139a. GEOTRIA AUSTRALIS, Gray. C.M.

G. australis, Günth., VIII., p. 508.

Pl. XII.

Skin on the throat dilated into a large sac; maxillary lamina thin, crescent shaped, with four sharp teeth, the middle pair of which are only half as broad as the outer; mandibulary lamina very low, slightly sinuous; suctorial teeth in numerous series, rather distant from one another; anicuspid small, those nearest to the mouth rather larger; only one transverse series of very small teeth between the mandibulary lamina and the posterior lip, which, as well as the remainder of the margin of the disc, is beset with numerous broad leaf-like fringes; suctorial disc subtriangular, with the lateral lobes very broad; dorsal fins widely separated.

Uniform blackish; in spirits bluish black (Günther).

Stewart Island; found also in South Australia.

ART. XXIX.—*Notes on some Undescribed Fishes of New Zealand.*

By JULIUS HAAST, Ph. D., F.R.S., Director of the Canterbury Museum.

(With Illustrations.)

[*Read before the Philosophical Institute of Canterbury, 7th August*, 1872.]

THE excellent "Catalogue of the Fishes of New Zealand," drawn up by Capt. Hutton for the Colonial Museum in Wellington, which forms a welcome addition to the scientific literature of the Colony, and to the careful edition of which I wish to bear my testimony, has afforded me an opportunity of naming the specimens of fishes in the Canterbury Museum with greater facility than otherwise would have been the case, as well as to see at a glance which genera and species are still unrepresented in the provincial collections.

At the same time that little work has shown me that we possess in the collections under my charge several species which are either unrepresented in the Colonial Museum or are new to science.

In the following notes I shall therefore give a description of a few species which form an addition to the Catalogue, adding a short diagnosis to each. In one or two instances I shall propose a change in the nomenclature, that adopted by Capt. Hutton not appearing to me to be quite appropriate.

HAPLODACTYLUS DONALDII. sp. nov.

Capt. Hutton in his Catalogue states that Richardson mentions a fish under the name of *Aplodactylus meandratus* as having been caught off Cape Kidnappers, but that it appears that there is no description of it. Dr. Günther

on the other hand, in his classical Catalogue of Fishes, does not even mention such an occurence, although he describes five species which have all been obtained either from the western coast of South America or from those of Australia, the genus thus being an inhabitant of the Pacific Ocean only.

It may be that the species described by Richardson belongs to some other genus, as it has also been mentioned by Solander, and Banks has given a figure of it. I may also add that none of the five species described by the accomplished ichthyologist of the British Museum agrees with our New Zealand specimen, and which thus may be fairly claimed as an addition to the New Zealand fauna.

It was named in honour of Dr. Donald, of Lyttelton, who presented it to the Museum, and to whom we owe so many valuable additions to our collections.

D. 15|18; A. $\frac{3}{7}$.

Incisors tricuspid, placed in a band on both jaws, and in several rows of which the outer series contains the largest. The six lower pectoral rays simple. The ground colour is black, all mottled with slaty grey; abdomen slaty grey, the same colour as the spots; fins mottled black and slaty grey, like the body, with the exception of the pectoral fins, which are nearly black.

DESCRIPTION.—The greatest height of the body is four times in the total length, and is below the fifth dorsal spine; the upper profile of the head and nape of the neck is rather concave; the head, which is only slightly convex between the orbits, is one-fifth of the total length; the operculum terminates posteriorly in a point and is entire, differing in that respect from *H. punctatus*, and *lophodon*, in which this limb is divided by a deep semicircular notch.

The dorsal fin beginning in a vertical line from the extremity of the operculum has the first spine small, 5 lines, the second 11 lines, the third 1 in. 3 lines, which is the average height of fourth, fifth, and sixth, after which the spines gradually diminish to the fifteenth or last spine. It is continued by the soft one, which rises at once to 1 in. 3 lines, gradually reaching a height of 1 in. 7 lines at the seventh ray, after which it gradually diminishes to 7 lines at the last ray.

A pad along the base of the dorsal fin is broadest at the base of the third spine, gradually decreasing towards the middle of the soft one.

	In.	Lines.
Total length	14	1
Length of head	3	0
Height of body	3	6
Diameter of eye	0	5
Interspace between dorsal and caudal fin	1	10
Length of caudal lobe	2	1
Interspace between ventral and anal fin	3	4

SYNNEMA.* Gen. nov.

Uranoscopus, Cuv. au Val. *Anema*, Günth., II., 230. *Kathetostoma*, Hutton, 23.

Habit and teeth of *Uranoscopus*; scales very small; a filament in the interior of the mouth; one continuous dorsal; ventrals jugular; pectoral rays branched; some bones of the head armed—six branchiostegals; pseudobranchiæ.

Synnema monopterygium, mihi.
Anema „ Günther.
Kathetostoma „ Hutton.

This species since the days of Solander and Forster has undergone several changes in its nomenclature, the latest being that proposed by Capt. Hutton, because he finds a filament in the mouth, so that the generic name of *Anema* of Günther (without filament) would be quite inappropriate. The species cannot again be united with *Uranoscopus*, as it possesses one dorsal only, while it cannot be placed with *Kathetostoma*, as Capt. Hutton has proposed, because the three spines on the inferior margin of the præoperculum, the two on the mandibula and two on the throat, which form amongst others a very important character of that species, are absent in the genus under review.

The Canterbury Museum possesses two specimens of this curious genus, of which one (11 in. 6 lines long) was caught in the river Avon, near Christchurch, and the other (15 in. long) in the river Rangitata, about forty miles above its mouth, by Mr. W. Packe, who presented it to the Museum.

This species, as far as the specimens in the Canterbury Museum are concerned, is fluviatile in its habits, but I suppose that it inhabits both salt and fresh water periodically.

I may also here observe that at least some of this tribe, which all bury in the sands or mud lying there in wait for their food passing over their mouth, can remain above low-water mark during the ebbing of the sea, as one of my sons when digging for shells in the sands on the beach near the Sumner Hotel not far below high-water mark came upon a specimen about 15 in. long. It was carried by him to a pool of water with a sandy bottom, but the fish disappeared in an incredibly short space of time, having buried itself in the sands.

KATHETOSTOMA GIGANTEUM. sp. nov.

The Canterbury Museum received from Mr. Day, in Sumner, a very large specimen of cat-fish, caught in the Heathcote estuary, near Sumner, which upon examination proved new to science.

This magnificent specimen, which, as far as I could ascertain, is the largest

* From *syn* with, and *nema* filament.

cat-fish hitherto described, is 29 in. long, 11 in. 9 lines broad, and 7 in. 2 lines high.

DESCRIPTION OF SPECIES.

D. 16; A. 14; P. 22; C. 11; V. 5.

Length of the head is four times in the total; teeth large and bent inwards in several rows, but not closely set; six branchiostegals; three strong spines on the inferior margin of the præoperculum, two below the mandibula, and two on the throat; head partly rugose and covered with numerous grains starting from star-like centres and forming regular figures; one dorsal, of which the rays are slight and entire, whilst those of the ventral, pectoral, and anal fins are strong and branched; lateral line straight, and only slightly bent down near its junction with the caudal. From the neck and the anterior portion of the lateral line, which stands well above the skin, start numerous raised flat lines, branching repeatedly and diminishing gradually, the whole forming an elegant pattern; interorbital space deeply excavated; scales none.

Head and back of a brown olive colour, with darker undefined spots; sides and abdomen and fins light brownish yellow. The upper surface of the body is like the head remarkably flat.

LEPTOSCOPUS HUTTONII.* sp. nov.

D. 31; A. 36; L. lat., 88 (44).

Length four and a quarter times that of the head, which is eight times the diameter of the eye. A strong and well pointed humeral spine; caudal rays branched (and in specimen B. also ventral rays); the scales of the lateral line twice as large as those of the adjoining series, each corresponding to the transverse series.

The Canterbury Museum possesses two specimens, which were both caught in the river Avon. The smaller one (A), presented by Mr. E. Barker, of New Brighton, is 11 in. long, and was caught near that locality.

Colour.—Head above and back dark olive green, the posterior portion of the latter becoming gradually lighter; cheeks, sides and abdomen white, the lateral line dark olive throughout, forming the division between the two colours; anterior portion of sides, above pectoral fins, below lateral line olive green, gradually shading off into white, with a few darker spots near the junction; pectoral fins above dark olive, nearly black, below white; anal fin white; dorsal fin white, with dark olive green rays and a fringe of the same colour; caudal fin—central portion white, with a dark line entering it at the base as a continuation of the lateral line for a third of its length, upper and lower portion dark olive green, like body.

* Named in honour of Captain Hutton, F.G.S., author of "Catalogue of New Zealand Fishes."

The second and larger specimen (B) is 18 in. long, and far brighter coloured than the first. Head above and back dark olive green, which is also the colour of the lateral line; middle portions of cheeks and side white; throat and addomen pink; anal fin pink; pectoral fin above dark olive, centre white, below pink, corresponding to position of colours of the body; dorsal fin white, with dark olive green rays and fringe; caudal above and below dark olive green, centre white, fringed below with pink.

Besides in the colour there are some minor points of difference between the two specimens, such as form of the operculum, so that possibly they might represent two distinct species, in which case I would propose for the latter the name of *Leptoscopus tricolor.*

NOTOTHENIA MAORIENSIS.* sp. nov.

Maori Chief.

D. 3/29; A. 23; V. 6; L. lat. 58.

Length of the head one-fourth of the total, of which the height of the body is one-sixth; total length 17 in.; eyes slightly directed upwards; the upper surface of head is flat and granulated; suborbital space, upper portion of præoperculum and operculum covered with scales, the two latter naked below. The lateral line stops in a vertical line with the root of the last dorsal spine, whilst its lower continuation begins again under the twenty-sixth dorsal spine, so that the latter overlaps the upper one.

The whole rays of the pectorals are branched; colour black, with the exception of the abdomen, which is light grey, the sides shading off gradually into that colour; rays black; membrane brownish grey.

Caught near Lyttelton harbour, where, according to the fisherman who brought it, it is very seldom seen. The dark colour and the peculiar expression of the face has given rise to the popular name of Maori Chief, which has suggested to me the proposed specific designation.

BOWENIA.† gen. nov.

Eyes on the right side, the lower rather in advance; mouth unsymmetrical, narrower on the right side than on the left, the length of the left maxillary being one-fourth of that of the head; teeth villiform on the blind side only where they form bands; dorsal and anal rays entire, with the exception of the few largest ones, which are slightly divided; dorsal and anal fins scaleless; the dorsal fin commences on the extremity of the snout and is not continued on to the caudal; the two ventrals are conjoined at the junction with the

* Capt. Hutton considers this to be the same fish as No. 39, "Cat. N.Z. Fishes."—Ed.

† So named in honour of his Excellency Sir George Bowen, G.C.M.G., Governor of New Zealand.

anal fin; scales small cycloid; lateral line straight; gill openings narrow, the gill membranes being broadly united below the throat.

BOWENIA NOVÆ-ZEALANDIÆ. sp. nov.

D. 56; V. 6; A. 37; P. 11.

The height of the body is contained two and one-eighth in the total length without caudal, the length of the head nearly four times; the lower eye is in advance of the upper by about one-half of its diameter, they are separated by a naked space, which is about equal to the vertical diameter of the eye; snout as long as the eye, which is one-fifth of the length of the head; the maxillary of the right side extends below the anterior margin of the eye; teeth minute, in villiform bands; anterior rays of dorsal fin produced beyond the connecting membrane; the dorsal fin commences on the foremost part of the snout, its longest ray being the thirty-first, situated a little behind the middle of the fin; caudal straight, of equal length with the head; the gill opening does not extend upwards beyond the base of the pectoral; the two ventral fins are joined posteriorly, and are connected by a complete membrane with the anal fin; the length of the pectoral two-thirds that of the head.

Total length 10 in. 7 lines.

Uniform light brownish olive.

Lake Ellesmere.

The Canterbury Museum possesses from the same lake—which generally contains brackish water, and only at some seasons salt water, when in direct communication with the sea—two other specimens, 12 in. 3 lines and 12 in. 1 line total length, which agree with the foregoing description of *B. novæ-zealandiæ*, with the exception that the right ventral fin is only continuous in the same line with the anal fin, being joined to it by a broad and complete membrane without rays, the *left* ventral fin occurring separate.

However, this difference may be accounted for by the connecting membrane of that left ventral having been torn off in both specimens, of which one is not in a good state of preservation.

Another and striking peculiarity consists in the very strange form of the head of both. The dorsal fin, instead of commencing on the foremost part of the snout, does not reach to the head, the skull being covered with skin to the post-frontal bone; the left eye lying nearly on the top of the head. A little distance behind that eye the body rises, forming here, as it were, a crest or free pointed process projecting over the eye. On the foremost part of that crest the dorsal fin begins.

I should at once have considered both specimens as monstrosities, brought about by arrested development, had I not found both specimens alike, but

since then having read Dr. Traquair's important paper "On the Assymetry of the *Pleuronectidæ*," ("Trans. Linn. Soc.," XXV., pt. ii., 1865), I have become convinced that they are both monstrosities, which, as I understood since from the fishermen, are far from uncommon.

GALAXIAS GRANDIS. sp. nov.

Bull-trout.

B. 9; D. 13; A. 13–15; V. 7; P. 14.

Head one-fifth of the total length, and one and one-third the height of the body; dorsal a little in advance of the anal; both jaws of equal length; eye rather small, one-seventh of the length of the head and one-half of the length of the snout; the length of the pectoral fin is two and a half the distance from the ventral; the anal extends beyond the base of the caudal if laid backwards; the least depth of the tail is one and one-fourth the distance between dorsal and caudal fins; teeth on tongue very large.

Brownish black above, yellowish brown beneath, with yellowish spots and short streaks, which are most numerous and best defined on the sides, whilst on the back and the head they are small and of rare occurrence; fins brownish black with lighter coloured rays. It will be seen that this species, although similarly coloured to *G. alepidotus*, is distinguished from it by its great size and some other specific differences.

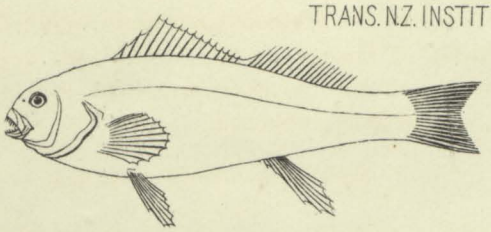
Total length 19 in. 3 lines.

I have been informed that even larger specimens have repeatedly been taken. I have not seen any specimens of *G. alepidotus*, so that I am unable to point out more fully all the specific differences, which I have no doubt exist.

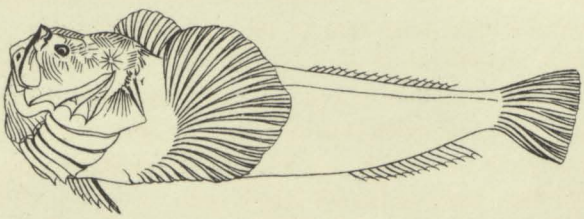
This giant bull-trout was obtained by Mr. E. Jollie in one of the small creeks near Lake Ellesmere, which rise as fine copious springs on the plains in its neighbourhood, and fall either into that lake or form branches of the Little Rakaia. These deep creeks, possessing generally vertical or overhanging banks, and having the bottom mostly covered by aquatic vegetation, to which the water-cress (*Nasturtium officinale*) forms in many instances a successful rival, are also inhabited by the New Zealand eel (*Anguilla aucklandii*), and it is rather astounding that they should offer shelter to two such voracious species—considering that very often the water-way is so narrow that a large fish like the bull-trout can scarcely turn round.

This bull-trout is easily caught with the hook baited with the grass-hopper during the summer time—and at any time of day.

This species occurs also at the West Coast, where I obtained it in Lake Hall, the outlet of which falls into the Paringa river.



HAPLODACTYLUS DONALDII, Haast.



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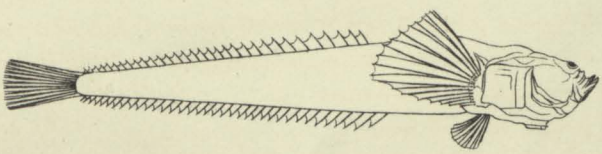
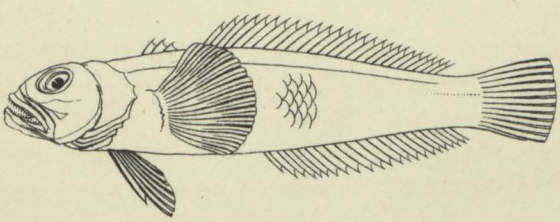
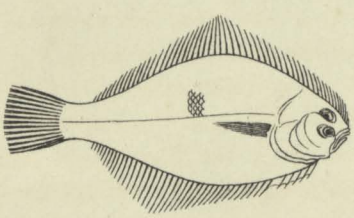


LEPTOSCOPUS HUTTONII, Haast.



NOTOTHENIA MAORIENSIS Haast.



BOWENIA NOVÆ ZEALANDIÆ, Haast.

J.F.M'Cardell. del. J.B. lith.