

**REPORT OF AN EXPLORING TRIP OF THE STEAMER FISH HAWK
IN CHESAPEAKE BAY IN THE EARLY SPRING OF 1882.**

By Lieut. Z. L. TANNER, U. S. N.

We left the navy-yard at 12.50 p. m., Saturday, and arrived at Point Lookout at 10.45 p. m., where we anchored for the night. At 12.30 p. m., before leaving Washington, we received 1,000,000 cod eggs in artificial sea water; about 75 per cent. of them seemed to be alive. Upon our arrival here they were put in three cones and a glass jar, and the hatching process commenced. The water was 40° at the surface and 41° in the cones; specific gravity 1.0070, that of sea water being from 1.0240 to 1.0290.

The eggs sunk at once to the bottom, and were, in consequence treated as shad eggs. About 60 per cent. were apparently alive on Sun, day morning, but the development had entirely ceased; in fact, the germinal disc seemed to have contracted. On Monday morning there were but few eggs alive (about 1 in 500), and no development since they were placed in the water of Chesapeake Bay. The germinal disc was much distorted. It was difficult to find a live egg in the evening, and the few discovered presented the same abnormal appearance. We have found no live eggs this morning (Tuesday). Those that survived the longest were strangely distorted, indicating, I think, that the trouble was with the water.

Nets were set Sunday evening in five fathoms opposite Point Lookout, but no fish taken. We went to Saint Jerome's Creek early Monday morning, and landed the lumber shipped for that place. At noon we ran over to Barren Island, where the cutter was left, to set a gang of nets; this vessel then went to the Patuxent, where another lot of nets were set. The latter have been taken up, but no fish caught. At 9.45 p. m. the cutter returned with a few menhaden, taken near the bottom in 20 fathoms water—no other fish in the nets. I propose using the dredge and trawl here, then off Barren Island, and will set the nets off Tangier Sound to-night; Cherrystone, to-morrow night; York River, the following day, and then return to the Potomac. This programme will depend on the weather.

STEAMER FISH HAWK, *Patuxent River, February 28, 1882.*

My report of February 28 closed at 9.45 a. m. At 10 a. m. we commenced dredging in the deepest water at the mouth of the Patuxent River to ascertain what life, if any, could be found in the bed of the stream. We found it to be absolutely barren, and the towing net failed to produce anything from the surface.

Three hauls of the trawl were then taken off Barren Island in the deepest water of the bay, 25 fathoms, the only results being a few young

menhaden, young herring, and another small fish, perhaps another variety of herring, a few shrimp, one craw-fish, and a few small shells.

Having examined this locality to my satisfaction, we started for Tangier Sound, but finding it would be late in the evening before we could arrive, I set four nets off Smith's Point and two off Point Lookout, anchoring at the latter place for the night. A thick fog shut down before the last nets were out, and the weather generally had an unsatisfactory appearance.

At 4 a. m., March 1, it was blowing a gale from southeast with thick fog and rain. Our anchorage being exposed to winds from that direction, we soon had a heavy swell. The steam cutter was down and thrashing about in the most lively manner, and the ship was somewhat uneasy, so much so that I did not consider it prudent to attempt to take the cutter on board. I ordered steam raised as soon as things began to get uncomfortable, and when ready we got under way; felt our way around Cornfield Point with the lead and anchored off Smith's Creek, where we found comparatively smooth water till about 10 a. m., when, the fog lifting, we went into Smith's Creek for a harbor. The wind moderated during the afternoon, and went round to northwest during the night. To-day the weather has been simply perfect.

We were under way soon after daylight this morning, and started for our nets, which had been out since the evening of the 28th ultimo. In passing the oyster beds off Smith's Creek, I observed that they were entirely abandoned by the dredgers, and as we had done some work there last season (finding oysters plentiful) I was curious to know the reason. A few hauls of the dredge demonstrated the fact that they were practically exhausted, our average being but a bushel to a haul, and these of a small size. We found the nets off Point Lookout in good condition, but no sign of fish in them, the only catch being a good quantity of bryozoa, medusæ, and grass. They stood the gale in their exposed condition remarkably well. Those at Smith's Point, on the contrary, were entirely demoralized, one end having broken adrift from its anchor, we found the entire lot in a "snarl" around the lee moorings, no sign of fish having been near them. Two of the four nets out at this place are *expended*; the others will be repaired.

The dredge and trawl were used in deep water off the point, but the waters were barren as usual.

Arriving off the Sound early this afternoon we used the rake dredge in order to see if there was anything burrowing in the sand and mud of the bottom. We found nothing but half a dozen common worms, a few shrimp, and dead oyster shells.

We are at anchor for the night in Cod Harbor, and our nets are set across the entrance to the Sound.

March 3.—We took the nets up at daylight. There were no fish in them, but they were loaded with great masses of grass, bryozoa, &c. As soon as the nets were on board, we got under way and started for Fort-

ress Monroe for supplies. It seems that the stewards trusted somewhat to the resources of the places we expected to visit when laying in stores, and now find themselves running short.

We will go either to York River or Cherrystone to-night, being governed by the weather. We can do nothing with nets at the latter place, unless it is calm and smooth, as they are to be set in the open bay.

Should we find anything in York River it will be an inducement to try our fortune in Mob Jack Bay; if not, it will hardly be worth while.

Our present plan is to spend about three or four more working-days in the bay and Lower Potomac, and then return to Washington.

1.45 p. m.—Arrived at Fortress Monroe. Will leave about 2.30 for Cherrystone.

STEAMER FISH HAWK, *Tangier Sound*, March 2, 1882.

PRELIMINARY NOTICE OF SOME POINTS IN THE MINUTE ANATOMY OF THE OYSTER.

By JOHN A. RYDER.

There is a spacious segmentation cavity developed in the embryo which becomes the subdivided body cavity (schizocœl) of later stages.

Between the ecto- and entoblast the mesenchymal or mesoblastic tissue is developed, apparently, and for comparative embryological reasons, from the two former by proliferation, whereby the segmentation cavity becomes in part obliterated.

The mesoblast of the embryo, formed as above stated, is the tissue from which the mesenchyme or connective tissue of the adult is developed.

The blood channels, or canals, are developed in the mesenchyme; no specialized endothelial lining cells are ever differentiated, the mesenchymal cells form their immediate walls. An exception to this is found only in the structure of the anterior and posterior aortæ, the heart, and branchio-cardiac vessels, which have proper walls.

In some places the mesenchymal tissue is found to be spongy, its cells being built around complex anastomosing spaces for the blood. There is, therefore, a true schizocœl developed in the oyster; it has been formed as the mesenchyme has grown into the segmentation cavity, which has been subdivided in this way into hæmal canals and spaces as development proceeded.

The heart, as in the embryo fish, develops in the blastocœl or segmentation cavity, the pericardiac space being a remnant of the latter. (See Davaine, *Recherches sur la Génération des Huitres*. Mém. de la Soc. de Biologie IV, Paris, 1853. The foregoing statement is made upon the evidences afforded by the observations of the author above cited, on the development of the heart.)

The adductor of the shell and the radiating muscles of the mantle, as