the Normans in Eleventh- and Twelfth-Century Buildings, as Exemplified in the Structure of Torre Abbey and the Churches of Kingskerswell and Cockington," *Devonshire Association for the Advancement of Science, Literature, and Art. Report and Transactions*, vol. 46, 1914, pp. 236-345.

Webster, John Clarence, *Acadia at the end of the Seventeenth Century*, Monographic Series 1-2, New Brunswick Museum, St. John, 1934.

Zeno, Nicolò, *The Discovery of the Islands of Frislandia, Eslanda, Engronelanda, Estotilanda, and Icaria; made by two brothers of the Zeno family, namely, Messire Nicolò, the Chevalier, and Messire Antonio. With a map of the said islands*, (translation of title), Venice, 1558. (See Major.)

Zurla, D. Placido, *Dissertazione intorno ai viaggi e scoperte settentrionali di Nicolò ed Antonio fratelli Zeni*, Venice, 1808.

Index

- Aelianus, Claudius, 22
 Africa, 11, 18, 21, 22, 30, 31
 afterboat, 79, 91, 100, 127, 129, 130, 136, 137, 213, 214
 Agassiz, Louis, 73
 Aillik, Labrador, 57
 Albright, Professor W. F., 193
 Alger, Abby Langdon, 258, 263
 Almqvist, 225
 alphabet, alphabetic, 23, 24, 30, 34, 191-194
America, 1355-1364, 216
 American Museum of Natural History, 25, 33, 34, 169, 220
American Sailing Craft, 120
American-Scandinavian Review, 102
 Amerigo the Florentine, 289
 Ancient Sites Foundation, 14
 Arna Magnaeus Collection, 133, 140
 Arna Magnaeus Manuscript 557 (*see* "Saga of Erik the Red")
 Arnold, Governor Benedict, 179, 183
 "Asphalt," 249-252
 Asvaldsson, Thorvald, 56
AVM, 215, 219, 223, 224
 Ayres, Kenneth, 111
 axe, 57, 139, 147, 156
 axes, Norse
 in Massachusetts, 57
 in Newfoundland, 57
 in Nova Scotia, 57, 207
 Azores, 11, 18, 42, 43
 Baffin Land, 137
 Barkhouse, Ronald, 272, 274
 Barnstable County, Mass., 163
 Basques, 278
 Bass River, 73, 80-83, 85-89, 91, 96, 112, 168
 bays, 137, 139, 141, 145, 146
 Advocate, 265
 Baie Verte, 265
 Buzzards, 83
 Cape Cod, 126
 Chedabucto, 253, 254
 Chesapeake, 18, 19, 23, 145, 146, 148, 151
 Cold Spring Harbor, 141
 Cumberland, 265
 Flushing, 141
 Fundy, 268, 271, 273, 277, 279
 Hempstead Harbor, 141
 Hudson, 212, 218
 Huntington, 141
 Little Neck, 141
 Manhasset, 141
 Narragansett, 176, 184, 185, 189, 190
 New York, 141
 Northport, 141
 Oyster, 141
 Smithtown, 141
 Tor, 57
 White, 57
 bearing values, 119-120
 Bianco Map, 287
 Binon, trader in 18th century, 173

- Bird, Dr. Junius B., 169
 Bird, Will R., 258, 262
 bishops
 Archbishop of Canterbury, 233
 of Greenland and Vineland, 57
 John of Greenland, 243
 Henry of Orkney, 243
 William of Orkney, 233
 Black Death, 234
 Black Friars, 243
 Blue Rock, Bass River, 96, 97, 100, 102, 170
 Boland, Charles, 159, 160, 168, 169
Book of Almanacs, The, 256
Book of Lismore, 40
Book of Old Maps, A, 184
 Borns, Dr. Harold W., 272
 Bowles, in 18th century in Louisiana Territory, 173, 174
 Brattahlid, 63, 127, 128, 132, 134, 135
 Brecva, Jenan, 172
 Breda, Professor C. J., 209
 Brinton, D. G., 258, 263
 Brittany, 39, 241
 Brögger, Anton W., 73, 122
 Bronze Age, 13, 15, 16, 181
 Brooklin, Maine, 18
 Brown, Walter S., 96
 Bruton Parish Churchyard, 48
 bull, 134, 138, 139, 146
Bulletin of Mass. Arch. Soc., 108, 112, 113, 116, 124
 Burmister, Professor Donald M., 120

 Canaanite, 24, 193
 Canada, 66, 100, 250, 252, 289
 cannon (bombards, mortars), 236
 canoe, 130, 145, 146, 275, 276
 Canty, S.A., 124
 capes
 Blomidon, 265, 271
 Breton, 173, 254
 Canso, 253
 Chignecto, 270, 271
 Cod, 57, 64, 67, 68, 77-82, 85-92, 103, 126, 128, 135, 139, 140, 142, 145, 166
 "Cross" (*Crossness*), 131
 D'Or, 267-270, 275, 277
 Forchu, 278
 "Keel" (*Kialnar Ness*), 130, 144, 148
 Norman, 68
 Ray, 67
 Sandy Hook(?), 148
 Spencer, 271
 "Trin," 246, 253
 Caribbean, 19
 Carthaginians, 11, 18, 20, 22, 30
 Celts, Celtic, 14, 36, 37, 174
 Chapelle, Howard L., 119, 120
 Christianity, 37, 38, 43, 44, 62, 137, 143, 144, 153, 158, 168, 188, 207, 214, 215, 233, 234, 278
 cities or towns
 Albany, 142
 Alexandria, Minn., 226
 Avignon, 233
 Barnstable, Mass., 88
 Bergen, 242
 Bismarck, N.D., 214
 Boston, 73
 Cadiz (Gades), 19, 21, 22
 Carthage, 18, 20, 22, 30, 31, 36
 Charleston, W. Va., 204
 Cyrene, 19
 Digby, N.S., 265, 269
 Dublin, 136
 East Advocate, N.S., 272
 Edinburgh, 229
 Galway, 39
 Halifax, 66, 207, 249
 Heavener, Okla., 46
 Helsingborg, 237
 Holmes City, Minn., 213
 Hyannis, 73
 Kensington, Minn., 208, 209
 Kirkwall, 233, 244
 Laxå, Sweden, 99
 Lerwick, 241
 Limerick, 44
 Liverpool, N.S., 265, 279
 Marseilles, 238
 Marstrand, Sweden, 232
 Mechanicsburg, Pa., 23, 31-34
 Merrimacport, Mass., 15, 16
 Middleboro, Mass., 98
 Moundsville, W. Va., 202
 Naples, 56
 Newport, R.I., 176 ff
 Nidaros (*see* Trondheim)

- Oak Bluffs, Martha's Vineyard,
 199, 200
 Orleans, Mass., 57, 89
 Parrsboro, N.S., 265, 274
 Pictou, N.S., 248, 250, 262
 Plymouth, Mass., 103, 126, 184, 185
 Portsmouth, N.H., 73
 Rome, 150, 151, 233
 Rouen, 214
 Scone, 241
 Spencer's Island, N.S., 267, 270
 South Dennis, Mass., 88
 South Yarmouth, Mass., 96
 Stellarton, N.S., 248-251, 263
 Stockholm, 99
 Tingwall, Shetland, 237, 241
 Trondheim, 62
 Tyngsboro, Mass., 280
 Uppsala, 19
 Venice, 227, 228, 236, 238, 288
 West Dennis, Mass., 96
 Westford, Mass., 279, 280
 Williamsburg, Va., 48
 Clark, Jeremiah S., 258, 259, 277
 Coal Brook, 250-252
 Coast and Geodetic Survey, 85
 coins
 English, in Maine, 18
 Punic, in Azores, 18, 19
 Roman, in Iceland, 18
 Roman, in Venezuela, 18
 Columbus, 12, 172, 243, 289
 "Commodities of . . . Long
 Isle . . .," 183
 Conant, Professor Kenneth J., 183,
 185-187
 Connaught, 40
 Connecticut Arch. Soc., 14
 Cook, Norman H., 163
 copper, 15, 16
 coracle, 37, 40
 corn, Indian, 140, 141, 173
 corncrib, 130
 Cortez, Hernando, 43
 Culdee, 14
 "cuneiform" inscription, 23
 currach (*see* coracle)
 Curtis, Lamont W., 272

 Dagmalastad, 90
 Davis Strait, 137

 "day's sail," distance, 66, 212
 in inland waters, 66, 212
 across open water, 66
 de Ard, Alexander, 230-232
 de Champlain, Samuel, 85, 270, 278
 De Costa, B. F., 73, 84
 declination of compass, 243
 Delabarre, Professor E. B., 198, 199
Den Kunskapsrike Skolmästaren, 222
 Denmark, 241
 "dew," 70, 76, 77
 Diodorus of Sicily, 21
Distichlus spicata, 102
 Dogfish Bar, 82
 "Drogio," 244, 254

 Easton, Gardner C., 180, 181
 Easton, Governor Peter, 179
 Egypt, Egyptians, 12, 115, 192, 193
 England, 56, 173, 233-235, 239, 241,
 242
Epitome de las historias portuguesas,
 19
 Erik the Red, 38, 128, 136, 206
 brought by father from Norway,
 56
 commits homicide in Iceland, 56
 explores and names Greenland, 38,
 56
 leads colonists to Greenland, 57,
 60
 reaction to Christianity, 63
 reaction to son's ambition, 63
 story of fall from horse, 63
 death, 128
 Erikson, Leif, 12, 44, 58, 134, 135, 206
 voyage from Greenland in 999, 62
 love affair off course, 62
 conversion in Norway, 62
 brings Christianity to Greenland,
 62
 desires to explore new lands, 62
 buys ship from Bjarni, 63
 preparations for voyage, 63
 father's disapproval, 63
 finds three new lands:
 "Helluland," 69
 "Markland," 69
 "Vineland," 70, 127
 first day in Vineland, 70, 72, 83
 lands on island, 70-78, 91

- Erikson, Leif (*continued*)
 sails into a sound, 70, 73, 79-83,
 91
 stranded off mouth of river, 70,
 82-85
 chooses campsite, 70
 sails up river to lake, 70
 erects shelters, 70
 probable date, 81, 227
 house in Vineland, 90, 101, 102,
 104, 124-126, 134, 135, 153, 154,
 170
 his "Shelters," 86, 91, 105, 130, 134
 experiences in Vineland, 103, 126,
 127
 rescues Thorer from skerry, 128
 called "Leif the Lucky," 128
 passes judgment on Freydis, 157
 Erikson, Thorstein, 123, 131, 132
 Erikson, Thorvald, 71, 91, 100, 122,
 132
 from Vineland sends afterboat to
 explore inland waters to west,
 79, 91, 128, 130
 sails in ship to east and around
 cape, 79, 91, 129, 130
 breaks keel, constructs new, 130
 leaves old keel, names Cape Keel,
 130
 sails to north and east, 130
 enters a fiord (Somes Sound), 130
 finds ideal homestead site, 130
 kills eight sleeping Indians, 130
 attacked, is fatally wounded, 131
 dying, names Cape Cross, 131
 Erlendson, Hauk, 133
 Eskimos, 38, 148, 189, 243
 Estotiland (*see* Newfoundland)
 Euphemia, Queen of Scotland, 231
 Europe, Europeans, 11, 17, 21, 228,
 236, 289
 Evans, John, 173
Evening News, New Glasgow, 249
Explorations in America Before
Columbus, 217, 218
Eykatarstad, 90
- Fairbridge, Dr. Rhodes W., 124
 Fairservice, Walter, 220
 Falland, Thomas, 88
- Famous Lighthouses of New Eng-*
land, 75
 Farley, Mrs. J. Ray, 46, 48
 Father Florez, 18
 fathom (*fathmur*), Norse, 187
 Fernald, M. L., 64
 Festinus, 42
 Finnbogi, 72, 154-156, 164, 170
 fiords, 38, 55, 56, 83, 130, 142
 Alptafirth, 135
 Breidafirth, 135
 Eastfiords, 154
 Eastfirth, 135, 139, 157
 Eriksfirth (*Eriksfjördr*), 63, 131,
 132, 135
 Lysufirth, 132, 153
 Skagafjord, 150
 Somes Sound, 130, 131
 Stream (*Straumfjord*), 141, 142,
 148, 151
 Tunugdliarfik, 63
 Fischer, Kermit, 272
 fisherman, Orkney, 38, 45, 244, 245
 Flanders, 239, 241
 Flat Rock Cove, Newf., 69
 Flaten, Nils, 209, 222
Flateyjarbók, 59, 60, 64, 66, 70, 72-74,
 79, 83, 89, 90, 96, 100, 104, 126,
 129, 133, 134, 137, 151, 154, 158,
 160, 161, 164
 Follins Pond, 88-126, 128, 158
 Foshag, Dr. W. F., 33
 Fossum, Andrew, 65
 Fowler, Dr. William S., 244
 French, 49, 173, 214, 229, 254, 270,
 278
 Freydis, 72, 123, 132, 153-158, 164,
 168, 170
 daughter of Erik the Red, 72, 136
 slaps bare breast with sword, 146,
 147, 153
 sails to Vineland with Icelanders,
 153
 pre-dawn talk with Finnbogi, 155,
 156
 slaughters Icelanders, 156
 socially ostracized, 158
 "Frislanda" (*see* islands, Fer)
 Frizell, Dr. Mildred, 48
 Frode, Ari (Ari the Wise), 44
 frost, 89, 90

fur skins, 138, 139, 146
"futhork" (see runic alphabet)

Gaels (Haki and Haekia), 140, 141
galley, 236
galls, 75
Gamlinsson, Thorhall, 135, 136
Gardar, 154, 243
Gathorne-Hardy, G. M., 73
Gellerson, Thorkell, 44
Geological Survey, 32, 75, 86, 93, 96, 159
German, Germans, 26, 150, 194
Gibraltar, 18, 19, 21
Gjessing, Helge, 218
glacier, glaciation, 26, 41, 61, 68, 89, 90, 127
Glaumboeiarland, Iceland, 150
Glooscap (Kulóskap), 261, 278
"culture hero" of Micmacs, 258
character, 262-264, 277
identified, 259 ff
explorations, 261
winter campsite, 267-275
"canoe," 275
phonetic equations, 264, 276, 277
Glynn, Frank, 14, 281-286
Godfrey, William S., 180, 181, 183
Gokstad ship, 122
Goodwin, William B., 14, 73, 207, 281
Gosnold, 85
Goths, 193, 194, 215, 223
Goudchaux, Dr. François, 34
Grant's Lake, 213, 214
grapes, 81, 127, 135, 139, 140, 141
Great Britain, 289
Great Ireland (*Irland ad Mikla*), 44
Great Point of Nantucket, 74-83
Greeks, 20, 175, 193
greenbrier, *smilax rotundifolia*, 103, 127, 139, 145, 159, 168
Greenland, 12, 37-39, 41, 44, 56, 58, 60-68, 89, 127, 131, 134, 135, 139, 150, 151, 153, 154, 157-159, 200, 207, 228, 243, 244
"Greenland Saga, The" (see *Flateyjarbók*)
Greenland Settlements, 57, 132
"Eastern," 57
"Western," 57, 132, 137, 153, 189, 215

Grimolfsson, Bjarni, 135, 136
Gudrid
rescued from skerry by Leif, 128
marries Thorstein Erikson, 132
after months at sea, lands in Western Settlement, 132, 153
returns to Eastern Settlement, 132, 134
marries Thorfinn Karlsefni, 134, 135
widely-traveled, 150, 151
according to *Flateyjarbók*:
with Karlsefni to Leif's Vineland, 138
there gives birth to Snorri, 138
meets native woman, 138, 139
sails to Greenland, Norway, Iceland, 139, 149, 150
journeys to Rome, 150, 151
returns to Iceland, 150, 151
becomes a nun, 150
according to *Hauk's Book*:
with Karlsefni to Cape Keel, 137
gives birth to Snorri, 149
sails to Stream Fiord, 140-142
remains there while Karlsefni explores to south and north, 148
returns with Karlsefni to Greenland and Iceland, 149
Gulf of Mexico, 45
Gulf Stream, 19, 54, 90
gully, Follins Pond, 105-112, 125, 126, 163, 170
Haas, Dr. Otto, 33
Hagen, Professor S. N., 54, 212, 216, 217, 224
halibut, 145
Hall, Henry, 120
Halyburton, Janet, 232
harbors
Advocate, 269-271, 274
Boston, 279
Guysborough, 254
New York, 134, 141-143, 148, 151
Pictou, 247, 250, 253, 257, 266
"Trin," 246, 253
Hauk's Book, 133, 135, 137, 139-142, 145, 151
Hawkins, Sir John, 172

- Hay, Beatrice M., 277
 hearth, 107
 Helgason, Professor Jón, 140
 Helgi, 72, 154, 164, 170
 Helluland ("Flat Rock Land"), 69, 137
 Hencken, Professor Hugh, 14
 Herbert, Sir Thomas, 171, 172
Herdsmen and Hermits, 217
 Herjulf, 59-61
 Herjulfssnes, 61-63, 68
 Herjulfsson, Bjarni, 44, 59-69, 128
 in Iceland, decides to find father
 in Greenland, 60
 storm-driven, 60
 sights three new lands, 60, 61
 landfall in Greenland, 61
 his voyage of 986 reconstructed,
 63-68
 visits Norway in year 1001, 62
 starts talk of new lands, 62
 returns in 1002 to Greenland, 62
 sells ship to Leif, 63
Hidden America, 123
 hieroglyphs, 12, 192
 hills
 Black Ball, 126
 German, 78-80, 126
 Green, 266
 Prospect (Westford), 279, 280
 Salmon, 254, 263
 Shootflying, 78, 79
 Stellarton, 248-250
History of American Sailing Ships,
 120
History of the County of Pictou, 252
History of the Town of Westford,
 280
 Hobbs, Dr. William H., 248, 258
 Holand, Hjalmar R., 69, 73, 100, 187,
 190, 210, 211, 214-218, 221-224
 Hóp, 145, 148
 horizon visibility, 68, 85, 86
 horse, 63, 117
 Horsford, Professor Eben N., 65, 73
 Hougen, Haakon, 54
 house (shore of Mill Pond), 158-168,
 170
 house sites, viking, 101, 159, 170
 houses, half-sod, Acadian, 273, 274
 Hovgaard, Professor William, 73
 Howieson, John, 180, 181
 Hunt, Dr. Charles B., 116
 Iceland, Icelandic, 11, 18, 37, 38, 42,
 56, 58, 59, 136, 149-151, 216,
 242, 244, 247
Icelandic Annals, 242
 ideograms, ideographs, 192
 Incas, 17
 Indians, American
 Abenakis (Wabanaki), 261
 Algonkin, 261
 Creeks, 173
 Delawares, 261
 Mandan, 214
 Micmac (*see* Micmac Indians)
 Padoucas, 173
 Passamaquoddies, 261
 Penobscots, 261
 Welsh-speaking, 172-174
 Ingram, David, 172, 173
 Innes, Sir Thomas, Lyon King of
 Arms, 286
 Ireland, 36, 37, 42, 44, 56, 136, 144
 Irish, 14, 36-39, 43, 44, 140, 245
 ironstones, 23-25
 "Islanda" (*see* Iceland)
 islands
 Baffin Land, 137
 "Bear," 137
 Bedloe's, 141
 Belle Isle, 68
 "Biarney," 137
 Bressay ("Bres"), 242
 Canary ("Dog"), 11, 42
 Cape Breton, 173
 Corvo, 18, 19
 Cuba, 21
 Easter Papay, 38
 Faeroes, 37, 242
 Fer (now Fair), 237, 239, 247
 Flatey, 59
 Fortunate Isles (Islands of the
 Blest), 11
 Governor's, 141
 Great Britain, 37
 Grand Manan, 73, 74
 Haiti, 21
 Hebrides, 56, 62, 230
 "island" as Kensington, Minn., 212

- "island which lay to the north of the land," 72-75
 Isle Haute, 271
 Jan Mayen, 42
 Kingiktorsuak, 200
 Langholmen, 99
 Long Island, N.Y., 140, 141, 183, 184, 191
 Madeira, 42
 Martha's Vineyard, 83, 126, 198, 199
 Monomoy, 77-80, 85, 86
 Nauset, 73
 Nantucket, 75, 79, 126
 "Neome," 247
 Nomansland, 198, 199
 Partridge, 265
 Ronaldsay, 237
 Sanday, 237
 Sicily, 56
 Stream ("Straumey"), 141
 Tenerife, 42
 Trinidad, 250
- Jansson, Professor Sven B. J., 216
 Jensen, Carl Christian, 54
 Jefferson, Thomas, 174
 Jesus, 143, 198, 222, 263, 264
 Johns-Hopkins, 16, 23, 194
 Johnson, Frederick, 116, 117
 Jones, Morgan, 173
- Kaiser, Herbert J., 124
 "Karlsefni Saga" (see *Hauk's Book*)
 Karlsefni, Thorfinn, 72, 91, 122, 125, 133-152, 202
 According to *Flateyjarbók*:
 arrives in Greenland, 134
 marries Gudrid, 134
 attempts Vineland settlement, 134
 son Snorri born, 138
 trades with natives, 138, 139
 battles with natives, 139
 returns to Greenland, 139
 sails home to Iceland, 157
 sails to Norway, 149
 returns to Iceland, 150
 According to *Hauk's Book*:
 arrives in Greenland, 135
 marries Gudrid, 135
- sails toward Vineland, 137
 finds keel on a cape, 137
 names Wonderstrands, 137
 explores north shore of Long Island, 140
 puts two slaves ashore, 140
 enters New York Harbor, 141
 winters up Hudson River, 141
 returns to harbor, 142
 sails south to Hóp, 145
 returns to harbor, 148
 sails north as far as Maine, 148
 voyages from Vineland to Greenland, Iceland, Norway, and back to Iceland, 149
- Katla of Reykjaness, 44
 keel bearings, 107, 113, 114, 119, 120, 122
 Kemmerer, C. F., 48
 Kensington Stone (see runic inscriptions)
Kensington Stone, The, 215, 224
Kensington Stone, a Mystery Solved, 221
- Kerry, 38, 39
 Kill Pond Bar, 82
knarr (Norse trading ship), 63
 Knutson, Paul, 190, 215, 216, 218, 227
 Krause, Wolfgang, 51
Kritischen Untersuchungen, 19
Kulóskap the Master and Other Algonkin Poems, 261
- Labrador, 57, 58, 64, 137
 Lake Winnepeg, 212
 Lamont Geological Laboratory, 116
Land Ho! 1620, 85
 land problem in 14th century, 234
Landnámabók, 38, 44
 Landon, Melvin, 81
 Langland, William, 234
 latitude, 19, 66, 81, 90, 91, 243
 La Verendrye, 214
 lawting, 241, 242
Legends of the Micmacs, 259
 Leland, C. G., 258, 261, 266
 Lethbridge, T. C., 217, 281, 282, 286
 Libby, W. F., 116
 lichen, 95
 linear measure, 185-187
 Liestöl, Aslak, 54

- Long Island north shore, 140, 141, 151
 Long Island Sound, 100
 Lord, Arthur, 165
Lost Discovery, The, 12, 13, 14, 57,
 127, 129, 134, 150, 151, 157, 187
 Lucas, Fred W., 247
 Lybia, 21
 Lyon, Frank C., 124
- MacKenzie, Dan, 249
 Madawgwys, Matocantes, 173
 Madoc, 171-173
 Magnus Erikson, King, 215, 223, 230
 Mallery, Arlington H., 57, 148, 180,
 181, 185
 Manana-Monhegan, 196
 Mandell, H. C., 105
 Margareta, Queen of Denmark, Nor-
 way, and Sweden, 218, 242
 Marianus de Orscelar, 22
 Markland ("Forestland"), 44, 137,
 207
 Marson, Ari, 43, 44
 Martucci, John, 76, 77
 Mason, Dr. Brian H., 34
 Massachusetts Archaeological So-
 ciety, 103-113, 163, 244
masur (mösür) wood, 150
 Mayas, 17
Mayflower, 85, 103
 McCracken, Dr. George E., 32-34
 McGrath, George, 159, 161
 McMichael, Edward V., 272
 Meader, Forrest W., 272
 Mediterranean, 11, 17, 18, 30
 mermaid, 40
 Mexico, 43, 45
 Micmac Indians, 252, 257-279
 costume, 264
 games, 264
 phonetic limitations, 264
 poetry, 258
 portages, 265, 267, 271, 272
 trails, 271, 272
 Military Effigy, Westford, 281-287
 Millis, Walter, Jr., 12
 Mill Pond, 88, 89, 91, 126, 158-160,
 165, 168
 Minas Basin, 265-268
 missionaries, pre-Columbian, 277, 278
 Mobyed, John C., 161, 162
- Moltke, Dr. Erik, 217, 218, 281
"monte" (Mount Adams, N.S.), 246,
 254, 255, 263
 mooring holes, 58, 93-101, 170, 222
 Morris, Merton, 274
 Morse, Reverend Abner, 73
 mountains, 141, 148
 Appalachians, 151, 202
 Berkshires, 142
 Blue Ridge, 148
 Catskill, 142
 Highlands of Hudson, 141, 142
 Poteau, 46
 Shawangunk, 142
 Storm King, 142
 White, 148
 Museum of the American Indian,
 12
- Nansen, Fridtjof, 64
 Nantucket Sound, 79, 83, 84, 86, 126,
 137, 168, 199
 Naskegg Point, Brooklin, Me., 18
 National Museum, Copenhagen, 98,
 201, 217
 net fishing, 244
 New Albion, Province of, 183
 New Brunswick, 172
 New England, 12, 72, 74, 100, 118,
 120, 177, 178, 182-185, 279
 Newfoundland, 37-39, 58, 64, 100,
 245, 262
 Bjarni's third land, 61, 66-68
 Karlsefni's Biarney, 137
 Leif's Helluland, 69, 137
 Micmac's Uktakumkuk, 262
 Orkney fisherman's Icaria, Land
 of Icari, 38
 Sinclair's Estotiland, 38, 39, 243,
 244
 "New Plymouth" (*see* Plymouth)
 New World ("*nuovo mondo*"), 45,
 228, 245, 289
 New York (*see* States)
 New York Harbor (*see* harbors)
 Newport Tower, 216
 description, 176-179, 182, 188
 dimensions, 185, 187
 excavation by
 Godfrey, 180, 181
 Mallery, 180, 181

- treasure hunters, 182
 linear measure used by builders,
 185-187
 location, 177
 plaster, 176, 180, 181
 built as church, 188, 189
 altar, 187
 oblique undercuttings, 178, 188
 ambulatory, 178, 180, 188
 fireplace, 176, 178-180, 189
 Norse, 14th-century, 182, 186
 built as fortress, 184, 188
 built as lighthouse, 188, 189
 built as watchtower, 188
 used as powder house, 179, 182
 used as trading post, 184
 used as windmill, 179
 "round stone towre" reference,
 183, 184
 "Stone Mill" reference, 179
 Nickerson, W. Sears, 85
 Nicolas of Lynn, 218
 Nobska Point, 83
 Noreen, Adolph, 53
 Normandy, 56
 Norse, Norsemen, 37, 38, 43, 57, 90,
 105, 178, 230, 278
Norse Discovery of America, The,
 141
 North America, 12, 21, 26, 43-45, 49,
 50, 57, 64, 105, 128, 133, 142,
 150, 151, 194, 201, 214, 215, 228,
 245, 278
 North Salem ruins, 13-16
 Norway, Norwegian, 55, 56, 59, 62,
 99, 150, 151, 209, 210, 215-217,
 223, 225, 227, 232, 235, 241, 242
 Nova Scotia, 58, 64, 66, 73, 74, 191,
 204, 207, 249, 257, 258, 261
 Bjarni's second land, 61, 67, 68
 Leif's Markland, 69, 91, 207
 Karlsefni's Markland, 137
 Orkney fisherman's Drogió, 244,
 254
 land Sinclair explored, 257 ff
 French Acadia, 254, 270, 273, 274
 numerals, pentadic, 209, 218, 224, 225
 oak, 235
 Oak Bluffs, 199, 200
 Ohman, Olaf, 208, 210, 220-223, 225
 Olaf Tryggvason, King, 62, 140
On Marvelous Things Heard, 20
 Ontario, 13, 58
 "opdagelse," 216, 217
 oral transmission, 59
 Orkney Islands, 37, 56, 230-237, 239,
 243-245
 Oseberg ship, 115
 Owen, William, 173
 Packard, A. S., 73
 palisade, 125, 138, 170
 palstaff, 13
 Papal Schism, 233
 "Papas," 38
 Papyli, Iceland, 38
 "patent medicine," 219
 patination, 24, 25, 27
 Pattee, 13, 14
 Patterson, George, 252
 Peirce, C. S., 186, 187
 Peterson, Mendel L., 18
 petroglyphs, Indian, 191, 192
 Phoenicians, 11, 18, 20-22, 31, 36, 175,
 193
 phonetic bridge, pre-Columbian,
 276, 277
 Picts, 37
 Piers, Harry, 264
Piers Plowman, 234
 Pillars of Hercules, 11, 20, 21
 pirates, 236, 242
 pitch (asphalt, bitumen), 247-252
 plaster
 mass grave, 169
 Newport Tower, 176, 180, 181
 Plowden, Sir Edmund, 183
 Plymouth Colony, 103, 184
 Podolyn, John, 18, 19
 Pope Boniface IX, 243
 Portuguese, 19, 186, 233, 287
 post molds, 125
 Powell, Bernard W., 100
 Prescott, William H., 43
 Price, 18th-century American of
 Welsh ancestry, 173
 Prince, J. D., 258, 261, 263, 266
 Proper, Mrs. Ida S., 196
 punch-hole technique, 281, 283
 Quebec, 58
 Quetzalcoatl (*see* Wixipetcocha)

- radiocarbon dating, 115-118
Radiocarbon Dating (Libby), 116
 "Radiocarbon Dating: A Brief Appraisal" (Johnson), 116
 Rafn, C. C., 202
 Rafn, the Limerick Merchant, 44
 Rand, Silas Tertius, 258, 262, 263, 276
 Rausing, Gad, 15
Reader's Digest, 102
Relation (Ingram), 173
Relation of Some Years Travaile (Herbert), 171
 Reman, Edward, 73
Report on the Shipbuilding Industry in the U.S., 120
Rhode Island History, 185, 187
 Richard II, King of England, 242
 Richardson, E. A., 179, 187, 188
 Ritchie, W. A., 16, 244
 rivers
 Arkansas, 45
 Bass (*see* Bass River)
 East (N.Y.), 141, 151
 East (Nova Scotia), 247, 250-253
 Hebert, 265
 Hudson, 134, 140-142, 145, 148, 151
 Merrimac, 279
 Mersey (N.S.), 265
 Mississippi, 45, 172, 173
 Missouri, 172-174
 Nelson, 212
 Penobscot, 148
 Poteau, 45
 Red, 212
 St. John ("Garinda"), 172
 St. Lawrence, 137
 Susquehanna, 24
 Robbins, Dr. Maurice, 107, 113, 114, 116, 118, 119, 123, 162, 163, 165, 167
 Robbins, Roland Wells, 111, 112, 118, 123
 Robert II, King of Scotland, 231, 233
 Robert III, King of Scotland, 241
 Robinson, Dr. E. S. G., 19
 rocks, kinds of
 gneiss, 281
 granite, 47
 ironstone, 23-27, 31, 34
 Savanna sandstone, 47, 48
 Triassic diabase, 24, 26
 Romans, 11, 193
 Rosander, Carl, 222-224
 Roslin Castle, 229
 Royal Library, Copenhagen, 59
Ruins of Great Ireland in New England, The, 281
Runeninschriften im älteren futhark, 51
 rune, 194, 217, 218, 222, 224
 "bind-rune," 204, 205
 retrograde, 51
 "Tartarian," 214
 runic alphabets, 193
 Anglo-Saxon, 194
 Continental Germanic, 45, 50, 52, 194
 Norse, 51, 194, 204-207, 214
 runic inscriptions
 Aptucxet, Mass., 201
 Braxton, W. Va., 202
 Grave Creek, W. Va., 202
 Heavener, Okla., 45-54
 Kensington, Minn., 208 ff, 216-226
 Kingiktorsuak, Greenland, 200, 201
 Nomansland, 198, 199
 Norse axe, Tor Bay, N.S., 207
 Yarmouth, N.S., 191, 204-207
 St. Brendan, 39, 40, 42, 43
 St. Clair, Sir William, 229
 St. Katherine's Oily Well, 253, 257
 St. Magnus Cathedral, Kirkwall, 233, 234, 287
 St. Magnus Church, Tingwall, 237
 "Saga of Erik the Red, The" (variant of *Hauk's Book*), 133, 136, 140, 142, 143
 sailing directions
 of Antonio Zeno, 246, 247
 of Bjarni, 60, 61, 64, 128
 of Leif Erikson, 63, 69, 70, 83-86
 salmon, 96, 97
 salt grass (fresh grass), 102
Saturday Evening Post, 102
 Saugus Iron Works, 123
 Scandinavia, 187, 215-218
 Scotland, 37, 39, 56, 230, 231, 233, 234, 241
 Scots ("Scotti"), 37, 230
 Scott, Sir Walter, 232

- sea level, 58, 78, 89, 123, 124, 129, 158, 160
 Shapiro, Dr. Harry, 220
 sheds, 155, 161-165, 170, 212
 Sherwood, R. H., 249
 Shetland Islands, 37, 56, 230, 233, 236, 237, 240-242, 245, 247
 ship shed, 105, 123, 161-165, 170
 ships, early New England, 120, 121
 ships, Norse trading, 63
 beam, 106, 110
 construction, 106, 122
 crew, size of, 63, 130, 132, 134, 135, 137, 144, 154, 213
 double-ended, 106, 114
 draft, 82, 84, 89, 95
 gangplank, 130
 leeway made by, 62
 length, 106, 110
 mast height, 85
 moored, 93, 94
 oars, 106
 rudder, 106
 sailed with following wind, 80
 speed, 81
 weight, 119-122
 Shirk, Col. G. H., 48, 54
 shoring for viking ship, 107-123, 125, 170
Sinclair Expedition to Nova Scotia in 1398, The, 260
 Sinclair, Henry, 278
 ancestry, 229, 230
 struggle for appointment, 230-232
 Installation, 232, 233
 Earl of Orkney, 233
 duties, 235
 powers, 234, 235
 responsibilities, 236
 marriage, 231, 232
 castle in Kirkwall, 234
 fleet, 235, 236, 242, 243, 246
 rescue of Nicolò Zeno, 237-239
 campaign in Shetland, 236, 238, 240-241
 coat-of-arms, 236
 sons and daughters, 232, 260
 Expedition to "New World," 227, 245
 date, 255-257
 geological confirmation, 246-252
 geographical identifications, 253-255
 explorations, 243, 258, 265
 ship built to sail home, 248, 270, 275, 276
 winter campsite, 257, 267-275
 memorial to a knight, 280-287
 death, 288
 Sinclair, Henry, 2nd Earl, 232, 260
 Sinclair, William, 3rd Earl, 289
 skerry, 93-95, 125, 128, 130, 170, 212
 Skraelings, 44, 138
 Smith, Benjamin L., 15, 113
 Smithsonian, 33, 217, 225
 smoke, 246, 248, 252, 254, 255
 Smyth, William L., 125
 Snorrason, Thorbrand, 147
 Snorri, 138, 149, 150, 151
 snow, 90, 145
 Snow, Edward R., 75
 soil, "undisturbed," 181, 182
 Somes Sound (*see* fiords)
 Sops Arm, Newf., 57
 "sound," 70, 73, 79-83
 South America, 21
 Spain, Spanish, 22, 49, 172, 233
 Sparre, Malise, Earl of Orkney, 229, 230
 Sparre, Malise, Henry's cousin, 232, 241, 242
 spring water, 92, 93, 125
 States of the Union
 Alabama, 250
 Connecticut, 100
 Florida, 58, 102, 172
 Kentucky, 173, 250
 Maine, 18, 43, 58, 81, 99, 148, 151, 202
 Massachusetts, 12, 15, 16, 18, 90, 98, 103, 118, 184, 279, 281
 Minnesota, 100, 208, 212, 214, 219, 222, 225, 226
 Missouri, 194
 New Hampshire, 12, 13, 15
 New York, 12, 100, 142, 143, 151, 183, 244
 North Dakota, 214
 Oklahoma, 46, 48
 Pennsylvania, 23, 24, 26, 32-34
 Rhode Island, 179, 183

States of the Union (*continued*)

Virginia, 43, 48, 145-147, 173, 183, 184, 202

West Virginia, 202, 204

stave construction, 104

steel, 98

Stefansson, Dr. Vilhjalmur, 216

Stephens, Thomas, 174, 175

Stirnermann, Erich, 54

Stone, G. H., 196

"Stone Mill" (*see* Newport Tower)

Strandwold, Olaf, 196-201, 204-206

Straumey (*see* islands)

Straumfjord (*see* fiords)

Strong, Dr. W. Albert, 31, 34

Strong, Dr. William Walker, 23, 24, 27, 30-32, 34, 35

Sunesson, Erngisle, 230

Swede, Sweden, Swedish, 19, 53, 99, 209, 210, 212, 215-217, 222, 223, 225, 227, 232, 237

Telemark, Norway, 54

teredo worms, 136

Thalbitzer, Dr. William, 217

Thor, 143

Thorbrandsson, Snorri, 135, 136, 145, 148

Thorer, 128

Thorhall the Huntsman, 136, 142-144

Thorvard, husband of Freydis, 136, 137, 156, 157, 168

tides, tidal rip, 81, 82, 84, 88, 268, 277

timber, 127, 128, 130, 134, 155, 245, 257

Tlapallan, 43

tree-ring dating, 115, 271

Trinity Sunday, 256

Tryggvason (*see* Olaf)

Tyler, Wat, 233, 235

Tyrker, 126-128

Ultima Thule, 11

Unipedland, land of "*Einfoetin*," 148

United States, 223, 289

Urann, Carl B., 98

Varia Historia, 22

Venezuela, 18, 250

Verrazzano, 190

Vescelius, Gary, 14

vikings, 36, 43, 56, 99, 104, 227, 262

Viking Ship Museum, Oslo, 115, 122

Viking Ships, The, 122

viks, 56

Vineland

Leif's, 43, 44, 57, 58, 64, 68, 72-74,

90, 91, 127-129, 132, 134-136,

143, 153, 154, 160, 170

problem of, 64, 65, 170

Karlsefni's, 140-149, 150-152, 190

vines (*see* greenbrier)

Vinland (*see* Vineland)

volcano, 41-43

von Humboldt, Alexander, 19, 20

Wahlgren, Professor Erik, 220-225

Wallis, W. D. and R. S., 263

walrus, 40

water table, 111, 114, 115, 117, 118, 123

Webster, J. C., 258, 277

Welsh Indians, 172-174

Westford ledge, 280-287

Westward from Vinland, 214, 216, 224

whale, 40, 134, 142-144

wheat

new sown, 140

self-sown, 140, 145

White Man's Land (*see* Great Ireland)

Wild, Joan, 86

Williamson, William, 276, 277

Wilson, O. B., 202

winds, 19, 22, 60-62, 64, 70, 80, 88, 92

Vineland (*see* Vineland)

Wixipecocha (Quetzalcoatl), 43

Wonder-strands ("*Furdurstrandir*"), 137, 139, 140, 143, 144

Wood, William, 184, 185

Wright, Muriel H., 48

Yale University Geochronometric Laboratory, 116

Young, Professor Donnell B., 282

Yucatan, 45

Zeno, Antonio, 38, 228, 241, 243-245, 247, 248, 256, 265, 270, 287-289

- | | |
|---------------------------------------|--------------------------------------|
| Zeno, Carlo, "the Lion," 236-239, 288 | Zeno Sea Chart, 243 |
| Zeno Narrative, 39, 45, 228 | Zeno, Sir Nicolò, 228, 238-243, 256, |
| Zeno, Nicolò (16th century), 227, | 289 |
| 228, 243 | Zichmni, 239, 240 |

[Continued from front flap]

a Viking expedition which reached New York Harbor and wintered up the Hudson River. He assesses the latest evidence relating to the Newport Tower, reviews runic inscriptions in North America, and enters the controversy which has long surrounded the Kensington Runestone. Finally, Mr. Pohl firmly establishes the all-but-forgotten voyage of Prince Henry Sinclair of the Orkney Islands to Nova Scotia a century before Columbus.

In his uncovering of commonly held misconceptions, Mr. Pohl writes with the true detective's awareness of the difference between persuasive evidence and proof. His book is not only a thorough and convincing reconstruction of pre-Columbian voyages, but also a piece of reading as exciting as fiction, since he never fails to see the search for truth as a revelation of human nature. *Atlantic Crossings Before Columbus* is a book for inquiring readers, a book that will change many minds.

JACKET DESIGN BY W. N. WILSON