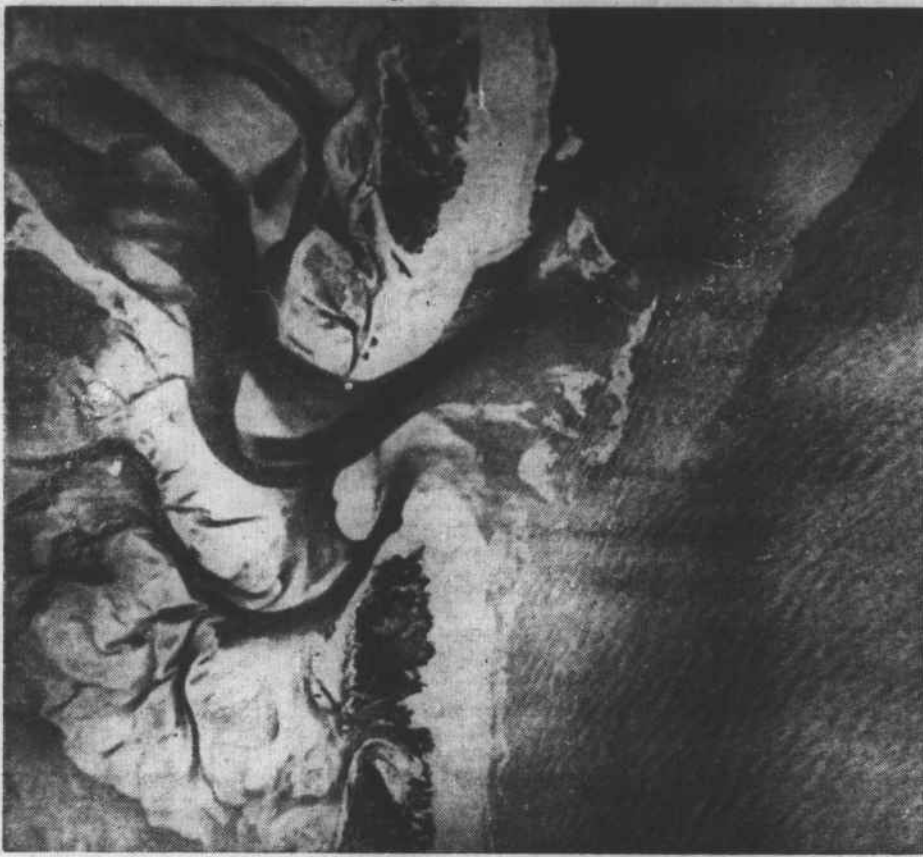


## An X-Ray of Drum Inlet



This amazing photograph of Drum inlet, taken from the air by the Coast and Geodetic survey with use of special equipment, shows deep water channels. Deep water shows up as black curved lines.

The left side of the picture is Core sound and

the right the Atlantic ocean. The light hook-like projections at the top and bottom of the picture are the ends of the sand bars or "banks."

Boats passing in and out of the inlet naturally seek deep water, which is not always in the same place because of the shifting sands.

## Inlets Come, Inlets Go Along the Outer Banks

By Dr. Eugene W. Roelofs

About two months ago a yacht came limping into the harbor at Ocracoke and the village was scoured for someone with a diving outfit who would examine the bottom of the boat. "What's the trouble?" I asked. Getting out a Coast and Geodetic Survey chart dated June 1950, one of the boys, slightly irritated by the interruption of the fishing trip, said, "Here we were, cruising at about 15 knots down Wallace Channel when all of a sudden we fetched up, but good! The chart shows 14 feet of water and we draw 18 inches. You figger it out! By the way, we were all sober!"

This incident shows that the poets are not dreaming when they write of "shifting sands." The outer banks are indeed heaps of shifting sand. In and around the inlets, the sand may move quite rapidly so that boat skippers must constantly be on the alert. Where there was a good channel only a short time ago, there may now be a sand bar. Skippers who visit the area infrequently must "feel" their way in and out. These shifting sands must have caused the early sailing vessel captains considerable trouble, and many of the early wrecks were probably the result of a captain's thinking that he knew where the channel was.

### Theories Set Forth

A number of theories have been advanced to explain the formation of the banks or offshore bars. In general, two processes are involved, namely, longshore currents and wave action. The first requires a large supply of sand or other material which can be carried by a current flowing along the shore and be deposited in the form of a bar. There is such a current on our coast going in a southerly direction. This current, flowing inside of and in the opposite direction to the Gulf Stream has been known for many years. Sailing ships in the 17th century took advantage of this current, which is now believed to be the result of a series of counter-clockwise eddies caused by the Gulf Stream.

But this current does not seem

strong enough to have carried down all the material now found in the outer banks. Another factor ruling out the longshore current theory is the belief that there apparently never has been a large enough supply of material to the north to have formed the present banks.

### Formed by Waves

There seems to be little doubt that our offshore banks were formed by the waves which have been pounding our shores ever since the present coastline existed. In order to explain this theory we must digress a moment for a study of waves and wave action.

When a wave moves shoreward, we see only the top of the wave. But actually, the wave extends as far below the normal water surface as it does above. Therefore when a 10-foot wave, for example, moves in, the water underneath this wave for a depth of 10 feet is also moving shoreward, so that the wave really involves a vertical distance of 20 feet.

As this wave moves up along a sloping shoreline and reaches a point where the water is about 10 feet deep, the lower part of the wave starts dragging on the bottom. The wave literally stumbles and falls over forward, giving rise to the well-known white-cap or breaker. A visit to the beach will demonstrate this phenomenon. It will be noticed that the large waves break some distance offshore, the smaller waves move farther in before breaking, and the very small wavelets stumble and fall right near the water's edge.

### Top Water Plunges

When a wave breaks, the water which was on top plunges down, rolls over, stirs up the bottom, and

carries the sand toward the shore until the movement of the water slows down to a point where the larger sand particles settle out. Each successive wave adds a little more sand, until after a number of years the accumulated sand forms a bar at a distance from shore depending on the slope of the bottom.

When the bar is first formed, it is not uniform in height or width. The tide, by its rising and falling, keeps some of the lower portions of the bar scoured out, while the rest of the bar keeps building up. As a result, the banks are interrupted by inlets through which the tide moves in and out, and through which the water from the coastal streams must pass, a little at a time on each successive ebb tide.

The outer banks of North Carolina have existed for many centuries. They were known to the early traders who came to this coast. The earliest chart of our coast available is one made by John White, the English Governor of Roanoke Island and grandfather of Virginia Dare. White's chart was made in 1585, and shows the outer banks with a number of inlets. Charts made during the 17th and 18th centuries are also available. A study of these charts reveals a very interesting history of the North Carolina inlets. At one time or another, there were 15 different inlets between the northern part of the state and Beaufort Inlet, where now there are five.

### Ocracoke Remains Open

Ocracoke Inlet appears on all the charts and apparently has been open during the entire 365 year period. Hatteras Inlet is missing from the charts made in 1770 and 1780, so it must have been closed during at least that 10 year period. Drum Inlet, pictured here, is shown in the 1585 to 1763 charts, but is absent from the charts from 1770 to 1785. Drum Inlet was again opened during the 1933 hurricane and has remained open since that time.

Water which goes through the inlets carries sand picked up near the inlet. The flooding water deposits the sand inside the inlet as shown in the photograph. This filling process goes on continuously and most inlets have to be dredged from time to time in order to maintain a given depth for navigation. The ebbing water deposits sand just outside the inlet, usually

## Thar' She Blows!

### Capt. Charlie Carrow, When 16, Helped Harpoon a Whale

Capt. Charlie Carrow of Beaufort, as a lad, went fishing on the banks and remembers the experience as one of the most enjoyable of his life.

He wrote of those days, "My First Experience as a Fisherman," and enclosed the account in a letter some days ago to his brother, Thomas Carrow, who lives in Philadelphia. His brother forwarded Captain Charlie's story to THE NEWS-TIMES.

Captain Charlie, who is now 79, said that he was 16 years old when he spent the fall and winter, the latter part of 1887 and early part of 1888, fishing.

"I had been sick for over two years and the doctor told my father to send me on the Banks with a crew of fishermen to see if the sun and salt water would help me, with rough life in the sand."

"I stayed there three months and gained so much and felt so much better. The fishing stopped the fifteenth of November. And then another crew was going to fish for porpoises and whales and I persuaded my father to let me stay, with the understanding that if I did not have a comfortable place to stay I would come home."

"There were three other young men from home went over there that winter and stayed, and we all enjoyed it and I have never enjoyed anything as much since; lots of old people and young ones and they were just as good as they could be. Captain Joe Lewis was captain. We had four boats and six men in each boat. I went in the boat with Capt. John Lewis—Black John they called him—as there were other John's—John Lewis, Chief John and John Hill. We caught quite some porpoises, over three hundred and killed a whale."

"Black John was a great hunter for ducks, and he was a great believer in dreams. And the night before we killed the whale he went out with his light and found a

large flock of Brants (ducks). He had an eight gauge gun that carried 1/4 of a pound of shot. He fired both barrels and picked up 45 Brants, went home and dreamed that we were going to kill a whale, and got up and came to the camp at 4 a.m. in February and called me and told me we were going to kill a whale that day and told me where he was sitting when he saw her and the direction she was, and that she was not hard to kill. He wanted to do it when light came."

"He took his seat where he dreamed he was and concentrated his eye. Then he told me to get his irons, that was the harpoon standing right by him, and fill the water jug. And between 8 a.m. and 9 a.m. he saw her and by 11 a.m. she was dead and we were towing her ashore. Everything happened just as he dreamed."

"We had several old men in the crew. Capt. John's Father shot three booms in her and the third one exploded. It sounded like worse than thunder. All these old men had helped to kill several. One was Indian and Spanish. He had helped to kill 98 and wanted to help to get 100. I could sit all day and listen to him tell his experiences."

"We sold the whale to Mr. Charlie Wallace for five hundred dollars. I made fifteen dollars, and I never enjoyed any six months as much as I did them because I was a boy, my health had improved and I weighed 30 lbs. more than when I went over there."

Captain Charlie added a bit last week to the story above, which was written soon after he helped harpoon the whale. There were five men from Beaufort fishing on the banks that winter, Joe Wolf, Henry Whitehurst, Bob Gardner, Ike Noe, and himself.

Of the five, only he and Ike, who lives in Beaufort also, are still living.

in the form of a bar or delta. Wave action tends to keep this sand levelled off so the channeled appearance of the inside deposits is not found outside.

The closing of inlets is a natural process due to filling in by sand. The longshore currents enter the picture here. Sand is picked up from the up-current area and is deposited on the north side of the channel, making the channel narrower. Water moves faster through the narrower channel and washes sand away from the side opposite the filling. As long as the scouring of the south side keeps pace with the filling on the north, the channel remains open but moves slowly southward.

When filling occurs faster than scouring for a long enough period of time, the inlet becomes closed. As a general rule, it is not feasible to construct man-made inlets, because the fact that no inlet exists in a given spot is an indication that the longshore currents carry enough material to close an inlet at that point. Inlets can be constructed and can be kept open by suitable jetties, but the cost of construction and maintenance would be enormous. So unless an inlet, or proposed inlet, has considerable economic importance, it seems best to let nature handle the matter.

Summarizing, it may be said that waves form inlets, tides keep them open, and longshore currents close them.

### How Long?

Many people, looking at the map of North Carolina, wonder how long that "strip of land" known as the outer banks will stay where it is. Studies indicate that offshore bars tend to move landward. The waves that formed them in the first place now attack them and tend to wash them away. Coupled with the erosion of the seaward face is the filling of the sounds with sand blown from the banks into the sounds and sediments brought in by coastal rivers. The narrower sounds will undoubtedly disappear first and Pamlico Sound

## Inspectors Work Along Coast

To help enforce fishery regulations and collect license fees on commercial fishing gear, the commercial fisheries division employs inspectors and law enforcement supervisors along the coast.

Inspectors and their locations are as follows: Carl P. White, Poplar Branch; U. G. Wise, Stumpy Point; W. P. Burrus, Englehard; W. H. Stowe, Belhaven; T. M. Popperville, Washington, N. C.; Clifton Wilson, Southport; Nolie Fulcher, Atlantic; Richard Davis, Davis; Fenner Whitfield, Lowlands, and L. W. Hassell, Beaufort.

Law enforcement supervisors are E. L. Nicholson, Burgaw, and F. E. Hopkins, Vandemere.

Capt. Ira Willis, Morehead City, and C. R. Webb, Swansboro, former inspectors, retired in July.

Should other inspectors be required, they are hired on commission basis. Additional inspectors are always taken on during the oyster season, Oct. 1 to March 1. They are required to see that the oysters taken pass the 3-inch cull law.

will likely be the last to go.

Our children and their children will likely know Topsail, Stump, Bogue, and Core Sounds. But should our civilization escape the atom bomb or even more efficient methods of destruction, Morehead City and Beaufort may some day find themselves resting on the shores of the Atlantic.

### Fish Attacks Fisherman

Singapore—(AP)—A mammoth swordfish leapt into a 10-foot fishing boat, carried out a split-second attack on the Malay fisherman and dived back into the sea. The fisherman suffered a deep flesh wound. The fish nearly capsized the craft during the attack.