
Mimicry in Tropical Fishes

W. Wickler

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Mimicry in tropical fishes

BY W. WICKLER

Max-Planck-Institut, Seewiesen

[Plates 22 and 23]

Labroides dimidiatus, a Tropical Wrasse, removes ectoparasites from the bodies, fins, and even the buccal and gill cavities of other fish (figure 1, plate 22). These often show special invitation postures and the 'cleaner' occasionally displays in a sort of dance in which the caudal fin is spread and the posterior part of the fish oscillates up and down. *Labroides* is never eaten even by large predators. Its size, form, coloration, and even its dancing movement are simulated by another fish of a different family, the blenny *Aspidontus taeniatus* (figure 2, plate 22), who thus succeeds in eliciting the invitation postures from other fish. Being a fin-eater, however, he then attacks instead of cleaning them. The *Aspidontus* even mimics some local colour-forms of the *Labroides*. The evolution of the imitative dancing movement of the *Aspidontus* has been studied in some detail because the evolution of mimicking characters gives the opportunity to study the evolution of a signal produced by a sender alone without co-adaptive interference from the receiver, which in this case does not profit from the 'false' communication (Wickler 1963).

Another example of specialized 'deceptive' signals has been studied in the cichlids (Wickler 1962); here the whole mimicry-system consisting of model, mimic and signal receiver lies within one species and therefore has been called intraspecific mimicry or automimesis. The males of *Haplochromis* and related mouthbrooding species bear very conspicuous yellow or orange spots near the base of the anal fin (figures 3, 4, plate 23). These spots resemble the eggs of the particular species in colour, size and form. They are displayed to the female during courtship and during fertilization and elicit her reaction of snapping up eggs. During courtship they make the male more attractive to the female. In spawning they assure fertilization of the eggs, which are taken into the female's mouth immediately after they have been laid and before the male is able to fertilize them. In snapping at the 'egg spots' with her lips, the female inhales the sperm, thus fertilizing the eggs within her mouth. The biological significance of these egg-dummies has been studied in several species.

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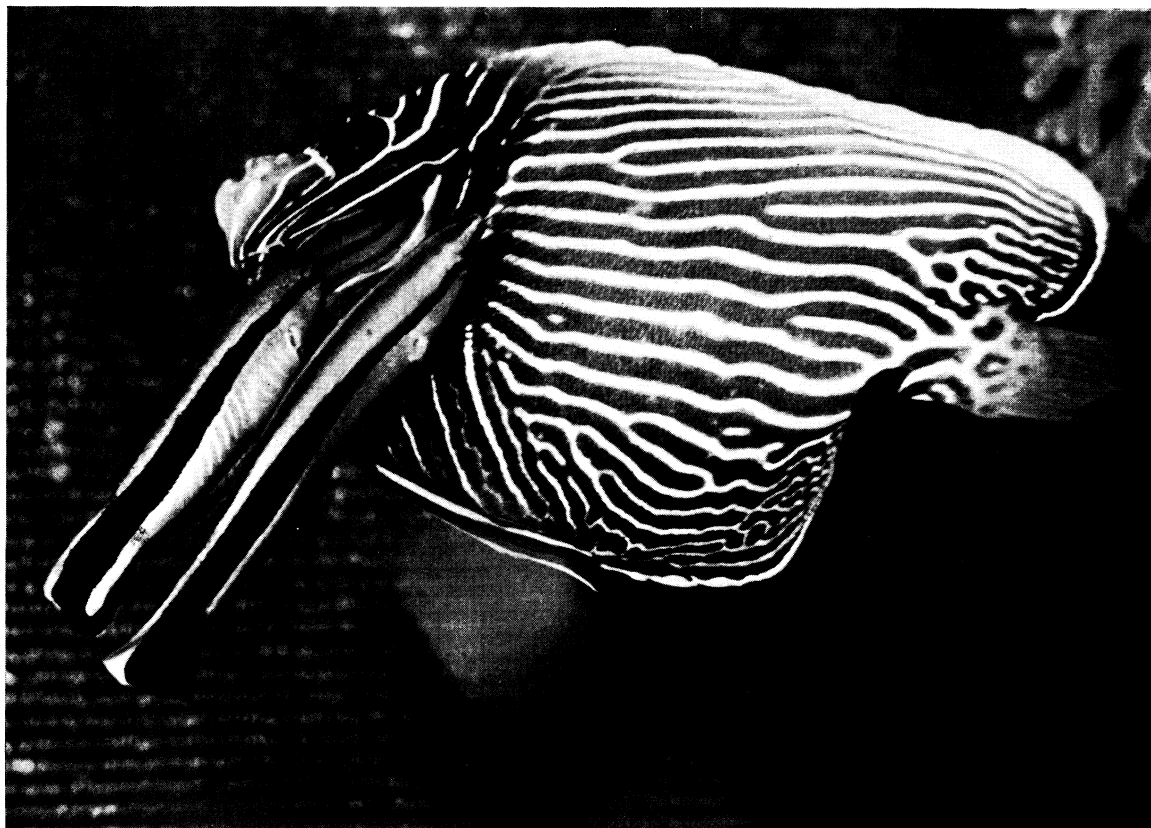


FIGURE 1. A mated pair of *Labroides dimidiatus* cleaning an Angel Fish (*Pomacanthus imperator*). Note the raised operculum.

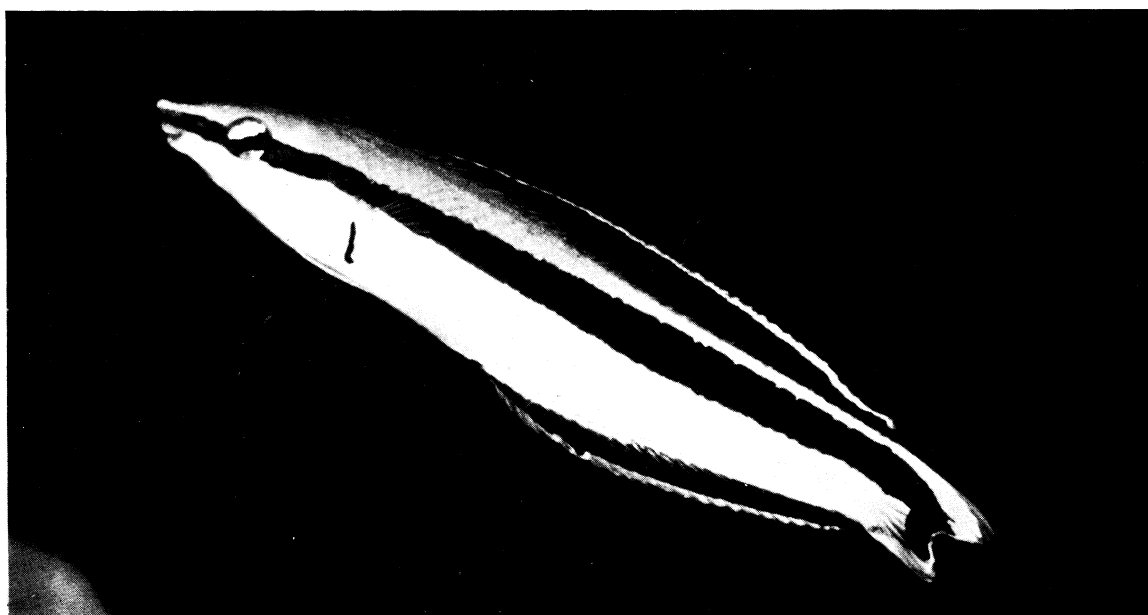


FIGURE 2. The mimic, *Aspidontus taeniatus*.

(Facing p. 474)

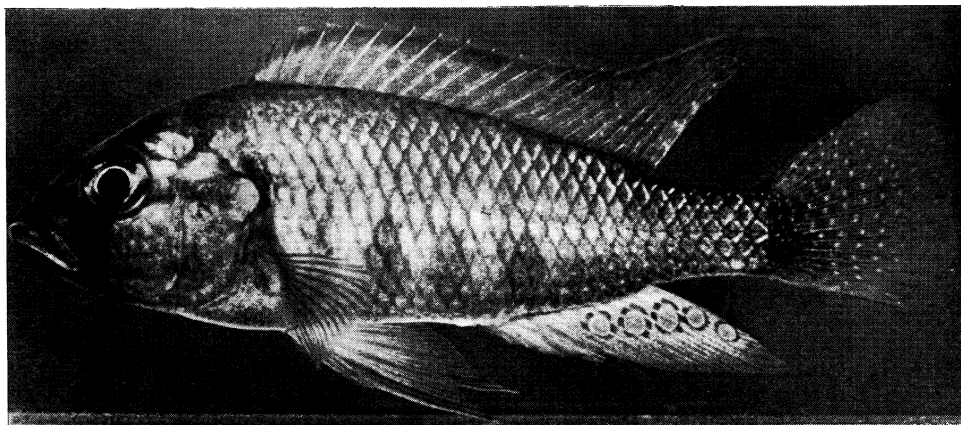


FIGURE 3. *Haplochromis burtoni* ♂. Anal fin with conspicuous egg spots.

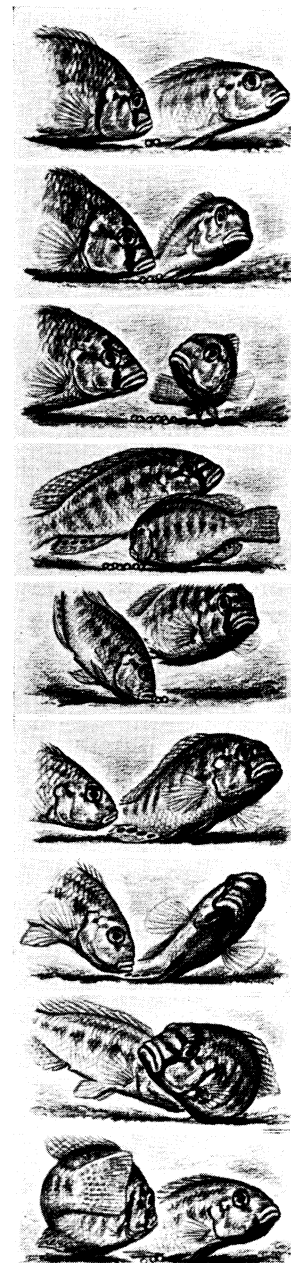


FIGURE 4. Behavioural sequence of spawning *H. burtoni* from film E 470. (Sequence: top to bottom.) 1–5: The ♀ (right) lays a number of eggs and immediately takes them into the mouth (4–5). 6–8: Only when the ♀ has taken all the eggs does the ♂ come down and glide over the bottom in almost the same manner as the spawning ♀ and ejects sperm. Simultaneously, the ♂ spreads the anal fin, thus displaying the egg-dummies. The ♀ treats the dummies like real eggs and inhales the sperm (7–8). 9: Finally, the ♀ starts spawning another batch of eggs.

(All illustrations provided by H. Kacher)

FIGURE 4

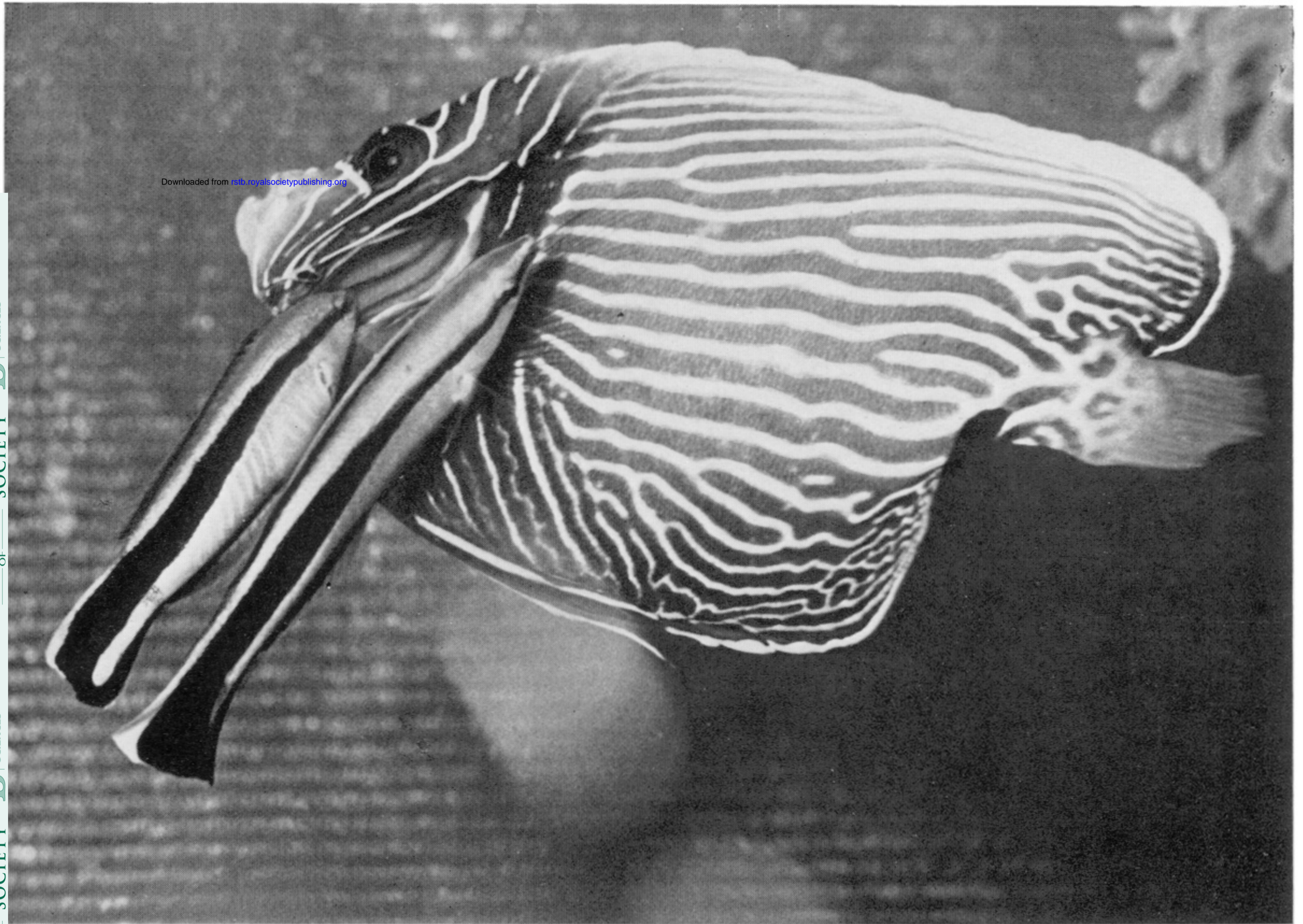


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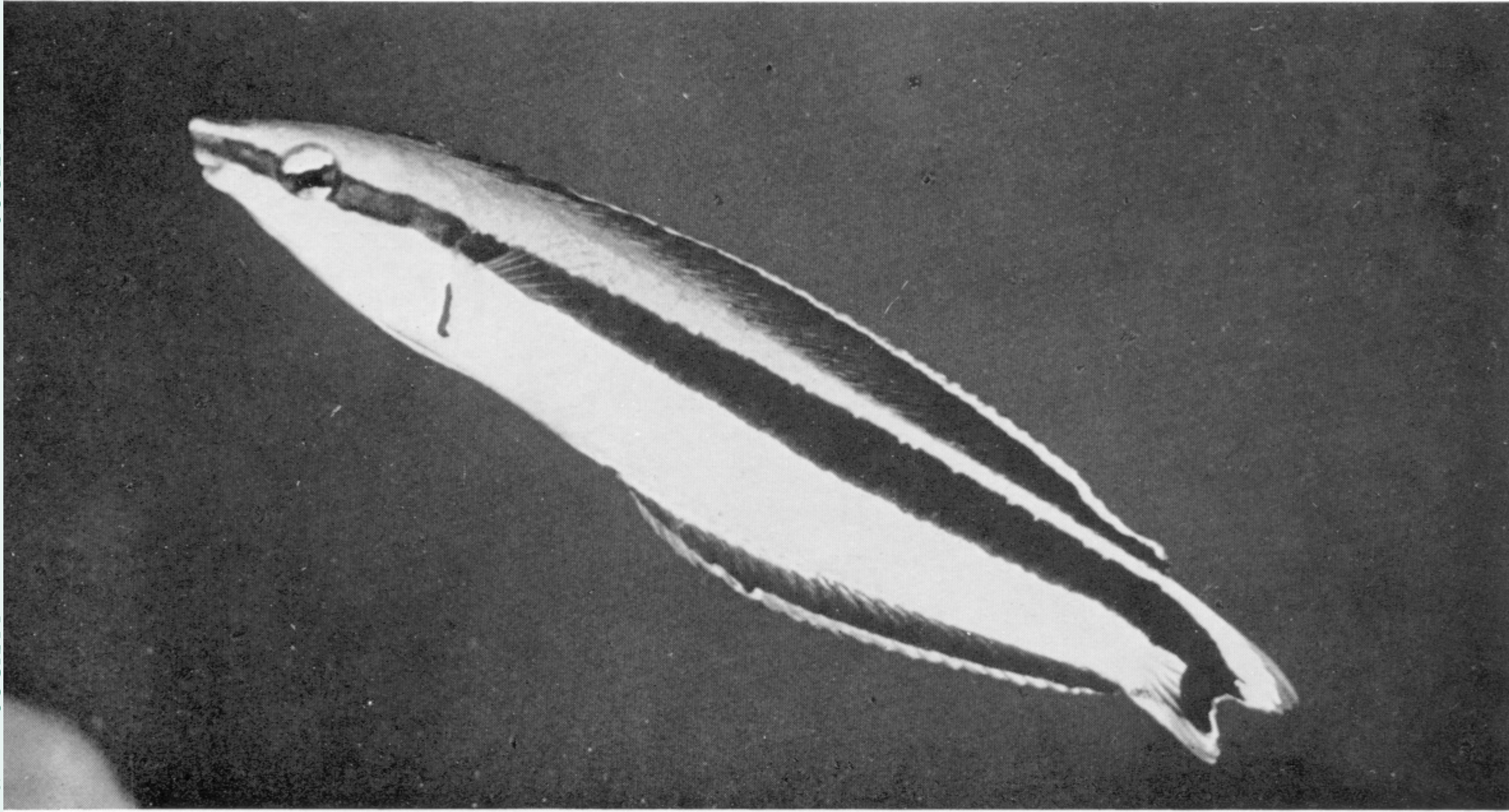


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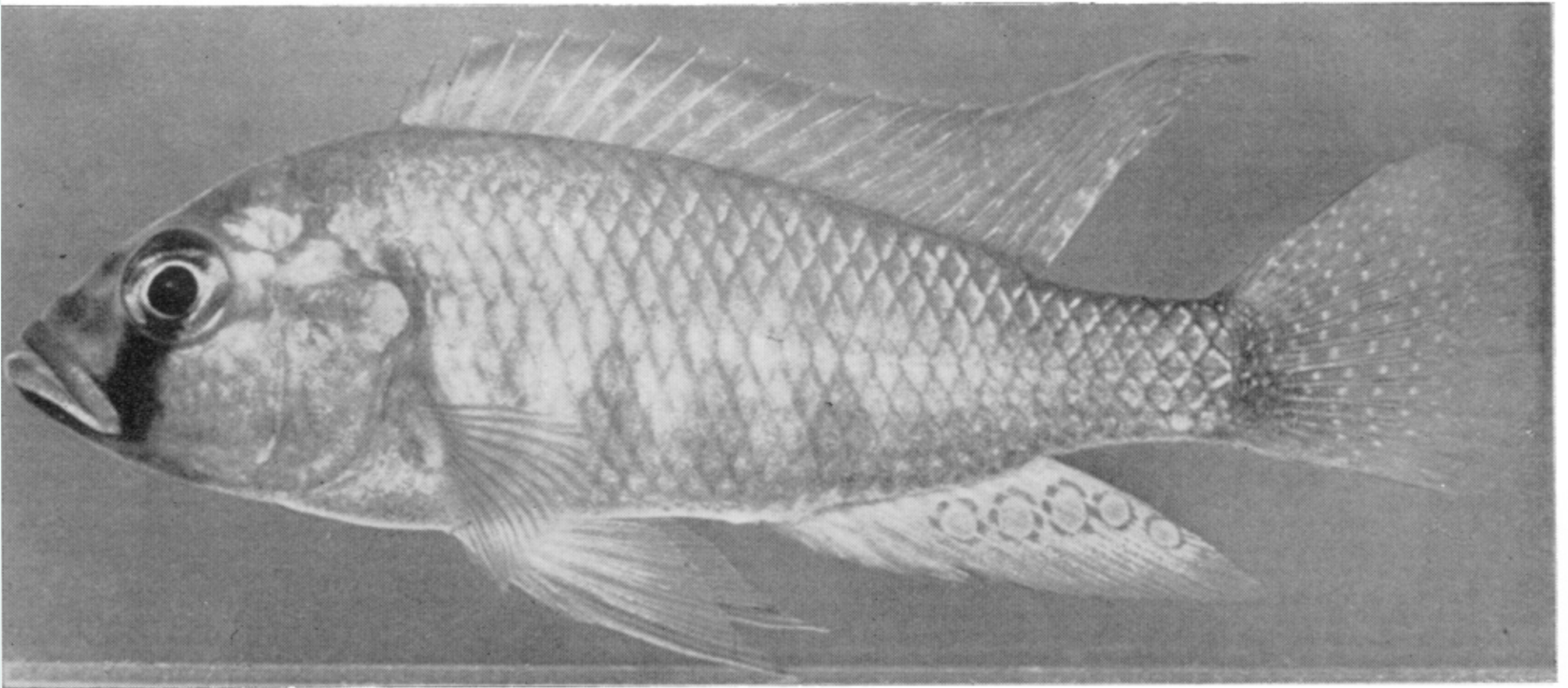


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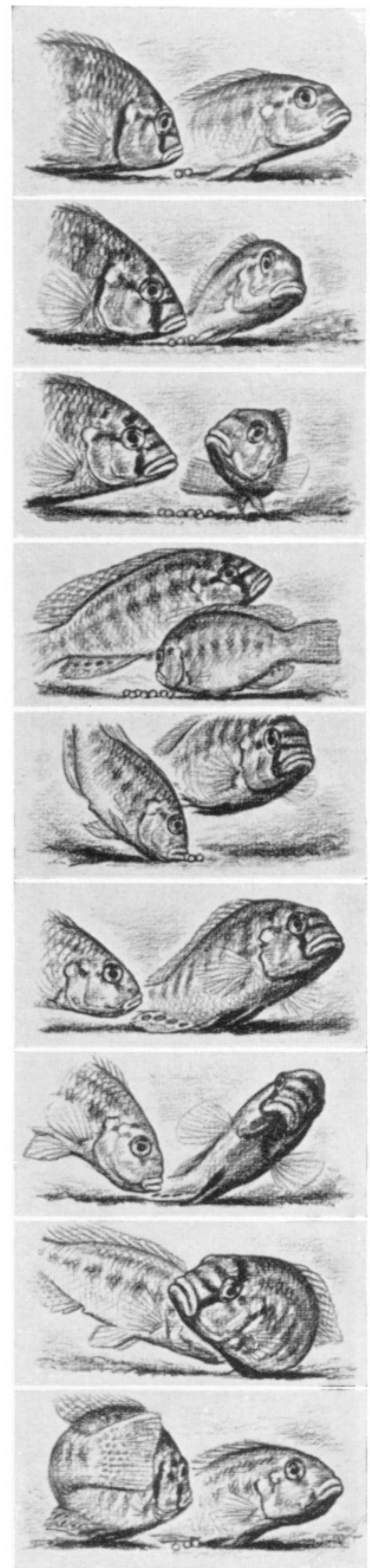


FIGURE 4