NEW JERSEY'S BARRIER ISLANDS:

AN EVER-CHANGING PUBLIC RESOURCE

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Center for Coastal and Environmental Studies

Credits and Acknowledgements

This report has been prepared by the Center for Coastal and Environmental Studies at Rutgers - the State University of New Jersey. The text was edited by Penny M. Brown and Hilary Lambert Renwick.

The cartography lab at the Center for Coastal and Environmental Studies was helpful in reproducing photographs and drawings. Patricia Eager, as always, graciously typed and retyped the text until it reached her standards of perfection.

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We are pleased to have been given this opportunity to share the results of the 1980 public conference on New Jersey's barrier islands with New Jersey residents and friends who were and were not able to attend. We feel that our islands can be enjoyed more by understanding them better; this book is written in the hope that it will enhance the coastal experience of all who read it.

The editors are particularly grateful to Leland G. Merrill, Jr. who was the real creative force behind both the conference and this publication. We are also indebted to Richard Waldron, Associate Director of the New Jersey Historical Commission, who offered welcome advice on sources of information and approaches to subject matter during each step of this project. Many thanks to him and to John Weingart, Acting Director of the Division of Coastal Resources at DEP, and to members of his staff for their thorough review of the preliminary manuscript. Langdon Warner has been of great help, with editorial assistance and a clear sense of the passage of time.

The speakers at the 1980 conference have been patiently waiting for publication of the proceedings, and have generously given time to review revisions of their original work. Thanks are in order to F. Ross Holland, Jr., R. Craig Koedel, Norbert P. Psuty, and Bayard Webster.

The Cover and Other Photographs and Illustrations

The photographs found throughout and on the front cover are the work of Rick Mitchell, Assistant Professor of Photography at Rutgers University. His sensitivity to the subject matter and his generosity in sharing his special talent have added greatly to our enjoyment in putting together this booklet. Unless otherwise indicated, illustrations are from 19th century volumes of Harper's New Monthly Magazine.

The 1980 Conference on New Jersey's Barrier Islands

The idea for this booklet originated at a conference on New Jersey's barrier islands held on October 4, 1980, in North Wildwood, New Jersey. The conference, entitled "New Jersey's Barrier Islands: An Ever-changing Public Resource," was funded by the New Jersey Committee for the Humanities and jointly sponsored by the New Jersey Historical Commission and the Center for Coastal and Environmental Studies, Rutgers - the State University. Other co-sponsors of the conference include:

American Littoral Society
Association of New Jersey Environmental Commissions
Atlantic Community College
Atlantic County Office of Cultural Affairs
Atlantic County Historical Society
Cape May County Historical and Genealogical Society
Cape May County Library
Division of Coastal Resources, N.J. D.E.P.
Monmouth County Heritage Committee
Monmouth County Historical Association
Monmouth Museum and Cultural Center
New Jersey Builders Association
New Jersey Marine Sciences Consortium
New Jersey Office of Historic Preservation, N.J. D.E.P.
New Jersey Society for Environmental, Economic Development
Ocean County Cultural and Heritage Commission
Ocean County Historical Society
Stockton State College

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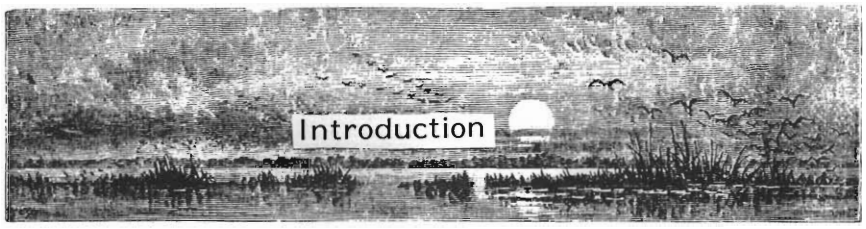
80 5681 SNJ-DEP Barrier Islands Publication (Brown)



New Jersey's barrier islands, those thin strands of sand which separate the mainland from the open sea, mean many things to different people:

--the gently sloping beaches of the Wildwoods, dotted with the bright colors of sun umbrellas and beach towels;

--the glitter of casinos in Atlantic City and community unrest there, as the old makes way for the new;

--the excellent fishing and clamming in the bays that the islands create;

--incomparable bird watching during spring and fall migrations;

--the numerous small communities, like Avalon, Beach Haven and others, which have become home for so many;

--the early morning of Island Beach with the peculiar quiet of roaring wind and crashing breakers.

New Jersey's barrier islands are a refuge from the problems and rush of daily life. Yet we may be killing these islands with love. Barrier islands are inherently unstable: they move and change shape in response to storms, tides, winds, and human efforts to create stability. Furthermore, barrier islands are interconnected by littoral (alongshore) water currents, wind and other features to form a unified chain. This connection is easily disrupted: human activity on one island can adversely affect other islands up and down the coast.

Throughout the history of civilization, people have been tempted to force nature to accommodate the needs of society. With patient repetition, natural events--both gradual and catastrophic--have demonstrated Sir Francis Bacon's dictum that "nature, to be commanded, must be obeyed". Some of the best examples of the futility of trying to bend the natural system to our desires can be seen in the history of coastal areas. The problems of New Jersey's coastal zone, described in the following chapters, have developed partly because of a lack of understanding of the physical processes at work on the shore, and partly because of an overly optimistic reliance on technological capabilities for problem solving.

There is a mass of conflicting demands on our islands. Over the past decade Americans have rushed to the shore in unprecedented numbers. Each person, on an average, spends ten days a year in some form of coastal recreation, and in New Jersey that means heavy use of barrier islands. The barrier islands are being rapidly developed for single family housing, apartments, and condominiums and for commercial ventures that respond to the growing need for tourist facilities. Add to that the activities which must be located at the shore, such as fishing and shipping, and it is apparent that New Jerseyans face some difficult decisions about coastal land use.

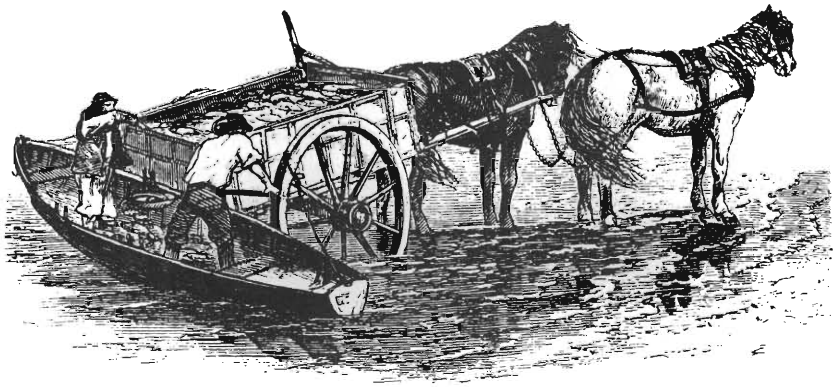
To make these decisions it is essential for the public to understand the boundaries of the problems, to examine many possible solutions, and to work to ensure that the use of the barrier islands complements the natural system and enhances the quality of life on the shore for all New Jerseyans. If we are to use our islands for recreation, and if we are to build our homes on them, we must accept the inevitability of their changing nature and plan our activities with understanding and flexibility.

On October 4, 1980 a conference, "New Jersey's Barrier Islands: An Ever Changing Public Resource," was held in North Wildwood, New Jersey. The conference was funded by the New Jersey Committee for the Humanities, and primary co-sponsors were the Center for Coastal and Environmental Studies (CCES) at Rutgers University, and the New Jersey Historical Commission. An audience of over 250 people listened to four speakers and participated in workshops that addressed the specific issues facing the barrier islands of Atlantic, Cape May, Monmouth and Ocean counties. Subsequently, the New Jersey Department of Environmental Protection's Division of Coastal Resources has provided funding to enable the CCES staff to put together the speakers' papers and workshop discussions in this proceedings volume.

Chapter I provides a description of the natural forces that shape the islands, presenting evidence that New Jersey's islands are extremely dynamic. Author Norbert P. Psuty is a well-known national and international expert in coastal geomorphology, and is Director of CCES. Chapter II gives an overview of the uses to which the barrier islands of the New World have been put, according to F. Ross Holland, Jr., Assistant Director for Cultural Resources for the National Parks Service, and well-known author on maritime

history and American lighthouses. Chapter III is a survey of the major trends in the historical use and development of New Jersey's islands, as compiled by R. Craig Koedel, professor of history and religion at Atlantic Community College and author of several books and articles on New Jersey history, including South Jersey Heritage: A Social, Economic and Cultural History. Chapter IV takes a look at the main issues facing the barrier islands today, a complex tangle of state and federal law, individual rights, and natural processes. This view of today and tomorrow is written by Bayard Webster, a science writer for the New York Times whose major interests have included humanity's interaction with the environment and resulting problems with pollution, wildlife, and resources conservation. Finally, Chapter V has been put together from the county workshop discussions by editors Penny Brown and Hilary Lambert Renwick. It offers an historical overview of island use and summarizes the issues that are of primary concern to island residents and friends in each county today.

Table of Contents



UNLOADING FISH.

STORM CLOUDS OVER A BARRIER ISLAND

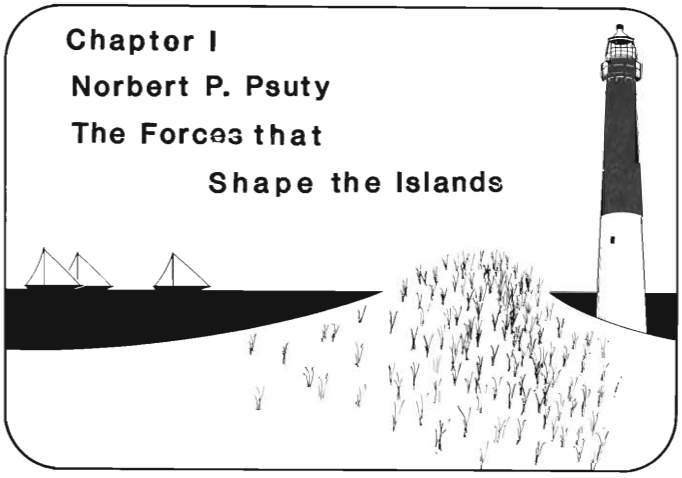
CHAPTER I

To understand the issues confronting New Jersey's barrier islands, we begin with the basic elements: the effects of wind and water on sand. According to coastal geomorphologist Norbert P. Psuty in this first chapter, "The Forces that Shape the Islands", the basic characteristic of the barrier island setting is dynamic change. Problems arise when human beings try to alter or halt the movement of sand for their own purposes. Psuty offers research evidence for thousands of years of a shifting, changing barrier island environment. He suggests that ultimately human beings must accept the inevitability of a changing shore. A flexible beach needs flexible policies, so that human use and natural processes can be in equilibrium.

As I looked over the water, I saw the isles rapidly wasting away, the sea nibbling voraciously at the continent, the springing arch of a hill suddenly interrupted..., showing by its curve against the sky, how much space it must have occupied where now was water only. On the other hand, these wrecks of isles were being fancifully arranged into new shores,...where everything seemed to be gently lapsing into futurity.

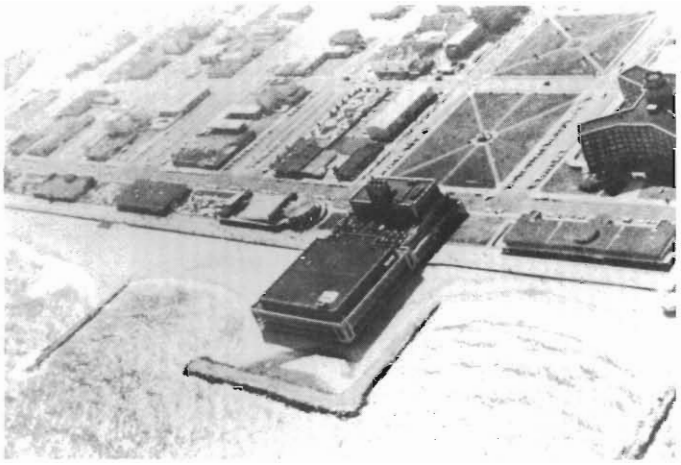
But I wished to see that seashore where man's works are wrecks;...where the ocean is landlord as well as sea-lord, and comes ashore without a wharf for the landing.

Thoreau, Cape Cod



The shoreline of New Jersey is the product of both natural and social processes. The natural, physical processes that have operated for thousands of years are responsible for the general outline, whereas specific features may be the result of the last few decades of waves, winds, and currents as well as the actions of people occupying the islands. Although we have a basic understanding of the physical processes which shape our islands we do not yet have enough research results to be able to precisely identify the relative roles of the physical factors and therefore are unable to predict with great specificity or accuracy the effects of any potential interruptions or changes in the barrier islands system.

The dominant characteristic describing our shoreline is that of dynamic change. Modifications of the shoreline or the barrier islands lining portions of our shore occur with storms and between storms. Storm events tend to plane the beach and move sediments into the offshore zone, through the inlets, and into the dune zone. The beach builds back during the non-storm periods. If the volume of sediment shifted in each of these two events is equal, the shoreline will regain its original position. If the erosional phase is larger than the building phase, there will be a net retreat of the shoreline. If the growth phase is larger, the shoreline will advance seaward. Waves, currents, and winds are the processes which cause the sediment to move about. The beach, the barrier islands, the dunes, and the inlet shoals are the products of the processes and respond by changing dimensions and locations through time. Change is occurring continuously. The rates of change may vary but change is persistent.



Asbury Park, New Jersey

from Nordstrom, K.F., et al. 1977.
Coastal Geomorphology of New Jersey.
CCES Technical Report.

A quick review of the map of New Jersey's Atlantic Coast (illustration 1) provides basic information concerning our shoreline. It can be seen as three sections: 1) a northern section which begins around Monmouth Beach and extends as a narrow sandy barrier northward to the tip of Sandy Hook, 2) the section without a barrier from Monmouth Beach to Bay Head, and 3) a series of islands and bays that extends south from Bay Head to Cape May. These barrier islands are characteristic of much of the Atlantic seaboard of the United States.

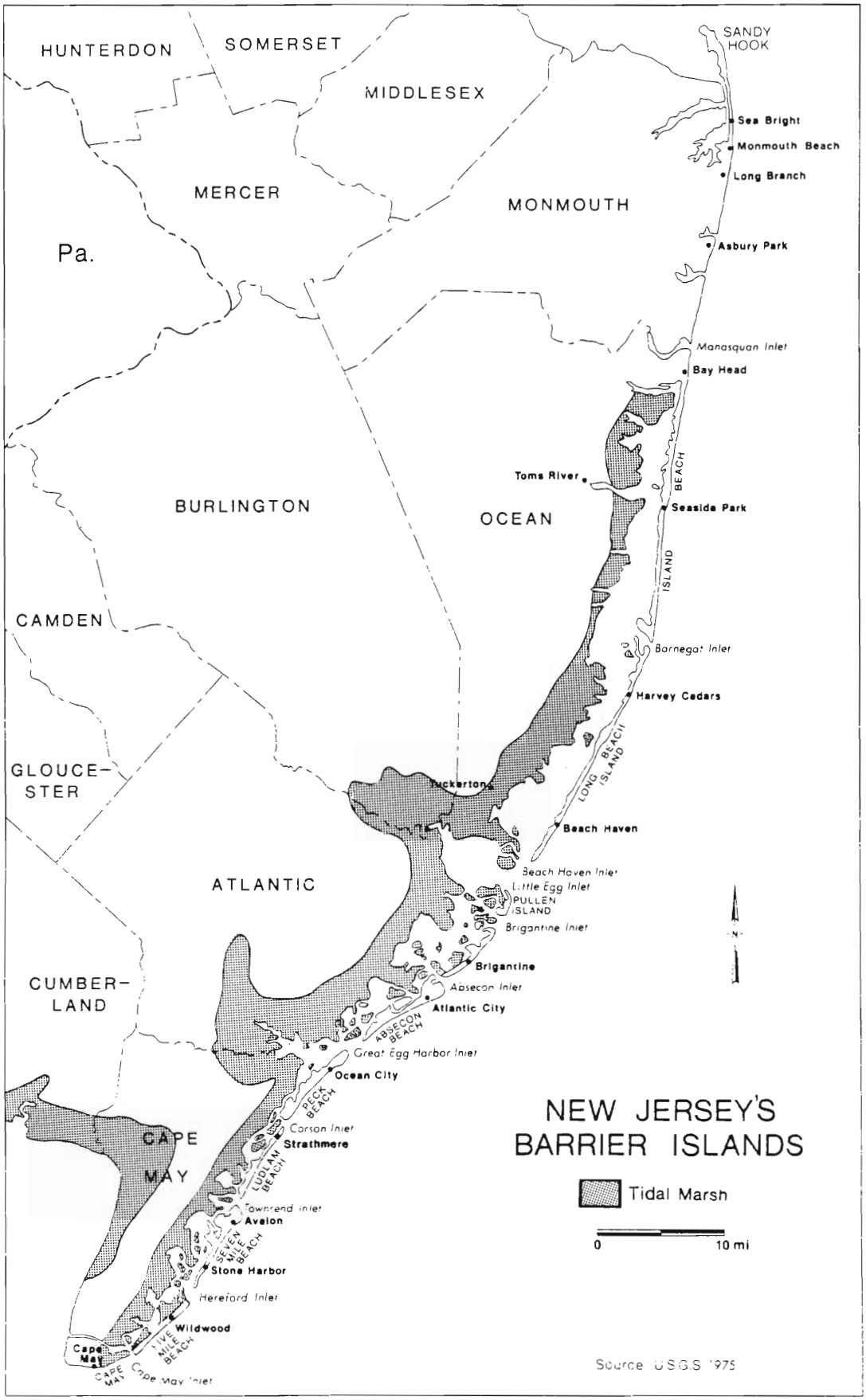


Illustration 1

There are presently ten islands along this shoreline, but we know that there have been more islands and different configurations in the past as inlets were opening and closing. The written and physical records of the last 300 years show that the islands have been changing continuously.

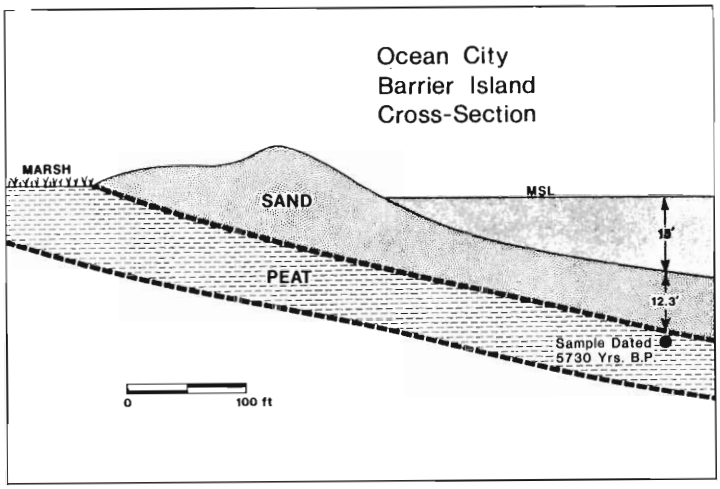


Illustration 2

By isolating a few specific locations in New Jersey, it is possible to explore the scale of the changes that have occurred. There is a particularly vivid example of shoreline migration in the southern part of Ocean City on Peck Beach Island where a long sewage outfall line has been constructed. In conjuction with the planning for that line, a team of Rutgers University scientists gathered information and samples from the offshore zone. Illustration 2 shows our finding of an organic peat layer located about 27 feet below mean sea level. The significance of this peat layer can be interpreted in the following manner:

1. The peat is the remnant of an old marsh.

2. There must have been a barrier island seaward of the marsh at one time for a marsh to have formed.

3. A sample of the peat has been measured by radio carbon dating methods to be 5,730 years old (5,730 yrs. B.P. or years before present).

4. The formation of peat indicates that the marsh ceased to exist about 5,730 years ago. This occurred because sea level was rising and the barrier island was shifting inland, covering the marsh on its bayside.

5. The difference in elevation between the old marsh surface and the present marsh is about 29 feet. Thus sea level has risen 29 feet in 5,730 years (the marsh surface is about 2 feet above mean sea level).

Before carrying this analysis further, it must be stressed that these values are approximations and that it is the trend that is important. Thus, whether the rise in sea level was 25 feet or whether the time scale was 6,000 years is less important than the evidence of a sea level rise of such magnitude. From the previous figures we can see that sea level has been rising at an average rate of about 0.5 feet per century during this period. There is no doubt that the rate has not been constant, but by looking at this long period (5,730 years) we can see a very clear trend. That is, we have evidence that the barrier island system that we see today has existed for thousands of years and has persisted during a substantial sea level rise.

During this period, the barrier islands were also moving toward the mainland. Calculating the rate of barrier island movement is a bit more difficult, but we can approximate the rate of landward shift by assuming that barrier island widths have been constant during this entire period. Many people, including the author, believe that the barrier islands have been both wider and narrower in the past than they are today, and that the following calculations are on the low side. By assuming that the width during the previous 5,700 years was similar to the width today, we have determined that the barrier has migrated

inland about 6,000 feet during this time, or about one foot a year. This means that Peck Beach Island has persisted even while sea level was rising and the entire feature was shifting inland at the average rate of one foot per year. That is certainly a long history of landward displacement of the seaward side of the barrier island. To an observer watching this retreat of the beach, the island would appear to be continuously eroding.

Further evidence of shoreline change is offered by cores collected in the marshes inland from Brigantine Island in northern Atlantic County. This study was conducted by several scientists about two decades ago. The information produced in that study complements the observation made in Ocean City by tracing the inland encroachment of the bays and marshes onto the margin of the mainland. Once again, you can see on the profiles (in illustration 3) that the lowest and oldest portions of the cores (as dated by radio carbon procedures) show prehistoric marsh deposits. The fact that the marsh was able to develop near the ocean margin gives evidence that a barrier island existed in front of the marsh to provide the needed environmental conditions.

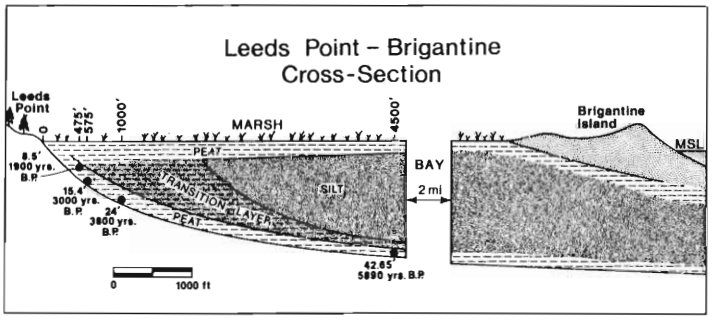


Illustration 3

Interpretations of the cores and the radiocarbon dates suggest that as a result of sea level rise, the wetland system moved up and inland. The rate of sea level rise is separately calculated for each of the dates in the accompanying table and it may be noted that they represent a consistent rise of the ocean, although the rate has been decreasing over time. The scale of the change is similar to that interpreted from the Ocean City data. The information in the table also indicates that the inland encroachment has lessened over time. This is related to the steepness of the slope that the marsh had to climb as it was moving inland. The steeper the slope, the less the horizontal displacement during similar time periods. The important information to be derived from these cores is that the marsh-bay-barrier island system maintained itself as it shifted inland and was elevated.

Peat Outcrop, Ludlam Beach Island

One more example of barrier island instability comes from the vicinity of Strathmere in Cape May County. On occasion, there is a peat outcropping just about at low tide level on the forwardmost part of the beach near Strathmere on Ludlam Beach Island (see illustration 4).

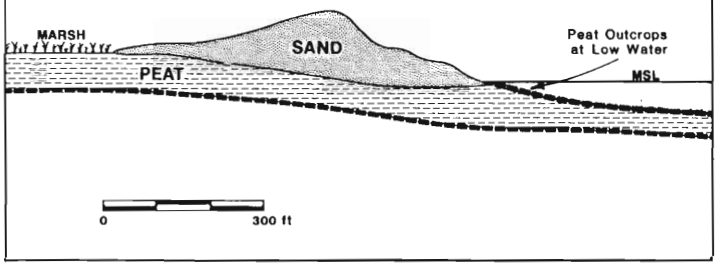
That peat is the organic remnant of a wetland that once was positioned behind a barrier island. However, as a result of inland migration of the island, the old marsh surface has been overridden by the migrating island and is now exposed in its seaward margin. Unfortunately we have no radio carbon dates for this peat and thus we do not know its absolute age. However, there are reports that cattle hooves and metal utensils from colonial days have been recovered from these peat outcrops. If this is true, and it is quite likely that it is, then the following interpretation seems justifiable.

During the time that the peat area was an active marsh, the colonists were grazing cattle on this barrier island, a common activity at that time. Later, as a result of a rising sea level and inland transfer of sediment by overwash and inlet processes, the island migrated up and over the marsh. The peat outcrops now visible on the seaward side indicate that the barrier island shifted inland the width of the island in the span of about 200 years. That means a rate of 3.5 feet per year in this area if we assume that the island width has remained constant during this migration. That rate is higher than the figures derived from evidence at Ocean City and Brigantine. However, these are all averages and all that may be said about these values is that the average rates are higher in the last two hundred years at Strathmere than they were for the past 6,000 years at Ocean City and Brigantine. Part of the reason for the variation in these two rates could be that the shoreline passes through cycles and now it may be in a high erosional period.

It is important to realize that the causes of past barrier island migration are still with us. Sea level is rising at present. Although there are reports of a sea level rise approaching nearly a foot per century as interpreted from tidal chart data, that interpretation is questionable. There is evidence that this displacement is not entirely a result of sea level rise. In the Sandy Hook area where the records were made, there may also be a significant downward movement of the land. Data from many other sources confirms that sea level is rising at the slower rate of about 3-4" per century at the present time.

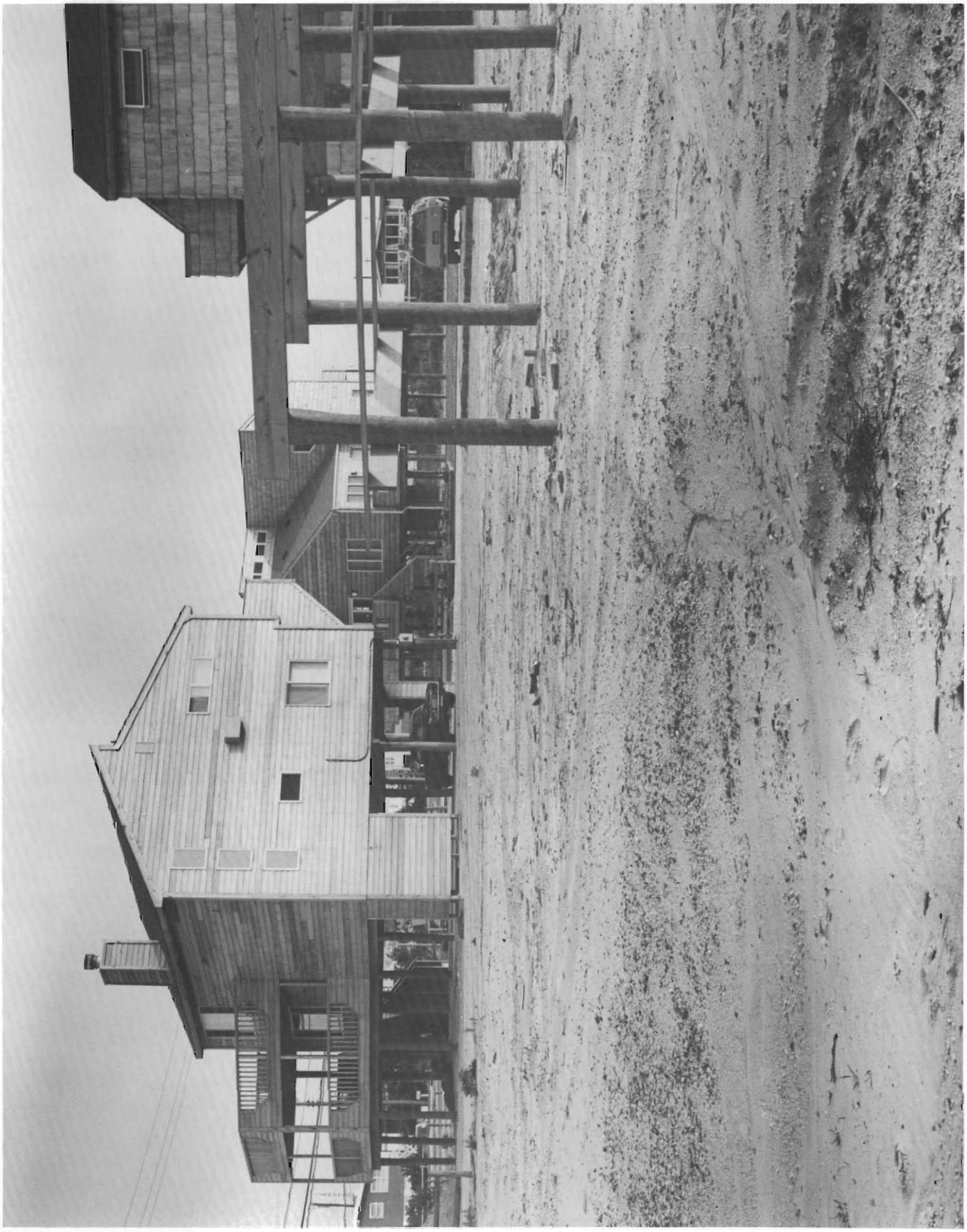
Illustration 4

Strathmere Cross-Section



Another cause of barrier island changes is the loss of present-day sand and other material. In order to maintain themselves, our beaches must have a positive sediment balance. That is, there must be at least as much material (sediment) deposited on them as the winds and water take away. In New Jersey at the moment, that is generally not the case. There is more material removed from our shoreline than is being brought to it, resulting in a negative or erosional sediment balance.

On a world-wide scale, we find that those areas that experience beach buildout have quantities of sediment being supplied to them by rivers. Rivers are the major source of beach sands. When you consider the fate of whatever sand is brought by those rivers that lead to the New Jersey shore you can appreciate our problem. There are no rivers that discharge directly into the ocean



Houses on Pilings, Harvey Cedars, July 1982 Mitchell

providing sand to the adjacent beaches. Our large rivers discharge into bays and these same bays catch and accumulate most of the river-borne sand. We have no major source of beach sand and we have no way to reverse the natural erosional trend.

Given the rise of sea level and the erosional sediment balance, it is evident that the landward displacement of the shoreline and of the entire barrier island system will continue. According to the long- term trend, the rate of erosion and inland migration should be about 100 feet per century. Using the rates measured at Strathmere, the change will be about 350 feet per century.

It is important to learn how the changes occur and what conditions either accentuate or reduce the rates. It is obvious from the records of the last fifty years that the barrier islands have not all reacted uniformly to the rise in sea level and the erosional sediment budget. For example, south of Barnegat Inlet there is a general coastwise transport of sediment to the south. Material eroded from the beaches is moved by currents southwards into the inlets where it accumulates (primarily on the bay side) in the form of shoals. Each inlet tends to function as a sediment sink, that is, much of the sediment gets trapped near the inlets and is lost to downcurrent beaches.

Because of this southerly drift, the islands and the inlets tend to migrate southward as well as inland. This causes an elongation of the islands at their southern end and erosion on the northern margin.

Another important factor affecting the stability of barrier islands is their elevation, primarily determined by the extent of the dune system. On New Jersey's barrier island this system has been changed substantially by the impact of civilization. During the last century large sections of barrier islands have lost their dunes. They have been removed to facilitate construction, and their sands have been pushed onto the beach to try to stem erosion. Over the years, some of the islands have changed from having well-developed sand dune ridges with great volumes of sand held in storage to low lenticular islands. These islands tend to experience considerable flooding with the winter perigean tides or with an average winter storm which happens to coincide with high tide.

What we now see on too many of our barriers is the combination of factors described above:

--The long term rise of sea level is causing a shift inland.

--There is a negative sediment budget because of the lack of sand supplied by rivers.

--The loss of dunes on the islands has reduced their elevations, increasing the likelihood of flooding and washover, and has reduced the volume of sand available to buffer beach erosion losses.

In the event of a major storm, the area of barrier islands with obliterated or dissected dunes will experience great changes. The barrier islands would survive the storm but they would not be in the same location after the storm. There could be a large spatial shift of the island and it could affect a great number of properties. Given the trends of shoreline change, if an island were to experience a sizeable shift because of a major storm, many coastal lots would no longer be in the dunes. They might be on the new beach, or even in the water.

This has considerable meaning for public policy. If the dramatic event were to happen, investors and speculators in this

high risk area would essentially lose title to the land because it would have become part of the tidal lands which are by law in the public domain. Additionally, the question arises as to how much public subsidy of private land-owners should be provided by the flood insurance infrastructure.

It is important to realize that changes may occur at a relatively rapid rate if the natural system has been interfered with for many years and the barrier island location is in a state of imbalance. Such an event characterized a section of Sandy Hook recently. For a long time, a portion of Sandy Hook was experiencing an average shoreline erosion rate of about 15 feet per year. However high this figure sounds it was kept artificially low by sacrificing the dunes and pushing sand onto the beach to attempt to stop or slow erosion. The scheme worked for a while, but when the disequilibrium finally got so great as to cause a major shift in the shoreline, the beach was swept inland about 400 feet in 5 years before a new balance was reached.

Unless we are able to come to grips with reality and recognize that the barrier island system is shifting beneath our feet, there will come a time when the resource will not be usable for recreation as we know it today. There may be house pilings lining the beach (as we can see today on part of Fire Island). There may be parts of highways where the beach should be (as on the east Texas coast). Wise management does not mean that no one can use the resource. It does mean that not all uses can be permitted all the time at all locations. The islands are flexible. Surely our policies can be the same.

Texas Coastal Road Washed Out by Hurricane Carla

With husky-haughty lips, O sea!
Where day and night I wend thy surf-beat shore,
Imaging to my sense thy varied strange suggestions,
(I see and plainly list thy talk and conference here,)

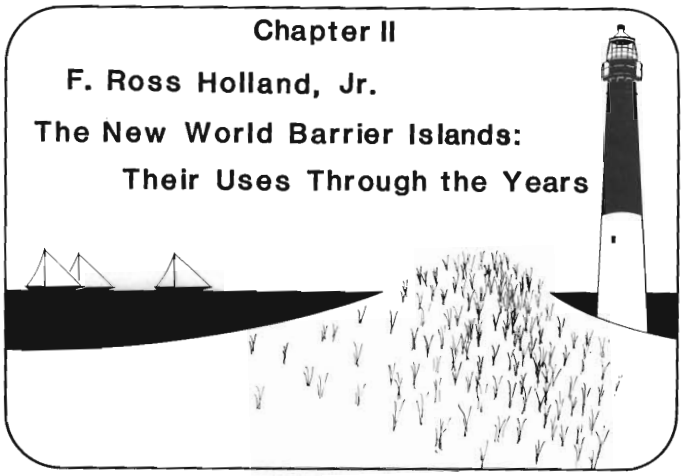
Thy troops of white maned racers racing to the goal,
Thy ample, smiling face, dash'd with the sparkling dimples of the sun,
Thy brooding scowl and murk--thy unloos'd hurricanes,
Thy unsubduedness, caprices, wilfulness;

from Whitman, "With Husky Haughty Lips, O Sea!"
(record of visit to Ocean Grove, New Jersey in September and October 1883)

CHAPTER II

The first chapter has made it clear that human beings must come to terms with the barrier island as an environment that is constantly on the move. Chapter II, "The New World Barrier Islands: Their Uses Through the Years", by F. Ross Holland, Jr. of the National Park Service begins a parallel examination of the history of human occupance on the New World's barrier islands. He finds that the human presence on the continent's outer edge has also been one of flux and adjustment. American Indians, early European settlers, the whalers, and the coastal lifesaving service have all had their day as part of the changing human face of our nation's barrier islands. Holland suggests that natural processes and human uses have between them caused great alterations to the barrier island environment in just a few centuries.

LIFE-SAVING STATION ON THE NORTH CAROLINA BEACH.



The New World barrier islands have been used in a myriad of ways over thousands of years. Native Americans spent their summers on or near the islands gathering fish and shells for food and ornamentation. Early European settlers established fishing outposts and cultivated some of the larger islands. The famed Sea Island cotton from southern plantations was praised in Europe. The annual round-up of wild horses on Chincoteague Island is a reminder that mainland farmers used to turn loose their cattle and livestock to graze on these thin strands. Perhaps the most unique use for our barrier islands was found by the Wright brothers when the winds and dune configuration near Nags Head proved to be the perfect runway to test their flying machine. Their success spawned the Air Age.

This chapter scans the history of the New World's islands, highlighting certain aspects of development, and concentrating on those things about which we know most. Perhaps in this way we can begin to understand how we have come to the present state of affairs. In trying to "save" our islands, we are often faced with the perplexing situation of having to change their very nature in order to hold on to them.

On the east coast of South America the fragile barrier islands were once connected to the mainland. Ten thousand years ago when sea levels were lower, early Indian inhabitants set up their camps along these unstable, sandy areas, attracted by the climate and the plentiful and varied seafood. In time, the ocean rose and formed thin, elongated remnants of the mainland--today's barrier islands. Now the only campsites of these ancient peoples which remain are the ones on these islands. These sites are facing slow extinction from submersion and erosion. Archaeologists are engaged in salvage operations to save as much knowledge of these seasonal occupants as time, tides and storms permit.

Most European settlers in the New World established homes on the mainland, but some were lured by the abundance of the sea to settle on the unstable barrier islands. Spanish priests in the early part of the sixteenth century established missions on the American coasts, some on islands, to convert Indians to Christianity. The oldest city in the United States, St. Augustine, Florida, founded in 1565, was positioned just behind a barrier island, where an inlet permitted convenient ship access and the island itself provided relief from the rage of a stormy sea. The English established a colony and fort on the Outer Banks in North Carolina in the mid-1580s.

Whaling

All along the east coast whales drifted ashore onto the barrier islands. The Indians and the later European settlers took advantage of this gift from the sea. The Indians used the whales primarily for food, while the Europeans processed them for fuel. On the northern islands, Indians took canoes and actively hunted whales with bows and arrows and wooden sticks tipped with bone. Poking at the whale they inflicted numerous puncture wounds until the whale weakened and died. As one writer noted, they worried the whale to death.

In time--at least by the 1640s--European settlers had adopted the practice of shore whaling. A spotter kept watch from a high point on a beach and sang out when he saw the spout of a whale. The whalers then shoved their boats into the water and searched out their prey, using techniques similar to those of the Indians, made more effective by iron weapons. Once they had made their kill, they towed the dead leviathan to shore, pulled it as high on the beach as their primitive equipment permitted, and here cut up the whale and tried out the blubber in large pots on open fires.

As whales became scarce and the whalers had to go farther and farther out, larger vessels were built with facilities for trying out the blubber on board. Whaling ships went to sea for periods up to four years. Whaling continued through the 1800s on the islands, but as the ntury drew to a close the east coast were becoming an extinct species.

For a man must be foolish to venture so far
On the broad blue expanse catching whales
When he knows that his life is in danger at times
Or his head being smashed by their tails

But whaling has its charms for the young and green hands
And he makes up his mind when he goes
In a very short time he would sooner hear a curse
As the unwelcome sound there she blows

"The Wings of A Goney"
from Gale Huntington's
Songs the Whalemen Sang
New York: Dover, 1970

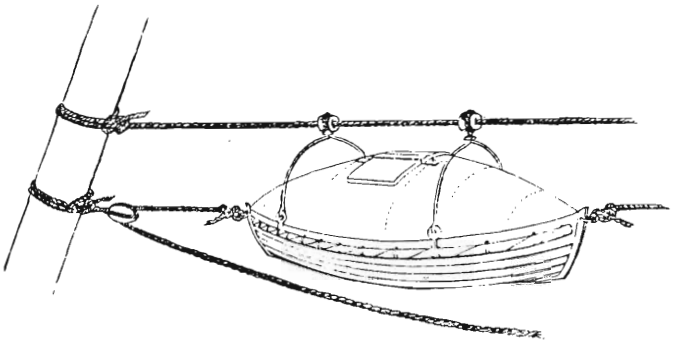
Navigation Hazards and the Life Saving Service

The barrier islands have long been a blessing and a curse to the mariner. They can afford safe haven to a storm-tossed vessel, if the skipper knows how to get through the inlets without running aground. Some places along the U.S. coast were designated harbors of refuge where ships could resort in time of danger.

The hazards of the inlets and shoals took a great toll in life and property. Sometimes storms drove vessels ashore; at other times vessels piled up on islands on calm, moonlit nights because the low islands were difficult to see. There are tales of people who deliberately lured ships ashore with deceptive lights. Nags Head in North Carolina purportedly received its name from the practice of some "bankers" who hung a lantern around the head of a horse and led it along the shore. They hoped the crew of a vessel at sea would think the light was another ship and be enticed to what appeared to be safe waters.

Recognizing the danger these low islands posed, the federal government erected lighthouses to act as guides to ports and harbors. Sandy Hook has the oldest standing lighthouse in the U.S., erected in 1765. In time lights came to barrier islands to fill in dark places so that the coasting vessel would never be out of sight of a navigational aid.

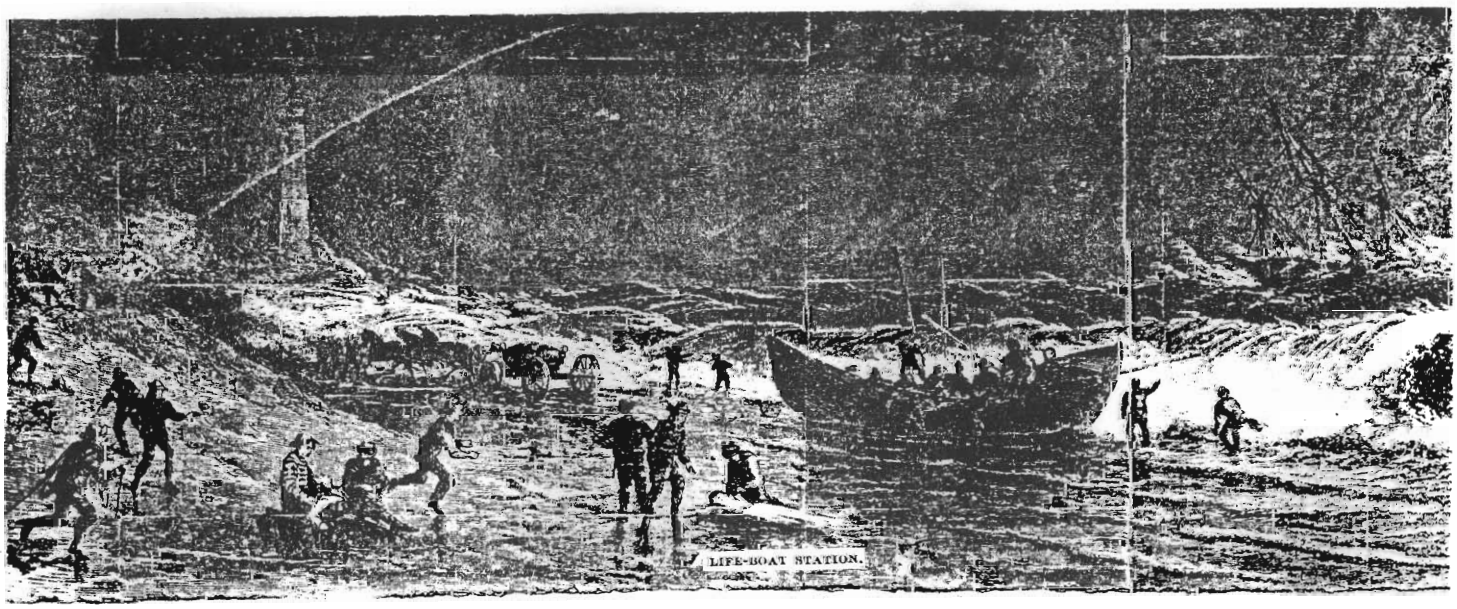
The lighthouses were important in reducing shipwrecks, but in the days of sail, the controlling factor was often the wind, not the location of the danger. The wind could blow too strong, or not blow at all; it could suddenly shift direction, or become erratic.



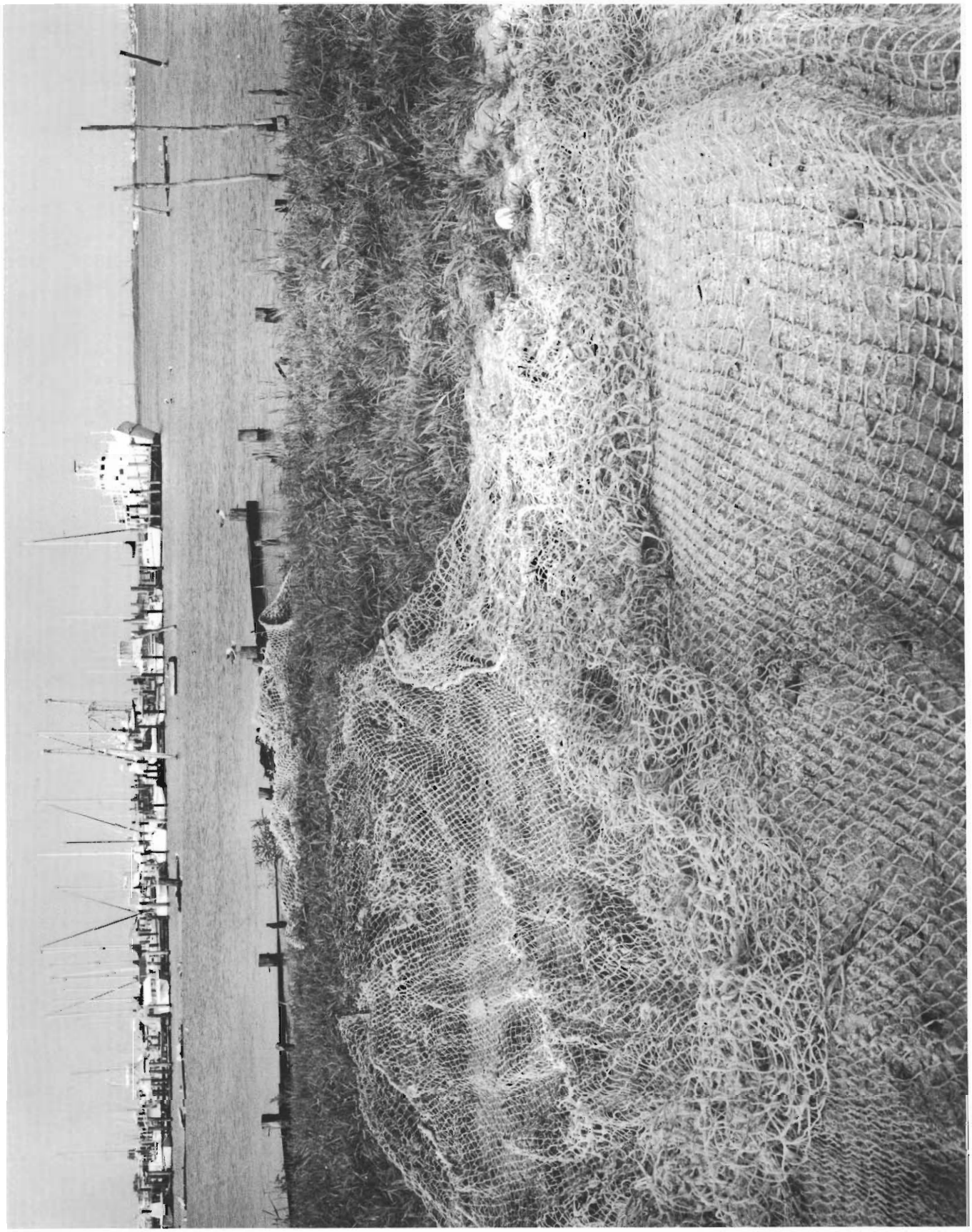
LIFE-SAVING CAR.

As the country's water-borne commerce increased, with an attendant increase in shipwrecks, a few farsighted persons began to realize that the great loss of life was not necessary. A New Jersey Congressman and future governor, Dr. William A. Newell, had witnessed a shipwreck at Brigantine in which 13 crew members died. Appalled by this incident, he introduced a bill in Congress to provide equipment for the assistance of vessels in distress. Passed in 1894, the law resulted in the creation along the New Jersey and Long Island shores of a series of huts that housed surf boats, rockets to throw lines from shore to ship, firewood to warm the rescued, and related lifesaving equipment. Spermacetti Cove at Sandy Hook was the site of the first station.

Though a local keeper was in charge of each station, assistance to vessels in distress depended on local inhabitants. Finding volunteer labor not completely satisfactory, in 1872 Congress created the Life Saving Service, which was manned by professional surfmen who received rigorous training in the techniques of rescue operations. The work of these rescuers became a romantic activity catching the imagination of nineteenth



LIFE-BOAT STATION.



Marina, Cape May, July 1982 Mitchell

century journalists and citizens.

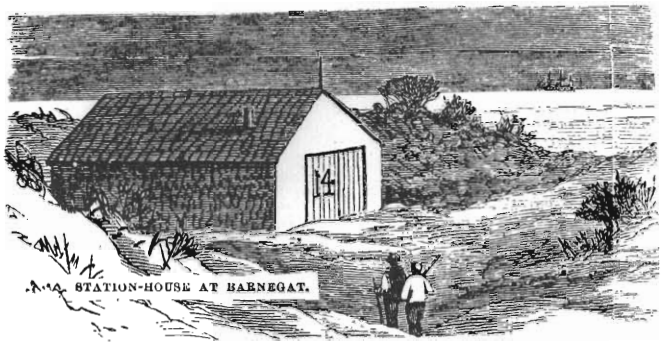
By the end of the century the standard, boxy stations of the life savers became common fixtures along many of this country's barrier islands. In 1915 the Life Saving Service merged with the Revenue Cutter Service, becoming the Coast Guard. The life saving function has now ceased, but many of the old stations survive, in some cases as coast guard buildings, or as private buildings adapted to modern uses such as homes and restaurants.

Fortifications

The thin edges of the New World were the first line of defense against attackers. Local militia and citizens threw up earthen fortifications on the sandy islands at various times during the colonial era to protect their coasts from pirates and ships of unfriendly nations. During the Revolution more substantial fortifications began to appear; the Revolutionary War fort erected at Sandy Hook is a good example of defensive works of this era. The nineteenth and early twentieth centuries saw almost continual activity by the military in an effort to provide adequate defenses for the nation. Sandy Hook has been a favored site. The army began a star-shaped fort there in the 1840s, and in 1890 the prototype of the thick concrete fortifications known as Endicott batteries was erected. With the coming of the missile age, Sandy Hook was selected as a NIKE base.

Summary

Our barrier islands have accommodated constant settlement in small towns and in cities. Some communities grew, survived for a while, and then disappeared, leaving only their graveyards, chimneys, pilings, and other artifacts to signify



their presence. In some cases people have settled on these islands and had little contact with the outside world, developing a unique subculture. For example, the Blacks on Dafuskie Island off the coast of Georgia have developed their own dialect, Gullah, a mixture of French, English, and of African languages.

By the late nineteenth century, the islands in the more populous areas had become summer resorts. The coast of New Jersey with its summer cottages, hotels, restaurants, and shops was one of the first to change its natural character to provide recreation and relaxation to the urban masses. There is little left to show what the land was originally like.

The Indians used the islands and lived lightly upon them, but immigrants to the New World have lived heavily on these elongated and fragile strips of land. We have let our stock overgraze, destroyed dunes to make way for buildings, eliminated forests to build roads, and constructed groins and jetties in vain attempts to halt erosion. We try to stabilize migratory inlets so that our bridges will remain, and spend millions to resand eroded beaches.

As we look to the future we must wonder what would happen if we were to accept barrier islands for what they are--unconsolidated sand, subject to daily change from winds and tides and to radical change by storms--and adjust our living patterns to those of nature.

It's now to the masthead
All of us must go
And when you see those sperm whales
Sing out there she blows

Then up will step the skipper
And sing out where so
Where away you damn landlubber
Does that sperm whale blow

Then tell him with a cheerful voice
Three points on our lee bow
I think he's going to leeward
My boys going very slow

Then clear away the boats my boys
And after him we'll go (travel)
And if you get too near his flukes
He'll kick you to the devil

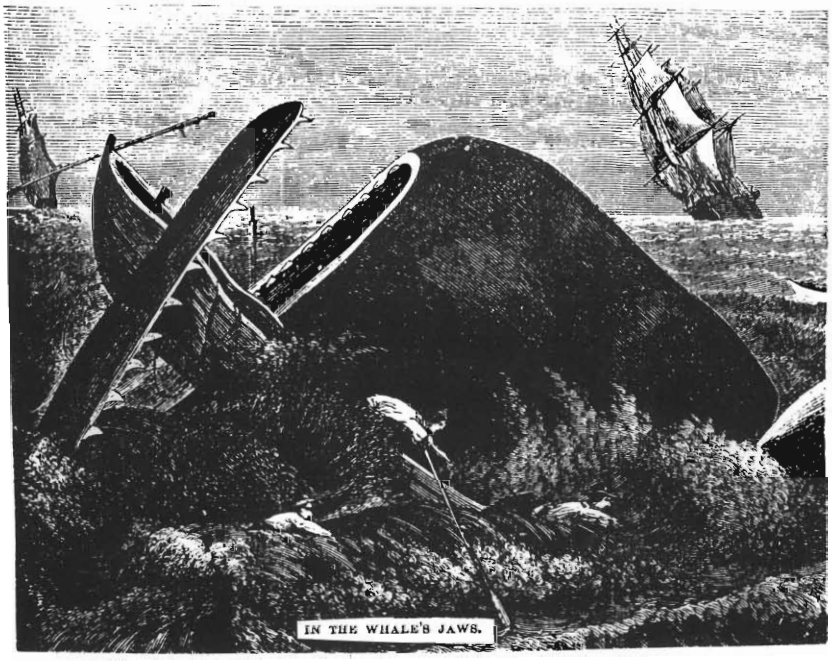
Now we have got him turned up-side (down)
We'll tow him alongside
And over with our blubber hooks
To rob him of his hide

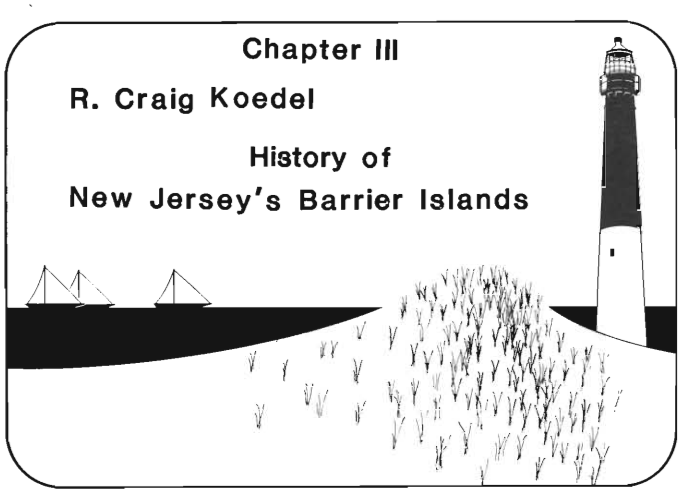
Now the boatsteerer overboard
The tackle overhauled
The skipper's in the main chain
So loudly does he bawl

(Huntington, 1970)

CHAPTER III

The issues facing occupants of the barrier islands today are to some extent based on human use patterns established in the past. In Chapter III, "History of New Jersey's Barrier Islands", historian R. Craig Koedel provides an in-depth examination of the uses to which New Jersey's barrier islands have been put over the centuries. The state's islands and marshes have not always been primarily recreation-oriented: this is a late 19th and 20th century development. The shore has also been used for its timber, grazing lands, hay, and opportunities for fishing, shellfishing, and shipbuilding. The more that human beings have become entangled with New Jersey's barrier islands, says Koedel, the more difficult it has become to plan for safe and rational use of this beautiful but vulnerable resource.





When a 19th century glass maker and a group of Philadelphia entrepreneurs brought substance to a village doctor's vision of an El Dorado by the sea by giving birth to Atlantic City, they rediscovered that New Jersey's barrier islands are a perfect place for spending the summer and making money.

The Indians and the Barrier Islands

The Lenni-Lenape knew this before the white men came. They were the first to make summer treks to the shore, annually leaving their villages along the rivers of the interior after the spring planting, and hiking single file down trails to the bays and estuaries of the outer coastal plain. Mounds of broken shells, bones, stone implements, and potsherds point to sizable and numerous Indian encampments. Evidence indicates that few Indians lived permanently alongside the coastal waters. Most came to fish and gather shells during the warm months, then returned to their winter homes in time for harvest. These temporary summer villages appear never to have been located on the barrier islands.

Shellfish from the island beaches and adjacent waters, fish, wild fowl, marsh hen and gull eggs, and probably berries were delicacies that added variety to Indian fare. Food not consumed when gathered was dried or smoked and carried home for winter meals.

The shells were used as utensils and, most importantly, for wampum. This bead money was usually fashioned by women, through a process of cutting, drilling holes for stringing, and polishing the shells with the tools of bone and stone. The inner core of the whelk produced white beads, mussel shells became beads black on one side and mother-of-pearl on the reverse, and the most valuable black or purple wampum was made from clam shells. In trade with the Dutch, six loose beads were equivalent in value to four strung beads, or about two cents in modern money. A beaver pelt went for about eighty cents in wampum.[1]

The Colonial Era

The first Europeans to pass these shores were little aware of their potential value. The islands were obstructions to be gotten around, the bays a mere promise of greater waters lying beyond. In their eagerness to find an all-water route to the Orient where they believed the real riches lay, these explorers missed seeing the worth of what they had already discovered. Giovanni da Verrazano, probably the first European to see New Jersey's barrier islands, sailed past them in 1524. A hundred years elapsed before

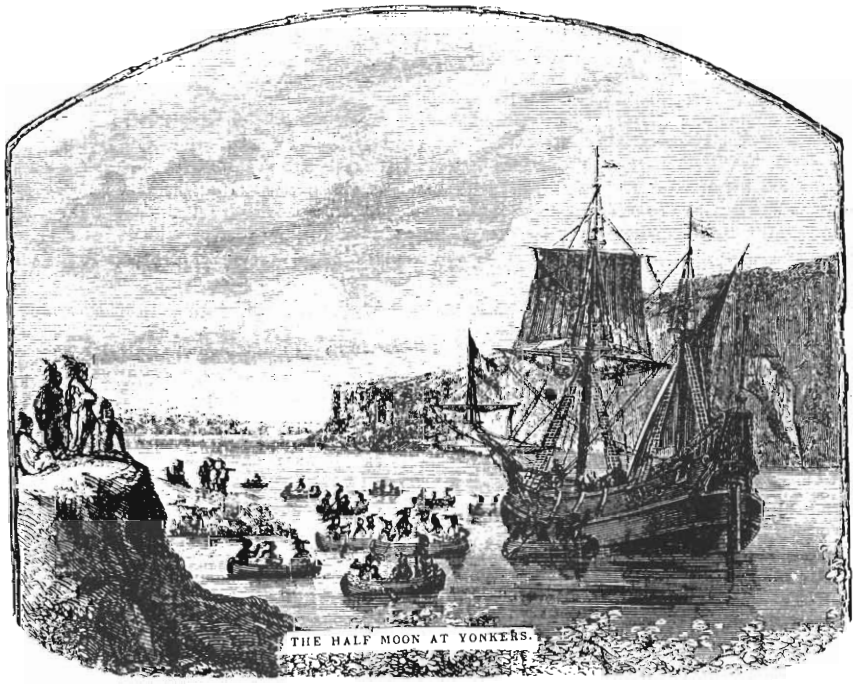
the Dutch perceived that fur trade with the Indians could prove as valuable as finding the elusive passage to the wealth of China and the Indies.

Robert Juet, an officer on Henry Hudson's voyage of the Half Moon, chronicled the 1609 voyage along the coast from the Delaware Bay where, "We weighed anchor at the breake of day, and stood toward the Norther Land, which we found to be all ilands to our sight," to Sandy Hook, where Juet observed great quantities of salmon, mullet, and rays.[2] With the establishment by Dutch commercial interests of the West India Company in 1621, trading posts were erected on the Hudson River, at the lower end of Manhattan Island, and on the Delaware River. Commercial whaling was undertaken by the Dutch in Delaware Bay in the early 1630s.

At first there was no interest by any of the early settlers--Dutch, Swedish or English--in the barrier islands; whales were plentiful in Delaware Bay, and the barrier beaches were bereft of good harbors and commercial goods. The English, nonetheless, were eager to terminate Dutch claims to all the region between the Hudson and the Delaware, including the barrier islands, because New England and Virginia essentially were separated by a foreign power and access to the hinterland was denied to English traders. Accordingly, in 1664, on the specious claim of John Cabot's discovery (in 1497) of the entire Atlantic seaboard north of Spanish Florida, King Charles II gave to his brother James, duke of York, all of the territory, and more, that constitutes the present state of New Jersey, a name coined by the duke himself. It was understood that James would devise a way to oust the Dutch from New Netherland, as the Dutch called what shortly became the Jerseys. This was accomplished the same year with little effort and less bloodshed.

New Jersey was then awarded to two court favorites, Sir George Carteret and John, Lord Berkeley, each being given an unspecified half. A Surveyor's line later separated Carteret's and Berkeley's holding into East New Jersey and West

HENRY HUDSON.



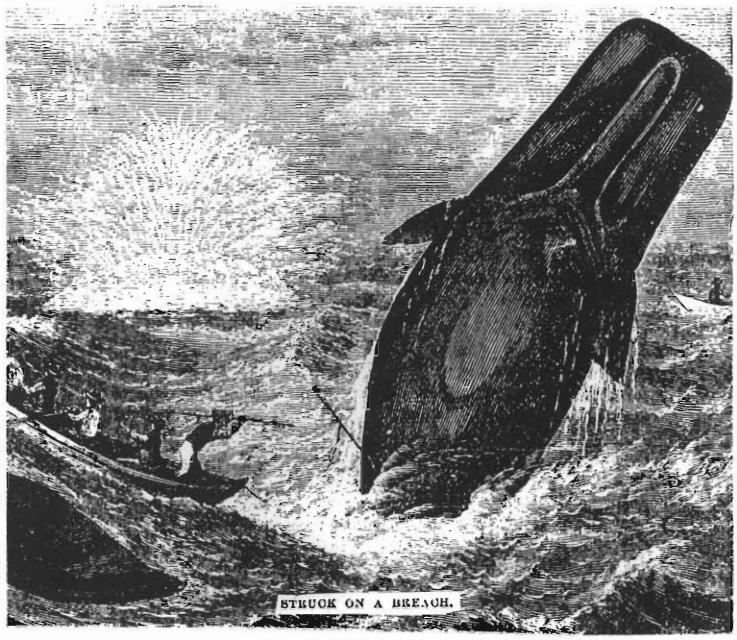
THE HALF MOON AT YONKERS.

New Jersey respectively. The barrier islands of today's Monmouth and Ocean counties were in East Jersey; those of the present Atlantic and Cape May counties in West Jersey. In 1702, the two were joined in a single crown colony, with an appointed royal governor.

The majority of settlers along the New Jersey coast did not migrate here directly from Europe. They came from other colonies or from other parts of East and West Jersey. Some left other colonies primarily to find religious freedom; others were attracted by the potential wealth from whaling and fishing. The mainland, as opposed to the barrier islands, was the preferred place for settlement. The unstable islands were exposed to the storms and high winds off the ocean, whereas the mainland offered solid ground, coves, streams protected by the islands, and access through the inlets to open water. In the 1690s onshore real estate sold for ten times the amount of beach property. The disdain with which island property was regarded is illustrated by the story of a young man who, about 1700, disposed of five Mile Beach and Two Mile Beach in their entirety (today, the Wildwoods) for nine pounds, "to buy his wife Margery a calico gown."[3]

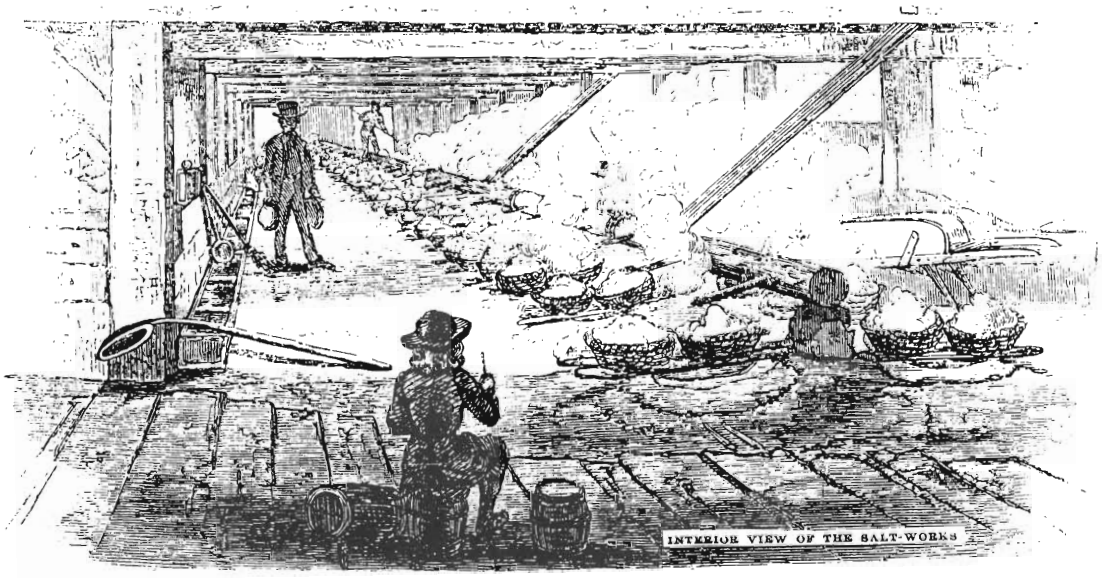
The beaches and islands were used in common for cutting timber (mostly cedar) and grazing cattle, and by the end of the seventeenth century small whaling villages were established on some islands and on the Cape. Beach property became increasingly more desirable as the eighteenth century progressed.

The barrier islands were utilized in colonial New Jersey's whaling and fishing industries as departure points for the boats. The convenient expanses of sand were used for butchering and curing the



catch upon their return. Crows nests atop laddered poles, the lookout towers for whales offshore, dotted the beach islands from Sandy Hook to Cape May. Whalers camped on the strand in small companies from mid-winter to early spring, waiting for a signal from a nearby tower. When the call of whales came, crews of six with harpoon and lance shoved off in 30-foot boats. If the catch was successful, the carcass was towed back to the beach where the bone, or baleen, was cut out and the blubber was boiled down for oil.

Whaling flourished in the waters off all the shore counties. The volume of a single whale, which could bring its captors as much as $3,000 to $4,000 in modern currency, was of financial interest to the government as well. All fish swimming in colonial waters were "Royal fish," including the mammals. Whaling, therefore, was subject to licensure and the payment of a tax to the king's authorities. These early attempts by the crown to profit from the whaling industry, however, apparently met with little success, as these assessments were ignored by the whalers.[4]



Oysters were abundant in the Raritan Bay and in many estuaries opposite the barrier islands. By the mid-18th century they were a significant item of export. The industry was protected by provincial law, with an act of 1719 limiting the raking and gathering of oysters to residents of New Jersey, and prohibiting oystering during the summer breeding months.

Most of the settlers along the New Jersey coast, even the whalers and oystermen, were farmers. Many used the barrier islands for grazing cattle and livestock. Fences were erected by some owners around their beach property, but most beaches were used in common.

Shipbuilding and the coasting trade were colonial enterprises more properly identified with the mainland along the New Jersey shore than with the barrier islands. The islands provided protection for the back bays and coves affording quiet waters for construction and the coming and going of vessels at such centers as Tuckerton and Somers Point.

As British and colonial vessels in increasing numbers plied the waters between Boston, New York, Philadelphia, and the southern and Caribbean ports, the shoals and breakers off New Jersey's barrier islands frequently turned the beaches into ship graveyards. As early as 1696, the governor of West Jersey appointed a deputy to take charge of any wrecks on the Cape May-Egg Harbor coast. Succeeding royal governors of the unified colony did the same. To aid navigation in and out of New York, the merchants there erected a lighthouse at Sandy Hook, the first in New Jersey, in 1764.

When Americans turned their guns on their British masters, the smugglers turned to privateering, using the same inlets, protected bays, and hidden coves to escape enemy pursuers and to hold their prizes for auction. British ships beached by storms were frequently plundered by local militiamen. Sandy Hook, strategic to the defense of New York Harbor, was seized, fortified, and held by the British during their occupation of the city.

During the Revolution, when Congress and the army could not rely upon imported supplies of salt, salt works were constructed along the Jersey shore with a few on barrier islands. Needed for making gunpowder as well as for the

preservation of food for the army, salt production was crucial to the war effort. After the war, the salt works were abandoned gradually as cheaper, imported salt became available again. Although salt works were in operation on Absecon Beach until 1825 and on Brigantine Beach in 1834, by 1800 salt production was of no economic importance to the area.

Rails, Roads, and Resorts

The history of the years between the Revolution and the Civil War centers around the development of transportation. The barrier islands, brought into touch with the mainland by roads and railways, had by the end of the 19th century become economically and socially important as a center of tourism.

Early in the 19th century, steamboat service was inaugurated between New York City and Sandy Hook. Wagons, stages and sail boats carried passengers to shore points from Philadelphia and other mainland communities.

Scattered boarding houses were standing on the barrier islands in the first half of the 19th century. These were often very crude affairs, isolated from other dwellings. Well before mid-century, New Jersey resorts not on barrier islands, such as Long Branch, had numerous facilities for summer visitors.

The railroad came to the shore in the 1850s, largely through the efforts of Dr. Jonathan Pitney of Absecon and the glass and real estate interests of Camden and Atlantic counties. Convinced that the hot, teeming populace of Philadelphia could benefit immeasurably from the health-giving qualities of Absecon Beach, Pitney proposed a railroad to the beach in 1850. A charter was secured from the legislature and the entire issue of stock (valued at $500,000) was sold in a single day. Pitney and his associates set about building a resort, Atlantic City, and on July 1, 1854 the Camden and Atlantic railroad went into operation.

Young America finds himself "used up," and is recommended to try Sea-Bathing to recruit himself.

He comes to the conclusion that the Salt Water Exercises do not agree with his Constitution. He therefore reverts to First Principles, and enjoys himself hugely.

Within the decade, several railroads were incorporated and constructed along the northern Jersey coast, and by the end of the 1880s, Long Beach, Seaside Park, Brigantine, Ocean City, Ludlam's Beach, and Five Mile Beach were connected directly to the mainland by rails, and Seven Mile Beach by way of a spur across Townsend's Inlet.

The suggestion has been made that initially city dwellers sought out the barrier islands for a resort because they were remote, offering a change of lifestyle for a few days or weeks in a relaxed, natural environment, a wilderness, as one writer put it, "not too far from the madding crowd."[5] Developers saw their potential, too, realizing the profits that could accrue from providing for the masses inexpensive transportation and such improvements upon nature as comfortable accommodations and man-made amusements. Atlantic City experienced the most sensational growth (a population increase of 425% between 1870 and 1880), but all four of the shore counties were affected by the boom in tourism, brought on mostly by the railroads. Their population doubled in the thirty-five years after 1850.[6]

There is here constantly an unseen, indescribable something, in the air or in the sea, on the sands or in the stream of ever-changing life, which acts as a tonic, invigorating alike to the old and to the young, to the feeble and to the strong, which robs idleness of its ennui and makes it rest indeed.

(Funnell, 1975)

As Atlantic City expanded in wealth and numbers toward the end of the 19th century, the overflow of population moved downbeach along the tracks of a railroad that reached nearly to the tip of Absecon Island by 1884. Immediately before and after the turn of the century, the municipalities of Longport, Margate, and Ventnor were created.

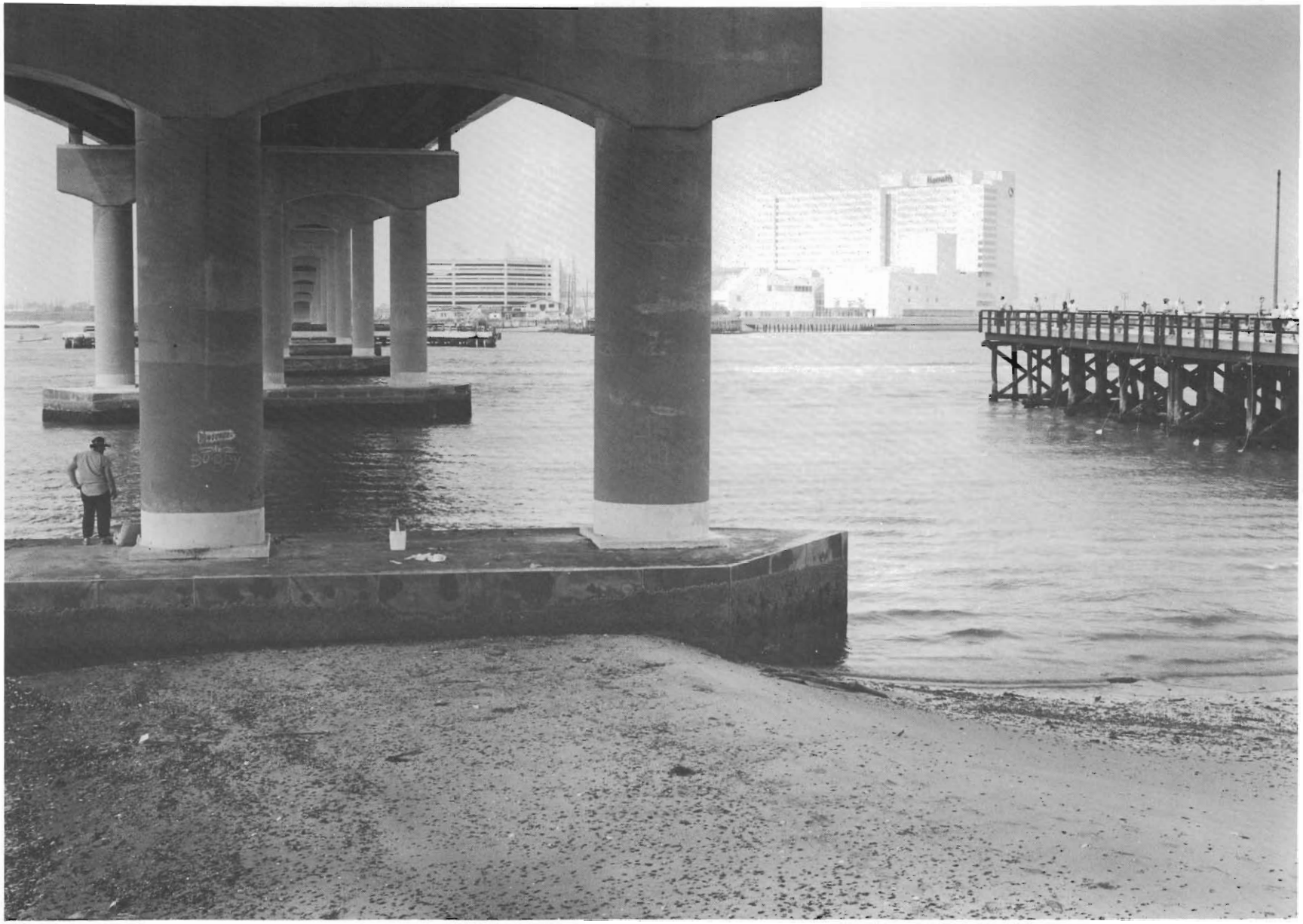
Land values soared as new resort towns sprouted. In the 1880's Holly Beach and Sea Isle City were developed, and in 1890 Wildwood was founded by a Vineland promoter. Holly Beach, Anglesea, and Wildwood merged in 1912, and Wildwood Crest was founded at about the same time. Ocean City, founded in 1879, began as a Methodist campground by the sea. In Ocean County, Bay Head and Lavallette were incorporated in the 1880s; Seaside Park became a borough in 1898; Normandy Beach, Mantoloking and Seaside Heights were established early in the 20th century. Beach Haven was founded on Long Beach Island in 1876. In Monmouth County, Monmouth Beach, undeveloped in 1871, was covered with summer cottages by 1889. Sea Bright began in 1865, and by the end of the 1880s land there sold for $700 an acre.
As railroads joined the islands with the mainland, they also linked together island communities. Scattered populated areas grew up in a nuclear pattern around the terminals of railroads coming from the mainland and the station stops on the island lines.

During the 20th century, travel to the shore resorts was based increasingly on the family automobile. The impact of the airplane on travel to the Jersey shore is difficult to assess. Certainly, in terms of volume it is negligible, even in the casino age, when compared with automobiles and buses. The effect has probably been to carry some of the resorts' potential

customers elsewhere, as relatively inexpensive air travel and the increasing affluence of the middle classes allow vacationers to seek out the faraway beaches of Florida, the Caribbean, or Hawaii.

Although resort communities maintain some individuality and character, the boardwalks and their adjacent piers have long been deemed necessary by resort business interests. Intended initially to protect the plush interiors of the hotels from sandy shoes, their commercial value was discovered shortly after 1870, and they began to feature shops and amusement rides. By the 1880s amusement piers, offering an unimaginable variety of entertainment, stretched perilously out over the ocean. At the beginning of the 20th century, speculation in island real estate ran rampant, but the boom was shortlived. By the end of 1926, speculators were bankrupt. The resort economy was devastated by the stock market crash and the resultant depression. Slow recovery began in 1935. All the ups and downs of boom and bust notwithstanding, in 1970, the centennial year of the first Atlantic City boardwalk, the tourist industry in New Jersey, most of it on the barrier islands, was pouring annually an estimated two and one-half billion dollars into the state's economy.

Boardwalk, Atlantic City, New Jersey.
John L. Stoddard, Scenic America. Chicago: Werner. 1893.



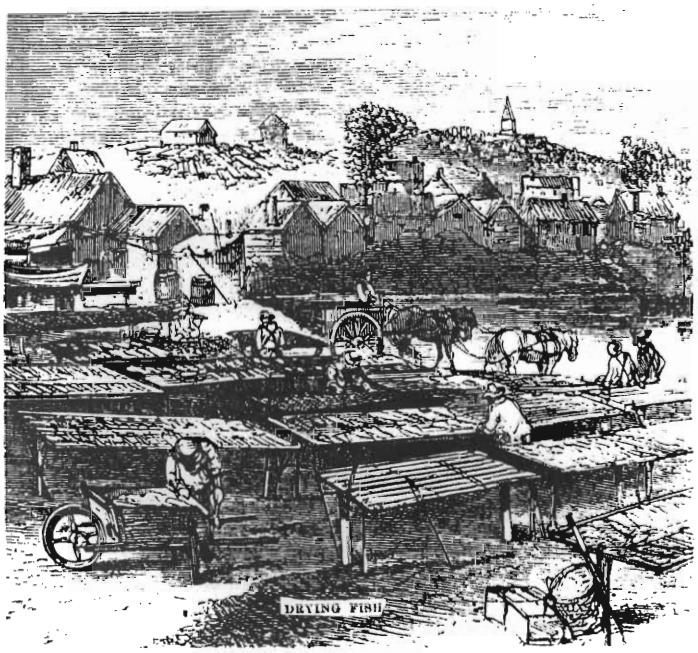
Old Bridge and New Bridge, Harrah's Casino, North of Atlantic City, July 1982 Mitchell

Other Industries

The resort industry is the most visible enterprise on New Jersey's barrier islands. Fish and shellfish have, however traditionally had a significant impact on the local economy. For example, pound nets, which accounted for large catches of finfish were first used in New Jersey at Sandy Hook. By 1879, the annual take from each of the six nets off the Monmouth County beaches reached $7,000. The fish were sorted and packed in ice at stations on the shore Improved nets were put into use between the two World Wars at large pound fisheries located off the barrier beaches in Monmouth, Ocean and Cape May counties. The catch declined after World War II, and the last of the pound net fisheries closed in 1961.[7]

Inshore shellfish fisheries for hard and soft clams and oysters are another centuries-old industry in New Jersey's ocean counties. Shellfishing peaked between 1880 and 1910 with oysters of particular importance due to the planting of oyster beds starting in the middle of the 19th century. Hundreds of families in the mainland towns across from Long Beach Island were supported by this industry in the 1880s, and in Atlantic County alone twelve hundred oyster boats were based at Port Republic.[8]

Hard and soft shell clams, found in the bays and estuaries behind the barrier islands, are another traditionally important industry, particularly in Ocean County. The inshore clam fishery has declined over the past thirty years due to water quality problems in the state's bays and estuaries. Historically, there was also a fishery for blue claw crabs in the waters surrounding the barrier islands. After World War I, this fishery shifted to the Delaware and Chesapeake bays.



One traditional barrier island industry is virtually nonexistent today. At one time salt marsh hay was considered the only resource of any value on the islands. As late as the 1890s, salt marsh hay was used to make paper, as winter fodder for cattle and sheep, and as a packing material for shipping crates. It provided bedding in stables and insulation in ice-houses and was used to pack down loose sand where the dunes had been leveled during development of new resort communities.[9] Production of salt hay remained high in 1910, but dropped to a small fraction of what it had been by 1930. Eel grass, or seaweed, was the basis of another industry on Long Beach Island from late in the 19th century until the early 1930s. It was used chiefly as stuffing for upholstery and mattresses, and as insulation.

Problems and Preservation of the Barrier Islands

Such masses of people accumulating on the unstable barrier islands had by the mid-20th century begun to cause problems. The sand, white in the spring, was a dirty gray from human use

by the end of summer. Garbage littered the beaches, and in the days when carriage rides along the strand were popular, the excrement of horses was mixed with it. Most of the well water on Absecon Island was brackish; rainwater was collected in cement cisterns and wooden casks.

Social problems also have plagued the resorts. Instances of prostitution, crooked politics, illicit liquor sales and illegal gambling have been common.

The problems of Atlantic City have been more acute than those of other island towns, mainly because it has been the only really urban community, with a population at times in excess of sixty thousand. While Atlantic City shares in the plight of other old American cities, it also has worries peculiar to resort communities: a transient population, seasonal employment, and a large retired citizenry. Public services and facilities for hundreds of thousands of people must be paid for with the taxes of a few thousand, many of whom are not fully employed.

Nature has made the barrier islands something short of a paradise for residents and tourists. Greenhead flies and mosquitoes have been perennial annoyances since the days of the Indians, and they are still present despite active pest control measures, albeit to a lesser degree.

Another of nature's admonitions has been the storms, with the resultant beach erosion and destruction of life and property. The two most destructive storms in the recorded history of New Jersey's barrier islands were the hurricane of September, 1944 and the coastal storm of March 1962. Although the tides were higher in the 1944 hurricane than during the 1962 storm, the damage was much more severe in the later disaster. According to a study by the U.S. Army Corps of Engineers,

> The Middle Atlantic Coastal Storm of 6-8 March 1962 was the most unexpected storm, most complex in structure, most unusual in behavior and most devastating to the beaches, dunes and barrier islands....
>
> High waves and breakers superimposed on the high tides also caused great destruction. The huge waves and breakers eroded the beaches, dunes and roads; damaged boardwalks, seawalls, bulkheads, groins and jetties; undermined and collapsed buildings; flooded streets and highways on the barrier islands: contaminated food and water supply; interrupted communications and power supply; and disrupted activities for weeks in the damaged coastal areas.[10]

Repairs and beach protection measures following the 1962 storm required $40 million dollars in federal, state and county funds.[11]

State, county and municipal governments have expended millions of dollars in the construction of jetties, seawalls, groins, and breakwaters over the years. Seawalls were standing, and regularly being breached, in the decades spanning the turn of the 20th century. At that time, construction and repair of these protective devices were funded by local governments. The first state expenditure for erosion control came with legislation in 1920, when $250 thousand was appropriated. Grants-in-aid from state funds were made available to municipalities

building protective structures by a 1944 law.[12]

Walt Whitman asked the rhetorical question that is the key to the island history for the century after 1850: "What would all interior or central or sea coast New Jersey be...if the Camden and Atlantic tracks were obliterated?"[13] One answer to the Camden poet's query is that the people of New Jersey might have been spared the numerous troubles associated with the increasingly heavy use of the islands during the present century. On the other hand, one doubts that most of the state's residents would care to exchange the economic benefits of resort tourism for a problem-free wilderness along our ocean front, even if it were possible. Whitman would likely have seen our present necessity to resolve these difficulties as a challenge to the human spirit and ingenuity.

Beach at Seaside Park, July 1982 Mitchell

Notes

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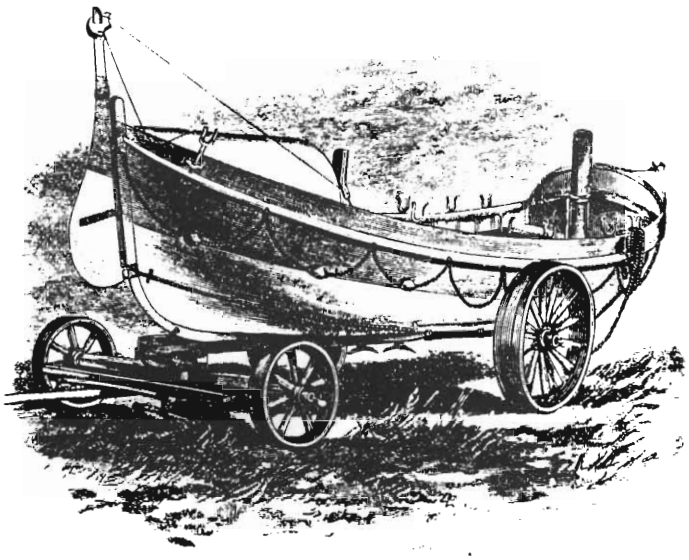
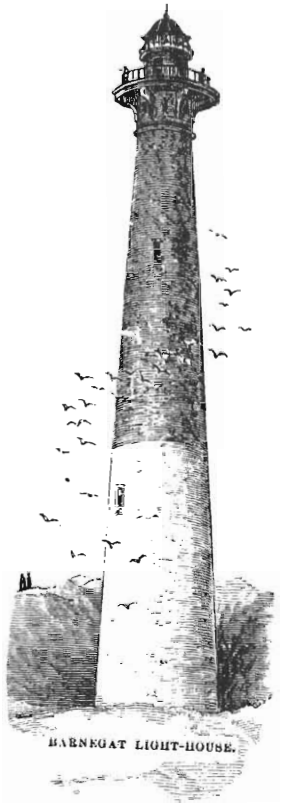


SELF-RIGHTING LIFE-BOAT.

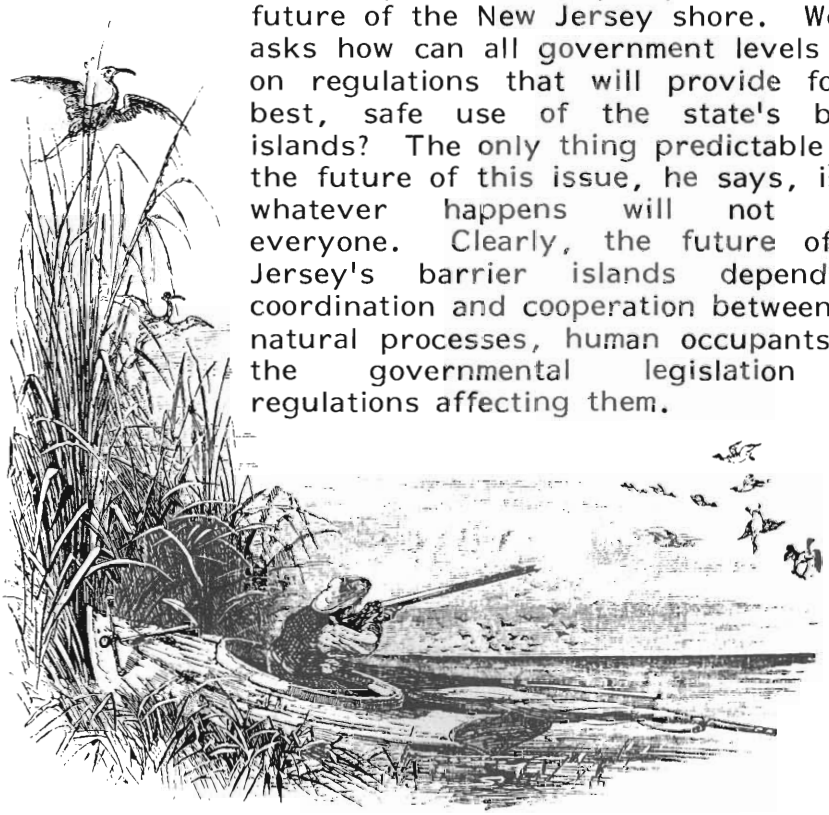
Many the wonders I this day have seen:...
The ocean with its vastness, its blue green,
Its ships, its rocks, its caves, its
hopes, its fears, Its voice mysterious,
which whoso hears
Must think on what will be, and what has
been.
Keats, "To My Brother George"



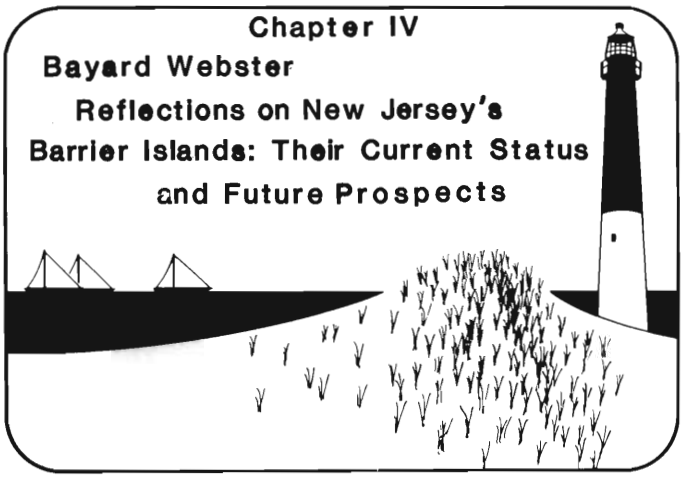
BARNEGAT LIGHT-HOUSE.

CHAPTER IV

Up to this point, the authors have provided ample evidence that the barrier islands of New Jersey are a complex mixture of natural processes and human use. When the modern-day system of local, state, and federal government is added, the mixture can be volatile. In Chapter IV, "Reflections on New Jersey's Barrier Islands: Their Current Status and Future Prospects", science writer Bayard Webster explores the interconnections of nature and culture with government. Just as earlier chapters have helped explain the past and present, so he provides a perspective on the future of the New Jersey shore. Webster asks how can all government levels agree on regulations that will provide for the best, safe use of the state's barrier islands? The only thing predictable about the future of this issue, he says, is that whatever happens will not please everyone. Clearly, the future of New Jersey's barrier islands depends on coordination and cooperation between their natural processes, human occupants, and the governmental legislation and regulations affecting them.



SPORT ON THE NEW JERSEY COAST.



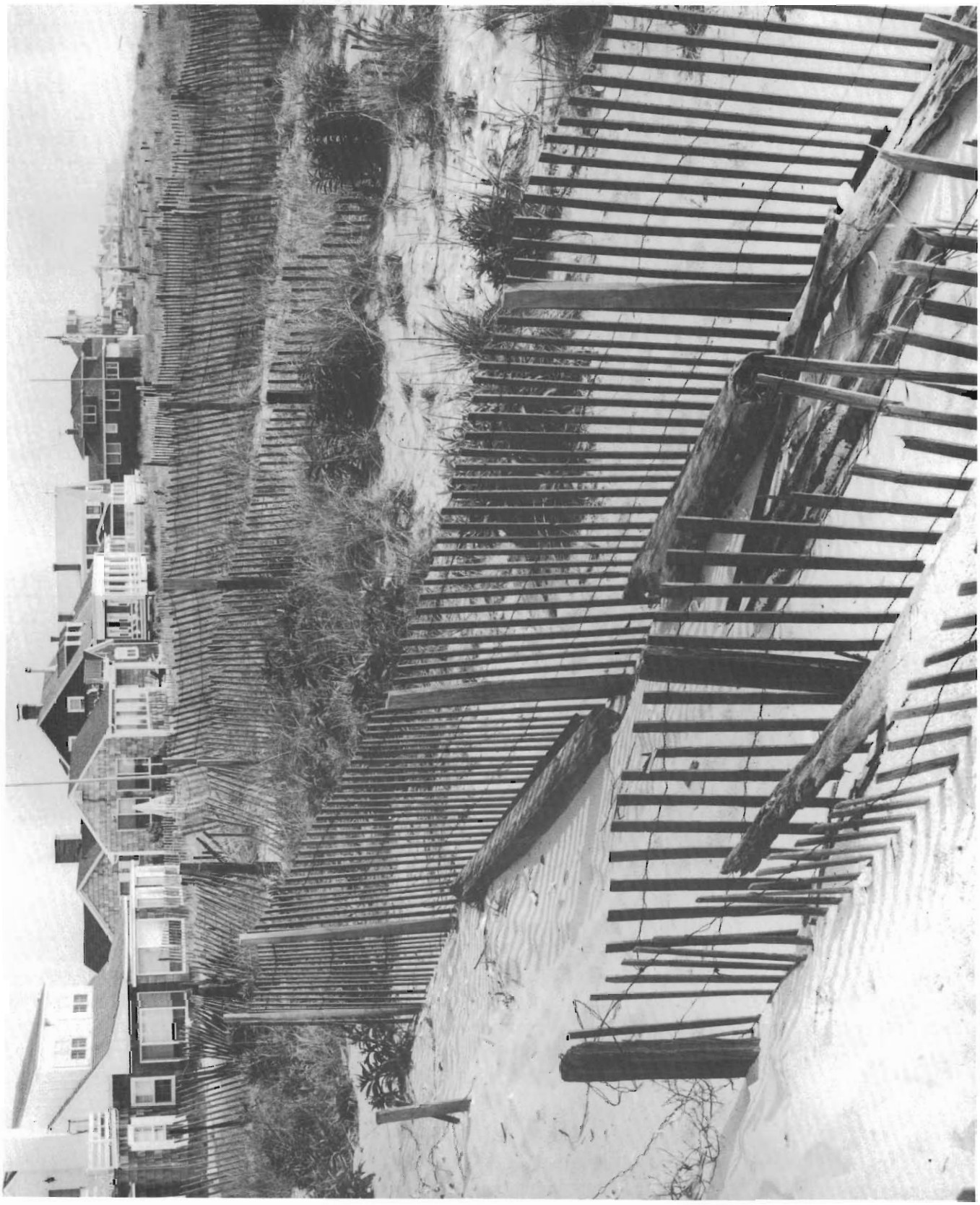
Today we all know much more than we did a few decades ago about barrier islands--those large and small pieces of land that are constantly reshaping themselves and changing their size while safeguarding the mainlands they front. For many, barrier islands evoke images of the relatively wild islands, such as those of the Outer Banks of North Carolina with their large maritime forests, huge dunes, salt marshes, inlets, fresh-water ponds, and scores of birds, mammals and reptiles. But for New Jerseyans, perhaps a more typical barrier island scene is that of the endless motels and boardwalk games of the Wildwoods, the saltwater taffy and casinos of Atlantic City, or the unavoidable traffic jams on the trip back to the mainland on a summer evening.

In New Jersey, the problem of shrinking barrier islands is worse than in most other coastal states. Its plight is unique, for almost all of its barrier islands are heavily developed. Seawalls have replaced beaches in Sea Bright, Monmouth Beach, Deal, and Cape May; and the rate at which the coastline is sinking while the sea level rises--about a foot a century--appears to be greater than in most other areas. A foot a century doesn't sound like much until you translate a vertical foot into a horizontal mile of salt marsh reaching back from the shore. The shoreline is eroding at an average rate of 2 1/2 to 5 feet per year.

New Jersey's barrier islands were being settled at a time when little was known about the physical processes which shape the islands and even less was known about the long-term effects of building on these shifting sands. Our knowledge about these unstable landforms and the hazards inherent in trying to build stable structures on them is increasing at the same time that pressure for their development is increasing. Potential harm can occur to the islands and surrounding marine ecosystems as a result of unwise or poorly planned activities. Our islands are threatened by oil and chemical pollution, dredge spoil dumping, filling-in of wetlands, and groins and jetties that

Aerial view of Sea Bright

from Nordstrom, K.F., et al. 1977.
Coastal Geomorphology of New Jersey.
CCES Technical Report.



Maintained Dunes, Mantoloking, July 1982 Mitchell

build up one portion of a beach at the expense of others. Competing demands for coastal land are creating a challenging political situation for local, state, and federal policy makers.

What the Federal Government Has Done

In 1972, in recognition of the destruction that was occurring in coastal areas, Congress passed the Coastal Zone Management Act. This was designed to encourage state and local governments to plan and manage coastal developments along all the nation's shorelines. Federal funding and the promise that federal actions will conform to state programs are the incentives used to encourage coastal states to participate. The states, for their part, must develop coastal management schemes which meet minimum federal standards.

The Clean Water Act amends the Federal Water Pollution Control Act to provide federally-mandated controls over industrial, agricultural and municipal sources of coastal and marine pollution. It also protects tidal wetlands, which adjoin many barrier islands, from destructive discharges associated with dredging and filling operations.

The Flood Insurance Act provides government subsidized insurance for structures built in floodplains, including coastal floodplains, if communities exercise control over siting and building standards. This is to ensure that unwise floodplain development which has actually been promoted in the past by federal financing, will be discouraged in the future.

Other statutes, such as the Marine Protection, Research and Sanctuaries Act and amendments to the Outer Continental Shelflands Act, control discharges into the ocean, forbid dumping of city sludge, and afford a measure of protection from offshore oil exploration.

But in the final analysis, at the national level the current statutory protection of barrier islands is flimsy. The Coastal Zone Management Act has not produced much in the way of results. If a state fails to develop a satisfactory program, development may go on as usual. Because relatively small amounts of federal dollars are involved, most states give low priority to cooperating fully with the provisions of the Act.

Congress has retarded the Clean Water Act's deadlines for meeting discharge requirements, and many industries are resisting the reductions in discharged effluents that have been ordered by the Environmental Protection Agency.

Current State and Local Action

In the Garden State there are many local and state ordinances which attempt to preserve the shoreline configuration of the 48,000 acres of the state's 10 barrier islands that act as buffers against mainland damage along most of New Jersey's 129 miles of Atlantic coast. One of the most important of these state statutes is the Wetlands Act. It has halted the filling-in of sensitive marshlands for conversion into housing tracts, etc.

There is also the Coastal Area Facility Review Act, known as CAFRA, outgrowth of the Wetlands Act of 19 CAFRA, which took effect in 1973, concerned with relatively large-s developments, requiring permits for th builders who are going to erect subdivision with 25 or more dwelling units or build certain specified facilities, such as airports, wastewater treatment plants,

etc. This has no effect on the extensive one- and two-family unit building boom on barrier islands.

Several New Jersey communities have dune protection ordinances that define the local dune line as one that runs close to the center line of the dune, permitting building on its back side. This is an admirable first step, but this static line of demarcation does not account for the wind, waves and storms that constantly shift the true dune line. To be effective, dune protection lines should be reviewed periodically and revised when there has been significant movement.

Pierce's Point

from Nordstrom, K.F., et al. 1977. Coastal Geomorphology of New Jersey. CCES Technical Report.

What Does the Future Hold?

Looking to New Jersey's coastal future, it is important to keep in mind the following three facts:

--Seventy percent of the United States population lives in coastal counties.

--The population growth rate in these counties is rising twice as fast as in the rest of the United States.

--From coastal erosion alone, without taking into account losses from hurricanes or northeasters, property losses on the nation's barrier islands are estimated to be some 300 million dollars a year.

Peering down this rocky, or sandy, road into the future, there is some indication that there is a growing awareness of the difficult problems facing those concerned about barrier island management; and because of that awareness, there are a few auguries for the future that seem promising.

In answer to a request by President Carter in 1977, the Department of Interior, Heritage and Conservation Service prepared a massive report (in the form of an environmental impact statement) on the future prospects of the nation's barrier islands. Although it is unusual for a government agency to criticize the policies of other government agencies, the Department of Interior has done so in this study. The impact statement (released to the public early in 1980) concludes that at least 20-odd federal agencies administer programs which have the potential to affect development on barrier islands. Through insufficient coordination and a general lack of understanding of the unique problems of barrier islands, many of these programs indirectly encourage unwise development while others promote conservation. The report points out that such agencies as the Department of Energy, the Army Corps of Engineers, the Federal Insurance Administration, the Federal Highway Administration, the Coast Guard, and the Small Business Administration are authorized to erect power plants, build groins, provide low-cost storm insurance, build highways and bridges and give low-interest business loans for barrier island investments--all this with little or no coordination.

With the change in Admistration and the subsequent abolition of the Heritage Conservation and Recreation Service, the fate of the Barrier Island Study is unclear, but there are encouraging signs

that Congress and the Administration are serious about reducing federal actions which encourage unwise financial investment on as yet undeveloped barrier islands.

Late in July 1981 Congress tacked a provision onto the Omnibus Budget Reconciliation Act which eliminates flood insurance for undeveloped barrier islands and beaches as of October 1983. This has been hailed as the beginning of a new national policy to shift the financial responsibilities from the general taxpayer to those who have chosen to live in these hazardous locations.

Thompson's Beach

from Nordstrom, K.F., et al. 1977.
Coastal Geomorphology of New Jersey.
CCES Technical Report.

Several bills to protect our nation's fragile barrier islands have been introduced in the 97th Congress. The one which is receiving the most support is the Coastal Barrier Resources Act. It seeks to end federal financial assistance, mostly grants and loans, to undeveloped barrier islands. Federal funds for such projects as bridge and road construction; water supply pipelines; shoreline stabilization; flood insurance; and other subsidies would no longer be available to undeveloped areas identified on maps accompanying the bill. The only area in New Jersey which has been identified as undeveloped for the purposes of this legislation is a 1.7 mile stretch of Stone Harbor Point.

Proponents of the measure claim that this legislation will not only curtail costly federal subsidies, but will also save lives and protect critical national resources. Opposition to the bill has primarily centered on the arguments that it deprives private property owners of reasonable use of their land and institutes a no growth situation in many coastal areas.

At the state level, greater attention is being focused on barrier islands and their problems. In Trenton work has been completed on a shore protection master plan that assigns priorities and defines what types of work should be done in specific regions of New Jersey's coast to achieve shore preservation.

One of the main features of the master plan is the elimination of the often ineffective town-by-town system of applications for state and federal funds for shore rehabilitation or preventive measures. Instead, the problems will be viewed on an inlet-to-inlet basis with recommendations for stretches of beach that may run through several towns or cities. The plan will need about 20 million dollars in bond money and matching 20 million from the coas communities.

Assemblyman Hollenbeck introduced novel and very controversial bill kno as the Dune and Shore Protection Act 1835) in June of 1980. It was partially aimed at filling-in the 25-or-more-dwellings loophole in CAFRA. The bill, now withdrawn, would have prohibited development from the ocean to

the first paved parallel road. It would also have forbidden the rebuilding of any home in this area that was fifty percent or more damaged by a storm. The state would have taken title to the property, with no provision for compensatory payment to the former owner. It is not surprising that the bill provoked a storm of opposition.

In response, the bill was revised and reintroduced on November 10, 1980 as Assembly Bill 2228. As in the first bill, the municipalities are charged with developing land use management ordinances which must be approved by the Commissioner of DEP. The new version redefines the area of regulation and proposes separate policies for the beach area and the dune area. In the beach area, no construction activity (including reconstruction) would be permitted except for necessary shore protection projects. In the dune areas, no new construction would be allowed, but reconstruction and repair of existing structures would be permissible unless prohibited by federal flood hazard regulations. The act also establishes a variance application procedure for local residents who feel the regulations impose undue hardships. The bill is in Committee and it is unclear whether it will ever reach the floor for a vote.

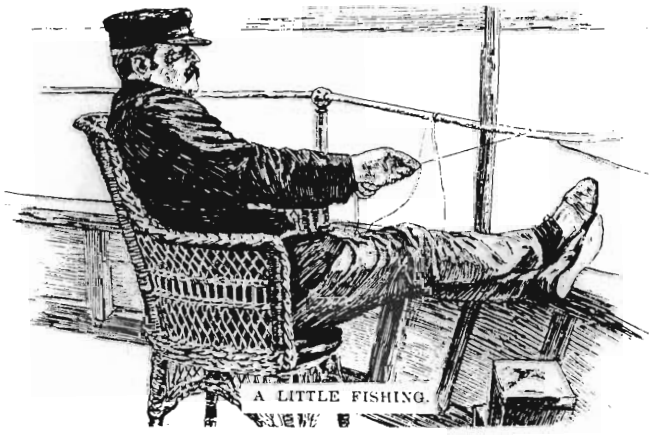
Looking at the federal, state and local barrier island problems and programs, four central issues emerge:

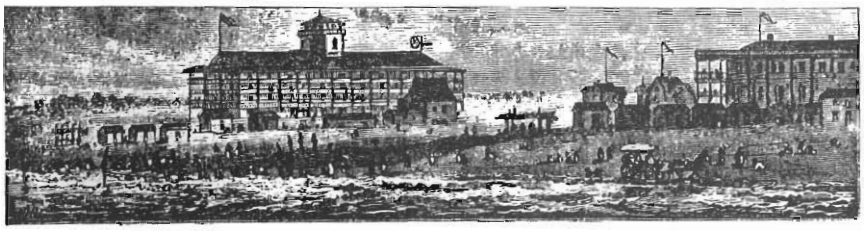
1. How do federal programs affect barrier islands and how should they be changed?
2. Should federal and/or state agencies attempt to stabilize developed barrier islands or leave them to respond to ongoing natural processes?
3. How do costs of development compare with the costs of preservation?
4. How can municipalities, counties, states and the federal government develop, agree on, and implement regulations that will ensure the best, safe use of a barrier island?

These are the questions that should guide future research efforts and policy discussions.

In the meantime, most coastal states joined President Carter in proclaiming 1980 as the Year of the Coast; there are signs that Congress may someday pass a barrier islands bill; and various citizens groups have been formed with the aim of protecting the coast. With all these people in Washington and around the country thinking about barrier islands, there is no doubt that things are beginning to look up for the cause of these strips of sandy land that form a protective chain along our coast.

It is not possible to predict what will happen; the only thing that is predictable is that whatever happens will not please everyone. But there are more and more people becoming aware of the problems, and more people with divergent views are coming a little closer to each other. By merging the views of those who are interested in conserving the country's fiscal resources with those who want to conserve the country's physical resources, perhaps we will be able to establish workable barrier island policies that will allow future generations to enjoy these thin strands of sand.





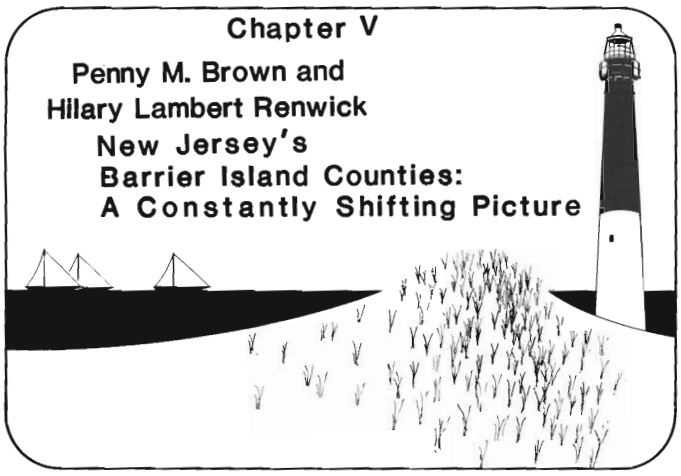
BEACH HAVEN.

CHAPTER V

The New Jersey counties with barrier islands as their ocean boundary all share the problems resulting from human use that tries to shape these unstable landforms to the will of society. In chapter V, "New Jersey's Barrier Island Counties: A Constantly Shifting Picture," a brief examination of the history of Monmouth, Ocean, Atlantic, and Cape May counties reveals some of the complexities of life on the New Jersey Shore. This is a place where moving sand, changing human populations and their tastes, big storms and waves have been mixing for several centuries. Put together by editors Penny Brown and Hilary Lambert Renwick, the chapter is based on historical sources and discussion from the county workshops at the 1980 Barrier Islands conference.

SCENES ON TOM'S RIVER.

TOMS RIVER.



MONMOUTH COUNTY

The Monmouth County shore was first settled by Dutch immigrants from New Amsterdam, but in 1664 English settlers from Long Island bought the Highlands from the Indians. In 1678 Richard Hartshorne bought all Indian rights for thirteen shillings to hunting, fishing, and gathering on his land, which included Sandy Hook.

Sandy Hook lighthouse was built in 1762-4 to guide boats through the channel to the port of New York. Originally 500 feet from the end of the Hook, the lighthouse is now over 7,200 feet inland as northward moving sand flows onto the curving tip. By 1775 the first resort cottages were built in the area; but the American Revolution brought the British Royal Navy to the bay, and Tories to Sandy Hook.

Following the Revolution, coastal Monmouth County began to look appealing to jaded New Yorkers, and by the early 1800s Long Branch was a fashionable resort. The town was known for its delicate sea bathing regulations: a white flag meant ladies only were on the beach, a red flag warned of a male contingent. Land values blossomed. In 1865, land in Sea Bright was worth five dollars an acre; by 1898, the per acre price was in the thousands.

The great strategic importance of Sandy Hook has made it a logical spot for military emplacements. Fears of the French led to calls in the 17th century for a fort; one was started there before the American Civil War, but by the 1890s it was still unfinished. Protecting this military resource, the Federal government resisted public use of Sandy Hook for decades: it was used as a testing ground in the early 20th century, and Fort Hancock has since been part of the nation's defense system. The government's presence helped maintain the Hook in a largely undeveloped state, and in 1962, over 640 acres were leased from the government for use as a state park.

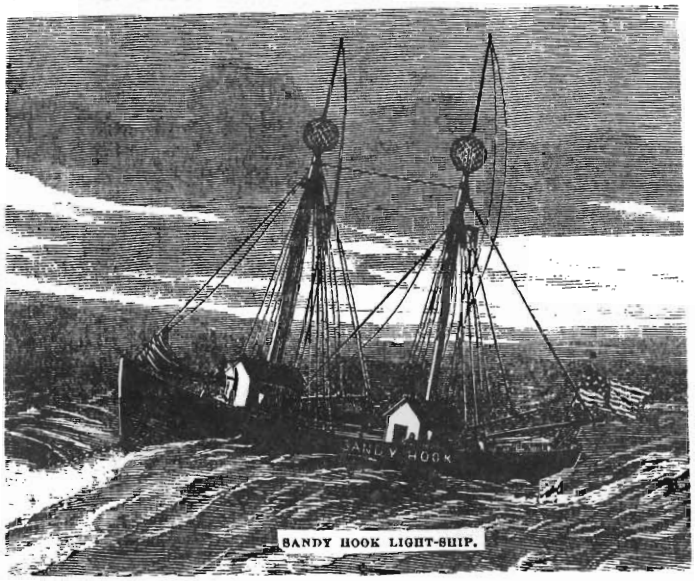

A RACE ON THE BEACH.

Now part of the Gateway National Recreation Area, Sandy Hook appeals for its colorful past, its glorious beaches, and its abundant wildlife and seaside vegetation.

Issues for Today and Tomorrow

The main problem facing Monmouth County coastal areas is that by trying to permanently fix the coastline, the normal flow of sand northward has been interrupted, and the beaches are starving. In the natural course of events, Sandy Hook has been an island and can become one again. Thus we must weigh human needs and preferences against natural processes: the communities near Sandy Hook depend on

its tourist traffic for much of their income, yet their beach protection measures are affecting the flow of sand to the Hook. If the slender road connecting Sandy Hook washes out, these communities will be adversely affected. A balance must be worked out. Also, who should pay for shore protection works - local taxpaying residents, or the developers who will be the major beneficiaries?



SANDY HOOK LIGHT-SHIP.

OCEAN COUNTY

This account is based in part on the Barrier Islands conference panel presentation by Pauline Miller, Ocean County Historian.

In the 16th and 17th centuries the shores of Ocean County were primarily occupied by nomadic fishermen, whalers and pirates, as well as Indians who summered at the shore. Henry Hudson's 1609 description of Barnegat Bay suggests the areas's rugged appeal. "We came to a great lake of water, as we could judge it to be. The mouth of that lake hath many shoals, and the sea breaketh on them as it is cast out of the mouth of it." Known as a difficult area for navigators, the hazardous coast nurtured a feeling of independence long before the American Revolution.

Between 1800 and 1837, there were 125 ships wrecked on the coast between Point Pleasant and Barnegat; the region was called "The Graveyard of the Atlantic." In 1834 Congress had Barnegat Lighthouse built for $6,000; in 1856 the light fell into the sea. In 1858 a taller light was built farther inland, for $60,000. This light is today again in danger, despite the engineering works all around it.

Though there was a boarding house for tourists at Tucker's Beach by 1765, the area's remoteness kept growth slow until the 1870's when railroads were brought in. Seaside resorts sprang up alongside, many of them mildly religious in tone. Philadelphia Quakers established Beach Haven; Baptists, Seaside Park, and Methodists had a camp at Island Heights. Until Barnegat Bay became polluted by tourist use, fishing, clamming and oystering were important. However by 1900 the county's main industry had long been tourism.

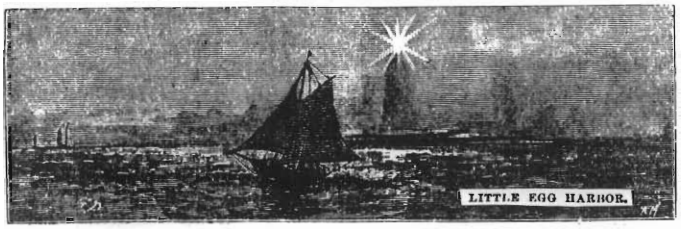

A WRECK ON BARNEGAT SHOALS.

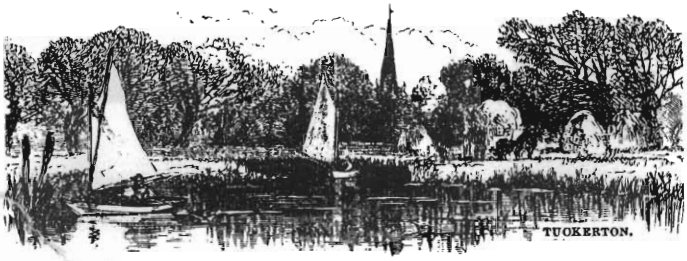
The most dramatic change in this coastal county was brought about by the completion of the Garden State Parkway in the 1950's. Within 20 years population had tripled, and many year-round residents began to move in. Most of this barrier island area has lost its natural character, but in 1952 the state bought the ten-mile-long southern half of Island Beach to serve as a park. Saved from

threatened real-estate development, it is a good reminder of how the entire coast of Ocean County must have looked 200 years ago.

Issues for Today and Tomorrow

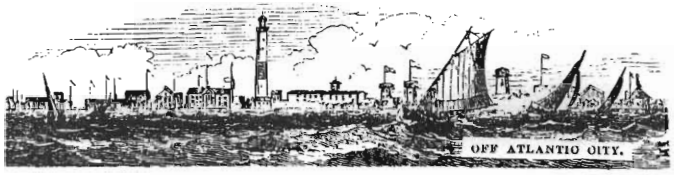
There is both physical and cultural historical evidence that the islands are constantly changing. The fall of Barnegat Lighthouse and the disappearance of the town of Tucker's Beach, its school, hotel and some houses during a storm in 1937 are only two examples. With the thousands of low-lying summer homes lining the sand, will the county's islands be prepared to survive the next major storm? Dunes act as a natural buffer to the storm's force. What role should state and local government play in the preservation and rebuilding of dunes? Development interests and the natural resource of the dune and beach system must both be protected.





ATLANTIC COUNTY

As with most of New Jersey's outer coast, Atlantic County's islands had limited appeal for early settlers, and were used in the 17th century mainly as a whaling base. To elude pursuers, pirates hid in the bays and coves west of Absegami Island. During the American Revolution the British Navy called this area "a nest of pirates," as it was a haven for American privateers attempting to cripple British shipping. While the iron and glass industries reached their peak inland during the early 19th century, the coastal area remained sparsely populated due to its infertile soils, windswept land and prolific insects. By the early 1800s there were a few rough boardinghouses for hunters and young people from the mainland who had discovered the potential for carefree beach parties.



Nature's dominance was challenged when Dr. Pitney convinced a group of entrepreneurs to invest in a gold mine by the sea. In 1854 the first train made the trip from Philadelphia: the railroad bridge across the inlet was unfinished, and 600 dignitaries and reporters were rowed across to Atlantic City's United States Hotel. Early oceanside entertainment consisted of hiking along the beach, collecting shells, and exploring the many shipwrecks.

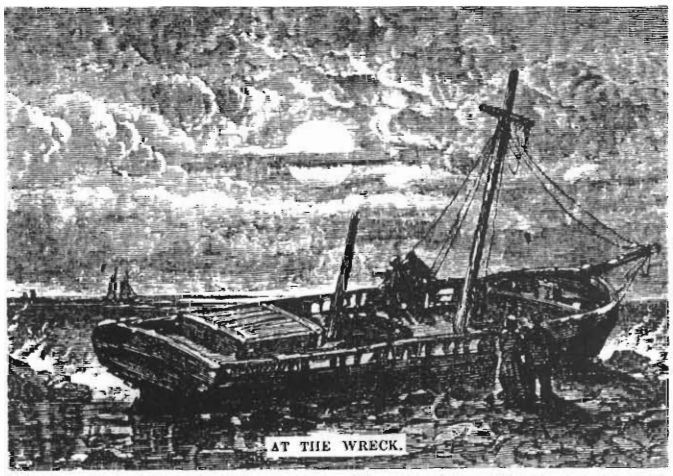
Mother nature slowed progress, with the cold winter of 1857 and the fly and mosquito plague of '58, but during the 1860s Atlantic City began to boom. The first boardwalk, 8 feet wide, was built in 1870 and the first ocean pier in 1882.

By the 20th century Atlantic County's coast was lined with resort towns. Hit hard by the Depression, Atlantic City began to recover during World War II as its hotels were used for troops and hospitals. After another period of prosperity during the 1950s, the city went into a long, slow decline. This bust-to-boom cycle continues today in the era of casino gambling.

Issues for Today and Tomorrow

The sudden and enormous impact of casino gambling has made Atlantic City one of the major "tourist destinations" in the United States over the space of a

very few years. Within the next twenty years, the county's population will double, primarily near Atlantic City. A lot of stress is being felt, by people and on services. Some fear that an economy focused on tourism will inevitably lead to another bust. The county and city, it is suggested, will have to work together to develop the adequate transport systems, sewage facilities, and other services necessary for a diversified economic base and decent standard of living. Another pressing problem is the erosion of the coastline, limiting the number of people who can enjoy the beach, and threatening structures. Millions of dollars must be spent to extend and maintain Absecon Island's beach. Perhaps it is time for a moratorium on growth, so that city and county planners and citizens can find ways to respond to the very real needs of the county's communities and not simply react to the demands of the casino industry.



AT THE WRECK.

CAPE MAY COUNTY

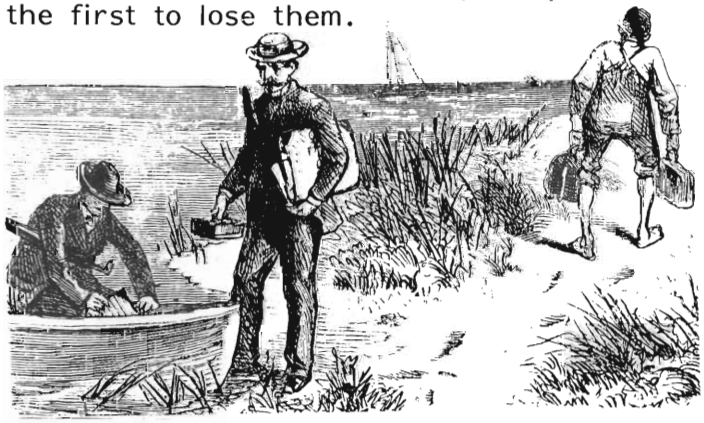
Settled by New Englanders, Cape May County's barrier islands and spits saw a pattern of use similar to that farther north. In 1801 Ellis Hughes, the Cape May postmaster, began what was probably the first promotional tourist campaign on the Jersey shore. He placed an ad in the Philadelphia Daily Aurora encouraging people to come to Cape May's broad beaches, with their firm sand and gently sloping bottom:

> The subscriber has prepared himself for entertaining company who use sea bathing, and he is accommodated with extensive house -room, with fish, oysters, crabs and good liquors. Care will be taken of gentlemen's horses. Carriages may be driven along the margin of the ocean for miles, and the wheels will scarcely make an impression upon the sand. The slope of the shore is so regular that persons may wade a great distance. It is the most delightful spot that the citizens may retire to in the hot season.

Cape May grew quickly as a resort, attracting both southern planters and the northern elite. The cultural and physical environment of the area changed rapidly. The local population became dependent on summer tourist dollars, and the ocean began to remove Cape May's beaches: 169 feet, for example, disappeared between 1804 and 1822. Steamboat service was established and by 1844 over 3,000 visitors per summer were enjoying this stylish resort.

ON THE BEACH.

By the late 19th century, other resorts in Cape May County were developing, such as Ocean City and the Wildwoods. There was a gradual decline in the popularity of Cape May city due to the draw of Atlantic City, the loss of beaches, and greater ease of access to less remote resorts. Today the city of Cape May, battered by changing tastes and winter storms, retains a handsome legacy of Victorian architecture and a small-town feeling lacking in much of New Jersey's resort areas. The downtown has been opened and modernized in the hope that the combination of increased automobile access and old-style charm will attract tourists anew. Along the ocean, however, in front of the Victorian boardinghouses, runs an immense seawall, built in the aftermath of the 1962 storm that flooded much of the city. Cape May was one of the first places in our country to try to hold its beaches, and consequently one of the first to lose them.



Issues for Today and Tomorrow

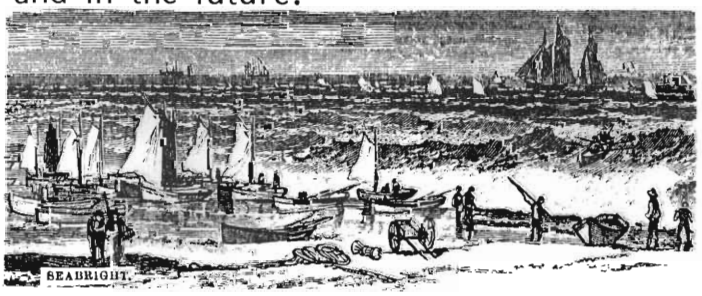
The problems associated with beach resorts--overuse, severe erosion, the strain of providing services for a large seasonal population, water supply and its pollution--are being experienced on Cape May County's barrier islands. What can be done to lessen the environmental impacts of tourism? Cape May Harbor is the number one port in New Jersey in dollar value of fish products landed. But this valuable resource is threatened by tourism-generated pollution. Can new sewage treatment plants and more closely regulated runoff help to clean up the bays? The tourism industry is also raising waterfront property values to the point that fishing facilities are being forced out. How can the municipalities of the county work together for unified solutions to these problems?

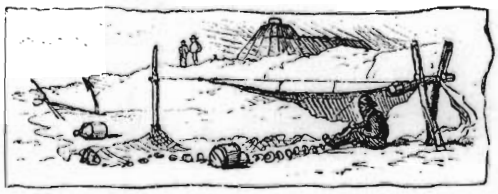
Conclusions

How can individuals and government deal with the dynamic physical beach system that so directly affects life and property on the New Jersey shore? The five chapters in this book provide ample evidence for a centuries-old struggle between human beings and the barrier island environment. Today, there are many people seeking ways to accommodate both natural forces and the human desire to live by the sea. There are builders who have educated themselves in safer methods of construction; municipal governments have passed ordinances prohibiting destruction of dunes; and home owners have put up sand fencing and planted grass on dunes to encourage the development of this natural storm buffer.

Despite all this action and concern, there are still questions about the adequacy of our preparations for the inevitable future storms. Are our building regulations strong enough? Who pays for severe storm damage? Will the existing emergency evacuation routes be capable of handling the large seasonal population, and do people know what the evacuation plans are? If individuals and municipalities do not have building restrictions which encourage the wise development of our coast, who must take the responsibility?

Our islands are not merely private property, but a public treasure. They must be protected so that they will be available to New Jersey's citizens today and in the future.





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A Word About the Center

The Center for Coastal and Environmental Studies is a research unit of Rutgers - the State University. The Center brings together research scientists from many disciplines and operates facilities for faculty and students from the Newark, Camden, and New Brunswick campuses of Rutgers University. The Center's facilities include a field station complex located near Tuckerton and laboratories in New Brunswick. A major function of the Center is to conduct basic and applied research providing timely information to government and the private sector. The Center conducts a large number of projects dealing with marine fisheries, coastal geomorphology, and coastal zone management and planning.

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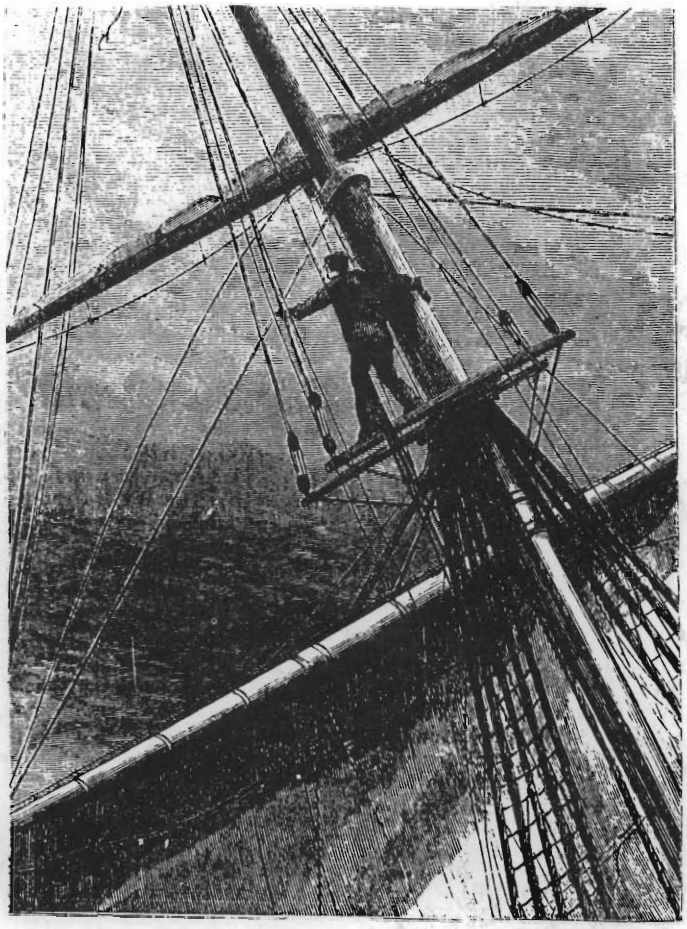

"THERE SHE BLOWS!"

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