

43.—REPORT OF THE MOVEMENTS AND OPERATIONS OF THE FISH COMMISSION STEAMER ALBATROSS FROM SEPTEMBER 15 TO 20, 1887.

By Lieut.-Commander Z. L. TANNER, U. S. Navy, Commanding.

At 7 a. m., the 15th instant, we cast off from the wharf at the Columbian Iron Works and Dry Dock Company and proceeded down the river, having on board one naturalist, Mr. Thomas Lee. We were detained off Thomas's Point about four hours by grounding—no damage done. We passed the capes of the Chesapeake at 5 a. m. the following morning and stood to the eastward. The weather was clear with a strong east-northeasterly breeze which caused a moderate head sea. At 2.40 p. m. (latitude $36^{\circ} 52'$ north, longitude $74^{\circ} 23'$ west) we cast the trawl in 958 fathoms br. Oz. It came up at 6.10 with no indications of having been on the bottom; a number of interesting specimens were obtained from intermediate depths. Several steamers were sighted during the day standing to the southward.

At 5.10 a. m. on the 17th (latitude $37^{\circ} 35'$ north, longitude $74^{\circ} 11'$ west) we sounded in 352 fathoms, wh. S. and P., Hyd. No. 1090, and at 7.30 cast the lead in 811 fathoms, gy. M. (latitude $37^{\circ} 34'$ north, longitude $73^{\circ} 58'$ west) and put the trawl over, the result being a number of fish, crustaceans, cup corals, and mollusks. We sounded again at 11.26 in 1,011 fathoms, br. Oz. (latitude $37^{\circ} 40'$ north, longitude $73^{\circ} 50'$ west) and put the trawl over, but in heaving in the dredge-rope parted losing the trawl and its appurtenances and about 6 fathoms of rope. Another haul was made at 3.49 in 852 fathoms, bu. M. (latitude $37^{\circ} 44'$ north, longitude $73^{\circ} 57'$ west), securing one octopus, a number of cup-corals, penatulas, shrimp, shells, lithodes, hake, red hake, and a number of coryphænoids. At 6.25 we made the last haul for the day in 865 fathoms, gn. M. (latitude $37^{\circ} 46' 30''$ north, longitude $73^{\circ} 56' 30''$ west), bringing up a few crustaceans and a large number of cup corals. The large surface net was used successfully during the day.

On the 18th, at 5 a. m., we made a hydrographic sounding in 255 fathoms wh. S. and P. (latitude $38^{\circ} 31'$ north, longitude $73^{\circ} 15'$ west). At 8.06 cast the trawl in 1,155 fathoms, gy. Oz. (latitude $38^{\circ} 31'$ north, longitude $72^{\circ} 53'$ west). It came up at 10.56—a water haul. Three more hauls were made during the day in from 554 to 102 fathoms, gn. M., between latitude $38^{\circ} 31'$ and $38^{\circ} 42'$ north, and longitude $73^{\circ} 05' 15''$ and $73^{\circ} 05' 45''$ west, obtaining 12 pole flounders, 10 specimens of *Macrurus*, a few crustaceans, shells, a few hake, whiting, shrimp, sponges, 1 skate's egg, sea-anemones, star-fish, and 1 octopus. The surface net was towed whenever practicable. The weather continued pleasant with light easterly winds. During the day a whale and a school of porpoises were seen near the ship.

At 5.22 on the morning of the 19th we cast the trawl in 1,276 fathoms, bu. M. (latitude $39^{\circ} 27'$ north, longitude $71^{\circ} 16'$ west). It came up with a few specimens of fish, 1 squid, 2 octopi, a number of sea-urchins, brittle stars, 10 specimens Holothurians (Benthodytes) and a number of shells. Two more hauls were made during the day in from 1,163 to 705 fathoms, gn. M. and Oz., between latitude $39^{\circ} 31'$ and $39^{\circ} 42'$ north, and longitude $71^{\circ} 14' 30''$ and $71^{\circ} 17'$ west, securing a number of blue hake, *Macrurus Bairdii*, 3 specimens of Geryon, etc. The last haul brought up a large number of skates' eggs. The surface net secured several rare specimens of crustacea, squid, etc. During the day several sailing vessels were sighted.

At 6.15 p. m. we started for Wood's Holl, arriving and making fast to the Fish Commission wharf at 9.50 a. m., September 20. The cruise was considered as a trial trip for the new boilers as well as for the sounding and dredging apparatus, all of which worked satisfactorily. A few rivets and one or two stay bolts in the boilers were found leaky, and they will be made tight by the contractor.

The dredging and trawling record and the record of temperatures and specific gravities are appended. I wish to call attention to the latter, as it presents a series of specific gravities from Baltimore down the Patapsco river and Chesapeake Bay to the sea, showing the gradual increase of saline matter in the water till it finally reaches the density of the open sea.

U. S. FISH COMMISSION STEAMER ALBATROSS,
Wood's Holl, Mass., September 20, 1887.

Dredging and trawling stations.

| Serial No. | Date. | Hour. | Position. | | Depth. | Character of bottom. | Wind. | | Drift. | | Instrument used. |
|------------|----------|-------------|------------------|-----------------|--------|----------------------|------------|--------|------------|--------|------------------|
| | | | Latitude North. | Longitude West. | | | Direction. | Force. | Direction. | Force. | |
| | 1887. | | ° ' " ° ' " | | Faths. | | | | | | |
| 2736* | Apr. 8 | 11 a. m. | Fortress Monroe. | | 11 | S. | E. | 4 | | | S. B. T. |
| 2737* | Apr. 8 | 11.17 a. m. | Fortress Monroe. | | 12 | S. | E. | 4 | | | S. B. T. |
| 2738 | Sept. 16 | 3.14 p. m. | 36 52 00 | 74 23 00 | 958 | gn. Oz. | NNE. | 6 | NW. by W. | 1 | L. B. T. |
| 2739 | Sept. 17 | 8.03 a. m. | 37 34 30 | 73 58 00 | 811 | gy. M. | NE. | 4 | NNW. | 1 | L. B. T. |
| 2740 | Sept. 17 | 11.32 a. m. | 37 40 00 | 73 50 00 | 1,011 | br. Oz. | NE. by N. | 4 | NW. by N. | 1½ | L. B. T. |
| 2741 | Sept. 17 | 3.49 p. m. | 37 44 00 | 73 57 00 | 852 | gn. M. | NNE. | 4 | N. | 1 | L. B. T. |
| 2742 | Sept. 17 | 6.25 p. m. | 37 46 30 | 73 56 30 | 865 | bu. M. | NNE. | 2 | NW. by W. | 1 | L. B. T. |
| 2743 | Sept. 18 | 8 06 a. m. | 38 31 00 | 72 53 00 | 1,155 | gn. Oz. | ESE. | 2.3 | NW. | 1 | L. B. T. |
| 2744 | Sept. 18 | 11.48 a. m. | 38 35 00 | 73 05 15 | 554 | bu. M. | E. | 2 | N. by E. | 3 | L. B. T. |
| 2745 | Sept. 18 | 4.20 p. m. | 38 42 00 | 73 05 30 | 224 | gn. M. | SE. | 2 | NNE. | 3 | L. B. T. |
| 2746 | Sept. 18 | 5.14 p. m. | 38 46 00 | 73 05 45 | 102 | gn. S. | SE. | 2 | W. | 3 | L. B. T. |
| 2747 | Sept. 19 | 6.05 a. m. | 39 27 00 | 71 15 00 | 1,276 | bu. M. | NNW. | 2 | S. | 1 | L. B. T. |
| 2748 | Sept. 19 | 10.53 a. m. | 39 31 00 | 71 14 30 | 1,163 | gy. M. For. | SW. | 1 | W. | 1 | L. B. T. |
| 2749 | Sept. 19 | 3.20 p. m. | 39 42 00 | 71 17 00 | 705 | gn. Oz. | S. | 2.3 | NW. | 2 | L. B. T. |

* Hauls made for the purpose of instructing the officers of the U. S. S. *Thetis* in the use of the dredging apparatus.

Record of temperatures and specific gravities taken on board steamer Albatross.

| Date. | Time of day. | Station or locality. | Depth. | Temperature by attached thermometer. | Temperature of the air. | Temperature of specimen at time specific gravity was taken. | Specific gravity. | Specific gravity reduced to 60° F. | Remarks. |
|------------------|--------------|--|---------------------|--------------------------------------|-------------------------|---|-------------------|------------------------------------|---|
| 1887. Sept. 5 | 1.30 p. m. | Wharf Columbian Iron Works, Baltimore, Md. | Low water surface. | 75 | 76 | 74 | 1.0030 | 1.005086 | Specimens retained in lower laboratory until they had acquired the temperature of the room. |
| 5 | 8.30 p. m. | Wharf Columbian Iron Works, Baltimore, Md. | High water surface. | 74 | 69 | 72 | 1.0034 | 1.005164 | |
| 15 | 7.15 a. m. | Fort McHenry, Baltimore | Surface | 72 | 70 | 73 | 1.0038 | 1.005724 | Off mouth Magothy River. Off Thomas's Point. Off Bloody Point Bar light. Off Plum Point. Off Taylor's Island. Between Cedar Point and Point No Point. Off Saint Jerome's Creek. Off mouth Potomac. Off Smith's Point. Cape Henry bearing W., distant 20 miles. |
| 15 | 7.45 a. m. | Fort Carroll, Baltimore |do..... | 73 | 70 | 72 | 1.0040 | 1.003764 | |
| 15 | 9 a. m. | Chesapeake Bay |do..... | 72 | 71 | 83 | 1.0048 | 1.008526 | |
| 15 | 10 a. m. |do..... |do..... | 72 | 72 | 83 | 1.0063 | 1.010026 | |
| 15 | 4 p. m. |do..... |do..... | 73 | 75 | 80 | 1.0080 | 1.011160 | |
| 15 | 5 p. m. |do..... |do..... | 73 | 74 | 81 | 1.0084 | 1.011739 | |
| 15 | 6 p. m. |do..... |do..... | 73 | 74 | 81 | 1.0088 | 1.012139 | |
| 15 | 7 p. m. |do..... |do..... | 74 | 73 | 81 | 1.0094 | 1.012739 | |
| 15 | 8 p. m. |do..... |do..... | 74 | 73 | 81 | 1.0096 | 1.012939 | |
| 15 | 9 p. m. |do..... |do..... | 75 | 72 | 81 | 1.0100 | 1.013339 | |
| 15 | 10 p. m. |do..... |do..... | 75 | 72 | 81 | 1.0124 | 1.015739 | |
| 16 | 7 a. m. | Off Cape Henry, Va |do..... | 73 | 67 | 78 | 1.0214 | 1.024208 | |
| 16 | 12 m. | Lat. 36° 54' N., Long. 74° 46' 30" W |do..... | 73 | 71 | 78 | 1.0228 | 1.025608 | |
| 17 | 12 m. | Lat. 37° 40' N., Long. 73° 50' 30" W |do..... | 70 | 65 | 82 | 1.0228 | 1.026320 | |
| 18 | 12 m. | Lat. 38° 35' N., Long. 73° 05' 00" W |do..... | 69 | 64 | 81 | 1.0230 | 1.026339 | |
| 19 | 12 m. | Lat. 39° 34' N., Long. 71° 17' 00" W |do..... | 69 | 71 | 81 | 1.0234 | 1.026739 | |