1953

Bulletin of the Massachusetts Archaeological Society, Vol. 14, Special Number

Massachusetts Archaeological Society

Follow this and additional works at: https://vc.bridgew.edu/bmas

Part of the Archaeological Anthropology Commons

Copyright
© 1953 Massachusetts Archaeological Society

This item is available as part of Virtual Commons, the open-access institutional repository of Bridgewater State University, Bridgewater, Massachusetts.
CONTENTS

INDIAN ROCKS OF CAPE COD

By

Howard Torrey

PUBLISHED BY THE
MASSACHUSETTS ARCHAEOLOGICAL SOCIETY

William S. Fowler, Secretary, Bronson Museum, Attleboro, Mass.

Mabel A. Robbins, Treasurer, 23 Steere St., Attleboro, Mass.

Maurice Robbins, Editor, 23 Steere St., Attleboro, Mass.
INDIAN ROCKS OF CAPE COD
A Study of Boulders That Served The Nausets

By
HOWARD TORREY
Member of The Massachusetts Archaeological Society
To the memory of my father

CHARLES TORREY

through whose companionship
in fields and woods

I learned the joy of searching for that which is
rare or hidden.
For the incentive to attempt the writing of this book I am primarily indebted to my friend, the late Warren K. Moorehead, Director of the Department of Archaeology, Phillips Academy, Andover, Mass., who on examining a Cape Cod boulder that had been called to my attention because it bears marks attributed to Indians, immediately suggested that I record it archaeologically: and who later gave counsel and encouragement when study brought out the fact that points of more-or-less mystery were involved—that opportunities were given to theorize about many things—and accordingly my interest increased to such an extent that I sought to locate and record other rocks in that territory having similar characteristics.

The work has included intensive searching, the making of countless inquiries, the following of numerous clues, and the repeated examination and study of specimens, this has been engaged in at intervals through many years. Even so, I probably have not found and recorded all there are in the region: but fortunately my limited number includes a variety.

My records have been presented, in part, before The Massachusetts Archaeological Society, as a series of papers. Two are so written as to show the many steps taken to prove specimens genuine and determine the probable cause of surface alterations. Here also is set forth the fact that I have ventured, in a few instances, to include designated bits of explanatory imagination.

All together the task of gathering, studying and recording has been an extremely pleasant one, and I hope the reader may share my interest in a seemingly simple subject that proved to be quite complex.

To those who have assisted I express my gratitude.

To, the late James Knowles, Eastham, for showing me the rock which fired my interest and started the long and devious search for others.

To, Cleon S. Crowell, East Harwich, and Charles Rennie, West Brewster, for reporting and showing a very interesting rock.

To, the late George Austin Smith, Eastham, and the late Stanley W. Smith, South Orleans, for reporting another excellent example and furnishing extremely useful historical data: and to the latter also for his unusual interest, constant encouragement, unceasing endeavor to be helpful during the gathering of information.

To, George E. Burbank, President, Sandwich Historical Society;

the late John Bursley, West Barnstable;
the late Harry F. Cunningham, Sagamore;
Frank E. Freeman, Harwichport;
Nathan Bourne Hartford, Bourne;
Howard Jones, Greenwood;
the late John Kenrick, South Orleans;
the late Prof. George Lyman Kittredge, Barnstable;
W. Sears Nickerson, Daytona Beach, Florida;
the late Russell Gilbert Payson, East Orleans;
Henry S. Smith, East Sandwich, and
John Snow, Wellfleet.

for showing, and or, reporting other rocks, having unusual features attributed to Indians, or having traditional connection with Indians.

To, Franklin T. Cleaverly, West Brewster;
the late Frank I. Knowles, Eastham;
Harriet Knowles, Eastham;
the late Arthur B. Nichols, East Orleans;
the late Francis W. Smith, Eastham, and
Freeman Snow, Orleans,
for helpful information and permission to repeatedly trespass while engaged in search and field study: and also to the Cleaverlys for the loan of a pestle shown in the photographs.

To, Prof. Kirtley F. Mather, Dept. of Geology and Geography, Harvard University, Cambridge,
for examination of the first rock and its site, and valuable information and opinions pertaining thereto.

To, the late Dr. Oliver H. Howe, Cohasset, and
Frederick P. Orchard, curator, Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge,
for examination of sundry rocks and extremely helpful information, opinions and constructive suggestions, during pleasant companionship on field and shore: and to the latter also for making a cast that has been invaluable in connection with repeated study of the first specimen; and for counsel and assistance in connection with photography.

To, the late Prof. Kirk Bryan, Dept. of Geology and Geography, Harvard University, Cambridge.

for information regarding coastal erosion on, and glacial geology of, Cape Cod.
To, the late Thomas Barbour, director, University Museum, Cambridge, and to
Wm. C. Schroeder, Woods Hole Oceanographic
Institution, Woods Hole,
for naming species of edible fish formerly found in
waters adjacent to Cape Cod, but not in its shallow
bays or harbors.

To Mary S. Cummings, librarian, Orleans Li-
brary, for listing kinds of fish now caught in Nauset
Harbor and Town Cove, Eastham and Orleans.

To, Arthur L. Sparrow, South Orleans,
for information regarding depth of water in the
mouth of Town Cove, Eastham and Orleans.

To, Arthur S. Knox, Washington, D. C.,
for information regarding climatic changes in the
past, as revealed by fossil pollens in eastern Massa-
chusetts.

To, the late John E. Hopkinson, Reading;
Albert Oliver Smith, South Orleans; and
Howard K. Snow, Wellfleet,
for days upon days of agreeable companionship and
assistance in field work.

To, Benjamin L. Smith, Concord,
for raising important questions.

To, the late Prof. Kirk Bryan, Cambridge,
Ripley P. Bullen, Gainesville, Fla., and
Prof. Laurence La Forge, Tufts College, Med-
ford,
for helpful criticism of portion of manuscript.
To, Jessie P. Grahame, Reading;
Douglas S. Byers, Director, and
Frederick Johnson, Curator of the Robert S.
Peabody Foundation for Archaeology, Phillips
Academy, Andover, and Frederick P. Orchard,
Cambridge,
for constructive criticism of the entire manuscript.

And, to all others, who in any way helped.

Without all this kind assistance, this book
would have fallen far short of my desire.

H. T.

Reading, Massachusetts.
CONTENTS

PREFACE

GENERAL INTRODUCTION

I "INDIAN ROCK"
INTRODUCTION TO CHAPTERS II and III

II A SHARPENING STONE AT TONSET

III AN ANCIENT ABRADING STONE AT NAUSET BEACH

IV A STONE ON STONY HILL

V "INDIAN MILL"

VI A PRIMITIVE MILL AT BARLEY NECK

VII A ROCK CORE AT NAMEQUOIT POINT

SUMMARY: THE GRINDSTONES OF NAUSET

SUMMARY: MILLS OF THE NAUSETS

SUMMARY: BOULDER CORES OF THE NAUSETS

GENERAL SUMMARY

APPENDIX: OTHER SO-CALLED INDIAN ROCKS

BIBLIOGRAPHY
On Cape Cod, that narrow strip of land, curving some seventy-five miles outward from the mainland of Massachusetts, like a great hook cast in happy fishing waters of the Atlantic, Nauset Indians once dwelt in numbers normal for a Stone Age population. 'Twas a pleasant home land. There were woods, ponds, streams, meadows, creeks and beaches; deer and other game; birds, fish and shellfish in abundance; berries, fruits and nuts; and there was ample stone for implements and clay for pottery; productive soil; a rolling terrain that afforded shelter from winds, and an ocean tempered climate. In 1605, the French explorer, Samuel de Champlain, saw the more protected shores well dotted with wigwams, yet today little evidence of that occupancy marks the landscape.

To be sure, arrowheads and other stone implements are more-or-less frequently found there; and at points along the shores, thin layers of shell exposed in the soil by erosion, indicate sites of former Indian villages; but little fixed evidence shows above the surface. No earthworks of any kind rise there. This is a proven fact, even though isolated symmetrical sand dunes are often called mounds, and even though it is known that the Nausets occasionally made burials in dunes. In the entire area, the only prominent evidences of former Indian life are some glacial boulders that still lie exposed on old village sites and still show definite signs of use.

These are undoubtedly but part of a once larger number, for there is no ledge in the region. The unevenly distributed boulders provided the only sizable hard surfaces on which work could be done. Probably man has been the principal destroyer, for naturally few rocks saw service except those conveniently located on, or adjacent to, Indian villages, and such sites were generally well adapted for homesteads and farms. Early settlers, in connection with clearing and cultivating the land, soon started removing surface rocks. This process, begun about 1640, continued intensively until the decline of agriculture, about 1875, and has been carried on slowly since. Quantities were built into stone fences, foundations, open wells, highways, bridge abutments, breakwaters and other construction work. In but few instances were any that had served the redskins valued and preserved. These seem the principal reasons why there are to be found on the Cape today so few boulders that show definite signs of having been used by Indians.

These few stand as the only monuments made by the primitive people: simple monuments, without petroglyphs or inscriptions: monuments on which use alone left records. Never-the-less, when studied and considered in connection with surroundings, the ordinary, unusual and obscure features of worn surfaces reveal much that may be interpreted, not only in terms of uses, but in customs, abilities and techniques of the people. Some even add bits of their history. In other words, these rocks provide a restricted view of the past—glimpses of peaceful scenes in the drama of Nauset life.

In the following pages, such of these interesting old boulders as are known to the writer, are recorded as Indian Rocks of Cape Cod.
In the town of Eastham, imbedded in the beach on the west shore of Nauset Harbor, at the foot of Skiff Hill, is a peculiarly marked boulder, locally known as "Indian Rock" (Fig. 9). In past geologic time, when the last glacial ice sheet receded from Cape Cod, this rock lay on, or was buried in, an easterly extension of the hill (Fig. 10). Nauset Harbor was then, or later became, open to the sea. The hill and other parts of the shore were eroded by wash of waves, and the rock undermined, or exhumed, and left upon the beach. The finer material from the hill was carried out, and filled the harbor, so that it became quite shallow, and then a barrier beach formed across, and nearly closed the wide mouth. This prevented further intensive erosion at the site. The water of the then comparatively quiet harbor, had little effect on the rock. It lay just above the reach of normal tides, and, although extremely high tides later effected complete submergence, pebbles kept the contiguous beach from washing. The relative level of beach and rock remained constant, so although the exposed portion became deeply weathered, the buried portion still is little changed. Thus the rock has been where it lies for a long time. It has, however, been somewhat reduced in size. At times rock has been broken away from the upper end, leaving ragged surfaces there, less weathered than the rest. The rock now projects 1'-2" from the sand and gravel, is 6'-6" wide, 9'-0" long, and of unknown depth. The unusual marks are irregularly scattered in the inclined semi-flat upper face, 6'-0" wide by 6'-3" long, which pitches an average of eighteen degrees from the horizontal, and is partly buried in the beach (Fig. 10).

They consist of some channeled areas and many narrow grooves. When this face is entirely uncovered by excavating, it is seen that they are in different states of preservation in the two parts. In the exposed portion the grooves and channels have rough surfaces, but are less weathered than the rock; while in the covered, almost unweathered portion, they are quite smooth and the grooves longitudinally scratched. Beach level, the division between the two parts, is plainly shown.

There are four of the channeled areas, and they vary in size and shape. One, in the lower central portion, 17" long by 12" wide, is in large part so shallow as to be nearly flat, but has a broad channel near the center, 12" long by 5" wide and 5/16" in maximum depth. Another, in the lower left hand corner, 16" long by 10" wide, also in part almost flat, includes at the side a similar channel, 14" long, 5" wide and ½" deep. The third channeled area, in the upper central portion, 23" long by 12" wide, consists entirely of two broad channels, ½" and 7/16" deep, which at their junction form a somewhat cylindrical convex surface, and this has a maximum depression of ¼" below adjacent rock face. A fourth area, the smallest, at the right of the third, 13" long by 12" wide, includes a channel, 12" long by 6" wide and 5/16" deep. All five broad channels are somewhat elliptical in outline, and their major axes nearly parallel and at a slight angle to the slope of the face. In four, the deepest part is somewhat above the longitudinal center. In one, a little below the center (Fig. 11). In two of the three deepest, one or more short irregular cracks extend lengthwise part way through each broad channel. The larger of the two shallower also is similarly cracked. None of the narrow grooves, or other parts of the rock's face, exhibit a similar break. All other fractures are quite regular, and extend from edge to edge. Here it should be added that the upper right hand corner of the rock's face bears a portion of a second pair of channels, one broad and one not so broad, also with depressed convex cylindrical surface between; but, as parts were upon detached rock, and thus lost, dimensions are necessarily incomplete and consequently omitted.

The narrow grooves are twenty-one in number, rounding in section, and of various sizes from ¼" to ¾" wide; from 5" to 17" long; and from ¼" to 5/16" deep in their deepest part, and the depth tapers gradually from there to nothing at the ends, where the width is from ⅛" to 3/16". All have a maximum width somewhat greater than maximum depth. In twenty, the deepest and widest part is somewhat above longitudinal center and in one, the shortest, at the center. Fourteen are slightly to the left, and seven are approximately straight. Six are at nearly the same inclination to the slope of the face as the major axes of the broad channels; the others are at various greater inclinations. Two adjacent grooves are so placed as to form a V; and two others are at a similar angle with one another, but do not join (Fig. 13). Two encroach upon an edge of the nearly flat portion of a channeled area; another is entirely within such an area; and two cut into the lower end of a broad channel. Some of the face along the sides of several grooves has apparently been hammered, or pecked, and an appreciable amount of rock thus removed, and these scars are weathered to a corresponding degree (Fig. 14). Here it should be added that the rock also bears one or more very indistinct grooves, too shallow and indefinite in outline to be measured, and so not included in the count.
Now in regard to some special features of "Indian Rock" site. The harbor, in front, is filled with irregular areas of salt marsh with winding channels between. At low tide, bars in these provide gulls with shellfish. Skiff Hill, in the rear, has been in large part cultivated, but still bears in, and near, its upper edge, a thin Indian shell-heap. Another lies on a flat portion of shore at the north. Both have been tested. Back of this is a swampy area and a tiny pond, and near these a third thin heap, excavated in part by Frederick Johnson in 1935. All contain very little. The surfaces of these areas, however, as well as the adjacent beach, still give up an occasional chip, reject or arrowhead. On the opposite side of the hill, nearly half a mile to the south and adjacent to a brook which there flows into the harbor, is another formerly inhabited area, now in part marked by remains of a sizable shell-heap. This brook rises about three-quarters of a mile inland in a spreading area of small swamps. One of these is the previously mentioned swampy area not far from the rock. In 1622 the land now included in the town of Eastham was property of Aspinet, sachem of Nauset.

The peculiar marks upon "Indian Rock" have been variously interpreted. Some have thought them nothing but natural irregularities, always present in the rock's face. Some have believed them to have been slowly formed by unequal erosion. Some have claimed the marks are glacial scratches. A few have seen a possibility that they were made by Norsemen, or other early explorers. Others have suggested that perhaps scraping by agricultural implements of the early settlers was the cause. Many, however, as the name indicates, believed that they are of Indian origin—that in the channels, tomahawks were ground to a keen edge; in the grooves, arrowpoints sharpened. And there is also a local legend that places their formation back in ancient time, when the rock was supposed to have been soft, and tells of an Indian who sat upon it, making scratches with his fingers, to represent tepees and other things, and leaving an imprint of his body.

The true character of the marks upon "Indian Rock" is seemingly made obvious by sundry significant evidence, plus a process of elimination. The marks certainly were not natural marks present in the boulder when left upon the beach, because those in the exposed part of the face are weathered much less than the equally exposed rock around them. They cannot have been caused by unequal erosion since then, because they are present in both the little weathered covered portion of the boulder and the deeply weathered exposed portion. They definitely are not glacial, because in the case of the narrow grooves, they are too uniform. The width of glacial strie varies more, and is much greater than the depth. Then too, glacial strie generally run all the way across a flat rock face. Furthermore, Dr. Kirtley F. Mather, professor of geology at Harvard, has examined the rock and believes that, although the broad channels and smooth areas could have been made prior to glacial transportation, by scouring action of restricted streams; no agency known to geology could have produced the narrow grooves. Consequently, as the wider areas are in the same face, run in the same direction, and are weathered to the same degree, it seems safe to assume that they are not of geologic origin either.

The only alternative is that the marks were made by man; and their general appearance and peculiar distribution are in accord with such origin. So is the fact that they are on the readily accessible, somewhat table-like upper face of the boulder, and not the sides. Norsemen, or other early explorers, surely did not make them. They in no way resemble ancient runic, or other inscriptions. Moreover, they definitely were not chiseled in the stone. Early settlers cannot have been responsible because, although Skiff Hill has been cultivated, the rock cannot have been marked there and tumbled to the beach to clear the land, because, as previously proved, it has been where, and as, it lies for a long time; and the site is a salt beach, and has of course not been cultivated: so, scraping by agricultural implements is improbable. And, early settlers seldom had occasion to mark stones of the field, or shore, except to designate boundaries; and this is obviously not the purpose of the channels and grooves. Moreover, the amount of weathering on those exposed, indicates that they were not recently made, and that they probably antedate the white settlers. A map of Nauset Harbor, called "Mallebarre harbour" by Champlain, drawn while his ship was at anchor there in 1605, shows Indian habitations in the vicinity of the rock. Now, the presence, nearby, of shallow shell-heaps, chips, rejects, etc., confirm the former existence of this village. Thus, the marks are undoubtedly of Indian origin.

The presence of old scratches on the almost unweathered marks below the beach shows them to have been made, at least in part, by forces acting lengthwise. Thus, as the stone is a granite gneiss, has an average hardness about the same as steel, and possesses abrasive qualities, and as none of the marks exceed the length of a convenient stroke of
the arm, they were probably made by rubbing, or
grinding, certain objects on the surface; which
seemingly means that the rock was a grinding stone.
The size of the boulder, its location on a village site,
and the amount of the wear in its surface indicates
extended use by many individuals. Consequently,
"Indian Rock" is, in all probability, a much used,
and worn, community grinding stone.

The more-or-less exact nature of the objects
ground upon the channeled areas is quite evident.
The parts consisting of broad channels were, on
account of slightly concave contour, seemingly suit­
able places on which to sharpen the laterally curved
cutting edges of stone axes, thick celts, etc., and the
outer edges of adze blades. The nearly flat surfaces
were probably well adapted for grinding the rather
straight cutting edges of tomahawks, thin celts,
chisels, etc.; and on the somewhat cylindrical con­
 vex surface the inner, or concave, edges of adze
blades could apparently have been readily ground.

An explanation of the presence of the short
irregular isolated cracks in the channels is seem­
ingly found by a process of elimination. First, it
does not seem probable that one, or more, unusual
cracks just happened to be in the rock at three
out of the five places selected for intensive rubbing
purposes, especially considering that each follows
more-or-less closely the deeper part of a channel.
Neither is it probable that they have resulted from
weakening of the structure of the rock by wearing
away of material. The depth of the abrasions is too
slight to have had any such effect. It would seem
that for some reason the rock must have been
strained, or shocked, sufficiently at these particular
places to make the cracks. Water freezing in the
channels cannot be responsible, because they are
too shallow and rounding for ice to have exerted
sufficient pressure on the sides; and furthermore,
the slope of the face is such that no water could
have stood in them. It would thus seem that any
strains, or shocks, responsible for the cracks must
have been directly, or indirectly, caused by the use
the rock was put to. The possibility that prolonged
laborious grinding operations generated enough
localized heat to produce sufficient strain in the
rock structure to result in fracture is remote. The
mass of the rock is too great to have been affected
by the small amount of heat that could be generated
in such a manner. Thus the presence of the short
irregular isolated cracks can seemingly only be
accounted for by assuming that the grinding sur­
faces were repeatedly subjected to the shock of
hammer blows; i.e. that their preparation involved
the removal of the slightly irregular surface layer
of the boulder by pecking with a hammer stone, and
that keeping them in suitable condition necessitated
repecking, or redressing, as often as the sharp crys­
taline surface wore smooth from use, became
dulled, and failed to cut hard stone implements
efficiently. Such pecking would have coincided with
the areas of wear, and been heaviest upon the areas
of greatest wear, i.e. the deeper parts of the chan­
nels. In time, repeated blows, even though they
were light, could have started a tiny crack in each
channel, and as the pecking continued these would
have gradually lengthened, (today stone masons
split large rocks quite accurately by delivering a
series of blows of diminishing intensity with a
heavy hammer, back and forth along the line of
desired fracture), but, with the pecking being
concentrated upon long areas, not lines, the course
the cracks took in their growth would not have been
closely confined, and the irregular form present
could have resulted. Consequently it seems within
reason to believe that this attempted accounting for
the presence of the peculiar cracks is the true one.

The probable nature of the objects that the
Indians ground in the narrow grooves, however, is
not so obvious, but seems to be indicated by many
cues. The fact that the grooves grow progressively
deeper from their ends, so that a straight edge
laid along one makes contact only at these points,
definitely precludes use of smooth wooden arrow
shafts. The narrowness and lateral and transverse
contour of the grooves shows that the objects were
probably small, but not arrowheads or other chip­
ped implements, or ground stone tools or weapons.
The contours of such implements were not right to
fit the grooves. The edges of some stone ornaments
were of a size that could have been rounded therein,
but, the Nausets had few such objects of art, and
making those could not have been, in more than an
extremely minor degree, responsible for producing
the large amount of wear in the rock. The extent
of the wear seems to very definitely indicate use,
when making something consumed in quantities.
The presence of twenty-one grooves of a limited
depth, instead of a few deep ones, seems to denote
that the objects were of a shape that could not, for
some reason, be ground after the wear exceeded
a certain depth. The fact that a portion of the face
of the rock at the sides of some grooves has been
removed by pecking, also may be a sign that deep
ones were unusable, because of course, lowering
the height of the sides would have had the effect
of reducing the depth, and prolonging the useful­
ness. Whatever the objects, presumably they were
something used in the vicinity. The site is located on one of the two harbors on Cape Cod that open directly upon the ocean, and so was advantageously situated for carrying on sea fishing, whenever the sea became sufficiently calm. Moreover, this harbor was the only one on the ocean shore that could have been reached by canoe from Cape Cod Bay. (Geological evidence shows that it was connected at high tide via a devious narrow waterway consisting of, Town Cove, Jeremiah's Gutter and Boat Meadow Creek.) Thus, the locality may even have been one in which Cape Cod Indians regularly congregated during the warmer months for fishing; in other words, one in which there was need for great quantities of bone fishhooks. Champlain, in describing the Indians of the nearby village at "Port Fortune" (Chatham), states in part, "They are not so much great hunters as good fishermen and tillers of the soil", and it seems safe to assume that this applied equally well to the entire tribe. He also mentions noticing Indians off "Port St. Louis" (Plymouth), returning in their canoes with cod and other fish, which he explains, "They catch with hooks made of a piece of wood, to which they attach a bone in the shape of a spear, and fasten it very securely. The whole has a fang-shape, and the line attached to it is made out of the bark of a tree." By, "fang-shape", he meant V shape.

C. C. Willoughby wrote in Commonwealth History of Massachusetts, "The fish hook in general use among the northern Atlantic Coast tribes was shaped like the letter V, with one arm of bone about half the length of the other. These hooks are still in use among the Montagnais (Mon tan' ya) Indians of Labrador, and hundreds of bone points have been found in the shell-heaps along the New England coast." Those found on Cape Cod vary from those common in Maine, in that instead of being pointed at both ends, they have a blunt and often wide base. Bone fishhook points of this type were of a size, and shape, that could have been ground in the grooves. Their slim shape also would have made them difficult, if not impossible, to have grasped sufficiently firmly with the fingers when held either at a low angle in a groove, or laid flat therein, and slid repeatedly back and forth for the purpose of pointing, and rounding the sides, if the groove was worn beyond a certain depth. The face of the rock would then have been in the way of the fingers, and therefore it would have been necessary, either to have started a new groove, or reduced the sides of the old one. This may partly account for the presence of so many grooves. Bone, however, would seem to have been an insufficiently hard material to have produced the amount of wear; but, while being ground green it would have, without doubt, soon clogged and glazed the abrasive surface with greasy, glutinous, bone powder; and cleaning this off with sand applied with the end of a stick, or otherwise, would have been necessary; or on the other hand, sand and water may have been used in the grooves to retard clogging and hasten the grinding. A use of sand seems confirmed by the fine strie still remaining in grooves below beach level. And, the abrasion by bone and sand could have produced the amount of wear. Then too, use for grinding greasy green bone would further account for the presence of so many grooves, because by having many and allowing those that had been used to set, the grease could have been removed. Time would have allowed it to slowly spread into the rock. Thus, as use in rounding and sharpening quantities of bone points of V shaped fishhooks would apparently account for the narrowness, number, and slight depth of the grooves, as well as the large sum total of wear and the hammer marks by the sides of some, it consequently seems reasonable to believe that they were the principal objects ground. In addition to the foregoing probable predominant use, the grooves were apparently equally well adapted for pointing bone awls and bone points of harpoons. Had the grooves been used only in connection with making awls and harpoons, it would not have been necessary to have reduced the height of the sides by pecking. These implements were far longer, and even if the grooves became rather deeply worn, there still would have been room for the fingers.

Here it seems well to add: there is no record of bone fishhook points having been found at the site; but that should not exclude the probability of their use there. It should not, because the location is, as explained, a most favorable one for fishing; and Champlain saw bone fishhooks in use at Plymouth in 1605, and they have been found in deep shell-heaps on lower Cape Cod. But, it is known that for over eighty years prior to that, tribes along the New England coast had been obtaining iron hooks from early explorers, fishermen and traders. So, there may not have been many bone hooks in use on the Cape during historic time. Moreover, the shell-heaps at the site are too thin, and too sandy, to have been favorable for the preservation of prehistoric bone. Surely, these reasons could well account for the absence of material evidence.

Certain other peculiarities of the narrow grooves seemingly are also explainable. The fact
that, viewed from below, the majority are slightly to the left, seems to indicate when the fact that the rock's face has a gentle slope is also taken into consideration, that when a groove was used the Indian assumed a kneeling, or sitting, position at the left of the upper end, as viewed from there, and perhaps resting his left hand on the rock, rubbed the object being ground back and forth with his right. This seems to have been the procedure, first, because it obviously would have been more convenient to have used the grooves from the upper end, i.e., to have rubbed on a declining surface, one tipped in the same direction as the thrust; than on an inclining surface, one tipped against the thrust; second, because it is obvious that by working from a point at the left of the upper end, a swing could have been imparted to the motion of his right arm, by that shoulder, corresponding with the curve present: and furthermore, because all this is in accord with a prevalence of right-handedness, which seems reasonable. Had the grooves been used from the lower end, from a point at the right, as would have been necessary in order to produce the curve from there, a prevalence of left-handedness would have been suggested, which seems unreasonable, because left-handedness is known to occur among Indians only with nearly the same frequency as among whites. All together these reasons seem sufficient to prove that grooves were used from the upper ends, and that the users were predominantly right-handed. (Here it had best be added that use of grooves from the upper end, in turn suggests that the channels were used from that end, but probably not from a similar relative position. The large stone implements ground in the channels obviously were most effectively held by two hands, which would indicate that the Indian placed himself directly in line with the abrasive surface. So this may be a minor additional reason to believe that channels were used from the upper end, for otherwise, whatever water was used on the surfaces during grinding would have deposited rock dust mud where the Indian sat or knelt.) The fact that all but one groove have the deepest and widest part somewhat above the longitudinal center, seems to indicate, not a difference in pressure at different parts of the stroke, for small more-or-less fragile objects of bone were being sharpened, and excessive pressure could not have been put upon them. The greatest wear was probably some above the center simply because, for some reason, the average center of the strokes taken was there. Probably the reason was that debris of grinding, i.e., bone powder, etc., gradually collected in the lower end of a groove, causing the strokes to be progressively shortened until it became necessary to pause and brush, or wash, the groove clean. (Probably this explanation is also applicable, in principal, to the broad channels.) The fact that two adjacent grooves are at such an angle upon the rock as to form a V, and that two others are at a similar angle, but do not join, was very likely unintentional, has no special significance, and probably should not be construed as an attempt on the part of the Indians to represent tepees, or designate the rock as a suitable place to grind the points of V shaped fishhooks.

The fact that a sizable portion of the upper end of the boulder has been broken away, presents a real problem. The fact that rock detached there bore part of one of the areas of wear, of course plainly indicates that it was detached subsequent to use of that part. The amount of weathering on the fracture surfaces makes it equally plain that the break probably occurred in the days of the Indians. But, here is the rub! Did the end of the rock break up naturally, or did the Indians break it? Was it broken by water freezing in tiny cracks? Or was it smashed by thrust and pounding of harbor ice? Or, did the Nausets accidentally crack it by frequent pecking: or, perhaps repeatedly break off pieces to use as portable hones? Such hones are not uncommon on the lower Cape. Grooved and channeled fragments have been found on the north in Wellfleet, and on the south in Tonset, Orleans. None, however, have been identified as part of this boulder. The old rock seems to hold no clue to the answer.

On the whole, "Indian Rock" seems a veritable storehouse of information, the conclusion from which is that the unusual marks are unquestionably artificial, and of Indian origin: that because of the abrasive qualities of the rock, in all probability stone and bone implements of the particular kinds adapted for use in the vicinity were, by generations of Nausets, laboriously shaped and sharpened on the surface; that the marks, and their various shapes, were the result of wear in so doing; the channels and flats from smoothing and sharpening large ground stone cutting tools and weapons, and the grooves from shaping and pointing slender bone implements. In other words, a safe conclusion is, that "Indian Rock" was probably a variety of community grinding stone, that might be designated as variform type, having abrading surfaces of different forms, or shapes, seemingly adapted for use in several special grinding operations.
Now, strange as it may seem, this great tool of a Nauset outdoor workshop not only holds this fragmentary record of the past, but is still actually in use. Now, however, it serves only the harbor gulls. To them it is a favorite A No. 1 quahog opener. From aloft they drop these hapless shellfish, and immediately that flat top becomes a banquet table. There they feast on little-necks on the half shell, and there, on the surrounding beach, the dishes collect as a bird shell-heap.
FIG. 9. Site of Indian Rock at the base of Skiff Hill, west shore of Nauset Harbor. (Rock 1 on Map 1).

FIG. 10. General View of Indian Rock.

FIG. 11. View looking down upon Indian Rock.
FIG. 12. Close up showing Broad Channels and Convex Surface.

FIG. 13. Close up of Broad Channel Showing Crack.

FIG. 14. Close up of Narrow Grooves Showing Pecking.
INTRODUCTION

As pointed out in the general introduction, Indians of Cape Cod used boulders for purposes that left marks of toil: some of these rocks still stand on their original sites today: and their study seemingly reveals, among other things, interesting facts regarding techniques employed, and customs of the past.

Mention was not made, however, of the fact that Indians there used boulders, not by preference, but because they were confronted with a somewhat restricted supply of suitable rock. Unlike their brothers on the mainland, they did not have access to ledges. The Cape is a great moraine, so they had to depend entirely upon pebbles and boulders, large and small. No boring, even, has ever been carried deep enough there to strike bed rock. Then too, the rocky material is a heterogeneous collection, scraped up and transported by glacial ice from a large area on the north northwest. The proportion suitable for use is small. Furthermore, the distribution of the larger erratics is very uneven. In some places there are many. In others, practically none. So, it must have at first taken quite a little searching, quite a bit of testing, by the Indians, to find boulders that were not only of the right material, but of a shape that could be conveniently used. Thus, it is little wonder that those remaining today show evidence of use over a long period.

The two short Chapters, which follow, treat of rocks that, like "Indian Rock", taken up in detail in the first Chapter, were used for abrasive purposes. These two Chapters, however, are by no means repetitions of the first. These rocks, and their surroundings, seemingly reveal other things. Discussion that would be a repetition, is omitted.
CHAPTER TWO

I am indebted to Mr. Freeman Snow of Orleans, Mass., for permission to make the search which resulted in finding the specimen here recorded.

In Tonset, a part of Orleans, resting on the upper beach on the east shore of Town Cove, is a rock that, like "Indian Rock", was used as a sharpening stone. This one, however, is far smaller, seldom tidewashed, and bears only two areas of wear. On casual inspection, it frankly does not seem to amount to much. Never-the-less, when given closer examination, it seems to disclose a technique of grinding; and when considered in connection with the geological situation, to suggest a particular use. (Fig. 15).

Tonset was part of the territory of Aspinet, sachem of Nauset.

Town Cove is a shallow body of water about two miles long and one half mile wide, an arm of Nauset Harbor; Eastham, making off from the southwest corner thereof. It is largely flats at low tide, but has about five feet of water in the channel at high. Clams are abundant. Flounders and eels are commonly caught.

The site of the rock is just south of narrows formed by small opposed points of land jutting from the east and west shores of the cove; i.e. is practically at what perhaps may be termed, the mouth. Here the width is not over 385 feet at high water.

Both points show evidence of occupation by Indians. (Another abrading stone, Rock No. 4, lies about 3/4 of a mile north northwest of the opposite point.)

The rock being considered in this chapter is 2'-7" long, 1'-8" wide and stands 10" high. It is grey in color, blotched with red, hard, fine grained and abrasive. Furthermore, it is highly resistant to weathering.

The upper face, more-or-less diamond shape, 2'-5" long by 1'-4" wide, slopes about fourteen degrees from the horizontal and bears the two areas of wear. These are both broad channels, elliptical in shape. One runs from the middle of the high end down the center, and is 1'-1" long, 41/2" wide and 1/4" in maximum depth. The other, parallel on the shore side, is 6" long, 41/2" wide and 3/16" deep. In each instance the greater depth is at the approximate longitudinal center. The surfaces of these worn areas are in a remarkably good state of preservation. They show not only rock crystals worn flat and even, but distinct strie running in general direction of channels, but by no means parallel with one another.

Like the broad channels on "Indian Rock", these were undoubtedly used for grinding broad bladed cutting tools of stone, such as celts and axes. These broad channels, however, are far fresher, and their non parallel strie clearly indicate that in grinding such tools, here at least, the direction of the strokes taken was by no means confined to one direction, but was varied more-or-less, probably in order to take advantage of both frontal and flank attacks on hard minerals in the crystalline structure, and so hasten the grinding.

The rock, located as it is at the narrow entrance to Town Cove, was seemingly at a logical spot from which a fish weir, of net type, could have been built across. (Nets were customarily made of cord twisted from fibre of the plant, Indian Hemp.) The flats would have provided ideal support for the stakes of such a hypothetical structure. They could have been easily driven with a wooden mallet. If the bed of the channel was too stony to drive them there, that portion of the net could have been supported by floats and anchored by sinkers. Moreover, Champlain's map of 1605 shows a weir of indeterminable construction, and fish or eel trap, set in the outlet of the Salt Pond, a smaller body of water similarly making off from the northwest corner of the same harbor. So, the supposition that a weir was erected at times in the entrance to the cove seems more than probable.

Thus, is it not within reason to believe that stone axes used for cutting and pointing wooden stakes, similar to those recently recovered at the site of the Boylston Street Fish Weir in Boston, to be built into and support such a structure of any type here, were repeatedly ground and reground on this very stone?

This, however, is wishful thinking; so, on to Chapter III—An Ancient Abrading Stone at Nauset Beach.
FIG. 15. A Sharpening Stone at Tonset, located on the east shore of Town Cove, an arm of Nauset Harbor. (Rock No. 2, Map 1)
Chapter Three

The field work on which this Chapter is based was done during 1933. Observations and conclusions recorded are as of that year.

On Nauset Beach, on the east shore of Eastham, near the Nauset Coast Guard Station and the north end of the narrow shoreline sand-spit that shields Nauset Harbor from the ocean, is another rock on which Indians sharpened stone tools; one on which, strange as it may seem, they may have last sharpened them before our coast was first sighted by Norsemen. It perhaps would be more correct to say that this rock is in Nauset Beach, for it lies close to low water mark, firmly imbedded among a layer of stones and normally entirely covered with sand. Only occasionally, immediately after great storms, when wind driven waves and currents have swept the beach free from sand, is it seen at all. (Fig. 16.)

The portion exposed at such times is block shaped, 3'-10" long, 1'-9" wide and 10" high, light grey in color, but finely streaked with dull purple and traces of green; and has in its otherwise very rough and deeply weathered surface one somewhat elliptical area of wear, a broad channel similar to those in “Indian Rock”, on the west shore of the harbor. This broad channel lies in the nearly flat upper face; is 10" long by 6" wide, and slightly concave, with a maximum depth of ¼" at the approximate longitudinal center. It is traversed by a crack that starts at the rock's irregular shore end. The channel surface exposes a hard crystalline structure with good abrasive qualities and such marked longitudinal schistosity that any strie present would not be readily distinguishable; and, for reasons at first difficult to understand, shows almost no signs of weathering, in fact is still semi polished.

This unusual rock lies approximately 170 feet from the upper reaches of the tide and a ridge of dunes forming the crest of the sand-spit; 190 feet diagonally outward from the north end and anchorage of the spit upon undisturbed till, at a point directly in line with the beach on north shore of the adjacent harbor, and 640 feet from the nearest exposed rocks thereon, i.e. rocks beyond the sand spit dune. The two shores are practically at 60 degrees with one another, and if the intervening sandy barrier was removed, the location would be the seaward end of the harbor beach, the point at which the two beaches meet.

On the low hills along the harbor's north shore, and exposed in the seaciff in line with them, at the original surface level, now topped with dune sand, (Fig. 17) are thin shell-heaps containing scattered arrowheads, etc., confirming Champlain’s recorded occupancy by Indians. This was included in lands once belonging to Aspinet, sachem of Nauset.

The foregoing observations, supplemented by consideration of coastal erosion, account for this rock’s present unusual location and remarkable preservation of, signs of use by Indians. They indicate that part of its history has been somewhat as follows.

The rock once lay on the beach on the sheltered north shore of Nauset Harbor, at some distance from the sea, and became much weathered by long exposure. After this, Indians settled on the adjacent sunny hillside (then, or subsequently part of the village of Nauset) and used the quiet shore as a landing place. In some way they discovered that the old rough stone possessed abrasive qualities, and regularly sharpened stone tools and weapons upon its convenient flat top. As a result, a smooth place was worn there, and as the grinding continued this gradually became of slight depth, and finally assumed a curved contour that approximately fitted the average cutting edge of such implements.

Time slowly passed: and the ocean took toll from the Cape’s outer shore. During severe storms parts of the beach were washed away; bordering cliffs and dunes were undermined; portions fell to take the place of material lost; and these in turn fed the waves. Constructive forces were also at work, there. At times, extra heavy seas washed across the sand spit, through gaps between the dunes, and carried sand with them. Often, strong easterly winds blew dry sand from the upper beach and exposed face of the dunes across to secure lodgment among sheltering beach grass on the harbor side. In these ways that side was slowly built up, growth of the grass kept pace, and the sand spit gradually moved landward as the ocean shore wore away. Eventually, the handy rock was reached and buried by the advancing ridge of sand, and the
Indians could use it no more. Sealed in the sand-slip dune, it was completely protected from wear.

More time went by: the slow recession of spit and shore continued; and land subsidence also attained consequential proportions; for, at last, when the rock was completely overridden by the spit, and its site became ocean beach, change in elevation was such that there also it lay beneath sand. The protecting layer was rather thin, however, so there during storms it was occasionally uncovered and underlying sand washed out, while the coast line pushed inland 170 feet more; and there, near the lower rim of the tide, in line with north shore of the harbor, it stands firm today; still actually on the same spot at which it was used, but possibly at a somewhat lower level; still in the original upright position; still only infrequently subjected to erosion—on the brink of being forever submerged in the advancing Atlantic.

Thus, this old Indian abrading stone, though now imbedded in a wild ocean beach, once lay exposed by sheltered waters in surroundings favorable for use; has since been covered and protected by nature, while intervening land gradually washed away; and consequently retains practically unscarred marks of years of patient toil, long ago.

At this point, this paper probably should end; but, long ago, is very indefinite so, as my good friend, the late Warren K. Moorehead used to say, when he was about to spring something, “Now take a good grip on your chair”. Here is a chance to actually calculate a date.

Encroachment of the sea indicated by this rock, when measured on a 60 degree angle, is 640 feet, a distance equal to that from present site of Nauset Beach to the nearest exposed rocks on the north shore beach of Nauset Harbor, i.e. rocks not reached by the sand-slip dune. When reduced to the perpendicular, or actual indicated encroachment, this becomes 554.25 feet. So, if as most geologists assume, recession of the glacial ice sheet responsible for depositing the uppermost sands, gravels and boulders of Cape Cod, occurred from 25,000 to 30,000 years ago; and if, since that time as seemingly shown by a more-or-less abrupt drop in the contour of the sea bottom, known as the “Edge”, when an allowance of 10% is made for a possible seaward advance due to accumulation of drift, the ocean shore in the vicinity of Nauset Harbor has receded, on an average, approximately 2.84 miles; and if the rate of recession has been uniform, or from .6 to .5 feet per year, it may have taken in round figures from 900 to 1100 years for 554.25 feet to have been lost, and accordingly the rock may have been last used by Indians between 800 and 1000 A.D.

However, remember that this approximate date is arrived at by a series of assumptions, any or all of which may be in error. In the first place, geologists admit that the period, 25,000 to 30,000 years, is only based on a premise that glaciation here was coincidental with that in Europe. Then, the exact amount of change that may have taken place in the elevation of Cape Cod has not been determined. Thus, the “Edge” may not even approximately mark the original shoreline, but instead may be another eroded shore, now submerged. So, there is a possibility that the original eastern beach lay many miles farther out. There are also the possibilities that the lost land increased progressively in height eastward, and that the Cape was originally somewhat protected for a time by another cape, or extension, curving to a distance of some 140 miles seaward over the site of Nantucket Shoals and Georges Bank. So, the rate of coastal erosion may not have been constant. Furthermore, even if the “Edge” does serve as an approximate marker, the degree of exactitude is indefinite, as its possible movement inward by erosion or outward by deposition is unknown, and this would in turn depend upon still other unknown factors, the direction and velocity of tidal currents and percentage of fine grains in the eroded material. And, this is not all! The presence of an error in the assumptions seems supported by fact. The outer shore of Eastham is now being cut away at a rate of four or five feet a year. Unfortunately, this leaves only one good leg to stand on—the measured amount of change in the shoreline. Consequently, until such time as definite information is obtained regarding the glacial geology of Cape Cod, this addendum should be considered only a tottering approach to chronology.

NOTE ON THE “EDGE”

About three miles off the ocean shore of Cape Cod, the twenty fathom (120 feet) curve follows the present shoreline quite closely all the way from High Head, North Truro, to North Chatham. It even bends in a little at harbors. Fishermen call it the “Edge”, because from there the bottom drops off rather abruptly to far greater depths. Probably some material eroded from the coast has been dumped over this declivity. Probably its top has as a result moved slightly seaward. Direction of the tidal currents, however, are such as not to carry much drift outward. This material is, and has been,
in large part moved along the shore. That carried north built the entire area occupied by Province-town, while that washed south made nine mile long Monomoy Point, Chatham. Thus, the “Edge” may closely mark the original eastern shoreline.

NOTE ON RECESSION OF SHORELINE

If, as some observers think, the cliffs of Eastham recede at the rate of 4 or 5 feet per year, it has taken only 123 years for 554.25 feet to be lost, and this would indicate that the rock could have been last used as recently as 1810. However, this estimate is probably far too large for a long time average. Some places, at some times, may have lost that much in a year, but loss is not continuous in any one spot. There are periods during which there is no loss at all. Points of attack shift as the outer bars change. Moreover, at the rate of 4 or 5 feet per year, a total of from 21.3 to 25.5 miles would have been lost since the glacial ice receded, and geological evidence to date does not indicate that the outer Cape ever had such a width to lose.

NOTE ON MATHEMATICS INVOLVED

Data—Last glacial ice receded from 25,000 to 30,000 years ago. Loss from outer shore of Cape Cod at Nauset Harbor, Eastham, since then, as indicated by “Edge” on U.S.C.&G.S. Chart, probably averages approximately 3.125 miles. Loss since last use of rock, or distance from nearest exposed rocks on beach on north shore of Nauset Harbor, measured on a 60 degree angle, 640 feet in 1933. 3.125 miles average loss indicated by “Edge” .284 less 1/11 (the addition of 10%)

2.841 miles, average loss indicated by “Edge”, less deduction of estimated extension by drift.

NOTE ON MATHEMATICS INVOLVED

\[ 640^2 = 320^2 + x^2 \]
\[ 409600 = 102400 + x^2 \]
\[ 307200 = x^2 \]
\[ x = \sqrt{307200} \]
\[ x = 554.25 \] feet

2.84 miles = 14995.2 or 15000. feet

\[
\begin{array}{c|c|c}
15000 & 554.25 & 1933 \\
15000 & .6 & \text{.6 ft. per yr.} \quad \text{923 or 900 yrs.} \quad 900 \\
25000 & .5 & \text{108 or 900 yrs.} \quad 1100 \\
30000 & .5 & \text{83 or} \quad 800 \text{A.D.}
\end{array}
\]
FIG. 16. The Abrading Stone on Nauset Beach, East shore of Eastham. Taken at low tide.
(Rock 3, Map 1)

FIG 17. Original surface level, along the north shore of Nauset Harbor, now topped with dune sand. Ancient shell heaps appear.
CHAPTER FOUR

On top of old Stony Hill on the west side of Town Cove, an arm of Nauset Harbor, Eastham, is a rock that, according to the late owner, has been simply called, "The stone that Indians used to sharpen tools on" (Fig. 18). It could however, be interestingly termed—an Indian grindstone that shows why it ground.

The locality, as in the case of the three rocks previously described, is territory formerly claimed by Aspinet, sachem of Nauset.

The site is about 646 feet back from Stony Hill's once wave-cut cliff. Between is a natural hollow of sufficient size and depth to have afforded shelter from winds. In places, its sides contain thin shell-heaps. From this seemingly ideal spot for habitation, a valley-like depression extends to the cliff, where there is a running spring. A quarter of a mile northeast of there a small brook flows into the cove. This rises some three-quarters of a mile inland, in a semicircular area of small swamps. The nearest of these, some 400 feet from the rock, is right at the southwesterly foot of the hill.

Not far from the rock, on the side toward the brook, there was found during cultivation some years ago, a most interesting specimen of Nauset art—the end of a roller pestle, bearing an effigy—but whether intended to represent fish or beast, only the Indian who made it knew.

The rock, grey, deeply weathered and lichen bearing, is a hard fine grained diorite, containing small veins of aplite granite. The length is 6'-0", width 4'-2" and extreme height above ground only 0'-8". Contour of the sides give the impression that the greater part of its mass lies hidden.

The top is more-or-less triangular, and as a whole approximately level, but by no means flat, in fact, it is in part very irregular. Rock has been broken from the southerly and westerly ends, perhaps during white cultivation of the land, leaving those portions jagged. The rest is apparently a natural wavy surface, worn smooth in three places by abrasion. Two are quite large.

The easterly of these large areas of wear has a length of 2'-2". Its entire southerly and northerly portions are concave. The former portion has a maximum depth of 5/16", a width of 0'-9", and a very smooth surface, which bears distinct longitudinal strie. The latter portion, 3/8" deep, covers a rather indefinite amount of the sloping side, but is of approximately the same size as the other. As a result of scaling it is somewhat irregular. Between these two concave portions, the surface is convex, and like one of this contour on "Indian Rock", could have been used to sharpen the inner, or concave, edges of gouges and adze blades.

At the easterly end of this convex surface are two very small grooves, 1/8" x 1/4" and 1 1/2" x 3/16" respectively, with a depth in each instance less than 1/16". These may be plough marks, but their more-or-less precise location, and the fact that they extend in the same direction as the convex surface, seems to indicate otherwise. Whatever exact use these very short grooves may have had, however, is problematical.

The centrally located area of wear has been partially lost. As previously mentioned, rock broken from the southerly end, bore part of this worn surface. This missing fragment is an uneven slab 1'-5" x 1'-8", with a probable maximum thickness of 1 3/4". As in the case of "Indian Rock", there is, of course, a possibility that this was removed by Indians to serve as portable hones. The remaining portion of the area is 2'-1" x 1'-2" x 3/8" deep, and very smooth. Its inner convex edge also shows use.

Thus, both large areas of wear evidently served to sharpen broad bladed cutting tools and weapons of stone, and had special provision for gouges and adze blades. Both areas are probably unusually wide because neither the shape of the rock, nor its position, imposed limitations, as in the case of the three other abrading stones, on the direction in which strokes could be taken.

The third area of wear, smaller and somewhat indistinct, at the westerly end of the boulder measures 1'-20" x 0'-4" x 1/16" deep, and, interestingly, has been in part pecked. Presence of the pecking seemingly indicates that this abrading surface was in the process of being resharpened in the exact manner suggested in the first chapter, "Indian Rock", i.e. by an all over pecking to remove the glazed and dulled surface and expose crystals that were fresh and sharp.

So it may be concluded, not only that this Stone on Stony Hill, like "Indian Rock", was a much used community abrading stone, with worn surfaces of shapes suitable for grinding and sharpening cutting tools of stone having convex, flat and concave blades. It may also be concluded that this rock reveals that such surfaces were, at intervals, reconditioned by pecking—that this was a reason one hard stone cut and continued to cut another hard stone—this was a reason these primitive grindstones ground.
FIG. 18. A Stone on Stony Hill, a community abrading stone.
(Rock 4 on Map 1)
CHAPTER FIVE

I am indebted to Mr. and Mrs. Franklin T. Cleaverly, West Brewster, Mass., on whose estate, High Brewster, this Indian rock of Cape Cod is located, for permission to repeatedly trespass for the purpose of making the field study on which this chapter is based.

Under pitch pines on the south west shore of lower Mill Pond, about a quarter of a mile above the outlet, and some twenty-seven feet from the water's edge, imbedded in the upper edge of a steep bank rising therefrom, is an interesting boulder entirely different from those previously considered, and locally known as "Grinding Rock", or "Indian Mill". (Fig. 19 and 20). It is normally capped with fallen needles, and when so covered, appears not noticeably different from other rocks thereabout, but, brushed clean, presents a pinkish semi-polished area covering nearly the entire flat upper surface, standing out in marked contrast to other parts, which are grey in color, and deeply weathered.

Notwithstanding a marked difference in surface characteristics, structurally the boulder appears perfectly homogeneous. The rock is a hard fine grain granite, and surfaces not deeply weathered derive color from one of its principal minerals, pink feldspar. Originally the entire surface undoubtedly was colored.

Some 25,000 years ago, when the edge of the last glacial ice sheet rose near by, a huge block of ice broke away, lodged, slowly melted, and dropped this boulder where it lies. Like other glacial boulders, its edges had been rounded and the entire surface more-or-less smoothed; and, like many, as a result of falling from the ice, developed cracks. In time the block of ice entirely melted away, leaving a great hollow filled with water, the present pond. Then, steep banks along the shores slid inward to an angle of rest and the boulder was thus partly undermined. As a result, the portion left over, the part that follows the rear edge has almost no relief; the higher parts of the waves are referred to as crests and the lower as troughs, even though the relief is very low.

A detailed description of the old boulder, as it is today, follows; in which the lower side, or side toward the pond, is referred to as the front, and observation made from there.

The visible portion of this unusual rock is 5'-4" long by 3'-2" wide, and rises table like from the sloping ground 2'-1" at the front, but projects only from 3" to 9" at the back.

The top, with the exception of an irregular raised rim, about 6" high, extending nearly across the back, is a cleavage surface and not only quite flat, but nearly level. The flat portion is 4'-0" long, and throughout most of that distance 2'-0" wide, but at the left end, or beyond the end of the raised rim at the back, is 2'-11" wide, there extending entirely across the top.

The semi polished part runs nearly the entire length, and from the front edge to within an inch of the raised rim at the rear, measures 3'-4" by 1'-11", pitches 2½ degrees to the front and 3½ degrees to the left, blends into the rough portion of the top, and is more-or-less elliptical in shape. As a whole it is slightly concave, like the basin of an extremely shallow bird bath, the maximum depth being only ½"; and if not for the slight pitch of the top and two gaps in the low rim (one a natural rounding off of the rock at the left edge) would hold a small amount of rain water. The surface of this slightly hollow smooth area, however, does not have a continuous curve. Instead, it is somewhat wavy, and moreover, these waves or ripples, are so located as to form a pattern (Fig. 21).

In the following attempt to describe the pattern, the higher parts of the waves are referred to as crests and the lower as troughs, even though the relief is very low.

Just within the bounding edge of the smooth area, a very shallow trough, having an average width of about 6", runs almost entirely around, but the part that follows the rear edge has almost no depth. If this trough extended entirely around the area, it would of course have a corresponding shape, and could be described as more-or-less elliptical in plan, but as it is incomplete at the right rear, perhaps may be termed, a flattened spiral. In the area within this spiral, on the longitudinal axis, is a second trough, about 14" long and 6" wide, of more-or-less oval shape (not elliptical) with small
The boulder has at least two other unusual features. The front face inclines forward a maximum of 5", and 6¼" below the top a horizontal crack extends way across, on a cleavage plane, and seemingly divides the whole rock into an upper slab and a main portion below. At the junction of the two parts, the top of the lower portion projects enough to form a shelf about 2" wide. The front face of the upper slab is in part irregular. Near the center large chips were apparently removed at some time, leaving a rough jog, 9" wide, extending 2" in upon the upper face and down to the horizontal crack. The upper edge of this jog, shown in this bird’s-eye-view, is surrounded by small cracks in the upper face at a distance of from ½" to 1" therefrom, and at its center is rounded off to an extent of ¾” in, ¾” down and 1¼” across, and at that point stands 5/16” below the adjacent front edge. This jog constitutes the second of the previously mentioned gaps in the rim of the semi polished depressed area. All surfaces of this irregularity are slightly pinkish and patinated. The front face of the lower portion is semi flat, and except at one spot, appears natural. At a point directly below the jog in the upper portion, the upper edge of the lower portion is also roughly rounded off, but to far less a degree; to be exact, 1½” wide, ½” in upon the shelf, and ¾” down upon the front face, and also appears to have been chipped. All surfaces of this slight irregularity, like the larger above, are somewhat pinkish and patinated. So, at least two points, the front face of the boulder also appears to have been altered.

Directly in front of the rock is a small spot of level ground, a sort of step-like recess in the sloping bank. This has a length equal to the length of the rock, and a width of approximately 2’-0”. At other points the bank has a continuous slope. A deeply worn footpath, that has every appearance of having been there a long time, runs along its upper edge and passes adjacent to the rock.

The immediate surroundings seemingly have no other unusual features. Comparatively flat land extends for 110 ft. in back of the rock and for some distance at the sides. This, in early Colonial times, was an Indian cornfield. Lower Mill Pond, in front, a pleasant sheet of water a quarter of a mile or more across, is first in a chain of ponds, the source of a small stream, a herring run, the Indians called Sauquatucket River, later known by the various names, Satucket River, Herring River and Mill Brook, and now called Stony Brook, which flows northerly and empties into Cape Cod Bay; and is of sufficient size to have floated a canoe. Numerous Indian relics have been found in the vicinity of the pond, and at points on the stream below. Plymouth Colony Records of Deeds, of 1663, establish this area (West Brewster) as part of Satucket, the territory of the Sachem Sachimas.

From the many foregoing observations certain deductions may be made.

The unusual character of the boulder’s upper surface clearly indicates it has been subjected to some form of wear.

Presence of wear on an upper get-at-able surface only, and the quite symmetrical shape and comparative freshness of the area involved, all point to it being the work of man.

The site, a sheltered level area on the sunny shore of a fresh water pond, connected with salt water by a stream of sufficient size to have been navigable by canoe; the fact that Indian relics have been found in the vicinity, together with the presence of heavy patina on the smooth surface, showing that same is not of recent origin, are all in accord with an hypothesis that the boulder was used by Indians.

The near level table-like top, from which objects or material would not readily slide; the convenient height; the size of the worn area; the extension of that area to the front edge only (the side from which manual work could be most readily done); the step-like recess in the bank there, of just sufficient size to provide footing; and the absence of obvious strie, as would be the case if the smooth surface was produced by wear of rolling and crushing, and not by rubbing, are all in accord with a more restricted hypothesis that the boulder was
used by Indian squaws as a meal stone. (A large flat stone on which coarse meal, produced by crushing corn, acorns or other things, in a stone or wooden mortar, was spread in a thin layer, and there reduced to a finer consistency by repeated rolling with a heavy cylindrical stone, a roller pestle).

The pestle shown in Fig. 20 belongs to the owner of the property, was found in the vicinity of the rock many years ago, is 14 1/8" long and 2 13/16" in maximum diameter, and shows wear on both the cylindrical surface and ends.

The hardness of the rock, together with the depth of wear therein, and size of the worn area, seem to indicate, according to the late Warren K. Moorehead, who kindly inspected it several years ago, that the boulder is a village meal stone and was used for a long time.

However, a few of the observations at first seem inconsistent with this meal stone theory. The wavy surface of the worn area seems more like one we would expect to find resulting from unevenly distributed rubbing, not rolling.

Consideration of the matter, however, revealed an explanation. We think of the rolling of a stone pestle as having been continuous in respect to the area used, and it probably was; but even so, was not this rolling at the same time discontinuous in respect to the actual surface of that area? Certainly when a meal stone was in use, the meal covered only the central part, for if the entire surface had been covered, some would have been pushed off onto the ground. So, certainly at the edges of the meal, the pestle was in direct contact with the rock. In other words, at the beginning and end of each roll, surely the entire pestle rolled off the meal. If rolled directly across, it ran off at front and back. If rolled somewhat diagonally, at the sides. And certainly during the rolling the meal layer was repeatedly spread thinner, causing the pestle to soon cut through to the rock midway of its roll. Thus these parts of the grinding surface would have been subjected to added wear, the wear of rock against rock. Then there is, of course, another factor that would have affected the depth of wear, namely, any difference in the amount of pressure applied to the pestle in different parts of its roll. Naturally there would have been a difference, for when the pestle was at a distance, when the reach was long, it would have been more difficult to press down upon it. For these reasons, regular use of a meal stone from a certain side, caused different amounts of wear on different parts of the surface.

The foregoing seems to make possible an interpretation of the wave pattern on "Indian Mill", in terms of grinding technique. The pattern seemingly indicates that milling was done by some one standing in front of the rock and rolling the pestle from front to back, both directly and at various angles, for in being so used it would have, by rolling off the sides of the meal, worn the portion of the curved trough at the sides; and by rolling off at the ends of its roll, worn the parts at front and back; and by cutting through the meal at the middle, made the trough on the longitudinal axis. The crests, or higher parts between the troughs, of course are simply parts that received less wear. Parts that generally remained covered throughout the grinding process, parts of the surface that regularly received only the wear of meal. Probably when grinding was to be done, the coarse meal was spread only to an extent that covered the central trough and surrounding crest. The curved trough, which runs in a more-or-less spiral course almost completely around the worn area, probably is extremely shallow across the back because, on account of the long reach, little or no pressure was applied to the pestle there. The crest, which runs off the wave pattern picture between the ends of the bounding trough, like the oval crest, is probably due to receiving little wear. Possibly the pestle was seldom rolled off there due to the nearness of the raised rim at the rear. Such seems to have been the procedure that slowly cut a wave pattern record.

Here it should be noted in passing, that the length of the oval trough, and the roller pestle previously shown, are the same; and that consequently there is a high degree of probability that this particular pestle, found nearby, was actually used there. It also should be noted that the pestle should have been photographed turned at 90 degrees, i.e., in the position in which it probably was most frequently used.

Another observation that at first does not seem consistent with the meal stone theory, is the slight slope of the top, which seemingly would have tended to cause meal to work off, under impetus imparted by being rolled, through the two previously mentioned gaps in the rim. However, this condition was easily overcome. Meal that may have tended to work off at the lower left hand corner, could have been effectively stopped by a low dam of plastic clay. Meal that may have tended to work off through the jog in the front edge could have been stopped in the same way; but, was not that opening made for use?
Consideration of the evidence seems to indicate that this opening did serve a definite purpose. Irregular contour, adjacent concentric cracks, and carefully rounded central upper portion, seemingly show that it is entirely artificial, was made by hammering, and presumably for a reason. From that point, the approximate center of the front edge of the grinding surface, completely ground meal could have been conveniently pushed off into a pot, or basket, set under the receding rock face below. The narrow rounded opening would have served the purpose of confining falling meal to a more-or-less solid stream. If the procedure had been attempted without the opening, meal would have fallen more as a sheet, and so less precisely. True, if pushed off through the opening a part would have struck upon the narrow ledge 6½" below the top, so was not the slight gap in the edge there also purposely made? It obviously was broken out by hammering. So, was it not made to prevent interference by this obstruction? Seemingly it was, because as soon as a small amount of meal had lodged there, that which followed would have slid off the first through the slight notch as a guide and joined the inner edge of the descending stream. This slide is proof that, on any but a windy day, all would have landed in a pot, or basket, properly placed on the ground below (Fig. 22). Why the upper slab was notched so deeply, when had it been cut away less, all interference of the shelf obstruction would have been avoided, is not explainable from evidence. However, one can guess that the situation was unintentional, that it exists simply because rocks are prone to break other than as desired. And here is proof that even on a windy day, meal could have been transferred safely, if the container was elevated and supported by the narrow ledge and one knee. Thus, the carefully rounded notch in the front edge of the milling surface was, with little doubt, intended to serve as an outlet, a directive outlet.

So, in this old flat top boulder on the shore of a quiet Cape Cod pond, we apparently have, not simply a much used Indian mill, but, one on which some unknown Stone Age artificer made provision for easy and rapid transfer of the golden product to portable containers, by means of a rudimentary meal chute. In other words, we seemingly have a primitive Indian mill, that is unique.

Now, who is there to deny that here, probably on the level area beside the ancient beaten trail, stood the wigwam of an Indian who (figuratively) built a better mouse trap?
FIG. 19. Location of "Indian Mill" (Rock 5) in West Brewster.
FIG. 20. "Indian Mill and Pestle" (Pestle was not found with this rock).

FIG. 21. "Wavy Surface" on Indian Mill at West Brewster, filled with meal to show theoretical manner of use.

FIG. 22. The author removing meal ground on "Indian Mill".
A PRIMITIVE MILL AT BARLEY NECK

CHAPTER SIX

The discovery of this specimen was due to the kind permission of the late Arthur B. Nichols, to examine his property; and of the late R. Gilbert Payson, to use his private road as a means of access.

On the southeast side of Barley Neck, East Orleans, is a rock that is more truly an Indian mill than the one of that name in West Brewster, for it is a complete mill (Fig. 24).

Barley Neck is part of the irregular north shore of old Monomoyick Bay, now called Pleasant Bay, a sizable sheet of water with inlet some six miles to the south in the town of Chatham. This bay, or harbor, is the second of the previously mentioned, two on Cape Cod that open directly upon the ocean. Like the other, Nauset Harbor, its easterly side once lay open to the sea, and is now shielded by a long shoreline sand-spit.

This mill, or mill rock, is imbedded in a formerly wave-cut bank on the northwest shore of a small cove, indenting the neck (Fig. 23). The bank is now overgrown with protecting vegetation, beach grass at the bottom, low bushes above, and amid these, some 16 feet up the slope, the rock rests crossways, apparently a bit insecurely. It is a porphyritic granite boulder, grey in color and of quite sizable proportions; to be exact, 8'-6" long and 6'-6" wide, with an exposed front 4'-0" high; and a more-or-less rounding upper face 8'-6" by 6'-0" that slopes noticeably in the same direction as the bank.

At intervals across the upper face, about three feet from the lower edge, are three more-or-less irregular semi-ellipsoidal hollows of various sizes (Fig. 25). These hollows all have their long axes running in the same direction, in fact they all undoubtedly at least started as frost fissures, on a closed crack that there extends across the rock. They still catch and hold rain water. When viewed from above, No. 1 on the left is the largest, being 11½" x 5½" x 2½" in effective depth; No. 2 is next in size being 10½" x 5½" x 1½"; while No. 3, the smallest, is only 4½" x 3½" x ½".

However, these hollows are by no means simply frost fissures, at least No. 1 and No. 2 are not, for although the bottoms of all three are roughly weathered, the sides and rims of those two are very smooth. So is the rock around and below all three. A sand colored coarse crystalline structure is exposed, and plainly shows the extreme smoothness to be the result of wear.

From hollow No. 2 a crack runs diagonally down to the lower right hand corner. A slightly concave channel follows this, and ends in a shallow open basin. These are also worn. The worn surface below hollow No. 1, and the upper portion of channel from hollow No. 2, have a pitch from 13 to 15 degrees from the horizontal.

In the rear of the rock is a more-or-less level area of sufficient size for cultivation.

At points along the cove shore, to the east, are shell-heaps of some thickness, that have been quite deeply eroded. These contain extremely scattered cultural remains. Beyond, adjacent to narrows between the Neck and Pochet Island, large net sinkers have been found on the shore.

The neck and island were formerly part of the territory belonging to Mattaquason, sachem of Monomoyick (Chatham).

From these field observations it is very evident that this rock served Indians as a mill; but, on the other hand, the pitch of the top is such as to practically preclude such use at the present time. The explanation undoubtedly is, that since the days of the Indians, the foot of the bank has, at times, been eroded by storms; support at the lower end temporarily reduced, and the rock permitted to drop a bit and increase its inclination. The great hurricane of Sept. 21, 1938 cut the bank east of the site deeply. Earth, shell-heaps and cedar trees were washed out. Had the wind come from a slightly different direction, it is conceivable that the rock would have been affected then.

Thus, even though the smooth portion of the boulder's upper face around the hollows now has too great an inclination to serve as a mill, there is good reason to believe that these surfaces were level or near level in the days of the Indians. Were these surfaces approximately level, the lower portion of the long channel from hollow No. 2 would still pitch somewhat, because of the rounded contour of the face, while the basin-like enlargement at the lower end would be righted. So the two larger hollows, at least, probably served as mortars in which to crack corn, which was then reduced on the surrounding surfaces by rolling with a pestle; then
fed into the long channel, cross rolled and further reduced on the way down to the shallow basin at the bottom; there given a final going over and scooped up, perhaps in a sea clam shell.

The rock had no provision to allow meal to be pushed off into a pot, or basket, as on "Indian Mill", West Brewster. The front edge is too rounding. If pushed off, meal would not have fallen free of the rock.

Hollow No. 1, the largest and deepest, was probably used the most. This naturally would have been the case, as it was far the easier to reach. Hollow No. 3, the smallest, may not have been used at all.

The bottoms of all three are probably deeply weathered because there standing water has accelerated disintegration. They are most likely about equally altered, because those that were subjected to wear and once smooth became crackled under repeated impact of the pestle, and consequently more susceptible.

Thus, it seems safe to conclude that this rock bears hollows used as mortars and surfaces which served as meal stones, that at these, two or more Indians could have worked at one time; in other words, that the rock is a complete multiple mill, seemingly ingenuously designed to expedite production.

In the yesterdays, during use of this mill, it is probable that, as the two mortar holes show quite a little wear, the pestles suffered likewise from continued pounding, and that this resulted in the meal being well seasoned with stone dust. No wonder that skeletal remains of adult Cape Cod Indians have teeth that are worn flat, for the product of such a mill as this must have in truth been, gritty grits!

Today, abandoned and neglected, this old rock no longer serves man food. Instead, there by the salt bay, it is to his feathered friends, the birds, a popular bar. Perhaps the three hollows provide three flavors!
FIG. 23. Showing location of Rocks No. 6 and No. 7. Embedded in formerly wave cut bank on the northwest shore of a small cove.

FIG. 24. "A Primitive Mill" at Barley Neck (Rock No. 6,

FIG. 25. Close up of "A Primitive Mill" on Barley Neck, showing 3 "hollows." No. 1, left; No. 2, center; No. 3, right.
In South Orleans, on the beach on the southeast shore of Namequoit Point, not far from the promontory known as Fort Hill, and just beyond the outlet of a very small pond, is an Indian rock that is entirely different from the others, for it was not used as a whole, but instead served piece by piece (Fig. 26).

Namequoit Point is part of the irregular northwestern shore of Pleasant Bay, formerly called Monomoyick Bay. Here, on board the Swan, in 1622, the Pilgrim's good friend Squanto died of Indian fever (smallpox), and was buried somewhere on its shores. All lands around the bay were claimed by Mattaquason, sachem of Monomoyick (Chatham).

The rock is a small one that on first sight appears not to have come there with the glacial till, for its surfaces, instead of being worn smooth, are very jagged. On viewing all sides, however, it is seen that one bears a portion of an original surface, fairly flat and smooth, a sort of label that stamps the rock as belonging after all. The rest of the original surface has been chipped away, together with an indeterminable amount of sub-surface material.

The portion now standing exposed is 2'-0" long, 1'-5" wide and 7" high; while its single remaining patch of original surface is 9" by 6" in extreme dimensions. The buried portion, although of unknown size is, judging by contours, probably small.

The rock is a porphyry with ground mass of bluish black, bearing scattered small white phenocrysts (a material commonly used by Indians of Cape Cod for making chipped implements of all sizes); but, in addition, has in its structure an uncommon feature. It is crossed in various directions by narrow veins of tan.

The vicinity, including the small pond and Fort Hill, is an Indian site. The latter portion is now occupied by a girl's camp. Not many years ago, when excavations were being made for foundations of one of the buildings, a discovery of great archaeological interest was brought to light—a skeleton, decked out with 76, or more, similar tubular beads fashioned from trade sheet copper. For such objects, these were of quite sizable proportion, the average length being 3 3/4" and average diameter slightly over 3/16". When in use, assembled and shining, they probably were part of an imposing breast ornament.

From that which has been recorded regarding the rock, it may be concluded with certainty that it served as a source of material for making chipped implements; that large flakes were removed by hammering, to be later worked down to the desired form in the customary way, by roughing out with a small hammer stone and finishing with a pressure flaking tool of hard bone or antler. It also may be concluded that the resultant implements were, on account of the narrow veins in the material, both decorative and distinctive.

But, why was not the rock all used up? It was at all times accessible. It verily stood in the very front yard! So why, even though now but part of the original, does it remain as a sizable core? No definite answer can be made. Until such time as more data may be available, one can only guess the reason.

Possibly it may well be the very fact that there could be fashioned from this particular stone chipped implements that were beautifully striped, plus a supposition that consequently it was used only for special purposes. The implements made therefrom seemingly could easily have had a special significance. With dark bluish black background, bearing white dots and yellowish line, they may have, to the Nausets, closely pictured the starlit sky and trail of a meteor, their flying fire-dragon. So, possibly the rock was held as a tribal asset down through the years; perhaps even used only for making ceremonial knives, spears, etc., to be carried by the sachems, who may well have been, judging by the lavish adornment accompanying the bones so rudely disinterred near by, the long line of predecessors of this, historic, Namequoit, "Skeleton in Armor". On the other hand, of course there is a possibility that the bones and their accompanying copper, are all that remain of the helpful, friendly Indian, who cut himself an honored niche in history—Squanto.

Whoever the Indian, he evidently was a man of importance; whatever the particular use fragments of the rock were put to; it definitely served certain Nausets of quarry-less Cape Cod as a convenient substitute.
FIG. 26. "A Rock Core" at Namequoit Point (Rock No. 7).
FIG. 27. "The Grindstones of Nauset"
SUMMARY

Four grindstones have been described. These constitute all of the obviously authentic Indian Rocks of Cape Cod, of this type, still on their original sites, that are known to the writer (Fig. 27). These have retained definite signs of use. In the order recorded, they are:

No. 1, “Indian Rock”, in Eastham, which bears twenty-one narrow grooves; five broad channels, or areas; and one raised semicylindrical surface. This rock is in part well preserved. The lower portion of the used face lies below beach level and there the worn areas still bear noticeable strie made by use.

No. 2, A Sharpening Stone at Tonset in Orleans, which has two broad channels, is well preserved because of extreme hardness of the rock. The complete pattern of strie left by grinding is still clear.

No. 3, An Ancient Abrading Stone at Nauset Beach, Eastham, which has one broad channel, has been covered with sand the greater part of the time since Indians used it, so has been subjected to little erosion.

No. 4, A Stone on Stoney Hill, Eastham, lies in a more protected location; has two extra broad areas of wear, one narrow area, and two semicylindrical convex surfaces. One of the broad areas bears distinct strie; the narrow is in part well covered with close pecking.

So now it seems well to consider these four rocks, and their surroundings, more-or-less collectively.

First, their used surfaces.

All together the four rocks bear three distinct types—broad channels or areas; semicylindrical convex surfaces; and narrow grooves. Some are so placed as to be level, some sloping.

Collectively, these surfaces show that objects were repeatedly rubbed back and forth upon them and thus shaped and sharpened, for several still bear strie left by such rubbing. Probably these were, in part, caused by use of sand and water to prevent or retard glazing.

Level, or near level, surfaces show the greatest depth of wear at the approximate longitudinal center; sloping surfaces some above the center, i.e. some nearer the upper end, probably because debris of grinding collected in the lower ends and consequently the full length was not always used. Sloping narrow grooves seem to indicate, by their slight curve, that sloping surfaces were used from the upper end.

The many wide areas of abrasion, particularly the elliptical ones, show by their transverse contour that axes and other broad bladed cutting tools of stone were sharpened.

The wide areas, as a whole, seem to indicate that when a suitable rock surface was broad and near level the grinding was not done in one direction, but was varied and spread laterally over an area of more-or-less equal length and width. That when the rock surface was sloping, or narrow, the grinding was confined to an elliptical area, but strie indicate that even then the direction of strokes taken was varied, as much as possible within the limits of that area. That in each case this was done for the purpose of bringing to bear attacks from all directions on the hard mineral crystals in the stone implements being ground, evidently in order to expedite the process.

One broad surface on Rock No. 4 seemingly bears evidence disclosing that when worn smooth from use, dulled, and no longer cutting hard stone implements efficiently, such surfaces were renewed by an all over pecking. Three broad surfaces on Rock No. 1 suggested that this was the practice, by the presence of localized irregular cracks that probably could only have been caused by repeated pecking.

From the three semicylindrical convex surfaces on Rocks No. 1 and No. 4, quite obviously used to sharpen the inner, or concave, edges of gouges and adze blades, it may be concluded, that such surfaces were made by re-shaping either a suitable natural curve in the rocks face, or the common rim of adjacent elliptical channels, (in which case, use necessarily began after long use of channels).

No semicylindrical convex surface bears evidence to indicate that they were kept in condition by pecking. However, that treatment would have been as practical as upon the flatter surfaces.

Twenty-one narrow grooves, all on Rock No. 1, seemingly indicate by size, contour, etc., that they were principally used to sharpen bone fishhook points.

There is no evidence to show, or even suggest, that surfaces of grooves were renewed by pecking, even though the height of their sides was at times
definitely reduced by that process. Probably it was not feasible to peck their surfaces. That treatment would have gradually widened the grooves, and in time changed their transverse contour to such an extent that bone fishhook points would not have fitted and been properly rounded. Furthermore, probably the wear of bone did not dull their surfaces appreciably—just clogged them. Presence of very noticeable strie on the surfaces of three that are well preserved, may indicate that grooves were cleaned by means of sand.

In brief, the four boulders indicate that grinding and sharpening of stone and bone implements, was effected by holding in proper relative position, and rubbing repeatedly back and forth upon a rock surface of suitable shape and texture; kept in condition, in the case of stone implements, by sand, water and occasional pecking; and in the case of bone, by sand, water and probably periods of disuse to allow accumulated grease to dissipate.

Now, the rocks and their surroundings, collectively.

They show that use of boulders as grindstones was not uncommon, or transitory, on lower Cape Cod. That those selected for this purpose served a long time, and were not only flat topped, hard and abrasive, but low lying; because great pressure could then be more easily applied during grinding. They also show that those selected were situated by sheltered salt water, and for the sake of greater convenience, in or adjacent to a village; or perhaps that in some instances, the vicinity of a good rock became part of a village.

The fact that all four rocks bear surfaces suitable for sharpening axes can be accounted for by the great and varied usefulness of that tool.

Why Rock No. 1 is the only one having narrow grooves is not evident. Possibly its texture was unusually good for grinding bone.

Rocks No. 1 and No. 4, the two which bear semicylindrical convex surfaces, show that such rocks were located not only adjacent to salt water, but on the more sheltered side, and furthermore, near a brook rising in inland swamps.

This is all in accord with the belief that such rock surfaces served to sharpen the inner, or concave, edges of gouges and adze blades; and, that these tools were used when making dugout canoes; for trees of adequate size grew around swamps; dugouts could be most conveniently made where the trees fell, and when finished, easily brought down a small stream. This seemingly explains why Rocks No. 1 and No. 4 are the only ones having semicylindrical convex surfaces. There were no inland swamps and brooks near Rocks No. 2 and No. 3.

In addition, it is interesting to note that Rock No. 4, nearer the brook, has two such surfaces; while Rock No. 1, farther away, has only one, (and that it was not used until that rock had long served to sharpen axes).

It is also interesting to note that these two rocks are the ones from which material has been broken to possibly serve some particular purpose; and the very fact that two rocks were so mutilated, seems to strengthen the probability. So does the fact that in each instance the material was broken from narrow ends, where doing so would have been easiest.

All this is in accord with a theory that the pieces served as portable hones, and were perhaps principally used back in the swamps, where days of continuous use of stone tools in patiently hewing out dugouts, made frequent honing of cutting edges necessary. (This should not be construed to suggest that swamps were the places in which portable hones, as a whole, were principally used: for, obviously, it was in villages having no ledges or boulders of suitable abrasive texture).

Brought together, the information obtained from these old grindstones, which strangely enough all lie on the shores of Nauset Harbor, i.e., all within known confines of the former Indian village of Nauset, serves to give a partial picture of life there.

The people of this primitive village by the sea were active, and, as would be expected, engaged in extensive fishing. Their shallow harbor opened directly upon the ocean, and at high water was also connected via a devious narrow waterway with Cape Cod Bay: so they made quantities of large bone fishhooks at Rock No. 1, and when the sea or bay was sufficiently quiet to venture out in canoes, engaged in extensive cod and halibut fishing. Rock No. 2 seemingly indicates that they caught smaller varieties within the harbor, by means of nets and traps. Thus they had a surplus, which probably was, in part, dried and smoked for winter use.

Middens adjacent to the rocks, prove that the people also ate several kinds of shellfish. These heaps also reveal other things, too numerous to include here.
A left curve in the majority of the sloping grooves used to sharpen good sized fishhooks, indicates a predominance of right-handedness among the people. Possession of bone of sufficient thickness for making such hooks indicates that they hunted deer, or other large mammals there in the forests of the lower Cape: and this in turn that they had enough of that material for other uses, also that whatever clothing they wore probably was fashioned from the skins.

The people at Nauset definitely were industrious. They made many broad bladed cutting tools of stone, principally axes, gouges and adzes. Thus they were wood workers as well as workers of stone. Furthermore, all believed in keeping tools sharp, for four boulders used as grindstones were located on their shores, and from two of these, No. 1 and No. 4, fragments were at times broken to very likely serve as portable hones.

These two rocks, which were also the ones bearing semicylindrical convex surfaces, lay respectively on and by adjacent hills on the west side of the harbor, between which an entering brook flowed through the village. This was fed by an inland area of small swamps, around which on low ground, pines, chestnuts and other trees, protected from forest fires by dampness, attained large size. So there, with axes and adzes, a hone to keep them sharp, and plenty of hard labor (probably somewhat lessened by careful charring of the wood) the Indians made dugout canoes, as needed, and floated them down the brook to the harbor. Then, on the nearby rocks, they thoroughly reground their much used stone tools to thin the cutting ends of the blades, which repeated honing had left insufficiently acute, that is, had blunted.

The fragment of an effigy pestle found near Rock No. 4, suggests that the people were also agricultural, grew corn and ground meal. In addition the pestle indicates, or at least seemingly indicates, that they were a people of importance, for the ordinary run of the more recent Cape Cod Indians did not have stone implements that were ornamented. This agrees with the commonly accepted belief that Nauset was the principal village of the Nausets.

Thus, besides revealing, in part, the everyday life at this supposed headquarters of the tribe, the old rocks and their surroundings seem to verify many items of long recorded information.

But that is not all! Two of the rocks, when considered in conjunction, seem to suggest that the village had an earlier day in which certain conditions and practices were different.

On Rock No. 1, the semicylindrical convex surface superimposed upon the common rim of deeply worn adjacent broad channels, and obviously not there when the channels were shallow, may indicate that gouges and adzes came into use thereabouts later than axes; thus, there was a time when dugouts were not made at Nauset. This agrees with the probability that the southern limit of white birches of sufficient size for canoe building, which in historic time has been Cape Ann, formerly lay farther south, because of a cooler climate, and that consequently canoes on Cape Cod were then made of birch bark, obtained on the adjacent mainland. (On the same rock, narrow grooves in worn areas do not indicate a time sequence. Either could have been there first).

On Rock No. 4, the semicylindrical convex surfaces are upon natural curves in the rocks face, so do not indicate that they were not there until after adjacent areas were worn down. However, the average depth of wear in these areas is only 9/32", i.e. only a bit over a quarter of an inch, while on Rock No. 1 the average depth is 7/16". So, Rock No. 4, which is back from the shore, extremely low lying and less worn, may have been hidden by vegetation, and not in use prior to the probable gradual addition of dugouts as, with increasing warmth, the nearest source of suitable birch bark moved northward. (Remember that this assumption that one rock was used longer than the other because of a difference in the depth of wear, is based on an assumption that the rate of wear was approximately equal, which may not have been the case).

But, Rock No. 3, which because of incessant coastal erosion, now lies buried in the ocean beach, apparently proves that Indians were living there on the shore of a far wider cape and more spacious harbor, a long time ago, perhaps hundreds of years before 900 A.D., or well within the previous cooler period, known as Sub Atlantic, the transition having been tentatively set by paleobotanists at 800 A.D.

So, the grindstones of Nauset make a great variety of disclosures—some rather astonishing.
Two Indian mills have been recorded. These are the only definitely authentic examples of Indian Rocks of Cape Cod, of this type, still on their original sites, that are known to the writer. These have retained definite signs of use. They are:

No. 5, "Indian Mill", which has a very shallow worn area in the upper face, has been protected from erosion by an inland location and sufficient inclination for drainage. Thus this rock is in an excellent state of preservation. The worn surface still bears a polish and extremely fine strie.

No. 6, A Primitive Mill at Barley Neck, which has three hollows and adjacent worn areas, is in part fairly well preserved. The bottoms of all hollows have held water and become deeply weathered. The rims of two, and areas surrounding all three, have drained and remained smooth.

So, at this point, these rocks had best be considered together.

First, the used surfaces.

Collectively, they bear two entirely different types of wear—smooth areas, somewhat ripply; and hollows, smooth in places. The surfaces show by contour, strie, etc., that the wear was caused by use of roller pestles, and that the two types were produced in different ways.

The hollows show wear resulting from use of pestles to pound and crack corn, acorns or other things. The examples in question, both on one rock, it may be concluded, are natural frost fissures enlarged and shaped as a result of such pounding; during which process the blows, at times un cushioned, caused some disintegration at the bottoms and sides, while rubbing produced a smoothing near the rims. Had the hollows been entirely artificial, there seems to have been no reason why they should be other than round.

The other type of used surfaces, the smooth areas, show that they were gradually formed as a result of repeated rolling of a cylindrical pestle over previously cracked corn spread upon them, while being thus reduced to meal. They show that during this process the pestle repeatedly ran off, or cut through, the cracked corn, or meal, and came into direct contact with the rock, and that this caused the wear. One surface reveals that the milling was generally done from one side, the most convenient side, and this caused the pestle to run off, and cut through, over and over again in the same places, and the wear consequently to eventually assume the form of extremely shallow waves. They also reveal that level, or near level, natural surfaces were selected for the milling; that no attempt was made to remove adjacent obstructions; that these were avoided, and in some instances served as barriers to prevent escape of meal.

Now the rocks and their surroundings.

They indicate that use of boulders as mills had been long practiced on Cape Cod. That those selected were hard, more or less flat on top, and protruded sufficiently from the ground to allow at least part of the milling to be done while standing. That those selected were situated on a habitable sunny shore of either fresh or salt water, adjacent to a sizable area on which corn could have been grown, and near a place where fish were easily netted in quantity. This is in accord with the historic practice of Indians of eastern Massachusetts of placing fish in hills of corn at planting time to serve as fertilizer.

The fact that only one mill is a complete mill, i.e., has mortar holes, as well as meal stone surfaces, may indicate that wooden mortars were often used. The fact that no effort was made to make a mortar hole in the other mill, may signify that the Nausets only used stone when nature had made the holes. The choice may have been a case of labor saving, for certainly it was far easier to make a wooden mortar. And, possibly the preferred wooden mortars, for, without doubt, use of stone resulted in grit in meal, but they used stone if the holes were ready made, because that was then easier.

So, in brief, these boulder mills disclose that primitive milling, as done on Cape Cod, consisted of two processes—first, cracking, then crushing—that the first was done in a mortar of stone or wood by blows struck with the end of a pestle; and the second on a flat stone surface, by using a cylindrical pestle as a roller: and that some mills had provision for carrying out both processes, others simply for the final reduction to meal.

Assembling the many observations gives a limited composite picture of life around such an Indian mill.

The people of a mill village on Cape Cod of course were agricultural, or at least grew corn, generally in immediately adjacent fields; and certainly cooked their food, for meal cannot be eaten other-
wise. They also were, of necessity, fishermen. Just before planting time they netted quantities of small fish in a nearby fresh water stream, or narrows of some bay or harbor, and placed these in the hills to serve as fertilizer. Otherwise the crop would not have amounted to much.

Use of nets shows that they were also spinners—that they probably gathered the plant, Indian hemp, and twisted its fibre to make the cords.

In the fall, after the corn was harvested and dried, 'twas shelled as needed, perhaps winnowed, and placed a small quantity at a time in a mortar and pounded with a roller pestle, held vertically, until the kernels were broken into small pieces. In this consistency, a small quantity was placed at the center of a meal stone surface and repeatedly rolled with the pestle under pressure, and when unduly spread by this action, pushed back into position until eventually reduced to meal. Then it was transferred, in some way, to a basket, or other suitable container, ready for immediate needs.

As the two mills show much wear, and are located at spots readily accessible by canoe from other shores, it is probable that each was used by more than those who dwelt in the adjacent village; probable that, like Colonial mills, each served quite an area.

So, all in all, these grinding rocks provide many glimpses of everyday life connected with corn, and by their locations seem to verify histories record of use of fish as fertilizer.

These rocks also seem to disclose, perhaps for the first time, one bit of information concerning the Nausets. For, the fact that both are more than mere meal stones, have special or unique provisions for handling the meal, provisions to make transfer to portable containers easier, shows that the primitive millers of Cape Cod were to a certain extent, inventive.

Can it be that living on the northeastern seaboard, where climate discourages lassitude, where incessant changes in the weather, if nothing else, kept them alert; and undoubtedly since had a part in stimulating well known characteristics in New England Yankees, was responsible for developing some of that same mental activity and originality in the primitive Nausets?
Only one Indian Rock of Cape Cod of the type designated as a core, is known and recorded—No. 7, A Rock Core at Namequoit Point. Never-the-less it seems advisable to include a summary, even though same cannot be comparative, for it probably is safe to assume, judging from cores of pebble size, that others would be similar in form but would differ in kind of rock.

First, the surfaces.

Rock No. 7 indicates that the faces of such boulders consist in greater part of a series of fracture surfaces, showing that small fragments were removed. The faces, altered in this manner, may be termed—regularly irregular. These numerous fracture surfaces are all of one type; all conchoidal fractures; and all of such a size and contour as to indicate that the pieces removed were suitable for implement making and that removal was effected by means of a stone hammer or sledge.

Here it seems well to include—that the later shaping of such fragments into implements is believed to have been accomplished; first roughly by blows struck with a small stone held in the hand, then by pressure directionally applied by means of a flaking tool of hard bone or antler.

Now, the rocks and surroundings.

Such rocks may be of any size, but each is all that remains of a larger one, gradually reduced by removal of fragments. The material is one particularly suitable for making chipped implements, that is, a brittle stone from which flakes may be readily struck. Both color and composition may differ greatly.

Rock No. 7, considered alone, would at first seem to indicate that cores of boulder size are generally found on, or adjacent to, a village site. However, this is probably not the case, because nearby rocks that were suitable for implement making would naturally have been used first, and the supply exhausted. Thus, such rocks would seem to be more likely found at a distance. Brought to a village, piece by piece, these would have suffered no loss of usefulness thereby.

Scarcity of these rocks on Cap Cod may indicate, either that the Nausets generally used cobbles or pebbles, or that when they obtained material from boulders, they in time commonly used practically the entire mass. Cores of pebble size are not uncommon.

In the case of Rock No. 7, either the Indians had not used it long, or used it only for special purposes. There is a possibility that it was transported.

So this rock core at Namequoit Point supplements previous evidence that the Nausets were workers of stone. To disclosures that they were familiar with the processes of pecking and grinding, it adds confirmation of the fact that they also made implements by chipping.

Furthermore, it indicates that they were attracted by beauty, or the unusual, or both; and collected, preserved and used objects of that character. This may in turn denote, that to them such things in some way symbolized elements of beliefs handed down in their mythology.

So again, a rock and its surroundings, gives a glimpse of life at a Nauset village. This time the people are pictured as workers of stone by chipping, workers who fashioned implements from various kinds that were brittle; but particularly as gatherers of suitable rock.

Once they found plenty of good boulders, cobbles and pebbles on their shore, but in time these were used, and the only chance nearby was in gardens, when yearly deep cultivation exposed new ones. Then, instead of depending upon their camp site, they searched far and wide—other shores of the bay, and nearby wooded areas, but there rocks were deeply weathered and suitable ones not readily recognized. Along the bay shore they found many, but it changed little from year to year, and in time the supply was pretty well picked over.

Thus, eventually, the best source became the ocean beach, for there new stock was occasionally on display. During severe northeasterly storms, great waves cut the foot of the cliffs, slides occurred, and the finer material, including the sand of the beach itself, was washed away. This left nothing but underlying clay, with residual rocks of all sizes spread upon it in grand array. The surfaces of these rocks were quite fresh, and particular kinds readily picked out.

Pebbles and cobbles were easily carried back to camp in a pack basket, and occasionally the Indians found a boulder of such fine quality that they stopped and added fragments to their load. So, at such times, by intensive activity between tides, during the few days before waves recovered the beach with sand, they gathered sufficient
material to last until the next similar opportunity presented itself.

Now an imaginary incident. It offers an explanation.

One day, far up the beach, on a section seldom traversed immediately after a great storm, men from Namequoit came across a small boulder of rare beauty—a bluish black porphyry with phenocrysts of white and the whole striped in sundry directions by little veins of tan. To them, this inanimate object that was both rare and useful, constituted a treasure. But, it lay way down by the lower reaches of the tide. They knew that even the next storm might so cut away the shore that it would never be seen again. Thus, they adopted an unusual measure.

Returning the next day with a dark rope, they attached a sling, and carried the rock, suspended from the middle of a stout pole, along the beach, across between sand-spit dunes, to the bay shore and their waiting dugout canoe. Then, placing it carefully aboard, they paddled the prize across to their village for safe-keeping.

So, maybe that is how Rock No. 7 landed in their very front yard.

Maybe that is why it lies so lightly imbedded.

Maybe that is the reason it still bears part of an unaltered face, indicating limited chipping, and an original size not too large to be carried.

Who knows?
These records show that boulders herein termed Indian rocks, i.e., those that have retained definite signs of use for utilitarian purposes by the primitive inhabitants of Cape Cod, have been located in Eastham, Orleans and Brewster, within the belt of terminal moraine that extends from the canal easterly to the Atlantic. Probably the distribution was formerly more general, at least within this belt where boulders were very plentiful.

These records show that such boulders may be recognized by unusual features, obviously not the work of nature; features which are—heavily pitted; somewhat regular; more-or-less clearly defined; and beyond reasonable doubt, prehistoric and man made: and that such rocks are of at least three entirely different types—grindstones, mills and cores.

Or those used as grindstones, signs of use are worn areas in an upper face, and may be—narrow grooves; broad channels; semicylindrical convex surfaces; or more-or-less flat areas: having in whole, or part, pecked, striated, smooth or semipolished surfaces. Such rocks are found on, or adjacent to, village sites; are generally in whole or part more-or-less flat and flat on top; regularly of a height convenient to use and of hard abrasive texture.

On those used as mills, as on grindstones, signs of use are worn areas in an upper face, and may be—shallow depressions; rounding hollows; or slightly wavy areas: having in whole or part, pecked, striated, smooth, or semipolished surfaces. Such rocks are found on, or adjacent to, village sites; are generally in whole or part, approximately level and flat on top; and regularly of a height convenient to use; and hard but not necessarily abrasive.

In the case of cores, signs of use may be on any face or faces, and regularly consist of—irregular surfaces made up, in whole or part, of conchoidal fractures. These rocks may be found either on, or in the vicinity of, Indian sites; may be of any size and shape; and are regularly hard and brittle.

These records show that boulders played an important part in the lives of these people, the Nausets. On those which served as grindstones, they shaped and sharpened tools and weapons of hard stone; also bone implements. On those used as mills, they ground corn and sundry foodstuffs. From the rock of others, termed cores, they fashioned various kinds of chipped implements. (Undoubtedly, still others served as anvils on which to crack nuts, break stones, etc.)

The used surfaces on these rocks disclose numerous details of practices and techniques involved. That surfaces of different contour were used for different implements—broad channels for thick axes and gouges, having rounded blades; flatter areas for thinner cutting implements, such as tomahawks and backs of adzes; semicylindrical convex surfaces for concave edges of gouges and adze blades; and narrow grooves for sundry kinds of bone points. That grinding of stone implements was expedited by constant changes in the direction of strokes taken; by use of sand and water; and by occasional pecking of the abrading surfaces: while in the case of bone points, continued use of surfaces was made possible by cleaning with sand, periods of disuse to dissipate grease, and when deeply worn, by pecking away some adjacent rock. That in milling, cracking was done in either a stone or wooden mortar, by blows of a cylindrical stone pestle held vertically; and reduction on a more-or-less level stone surface, with a similar pestle used as a roller; and in at least some instances, collecting speeded and waste avoided by special, or unique, means to transfer the meal to containers. That for making chipped implements, fragments of brittle pebbles, cobbles and boulders were used; and at times choice rocks hoarded.

The rocks and their surroundings, show that the Nausets lived under a hunting, fishing, agricultural economy. They hunted deer in nearby forests; fished in the sea and bay with bone hooks; netted others in streams and narrows; and raised quantities of corn in the vicinity of their mills.

The rocks indicate that the people were able, and industrious; predominantly right-handed; wood workers as well as workers of bone and stone; makers of tools and weapons, and even inventors. They confirm the fact that the people worked stone by cleaving, grinding, pecking and chipping. That cleaving was done with a stone sledge; grinding on a boulder or portable hone; and pecking and rough chipping with a hand hammer stone. That bone was worked by grinding, and probably scoring and cleaving; and that this grinding, as in the case of stone, was done on a boulder or portable hone.

In addition, the rocks reveal that the Nausets had lived on the Cape a long time; that they probably occupied the region long before 900 A.D., when the climate was cooler; and that during a great part of their occupancy made dugouts, but early, probably only birch bark canoes.
Thus, such rocks were inherited by generation after generation, and those that remain stand as examples of the energy, ability and resourcefulness of an ancient and historic tribe. So, even though the Nausets apparently cut no petroglyphs, they unknowingly, by long use of these Indian Rocks of Cape Cod, left records of at least comparable value.
This book would not be complete without some mention of certain other so-called, Indian rocks. There are at least three general classes of these on Cape Cod.

It is a deplorable fact that antiques are so generally imitated or altered, and subsequently displayed, sold or treasured as genuine. Some are so well executed that even experts disagree as to the authenticity. Fakes have been purchased by museum representatives. Unknowingly, fakes have been described in writings of the learned.

One would not expect to find such an unspectacular object as an Indian rock faked or altered, but they too have suffered this degradation. There are at least two on Cape Cod. So the first class is—fraudulent, altered or doubtful Indian rocks.

It is indeed strange that in this day and age so many people are still prone to attribute all unusual marks on rocks to either Indians, the Norsemen or the supernatural: that they are so hesitant to give geological agencies credit for wearing a surface unevenly, even though they live in a land, itself deeply sculptured by nature.

In many places on the Cape there are boulders that have more-or-less unsymmetrical hollows, irregular grooves, or surface peculiarities of fantastic shapes, resembling in some instances, human figures, footprints, etc. Such rocks, in most instances, are not homogeneous in structure, are not of the same degree of hardness throughout, but are made up of unlike layers, or masses, and the peculiar contour of their surfaces has in consequence resulted from long exposure plus deferential weathering. In some instances, hollows produced in the above manner may have been used by Indians as mortars, but none have been discovered that have retained signs of such use. Then there are some boulders that are homogeneous in structure, that have hollows of quite regular shape in their sides, hollows so situated as not to be usable as containers. Such depressions, in some instances, may have been produced while the boulders were in a different position, either during or prior to the last glacial period, by the force of restricted running streams, aided by the grinding action of swirling entrapped pebbles. If any such boulders ever rested since then in a position that brought the hollows upright, it is possible that these also may have been used by Indians as mortars, but no example bearing positive evidence has been discovered. So the second class may be termed — rocks having unusual natural features erroneously attributed to Indians.

A few of the Cape Cod towns have certain other boulders, which although properly called Indian rocks, for legends definitely establish them as such, show no signs of use, present no evidence from which the use may be verified or determined, so could not be recorded in the main part of this book. These may be termed—rocks having traditional or legendary association with Indians.

One example from each of the three classes is described and discussed in the following pages.

A DECEPTIVE SCORTON ROCK

When the so-called Indian mortar that is the subject of this account was first seen by the writer, many years ago, it rested on a flat underlying slab and formed a part of a low field stone retaining wall in the rear dooryard of the Wing homestead, East Sandwich. The exact original location is unknown, but presumably was land of the Wing family bordering the shore of Scorton Creek, a tidal stream that empties into Cape Cod Bay, for such walls were almost invariably built of material removed from the immediate surroundings in the course of clearing the land. The area is one in which many Indian relics have been brought to light by cultivation. The rock now repose in the garden on the estate of the late Henry T. Wing, in Sandwich. (Fig. 28). Residents say, it is the only known specimen within that town. Thus, the so-called-mortar evidently is the one cited by the late Charles C. Willoughby, in Antiquities of the New England Indians, p. 149, as follows, "A fine example may be seen in a field in Sandwich on the Cape, where it is carefully preserved by the owner of the estate."

The specimen is a weathered block shaped rock, 1'-11" wide; 2'-5" long and 1'-5" or more high; rather coarse grained and tan in color and contains several finer grained grey inclusions. These are evidently less resistant, for each is weathered slightly below the surrounding surface. The top, approximately quadrangular, measures 1'-7" x 1'-10"; presents several of the inclusions and, with two exceptions, is quite flat. Near one edge is a sizable bowl shaped hollow which catches and holds rain water, leaves, etc.; and near the opposite edge a small round aperture, in which three nails are firmly rusted in place. Each cavity lies in, or partly in, the grey inclusive material.

The bowl shaped hollow is 2" from one edge; 7" in extreme diameter; 3 1/16" deep; and quite symmetrical. A large inclusion forms part of the surface and two small ones appear on the sides. Its rim is rounded, but not evenly—along the inner edge very little; on the outer as much as ½". The sides incline downward for a distance of 2¼", then round off to a slightly concave bottom, 3¾" in diameter. The bowl's surface, throughout, is weathered less than the exterior, but unevenly. The inner side is weathered the least. No part bears a polish, but the bottom is comparatively smooth, but pebbly. No fine strie are noticeable, but on the inner side, just below the rim, there are several very small grooves and traces of others. At least six of the grooves can be plainly distinguished. All are vertical and from 3/16" to ¼" long; from 1/16" to ½" wide; rounding in contour and spaced quite regularly about ¼" apart. These appear to have been made with a steel tool.

The small hole is 2" from the rear edge; 7/16" in diameter; quite round and entirely within grey inclusive material. The hole is so filled by the fixed nails and dirt, as to make determination of the depth impossible. A visible portion is weathered to the same degree as the larger hollow; and an irregular crack in the rock passes through the cavity. Careful examination reveals that this quite definitely is, a drill hole.

It is probably that this boulder originally contained solution cavities. It is possible that the larger cavity served Indians as a mortar, and was gradually enlarged by use and in part extended into the harder rock: that the bottom is pebbly smooth because some rock minerals were more resistant to wear than others: that rounding of the rim is greater at front because a pestle often rested there: and it is also possible that when first removed from its original site, probably somewhere on the shore of Scorton Creek, the rock bore definite evidence of such use. On the other hand it is possible that the larger solution cavity was not used: that condition of the bottom is solely the result of solution in water acidulated by debris from vegetation: that the pebbly surface is present because the harder rock minerals are less soluble: and that difference in the shape of the rim is a natural feature. The bottom shows none of the disintegration that generally results from cracking caused by pounding, while the rim bears none of the polish produced by rubbing of a pestle. In fact, distribution of surface conditions on the bowl is an exact reverse of that which is normal in weathered mortars. But, if the hollow is solely a solution cavity, if it was not enlarged by Indians, why does it lie partly in the harder rock? An explanation is obvious. Presence of the drill hole and other tool marks show that the rock has been tampered with, that it has been altered. Thus, it is possible that the larger solution cavity was originally irregular, that it lay entirely within the inclusions, but that alterations extended into surrounding rock.

Why the rock was altered is not evident. However, George E. Burbank, of Sandwich, president of the Sandwich Historical Society, supplied an explanation in 1934. It had been given to him by the late Mr. Wing.

It seems that when this rock formed part of the low retaining wall in the rear dooryard of the Wing family homestead, in East Sandwich, it served for years as a general utility stone. Filled from the well, or by rain, it was there that the farm hands washed at dinner time; there that the hens kept their throats moist; and there that pets lapped cooling water on warm summer days: so, during Mr. Wing's boyhood, his father had a stone mason enlarge and true up the hole, in order that capacity might keep pace with demands, particularly, it is said, of all too numerous bobtailed cats. No explanation of the presence of the drill hole was included.

So although there still remains a possibility that this twice moved rock once served Indians of the village of Scorton as a mortar, an appreciable amount of the original bowl surface has been removed and consequently it cannot be definitely determined now. The only safe conclusion seems to be, that the specimen is doubtful.

Had the writer known that his friend, Charles C. Willoughby, now deceased, had mentioned this evidently unseen and deceptive, "Fine example", in the manuscript of Antiquities of the New England Indians, he certainly would have passed this information along.

"SACRIFICE ROCK"

This final account deals with an enormous boulder in Bournedale, that is associated with Indians by legend, from which it derives the name, "Sacrifice Rock". (Fig. 29.)

This area was one of special importance in Indian days. There a waterway, easily traversed by birch bark canoe, extended practically across Cape Cod. There, by ascending to the headwaters of Scusset Creek and Brook, from Cape Cod Bay, only
a short carry had to be made to Manomet River, a sizable stream which rose in the Herring Ponds on the north, and flowed southwesterly into Buzzards Bay. This waterway, some five miles in length, was a regular trade route between Massachusetts Bay tribes and their neighbors on the south.

Embracing the point where waters of these streams nearly met, as well as the outlet of the ponds, and surroundings, stood the unusually favored Wampanoag village of Comassakumkanet. Not only did it have the three avenues of approach by canoe, but sea food was extraordinarily plentiful. Waters of the river mouth provided oysters and other shellfish; lobsters could be obtained among rocks east of the creek; and both bays and ponds abounded with fish in great variety.

Today, this once natural waterway across the Cape has been swallowed up by the Cape Cod canal. Only the upper mile of old Manomet River remains—little more than the stretch above the carry. Known as Herring River, it ignominiously drains into the canal.

"Sacrifice Rock" lies slightly over a quarter of a mile west of this stream, a short distance in on an old, woods road that leads off from a highway at the northerly foot of Signal Hill; on the so-called "Indian lands". It is an enormous flat topped granite boulder, some 25 feet long, 17 feet wide, higher than one's head; split lengthwise into two main portions which stand erect, separated by a crevice wide enough to pass through. The top of each of these parts, except where the surface has scaled off, is smooth way to the edge: and the late, Nathan Bourne Hartford of Bournedale, told the writer that early settlers found the rock top smooth, even smoother than now.

It is plain that the explanation of this condition is not use by Indians; because smoothness extends to the very edge. Moreover, soil around the rock contains nothing to indicate use; unless it be occasional pieces of charcoal, which could very well have resulted from forest fires. Thus it may be said that archaeological evidence is nil.

The obvious explanation is that while this boulder traveled slowly southward imbedded in the last glacial ice sheet, one face was ground smooth by contact with ledges: that inversion was caused either by turbulence within the ice; overriding a stagnant end; or falling from the margin: that fracture took place as a result of pressure cracks, or shock sustained: and that widening has been gradually effected by frost action. In other words, geological agencies definitely are responsible.

The Indians, however, according to Mr. Hartford, had a more picturesque explanation, which follows. Some details have been added to his version, but otherwise it is unchanged.

In ancient time, so a legend goes, people of the village of Comassakumkanet were troubled. Squash vines lay limp in the sun; leaves of beans were turning yellow and even the corn was drying. No rain had come since the last moon. For days their shaman had done his best, but incantations had had no effect. The sky remained aggravatingly clear. Not a cloud came their way. Heated air rose in waves from parched fields. The people saw that their crops were slowly dying and feared there would be little of those important foods for winter.

To them, this withholding of life giving rain meant that their normally good friends, the Thunder people, were angry. So the sachem called his band of councillors, made up of his sagamores, his shaman, and his orators to the council house; and after much meditation and some discussion, it was decided that a great sacrifice must be made—one resorted to only on rare occasions such as this, when everything else had failed—a human sacrifice.

So a victim was chosen by lot from among captives taken in a raid upon a distant tribe: and preparations went ahead. Squaws were sent into the forest to gather dry sticks. Men were delegated to bring a long heavy pole, like those used in stockades.

Within the village was an enormous flat topped unbroken boulder, a natural stage, on which it was the custom to hold important rites and ceremonies. One end could be ascended easily. Elsewhere the sides were cliff-like. About this the people gathered. A hole was dug and the pole erected close against the steep end, so that it stood man high above the top: the hapless victim led up, securely bound in place, and the dry sticks piled about his feet.

At this point in the proceedings it was seen that even these preliminaries were having effect; for, in the west, great black clouds had risen and rumbling voices of the Thunder people could be heard. People of the village watched, listened and tried to understand.
The distant clouds rose higher; daggers of light darted earthward, while all about leaves of the forest began to stir, uneasily. Now from the council house came the chief and his councillors, slowly in single file, led by the medicine man bearing a flaring torch. All mounted the rock with arms held imploringly skyward, and as they took their places at the end opposite the victim, rain could be plainly seen streaking down not so far away.

The people waited, expectantly. Prayers seemed about to be answered; the storm seemed about to break: and just as the medicine man took a step forward to apply the fire, it did with sudden and awe inspiring fury. With a blinding flash, a resounding roar, and crash that shook the ground—

the great rock split wide open—and prone upon the sections, in rain which now fell in sheets, lay the group of village leaders—dead: while to the amazement of all—one on the rock remained unharmed—the intended victim.

This the people took as a sign from the Thunder people that they disapproved of human sacrifices. The news spread quickly from village to village, and the custom of offering up captives was abandoned by the entire tribe.

The rock still stands divided by the great crevice, with a top worn smooth in that distant past by tread of many feet—still stands for all who doubt to see.
Bowman, George Ernest

Bradford, Gov. William

Brigham, Albert Perry

Champlain, Samuel de

Delabarre, Edmund Burke

Freeman, Frederick

Haugen, Einar

Hodge, F. W., et al.

Howe, Henry F.

Johnson, Douglas

Johnson, Frederick
1942. The Hemenway Site, Eastham, Mass. (Vol. 3 No. 3 Bulletin of the Massachusetts Archaeological Society, Boston.)

Johnson, Frederick, et. al.

Knox, Arthur S.
1942. The Pollen Analysis of the Silt and the Tentative Dating of Deposits (Chap. 9, The Boylston Street Fishweir, Frederick Johnson, Andover, Mass.)

Longwell, Chester R.; Adolph Knopf and Richard F. Flint

Loomis, Frederick Brewster

Mathews, F. Schuyler

Nickerson, W. Sears.

Pirsson, Louis V., and Adolph Knopf

Reynard, Elizabeth

Speck, Frank G.

Tarbell, Arthur Wilson

Willoughby, Charles C.
1927. The Wilderness and the Indian (Vol. 1 Chap. 6, Commonwealth History of Massachusetts, A. B. Hart, Editor, New York.)

Woodworth, J. B. and Edward Wigglesworth
1934. Geography and Geology of the Region including Cape Cod, The Elizabeth Islands, Nantucket, Martha's Vineyard, No Man's Land and Block Island. Cambridge.