

ICHTHYOLOGY

# Fish That Bite Men

## Shark Attacks on Bathers Well Authenticated, Though Not so Frequent as Many "Scare-Head" Stories Allege

By DR. FRANK THONE

**S**HARK scares are always good for front-page space in the papers. There is something fascinating in the terror of those rows of razor-edged, three-cornered white teeth that holds the eye and the imagination, even as in childhood we were enthralled by the "great teeth" of the Big Bad Wolf that gobbled up Little Red Ridinghood's grandmother—and meant to take Little Red Ridinghood herself, next. One school of psychologists might speculate that there is a kind of mental evolutionary throw-back about it all, to an ancestral state when Teeth meant Death, and being eaten afterwards, as Teeth still mean death and devourment to myriads of animals today.

Whatever may be the cause, there is no doubt about the effect. We gobble up shark stories in the newspapers, even as we imagine the sharks would like to gobble us up. There is nothing at all new in the idea of a fish biting a man, but it is nevertheless sure-fire News.

### Nail-Sharks and Bottle-Sharks

Such fascination there is in the thought of attack by a shark, that sharks get much more newspaper notice than they really merit on the basis of their own exertions. Let a bather snag himself on a nail on a piece of drifting timber, or sit down on a broken bottle in shallow water, or even see something he takes to be the sinister back fin of a shark cutting the water, and he (or she) yells shark-and-bloody-murder. And it makes good "copy" for the papers—and sprouts some more gray hairs for the managers of beach resorts.

But even when you have "played down" the false alarms of shark attacks, there remains a quite substantial and painful residue of true and authentic cases. Sharks do attack human beings, and while they seldom carry the attack to a fatal outcome they usually maul and bite their victims so badly that weeks in the hospital and dozens of surgical stitches are necessary before they can walk again.

From the warmer beaches of both the world's ends come stories of well-authenticated shark attacks. It is winter now

in Australia, but when they were having their summer, last December and January, the shark situation received the attention of a careful student of marine life "down under," Gilbert Whitley. He reported his findings recently in the *Victorian Naturalist*.

He divided his records into ten-year periods. The number of authentic shark-attack reports in the decade 1912-1921 was 13; in the following decade, 1922-1931, it jumped to 45, and in the three-year period 1932-1934 there were 16 well-supported records. At this rate, the 1932-1941 decade might be expected to run up a record of somewhere near 60 serious shark-bites.

### More Bathers, Not More Sharks

Mr. Whitley does not believe that Australian sharks are becoming wicked-er, or necessarily more numerous. It is beach bathers, potential shark victims, who are more numerous, he suggests. As remedies, he offers the construction of "shark fences" enclosing bathing beaches, or where this is not practicable, the use of lookouts on specially built high towers or even in aircraft, to warn bathers ashore when Old Toothy is seen in the offing.

On our own shores, shark attacks seem to have occurred most frequently in the Florida region. They are usually blamed on the notorious Caribbean sharks, wandering northward out of their true bailiwick. They would not in any case have to wander very far, however, for Havana harbor is full of sharks—sometimes credited with assisting in the disappearance of too-troublesome *revolucionistas*.

Farther north, it is difficult to obtain any really well-authenticated shark-bite records. There was, to be sure, a major shark scare off the New Jersey coast back in 1916, much to the distress of Atlantic City and neighboring beach towns. But the actual shark damage (if sharks really caused it) was multiplied manifold by terrified imaginations. Sharks of man-eating size and disposition may be set down as extremely exceptional in northern waters.

What the northern boundary of really vicious sharkdom may be is still a matter of some doubt. For long it was claimed that such sharks never appeared north of

Florida, but recently the director of the Charlestown, S. C., Museum, E. Milby Burton, made a critical investigation of all the recent cases of shark attack he could find. He limited his inquiry to victims whom he could locate and interview personally, and reported what they told him in the *Scientific Monthly*. Two of them consented to have photographs of their tooth-scarred legs published in corroboration of their testimony.

Perhaps the most vivid account, and certainly the most vivid scars, were offered by a youth named Drayton Hastie. He stated that while bathing at the north end of Morris Island, at the mouth of Charleston harbor, he saw what he took to be a shark-fin and swam out to investigate. The fin had disappeared, so Mr. Hastie concluded he had just been "seeing things."

Nevertheless, he said, "I did not like the idea of swimming with sharks all around, so I sat down in about three feet of water . . . I was almost certain that



**TWELVE-FOOT TIGER SHARK**  
Taken off the Great Barrier Reef, Australia.  
Sometimes accused of being a man-biter.

in such shallow water I would be safe from anything large enough to bite.

"I felt a swerve of water, which was followed immediately by an impact which brought me to my senses. Something clamped down on my right leg. I was aware of a tearing pain up and down my leg, and I was being pulled outward by something which seemed to have the power of a horse.

"Looking down, I saw, amid the foam and splashing, the head of a large shark with my knee in its mouth, shaking it as a puppy would shake a stick in attempting to take it away from some one . . . I freed my right leg, only to have the monster bite me on the left one."

### Sharks Eight Feet Long

Mr. Hastie broke loose and backed ashore. The whole thing happened in ten seconds, but so severely had he been bitten that his friends had much ado to get him to the army hospital at Fort Moultrie, where more than thirty stitches had to be inserted. He was transferred to the Riverside Infirmary, in Charleston, where he remained a patient for two weeks.

Both the week before and the week after the attack, specimens of sharks eight feet long were captured within a hundred yards of the scene of the accident. One of Mr. Hastie's friends who witnessed the attack said the shark that bit him was easily eight feet long. The marks on the bitten knee indicate a mouth diameter of ten inches, which is a fair fit for a shark of that size.

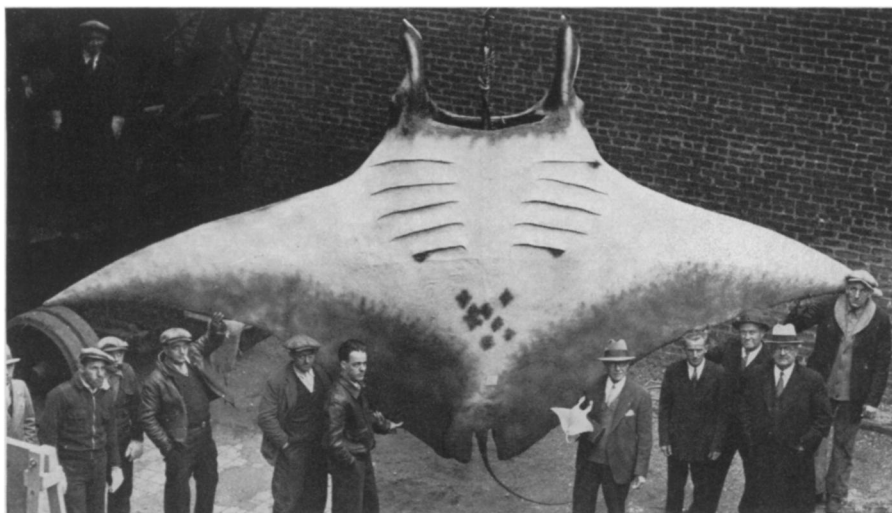
The captured specimens were identified as the yellow or cub shark, usually considered to be a West Indian rather than a South Atlantic species.

### "Didn't Stop to Observe"

A second victim was attacked while standing in the water, and so badly bitten that over 100 stitches had to be taken in his left knee and leg. A Negro, who came to his rescue and helped him ashore, stated that he "saw about six feet of the fish—but didn't stop to observe closely."

In all, Mr. Burton lists five cases of shark-bite from the immediate vicinity of Charleston, which he believes to be "absolutely authentic." In addition, he records two "semi-authentic" cases. In both these cases the victims were women. Their injuries were real enough; but nobody actually saw the sharks, which leaves a slight margin of chance that some other voracious sea creature might have made the attacks.

All shark attacks recorded in American waters have apparently been by sharks scarcely big enough to do more



**HUGE MANTA, OR SEA-DEVIL, A RELATIVE OF THE SHARKS**  
*Terrible in appearance, but its reputed man-killing tendencies probably mythical.*

than disable their victims. They are reported to be eight- or ten-footers—rarely larger. The real villain in the shark world, the true man-eating white shark of the tropical seas, reaches a length of thirty feet, and can easily kill and devour a grown man in a few slashing bites. Linnaeus, the great Swedish naturalist of the eighteenth century, credited this species, and not a whale, with being the "great fish" which in the Bible narrative "swallowed up Jonah" and kept him within, undigested, for three days and nights.

### Sharks With Six-Foot Jaws

But even this terrible monster drops to mere mackerel size as compared with a whale-sized species that swam the seas only a few million years ago. This giant is known only by its teeth—for shark skeletons are made principally of cartilage or "gristle," which does not form fossils. But these teeth, which are quite abundant in fossil deposits, are often a good six inches from base to point! By comparison with modern shark teeth, they indicate a jaw-spread of five or six feet, and an over-all body length of ninety feet, quite as large as the biggest living whales.

Of existing sharks, the largest are the whale sharks of the tropics and the basking sharks, which also reach the higher latitudes. The sharks harpooned so daringly by the Irish fishermen in the recent film feature, "Man of Aran," are basking sharks. Size limits of these giants are not as sharply known as they might be, but it appears probable that they both reach lengths approaching forty feet, with the honors perhaps a little on the side of the whale shark.

Fortunately for the seafarer's peace of mind, neither of these giant species is a man-eater. Their teeth are small, though numerous, and they seem to be content with ordinary prey—fish, squid and the like.

Finding human bones, clothing, etc. in a shark's stomach does not necessarily convict the shark of man-eating proclivities. Almost any shark that is large enough, and has strong enough jaws and teeth, will eat the bodies of drowned persons, but only a few kinds of sharks have the courage—or viciousness—to attack a living man. Dr. E. W. Gudger of the American Museum of Natural History, a widely known specialist on fishes, states that probably most man-eaters and man-maulers belong to the genus known by the forbidding name of *Carcharias*. Tiger-sharks are under some suspicions and in Australia the mackerel-sharks also; but the case against them is apparently not as yet quite conclusive.

### Barracuda More Vicious

Sometimes sharks receive unjust blame for the attacks of the barracuda, a five- or six-foot fish with the jaws, teeth and truculent disposition of the muskallunge of the freshwater lakes of the North. Barracudas seem to be limited, in their American range, to the southern part of Floridian coastal waters, but there they make mischief enough.

Dr. Paul Bartsch, of the U. S. National Museum, likes to walk on the sea bottom with a diving helmet over his head, taking photographs of sea life with a specially equipped camera. He is not much concerned about sharks, but barracudas worry him. "The shark is a gentleman,"

says Dr. Bartsch. "You let him alone and he'll let you alone. But you never can be sure about a barracuda."

The manta, or sea-devil, a great wide-winged, two-horned creature related to the sharks, is often reputed to be a man-eater. Legend says it will smother a fisherman in its great embrace, and then swallow him. But it is doubtful whether it ever eats anything more formidable than oysters. The manta could more justly complain about the manta-killing ac-

tivities of man, for sportsmen in the warm waters off southern California and Lower California like to fling harpoons into its tempting expanse of back, and then enjoy the somewhat hazardous thrill of being towed at high speed for hours by a half-ton of bewildered giant fish with the terror of imminent death upon it.

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## PHYSICS

## Airplane Propeller Makes World's Noisiest Roar

**S**OMETHING more radical than better sound insulation of airplane cabins must be found by scientists if air travelers are to be spared the roar of airplane propellers, it appears from the report of E. Z. Stowell and A. F. Deming of the laboratories of the National Advisory Committee for Aeronautics at Langley Field, Virginia.

In a new study of noise from two-blade propellers the scientists have found that the greatest noise source is the roar of the fundamental frequency. This basic noise is a musical note having twice the frequency with which the propeller is rotating. In the propeller roar as many as 50 or 60 harmonics of this fundamental note appear.

Discussing the importance of propeller noise tests, the scientists state: "It is evident that, although passengers in a commercial airplane may find the noise temporarily disagreeable, the effect of the noise upon the pilots who are immersed in it day after day may be greater and even interfere seriously with efficiency."

The two-blade airplane propeller, they point out, radiates more noise as expressed in watts of power than does almost any other continuously operating device known to man. The only exceptions are certain special signalling devices.

Propeller roar due to the blades' rotation, Stowell and Deming found in experimental studies, has a maximum at about 30 degrees on each side of the propeller's axis of rotation. This angle is just about the one which passes through the passenger seats in cabins of commercial multi-motors airplanes.

At close range and at great distances the propeller roar of rotation dominates propeller noise. At intermediate dis-

stances, however, a second noise source may be prominent. This is the tearing, ripping noise caused by the periodic release of vortices from the trailing edges of each blade. The vortex propeller noise forms a continuous sound spectrum, it has been found, in the middle range of frequencies of from 1,000 to 5,000 cycles. Vortex noise is a maximum in the line passing through the axis of the propeller in both directions and a minimum in the plane of rotation of the propeller.

The fundamental rotational noise of a propeller is the most objectionable from the viewpoint of the airplanes, state the Langley Field scientists, for (1) it masks speech readily, and (2) insulation against this low frequency is difficult.

"No great improvement can result," they conclude, "from any scheme of silencing that does not include a reduction in the magnitude of this (rotational noise) component."

The propeller noise studies were made with a variable pitch two-blade aluminum alloy propeller eight and a half feet in diameter. The propeller's pitch angle was adjusted so that it absorbed 100 horsepower from its driving motor at 1,800 revolutions per minute.

The motor and propeller were 235 feet from the nearest obstruction and capable of rotating through 360 degrees so that the noise output at various angles could be obtained with a fixed microphone. Using a special apparatus, the electrical counterpart of the sound waves as generated in the microphone and the amplifying equipment was analyzed by frequency spectral parts and photographic records obtained of any portion desired.

*Science News Letter, September 14, 1935*

Grade crossing accidents took 1,554 lives in this country last year.



CHAMPION ROARER

## PHYSICS

## Stratosphere Balloonists To Seek Sun's Neutrons

**N**EW FIELDS of research in stratosphere balloon ascensions should include studies to see if neutrons are being shot out by the sun, Lord Rutherford of Nelson, F. R. S., widely known physicist and head of Cavendish Laboratory, Cambridge, told the meeting of the British Association for the Advancement of Science.

In laboratory experiments neutrons, fundamental units of matter out of which atoms are composed, make possible the transmutation of one element into another.

It might be possible to detect neutrons from the sun high in the earth's atmosphere, Lord Rutherford declared, and they should be looked for as high as scientists can reach in manned and unmanned balloons.

If neutrons occur in the sun and the other stars of the universe they should be very effective in causing breaking down and building up processes among the elements by the atomic transformation discovered by Madame Curie-Joliot