A Shark Encircled with a Rubber Automobile Tire

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repeatedly by workers. Indeed in our collection of materials we have slides showing these. It is true also that the researches of Van Beust and others indicate channels of a sort within enamel itself. Nevertheless, the lumena of these passages is so small that one can not conceive that a cell of any sort may pass through them. Circulation if it exists at all can include at most merely the slow passage of an extremely small amount of fluid entirely without cell contact. Even this degree is by no means an assured fact. In light of these considerations, it seems very likely that there can be no immunity in the usually defined sense of this term of a host towards dental caries. Resistance has been demonstrated, but that is not immunity.

In this discussion, then, it has been our endeavor to show that it is probable that there is a bacterial etiological factor in dental caries. No claim is entered that this is the sole factor, but we have attempted to prove that organisms which may be cultivated nearly always from a carious lesion may in turn induce the result. A certain degree of hydrogen ion concentration is necessary in order to break down human teeth by solution. These organisms produce this appropriate degree of hydrogen potential. Likewise they can dissolve the calcareous structure of dead teeth. The metabolism of these forms is in large degree dependent upon decomposing food materials found about the teeth. In addition dental caries includes more than the mere solution of dental calcareous material since an organic matrix in enamel is liquefied also. These organisms are not identical in all respects to other groups found within the intestine since the final degree of acidity produced is not the same in the two series. A commensal relationship between two different groups of bacteria appears to function within the mouth since one series may furnish anchorage for another.

These caries-inducing bacteria do not show constant cultural reactions particularly as regards their effects when in contact with certain carbohydrates. Neither do they show immunological types. The probabilities of true immunity in dental caries seem to be remote.

A SHARK ENCIRCLED WITH A RUBBER AUTOMOBILE TIRE

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The senior author has already published two articles (American Museum Novitates, 1928, No. 310; and Annals and Magazine of Natural History, 1929, ser. 10, vol. 4) describing mackerel and other fishes with rubber bands encircling and even partly imbedded in their bodies, and has on hand six other specimens showing this phenomenon in more exaggerated form. What then could be more logical than for the junior author to send him a clipping from the rotogravure section of the Diario de la Marina, of Habana, Cuba, for Sunday, September 21 last, containing a reproduction of the picture which is included in this article. Above the picture was a short caption and below an interesting account of the phenomenon. A translation follows herewith.
The Last Contribution of a Rubber Tire

In the vicinity of the coast opposite Habana, where fishermen are navigating their small boats daily, two fishermen, when outward bound as usual, recently saw an enormous shark which was making a great disturbance at the surface of the water. It was unable to swim and apparently remained stationary as if moored by an anchor at the bottom of the sea. The fishermen, actuated by curiosity and the desire to make a good catch, decided to approach the fish. When they did so they were surprised to see that it was a shark of the ‘‘Alekrin’’ kind about five meters long which had been caught by a rubber tire... which the owner had thrown into the sea, having decided to replace it by another.

This shark, one of the most voracious of its kind, seeing the circle of the rubber tire, had thrust its head into its center and there remained trapped in the manner in which we see it in the photograph. This placed it in a position to be easily captured thanks to the rubber tire. This latter, after having for many years rendered its service to an automobile, nevertheless cheers us with a last contribution—the deliverance from one of these terrible sharks.

A letter to the director of the Diario de la Marina brought a copy of the photograph and a very courteous reply from Señor Gonzalo Menéndez, the managing editor, expressing his regrets that he could give us no further information than that contained in the note above set out. Inspection of the figure showed the shark in question to be a male of a non-determinable species.

Information has been hard to obtain, but the persistence of the junior author has finally produced some data. Our first efforts were to ascertain if the fish swam into the tire or if it was caught and the tire put on it by human hands. Our earliest information was that the fish when seen by the fishermen as noted above was literally ‘‘alive and kicking’’ but unable to move save at a snail’s pace. It was in the bay of Cojimar, off
a small fishing village about five miles to the east of the mouth of Habana Har-
bor—from which place we have recently put on record the capture of a second
whale shark from Habana waters.

Our next information came from a gentleman who saw the fish alive but
who described it as very weak, almost dead. This exhaustion was undoubt-
edly in part due to the efforts it had made to swim in spite of this great hindrance,
and in even greater degree because it had practically been unable to catch any food since it became encum-
bered with this tire.

Finally Dr. Hoffmann himself made a
trip to Cojimar and there found the
fisherman who gave us our most reliable
information about the second whale
shark. He also saw and talked with the
two boys who actually caught the shark.
All three of them saw the fish swimming
along and trying to jump out of the
water in its efforts to free itself of the
incumbrance. But these only drove the
tire further back until it had come to
encircle the body of the shark just in
front of the first dorsal fin. One man
said that the tire was so tight on the fish
that one could see the ring it had made
in the skin and flesh, and that the only
way to get the tire off was to cut the
shark to pieces—as was done. This, if
correct, would indicate that the tire had
been on the fish for some time.

The shark was actually caught by two
boys who cautiously approached it as it
was floundering along on the surface of
Cojimar Bay. When they saw that it
was practically helpless they approached
nearer and getting a lasso over its head
brought it to shore where they killed it
after it had been photographed.

Now the final question is how did the
tire come to encircle the shark as is
shown in the photograph? And at once
we may dismiss the idea that it was
placed there by the hand of man. No
sane man is going to attempt to put an
automobile casing over the head of a
large vigorous savage shark and to drive
it back clear of the pectoral fins. We
believe that the explanation is to be
found in the following facts, which
agree in essence with those offered by
Dr. Gudger to explain how his speci-
mens of northern fishes came to be
adorned with rubber bands.

As in New York, so in Habana, gar-
bage, street cleanings, wastes of all
kinds are collected, loaded on seows or
barges, and these are towed out to sea
and their loads dumped overboard.
Sharks are scavengers and they attend
these seows to their unloading grounds
to feed on garbage. When this with the
worn automobile tire and other like
débris was dumped overboard, our
shark dashed into it to pick up what he
could to ease his hunger. The open
ring of the automobile tire confronted
him with something edible beyond.
Laying his pectoral fins close against his
sides, he drove through to find himself
stopped when his non-bendable dorsal
fin struck the rim. Finding himself
cought he became panic-stricken and
pushed against obstacles to sweep this
clinging thing free from his body—with
the results that we have seen.