

## 19.—CROAKING OF THE PERCH.

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My observations with regard to the croaking or grunting noise made by the Drumfish family have been confined to the fish known here as the "Perch" (*Haploidonotus grunniens*). This fish, as is well known, is furnished with a masticatory apparatus in the gullet, and the lower division of this has its upper surface flat and triangular in outline, and studded all over with spheroidal "teeth," if they may be called genuine teeth. The upper division is composed of two parts united by a ligament; their lower surfaces are also supplied with similar teeth. The divisions of this apparatus have powerful muscles attached to them by which they can be pressed together and moved laterally on each other. By this process the fish masticates the crustaceans on which it feeds. When this action takes place, the teeth coming in contact and gliding over each other produces the croaking of the perch.

About twenty years ago, for the purpose of endeavoring to ascertain by what means the croaking of the perch was produced, I procured from an Ohio River fisherman a perch weighing 18½ pounds, which he declared was the largest perch he had ever caught. I divided the head on one side, and thus exposed its masticatory apparatus; and while moving its grinders as I supposed the fish had done during life when crushing a crawfish, an exact imitation of the croaking of the perch was produced. I produced the sounds in a similar manner within the hearing of several Allegheny River raftsmen and Ohio River fishermen at intervals during the day on which I experimented, without allowing them to know how the noises were made, or that a perch was used for the purpose, and they all declared that it was an exact imitation of the croaking of the perch. This noise is made, I believe, only at the season of the year when the perch "bites" or feeds. The above experiment and others of a similar kind lead me to believe firmly that the croaking of the perch is produced in the manner referred to. I cannot conceive of any way by which the sound could be produced by the air-bladder of the fish, as its physiological functions and anatomical structure do not indicate its use as a vocal organ.\*

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\* Prof. John A. Ryder, in a letter commenting on the above, May 21, 1887, said: "It is now known that certain sound-producing fishes give out noises by grating certain bones together in a peculiar way. An extensive memoir by a Danish author has appeared within two years, the Danish title of which has escaped me, but which deals with this question at great length, with fine illustrations. The usual view, that the air is forced from one part of the air-bladder to another in the Sciænoidea, seems to me inadequate in the absence of clearly worked-out demonstrations. This group is physoclistous, or has the air-bladder entirely closed."