

201.—TREATMENT OF THE CASELLA-MILLER THERMOMETER.**By LOUIS P. CASELLA.**

[From a letter to Prof. S. F. Baird.]

I regret to learn the difficulties you describe in connection with some of my thermometers. I incline to believe that I could correct most of the thermometers you may have which are not broken, and will be most glad to do all in my power, if you will let me have them, telling your assistant to pack them carefully so as to prevent their being further disarranged.

The usual precaution against disarrangement in the first instance is that they should not be kept lying flat; that when sent from place to place the indices should be lifted well up from the mercury. If by chance a small portion of mercury gets over the bottom of the index, hold it flat and use the magnet to draw it slowly up. With the head quite raised, tap it smartly on the palm of the hand, the portions of mercury become detached and fall down to the main column. Warm the surface freely before the fire, then hang up; they thus become united.

As these are the only thermometers that register the maximum and minimum temperature they were adopted with my arrangement, and have thus shown the temperature of all depths of the sea in a way that has not yet been contradicted, though I regret this tendency to disarrangement which I have acknowledged from the first. Should you send yours for repair, I propose adopting an arrangement of case that will, I hope, enable me to employ an easier kind of index. This I will try to have ready so as to apply to yours or to part of them when they come.

147 HOLBORN, LONDON, E. C., *May* 21, 1884.

202.—HATCHING BLACKFISH AND SPANISH MACKEREL.**By R. E. EARLL.**

[From letters to Prof. S. F. Baird.]

This morning, while at the fish-wharves, I discovered that nearly all of the blackfish (*Centropristis atrarius*) were thoroughly ripe, and eggs would run from fully 50 per cent. of the females in handling. I took a number of thousand and impregnated them. They sink readily in salt water, and have a diameter of $\frac{1}{27}$ of an inch. I saved some in alcohol and glycerine. Many of the other species are well advanced and will spawn in two or three weeks at most. I shall try to get a full series of ovaries in alcohol for future examination.

CHARLESTON, S. C., *March* 25, 1880.

I have spent a week with Colonel McDonald at New Point, on Mobjack Bay, where we have been engaged in collecting specimens and statistics of the extensive pound fisheries of that locality. We found several species ripe or nearly so; among them were a number of important food-fishes, including the Spanish mackerel (*Cybium maculatum*) and porgy (*Ephippus faber*). These have free sinking eggs about $\frac{1}{30}$ of an inch in diameter. The Spanish mackerel are next to the shad the most important species in the locality; they are just beginning to spawn, and the height of the season will probably not occur before the 1st of July. We secured several thousand eggs of the porgy and kept them until well advanced, but could not remain long enough to hatch them out.

NORFOLK, VA., *June 6, 1880.*

Spanish mackerel have been taken in fair numbers in this vicinity for two weeks. I cannot yet report anything definite, but will write in detail soon. May be obliged to go further down the sound before I can gather satisfactory information.

CRISFIELD, MD., *June 24, 1880.*

The work in hatching of mackerel at Crisfield has been a great success and I have hatched out fully half a million young mackerel. The course will probably not answer for the work, but I have an impression that a very simple and inexpensive apparatus can be constructed and made to answer admirably. The spawning season has hardly arrived, but most of the fish are well matured.

I am now on my way down the bay to examine the lower pounds with a view to enlisting the sympathies of the fishermen in the work in case you should decide to begin hatching mackerel, and also to gather additional data about this and other species.

ON BOARD STEAMER HELEN, *July 1, 1880.*

The outlook for extensive work in the artificial propagation of the Spanish mackerel is excellent, and Cherrystone, an excellent harbor on the eastern shore of Virginia, is the most desirable location. The pound owners in that locality are thoroughly interested in the matter, and offer not only to furnish all the eggs needed free of charge, but also to assist in the work as much as possible. I am fully convinced that a station located at Cherrystone, with the necessary apparatus, could easily hatch out a hundred million young mackerel by the 1st of September. The eggs are unusually hardy and hatch in from 18 to 20 hours. The Ferguson bucket could be made to answer in the work, but by far the best apparatus would, I think, be the Clark hatching trough as modified for the cod work.

I send you by to-night's express a bottle of young mackerel hatched at Crisfield, Md., June 30, and have quite a quantity of them here.

WASHINGTON, D. C., *July 8, 1880.*