diameter of the eye in advance. Interorbital space equal to the length of the snout. Palatine teeth confined to an anterior patch only. Operculum with a long spine over the shoulder directed backwards; head naked. The dorsal commences above the anterior portion of the root of the pectoral, and the rays both of it and the anal project beyond the membrane. Anus, with a papilla, but no claspers.

Brownish, paler on the abdomen. Total length of the specimen 3 inches. Collected by Mr. C. H. Robson, at Cape Campbell. The type is in the Colonial Museum, Wellington.

Art. XXVIII.—*Notes on the Habits of the Frost Fish* (Lepidopus caudatus).

By C. H. Robson.

[*Read before the Wellington Philosophical Society, 6th September*, 1875.]

These remarks on the habits of the Frost Fish are presented to the Philosophical Society of Wellington, not so much in the belief that they shed any great amount of light upon a hitherto obscure subject, as in the hope that they may incite other members, who have opportunities of doing so, to make observations, so that we shall at last find out why it is that this curious fish commits suicide, or appears to do so. Dr. Hector, in his notes on the edible fishes, attached to Captain Hutton's "Catalogue of the Fishes of New Zealand," and under the head of the Frost Fish, or Hiku of the Maoris, remarks, "Nothing is definitely known of the habits of this singular fish, or why it should be cast up on the land, the probability being that, on the calm nights, when the sea is smooth, it pursues its prey too close to the shore, and is left by the long swell during ebb tide." This hypothesis is, I venture to think, though very ingenious, incorrect. It is true that the Frost Fish usually comes on shore during the cold moonlight nights of winter, but it also frequently lands in Clifford Bay, near Cape Campbell, during the daylight, always when it is calm or with a southerly wind, and smooth water. It has been my good fortune to witness several such landings, and though unable to determine the reason of them, I can state positively that the fish is not cast up by the sea, but that it deliberately forces itself on shore, selecting a shallow sandy beach for that purpose. My first thought was that it came to rid itself of some external parasite, by scouring on the sand; but a careful examination of some fish thrown out of the water by hand, before they could touch the sand, showed me that this was not the case, and that the only parasite with which the Frost Fish seems to be troubled, is an internal one, of which I send herewith a

specimen for your inspection. It is a yellowish-white worm, about two inches long when alive, and is usually found inside the fish, not far above the vent, with its head firmly fixed in the flesh, to which it clings with great tenacity. Having discarded the idea that the fish came to rub off parasites, I next thought that it might be blind and not know where it was going, but I soon found out that it could see as well as myself. On two occasions I stood between a Frost Fish and the beach, and, as he came on, turned him with a long stick head to sea, making him swim out, but in a minute or two he turned again for the shore, going up high and dry as fast as possible, so, as he seemed to have set his mind upon landing, I gave up the attempt to influence his decision, and just took him home for breakfast. All the Frost Fish which come on shore here are in fine condition; they seem to be in perfect health, and their landings appear to be deliberate acts of self-immolation. Their food, I believe to be the young of *Clupea sagax* or *Clupea sprattus*, but I have only found one specimen with food in its gullet sufficiently perfect for identification. I have seen one Baracouta forcing itself on shore in the same way as the Frost Fish.

Accompanying this paper, I forward for your inspection a specimen in spirits of the internal parasite of the Frost Fish, and with it specimens of a recent addition to the interesting class of phosphorescent fishes, hitherto represented in the Colonial Museum by *Phosichthys argenteus* and a small fish obtained by Dr. Hector in Milford Sound. A specimen similar to those before you was forwarded to Captain Hutton for identification, and he has written to say that it is certainly a new species.

Art. XXIX.—*Notes on the Sword Fish* (Ziphias gladius).

By T. F. Cheeseman, F.L.S.

[*Read before the Auckland Institute, 16th August*, 1875.]

Dr. Hector, in a valuable contribution to New Zealand ichthyology, printed in last year's volume of "Trans. N. Z. Inst.," introduces the well-known Sword Fish of the North Atlantic *(Ziphias gladius)* as an inhabitant of the New Zealand seas, on the authority of a dried snout obtained by Mr. G. M'Leod from the natives at Ngunguru, and presented by that gentleman to the Auckland Museum. During the last year I have been able to collect some additional evidence of the occurrence of this curious fish that appears to me to be worthy of record.

In the early part of last January an adult specimen was stranded at Shelly Beach; and, through the kindness of Mr. T. Jenkins, I was enabled to secure the greater portion of the skeleton for the Museum, and to obtain