NOTES OF
EDIBLE FISHES
OF VICT.

F. CASTELNAU

1873

N. M. V.

597.09945
C276.

L.H. Moon
& Son
Bookbinders

MUSEUM VICTORIA

Location: TISH 33.21.597
Date: 21/7/11
Bar code: 09065
Call no.: C276

MUSEUM OF VICTORIA

33091

NOTES

OF THE

EDIBLE FISHES OF VICTORIA.

AN ESSAY:

BY

COUNT F. DE CASTELNAU.

Melbourne:

MASON, FIRTH, & M'UTCHEON, GENERAL PRINTERS,

51 & 53 FLINDERS LANE WEST.

MDCCCLXXIII.

09945

276

INTERNATIONAL EXHIBITION ESSAYS, 1872-3.

No. 5.

N O T E S

OF THE

EDIBLE FISHES OF VICTORIA.

BY COUNT F. DE CASTELNAU.

NOTES

OF THE

EDIBLE FISHES OF VICTORIA.

THE edible fishes of Australia do not generally present very remarkable forms, and to a superficial observer they would, in most instances, be considered as similar to those of Europe. In point of beauty also they are not superior to those of that continent; as very few present those symmetrical stripes, those strange bands, that rich variety of colour, so often to be admired in the inhabitants of the torrid regions. Those of the fresh waters, in particular, are few in number and generally of most modest appearance, but nevertheless, to the naturalist, their study is an object of great interest.

The dispersion of animal life over the surface of the globe is a subject of vast scientific importance, as by its knowledge we may acquire a correct idea of the changes that have occurred in the geographical forms of continents. It is universally admitted that the outlines of most of the regions of the earth have been subject to considerable alterations, due to various geological revolutions, which have occurred at periods of which the precise date cannot in general be well ascertained, but which may be determined, at least, in a comparative way.

When, for instance, an island presents a *fauna* almost entirely and specifically similar to that of another land, it is certain that they have both been united, and that their separation has only taken place at a geologically modern period. If the majority of the sorts is specifically different, but belong to the same natural groups, it is probable that the two lands have been united, but that their separation has taken place at a much more remote date. If not only the species are different, but also nearly all the generic forms dissimilar, it is likely that these regions have never been united. To give this study a degree of certainty we

must not only consider the present forms, but also those of previous ages, of which the remains are imbedded in the *layers* of the earthly formations, and are called *fossils*. As an instance of this I may say that we shall thus be led to the conclusion that Tasmania has, till a modern period, formed a part of the Australian continent, and that New Zealand, on the contrary, has been separated at a very distant period. If we apply these principles to the Australian continent itself, and if we endeavour to form an opinion as to whether it has always been isolated, or if, at a distant age, it has been united with other lands, we must bear in mind that by a singular chance the first navigators, the first naturalists, who visited the southern continent, obtained nearly the totality of the most extraordinary forms of the zoology of Australia.

The *black swan* had been seen by the old Dutch navigators; the duck-billed *platypus*, the pouched *kangaroos*, the abnormal *echidna*, the curious *wombat*, the gigantic *emu*, were observed either by Cook or by the learned naturalist Peron, who, in the beginning of this century, made so many interesting discoveries during the exploring expedition of Captain Baudin. The plants brought back by Banks and Solander, and those that Ventenat described from the Imperial gardens of the Malmaison, were not less abnormal and singular; thus the idea spread universally that the natural productions of this continent were all of a most particular type. It was thought that every animal, every plant, inhabiting the Australian regions, must, of course, be of a most extraordinary form, and that the animal life of this continent had been created to upset all the admitted ideas of organised beings. It appeared that nature had, in a sort of playful freak, taken the task of destroying all the so-called natural classifications, and had endeavoured to teach wisdom, even to men of science, in obliging them to acknowledge their entire inability to understand the work of the Almighty Creator.

Since then numerous naturalists have explored a great portion of Australia, and immense collections of specimens have been forwarded to most of the European museums, and it has been found that, putting aside a few curious beings, the greater part of the animals could be placed in natural groups found in other parts of the world, and that on the whole these regions did not perhaps present a more extraordinary fauna than might have been expected from their isolated position.

These considerations have been particularly suggested to me by the very curious theory lately hazarded by a writer in the *Bulletin* of the Geographical Society of France (February, 1872, page 160, and following.) The author, Mr. A. Dufresne, emits the unexpected idea that Australia was an *aérolite*, a sort of moon,

which having, by some unknown cause, deviated from its course, had struck the terrestrial globe and become one of its ingredient parts. The author thinks that not only the animals of this great island, but also its aborigines, are different enough from all others to support and prove such an extraordinary theory. He conceives the animals and the men themselves as belonging to races quite different from ourselves, and the latter he represents as descendants from a different Adam, and *as a proof that the planets are inhabited!*

Less imagination and a closer observation of facts would have led him to see that the Australian blacks are closely allied to the *Papuans* of New Guinea, to the aboriginal tribes of the central parts of most of the great islands of the Indian Archipelago, to the *Mentras* I have myself observed in the interior of the Malayan Peninsula. This black race is only the remnant of vast populations which once covered the greatest part of India, and probably of Europe itself during the stone period. In that last continent this race was conquered from the east by the white race of central Asia, and probably also from the west by the red one of Atlantida, as I believe that long before Europe discovered America it had been itself conquered by the more civilised nations, who inhabited the now submarine regions, which formed the eastern portion of the American continent. The Australian man is not isolated in creation, and if we come to the animals of the southern continent we find that this is certainly the centre of the marsupials, as at least one hundred and ten of their sorts inhabit that continent, but the *Dendrologi*, or tree kangaroos, are found in New Guinea, as is also *Dorcopsis Bruni*, and that America has, in its genus *Didelphis*, several representatives of the same type. We must also take in great consideration that if the marsupials have at our period a limited habitat, they have not always been so restricted. They have lived in most countries of Europe, and both England and France contain their fossil remains; these countries even seem to have been much more suited to them than Australia, as our present pouched animals are very small representatives of their lost predecessors, which were sometimes equal in size to a full-grown *Rhinoceros*. It is evident that at one time the entire globe must have had much resemblance with what Australia is to-day.

The absence of *quadrumana*, *carnivora*, and *ruminantia* is very remarkable. It must also be observed that the most anomalous animals, such as the *platypus*, *echidna*, and *wombats*, are restricted to its southern or more distant portion, the northern regions of the continent having on the contrary a fauna very similar to the one of New Guinea. In most instances the animals belong to the same natural families, and often even to the same

species, and Gould says with truth that the productions of this latter country (New Guinea) are so similar to those of Australia that, zoologically speaking, they cannot be separated. I must not forget to mention those curious animals of Tasmania, which are becoming more and more scarce every day, and will, there is no doubt, soon disappear from the living sorts of the world; I mean the Tasmanian *devil* (*Sarcophilus*) and the Tasmanian *tigers* (*Thylacinus*). These ferocious animals, now only confined to Van Diemen's Land, have once inhabited Australia, as is proved by the numerous teeth found in the Wellington caves and also in Victoria; the genus wombat (*Phascogale*), so entirely Australian, and of which only three or four living species are known, has been much more numerous, as the fossil remains of more than twenty sorts have already been discovered, and some of them are of considerable size. *Echidna* is also an old inhabitant of Australia, as its fossil bones have been found there.

In the class of birds we also find that several large families are entirely missing, such as the *vulturidae*, the *picidae*, and nearly so the *gallinaceae*, but the parrots which abound in the Malayan Islands are also very numerous here, where they have over sixty representatives. The *coccyos* are a remarkable instance of this, as they equally swarm over all Australia and the Indian islands.

Here again we find that the most abnormal forms are more to be met with in the southern parts than in the northern ones. Such is the famous *black swan*, and also the beautiful *menurus*. The latter extends, it is true, its *habitat* to a considerable distance on the eastern part of the continent, but nowhere is it so common as in eastern Victoria, and in the southern parts of New South Wales; its being found out of these regions can be explained by the fact that the mountainous and brushy country that it inhabits extends in that direction, and we must also take in consideration that it is not at all certain that the same species extends all through, as Gould considers them as forming three different ones. In all cases the climate has produced its necessary effects. This I consider confirms my idea that types differ in proportion with the distance that separates them, as greater the distance, greater has been the time elapsed since the original specimens were separated. I certainly do not admit that all animal life derives from one created type, but I believe that those primordial types were proportionally few, and that like stars they have radiated in all directions, and have formed, are forming, and with time will form, almost innumerable species.

The *Emeu* is found in a fossil state, and has long been a denizen of the southern continent. The remains of a large species

of *Dinornis*, found at eighty-six feet below the surface on the Leichardt Downs of Queensland, show that these most singular giants have not always been restricted to New Zealand. At a certain period enormous birds seem to have inhabited all the southern hemisphere, and the *Dido* of Mauritius is probably the one that has lived the last.

The class of reptiles present a singular fact, as almost all the snakes (ophidii) of the southern part of Australia are very venomous, when in regions much warmer, such as Brazil and India, eight or nine sorts out of ten are harmless. As might be expected, crocodiles only live in the tropical rivers of the continent, but their fossil remains have been found at a great distance to the south. Snakes are found all over Australia and Tasmania, but are absent from New Zealand and New Caledonia. If we come to the fishes we find that those of the northern territories are almost all Indian, and that those of the southern colonies have a decidedly European appearance. Western Australia and Southern Australia have some curious forms. *Serranus*, of which species are found in almost all the temperate and warm seas, is absent in the southern portion of the continent, and this is also the case in the extreme south of Africa. It results from these few observations that animal life follows here the same law as in other parts of the globe, and that its variations are in proportion to distances.

Before proceeding to the subject which is more particularly the object of these notes, I must say that, as a contrast to the general indifference to natural sciences, which is to be lamented in this country, we have to mention the useful labours of the Acclimatisation and Zoological Society, which, with the very limited means it has at its disposal, has not only formed the nucleus of a fine menagerie of living animals, but has done all in its power to introduce in this new country natural products of other lands, which may one day increase its natural wealth. It has also begun, under the direction of its president and secretary, Dr. Black and Mr. Le Souef, a series of publications, which will, it must be hoped, contribute to develop in this country a taste for the study of nature. It is little to be feared that men will cast off religious feelings, when they will study the Almighty through the immensity and glory of His creation. I must also mention Mr. Waterhouse, the learned director of the South Australian Museum, who, by his laborious exertions, has done much for the study of ichthyology in these antarctic seas.

The first sub-class, the *Teleostei*, or fishes with an ossified skeleton, comprise, in Australia, as in all other countries, by far the greatest number of sorts; it is divided in six orders, the first of which, the *Acanthopterygii*, have a part of their vertical fins formed of spines.

The *Perch* family (*Percidæ*) has rather numerous representa-

tives in Victoria. Some inhabit the sea, such as the *sea perch* (*Lates Antarecticus*) and other nearly allied sorts (*Lates Similis* and *Victoriae*), *Apogon Guntheri*, *Enoplosus armatus*.

Such is also the case with *Anthias rasor*, on which I have formed the genus *Cesioperca*. The great genus *Serranus*, of which the numerous sorts inhabit almost all the seas of the world, appears to be absent from the southern region of Australia.

The genus *Arripis* is entirely Australian, and is represented by the *roughy* (*arripis Georgianus*), and the *salmon trout* (*arrip. truttaceus*); the full-grown specimens of the latter are called *salmon* by the fishermen. The two species of *Arripis* are very frequently brought to the market, and are sold at a proportionately cheap rate, but great caution is required, as their flesh sometimes causes painful poisoning and even death. The skin of the patient presents a curious red tinge. It is to be remarked that after having equally eaten of the fish, some persons will feel the bad effect of it when others will remain entirely free therefrom; being something like sea-sickness, which will also affect one and not all the persons similarly situated. It is generally thought that these fishes are only dangerous when in a state of half-putrefaction, but I believe that, in a few cases, and in very warm weather, it has been found that even fresh specimens have caused unpleasant consequences; I have not heard, however, that the large, full-grown specimens (*salmon*) have ever produced such effects.

Among the fresh-water sorts of *Percidæ*, I must first mention the Murray cod (*Oligorus Macquariensis*) which sometimes weighs one hundred pounds. It formed, before the country was settled, the principal article of food of the natives of the interior. The Acclimatisation Society has introduced it in the Yarra, and small specimens are often caught in this part of the river which bathes the city. When fresh and just taken from the Murray, it is a very good fish; but after having been carried to Melbourne by the railway it loses much of its flavour.

Modern authors have united in the same genus with this, a very large sea-fish, from New Zealand (the *Oligorus gigas*, of Gunther), which is called *Hapuka* by the natives, and is said to be sometimes six feet long. By its armed tongue, its double-pointed operculum, &c., it differs too much from the Murray cod to be left with it, and I propose forming on it a new genus, I would name *Hectoria*, in honour of the illustrious Dr. Hector, to whom natural sciences owe so much.

The Gipps Land perch (*Lates colonorum*) is very similar to the sea sort; it is frequently brought to Melbourne in winter, but on account of its unsavoury flesh does not seem, at least to me, to add much to the comforts of the population.

Microperca Yarrae is a very pretty but small fish, common in

the lower Yarra, and in the neighbouring swamps; boys often catch them alive, and sell them as young *golden fish*.

The most important of the Murray fishes, after the cod, is the *golden perch*, which I have named *Dules auratus*; it is certainly very nearly allied to Richardson's *Dules ambiguus*, but does not entirely agree with the description given by that learned zoologist; it unites beauty of colours to the good quality of its flesh; and it sometimes weighs up to six or even seven pounds.

The following fishes come in the same natural family as the former, but have been separated from them under the name of *Pristipomatidæ*:—The *Murray silver perch* (*Therapon Richardsoni*) is found in great numbers in all the rivers of Riverina, and is often brought to the Melbourne market. It is very nearly allied to *Therapon ellipticus*, and perhaps similar; but here again the description published does not agree with it, and this last fish being an inhabitant of the rivers of Western Australia there is sufficient reason to consider it as different till specimens may be compared from the two localities. Another blackish, and much larger sort, is also sometimes found in the Murray; I have called it *Therap. niger*. I have also described, under the generic names of *Murrayia* and *Riverina*, several fishes of the Murray River. The first have eleven spines, and the second twelve to the dorsal fin.

Of the family of MULLIDÆ, we only knew till lately of one representative, the *red gurnet* (*Upeneichthys porosus*), which is highly considered as a table fish, and is also remarkable for its beautiful carmine hues, and the pretty blue stripes of its head; but this year two specimens of an Indian sort, *Upeneus Plumingii*, have been obtained in the market.

The family of SPARIDÆ is, in these seas, the most important of all, as it contains the *Snapper* and the *Bream* of the colonists; the first sometimes weighs up to fifty pounds, and is as remarkable for its beautiful silvery pink and red colours, as for its excellency as a table fish. The males take with age a most extraordinary appearance, the anterior profile of their head resembling a monstrous human face, with an enormous large nose, and a very prominent forehead. The fishermen pretend that these old specimens, living constantly amongst the rocks, owe their singular forms to the constant blows they receive from the stones, but this evidently cannot be the case, as the females always maintain their ordinary form. I had long ago observed, at the Cape of Good Hope, a fish of this family with an enormous excrescence in form of a nose, and thinking this was a specific character, I had called it *Chrysopheris nasutus*; but after having seen the Melbourne specimens I do not doubt that it is a monstrous old male of the common, but most beautiful sort of that colony (*Chrys. gibbiceps*).

The *Bream* (*Chrysophris Australis*) never attains large dimensions, but it is esteemed as an article of food, and is always plentiful on the Melbourne market.

The *Melanichthys tricuspidata*, called here *Black perch* on account of its colour, appears frequently on the market, and is also considered good for the table; another sort, very nearly allied to it, but of a dark grey, with broad transverse black bands, is more rarely seen; I believe this to be the *Crenidens zebra*, of Richardson; I had formed on it a genus *Neotephræops*, but as I have already stated it in the errata of my paper in the Transactions of the Acclimatisation Society of Victoria, I believe it to be identical with *Melambaphes* of Dr. Gunther.

The SQUAMPINXES form a family of fishes remarkable not only by the beauty of their colours, but also by the elegance of their forms, but they are not generally fit for human food; several sorts inhabit the shores of Northern, Eastern, and Western Australia, but none have yet been found in the Victorian waters. CIRRHITIDÆ on the contrary have here rather numerous representatives, and a few of them are much esteemed as food. The *kelp fish* often attains rather large dimensions, and is remarkable by its brown colour, marked all over with numerous irregular, but pretty, concentric dark lines; it is the *Chironemus Marmoratus*, and is but rarely eaten.

Cheilodaetylus is a genus characterised by its pectoral fins having some of their rays prolonged like long fingers; this conformation is particularly remarkable in *Macropterus*. *Nigricans* is the *butter fish*, which is one of the commonest of all sorts on the Melbourne market. *Gibbosus* is so called on account of its gibbous form; it is of a pretty light purple, crossed by two broad transverse black bands.

Latris contains one of the sorts the most esteemed by the Melbourne gastronomers, the *Hobart Town trumpeter* (*Latris Hecateia*), which is often from two to three feet long, and is remarkable by three or four broad longitudinal bands, which extend over its generally grey colour; large quantities are brought fresh and salted from Tasmania, but it is also found in the Victorian sea. Another sort (*Latris Forsteri*) is called *bastard trumpeter*; it is not so much praised as the preceding, perhaps because it is not so well known; it is found in great numbers on some parts of the coast of Gipps Land.

The TRIGLIDÆ are singular, and sometimes hideous-looking fishes. The first I will mention is the *gurnet*, as being very common on the market. Following the opinion expressed in the essay for 1866, I had considered it as granted that it was the *Centropogon Australis* of the authors, but I find that this is a mistake; it is the *Neosebastes scorpenoides*, of Guichenot, and

is very nearly allied to a sort from Western Australia, described by Richardson under the name of *Sebastes Pandus*. I owe the very scarce pamphlet in which the genus *Neosebastes* is established to the kindness of our illustrious botanist, Baron Von Mueller.

The *Pentarogeton marmoratus* is rare in these waters, and is only remarkable by the large, moveable, sword-like spine, which it has below the eye.

The *flat-heads*, or *Platycephalus*, form the most important genus of the family, as containing the most common and cheapest of the Melbourne fishes; they form several sorts, of which the two most common are the *Bassensis* and the *Lævigatus*; the latter is called *rock flat-head*.

Trigla is remarkable not only for the beautiful crimson pink which adorns several of its species, but also by the great extent of its pectoral fins, which take the form of large wings. The *Trigla polyommata* is generally known as the *flying gurnet*; it is a fish of unsurpassed beauty; its body is crimson and silvery; its magnificent large pectorals are of a fine green, bordered with purple, and have a large oblong double black spot, lined with white; it is said to be good for the table, and always attracts notice by its extreme beauty.

Lepidotrigla vanessa and *sphynx* are very pretty, but of smaller size than the preceding. All these fishes appear from time to time and accidentally on the market. I have observed no other sorts, and I believe that it is by mistake the New Zealand *Trigla kumu* has been said to inhabit the coast of Victoria.

The family TRACHINIDÆ contains the *stone lifter* (*Kathetostoma Lave*), a fish of hideous appearance, often met with in the Melbourne market, but of little estimation as food. This is not the case with the *whiting* (*Sillago punctata*), which is also very common, and is one of the best of the edible fishes.

SPHYRÆNIDÆ are represented by the pike (*Sphyræna Nova Hollandiæ*), which attains a large size, and is considered by many as the most delicate of the Victorian fishes.

I have formed a new genus (*Neosphyræna*) on a sort (*multiradiata*) often called by the fishmongers *Skip-jack Pike*, and which is as good as the pike itself.

The family of SCIÆNIDÆ was for a long time thought absent from the Australian seas, but an enormous sort, the *king fish*, sometimes, but very rarely, makes its appearance on the market; the fishmongers often give that name to the *yellow tail*, but I have only seen the true king fish once in two years; it is considered a very great delicacy, and is sold for £2 or £3. In my work on the Victorian fishes I named this sort *Sciæna Antarectica*, but Professor M'Coy tells me that he has compared it with the *Meagre* of the

Mediterranean (*Sc. Aquila*), and that he considers them as similar; this may be the case, but the description given of that sort by all the authors does not apply to our fish, and in particular they all say that the upper jaw is longer than the other, when in the Australian sort the lower is sensibly the longest. At the Cape of Good Hope very numerous specimens are found, which Dr. Gunther considers as belonging to the European species. In that colony young individuals are very common in the warm months, and old ones in the Antarctic winter; the first are only eaten fresh, and the large ones being hard and dry are salted like cod, and exported to the Mauritius.

The family of TRICHIURIDÆ contains one of the principal edible fishes, the *Barracuta* or *Thyrsites Atun*, which is also very common at the Cape of Good Hope.

SCOMBRIDÆ here, as in almost all seas, have several representatives highly esteemed for the table. The *mackerel* of these seas (*Scomber Antarcticus*) is the first, and requires a particular notice. It has an air-bladder, but differs from *Pneumatophorus* by the small, irregular, very numerous punctiform dark spots, which cover all the lower parts of the body; this character would bring it to *Colias*, and it is still nearer allied to this sort by the pectoral region being covered with scales considerably larger than the others, but the large, dark, round spots which form one or two longitudinal series on the sides do not appear to be present in the Mediterranean sort, and in this the abdominal spots are stated to be *irregular, reticulated, dark lines*.

Dr. Gunther gives also to this sort (*colias*) a very different number of fin rays—D. 7-1-12; A. 1-1-12; but I must observe that Cuvier and Valenciennes do not appear to have found any difference, on this point, between the *colias* and the common mackerel. Risso also gives it similar numbers, but he seems to have confounded it with *Pneumatophorus*.

It is thus evident that *Antarcticus* cannot be *Australasicus* nor *Pneumatophorus*, but may possibly be *colias*, if we suppose that Dr. Gunther's description is erroneous. I must observe that all authors describe the European *Scombers* as having the scales forming their lateral line larger than the others, which is not the case with the Australian species. Dr. Gunther considers *Sc. grex* of Mitchell and Cuvier as being the same as *Pneumatophorus*, and this sort, which I have observed in great quantities at the Cape of Good Hope, is a very different fish from *Antarcticus*.

I believe that the South Australian sea has two species of mackerel, who stand to each other in the same sort of relationship as *Sc. Scomber* and *Sc. Pneumatophorus* do in the Mediterranean, but are both specifically different from the European ones; these are *Australasicus* without an air-bladder, and *Antarcticus*

with one; they are, unfortunately, both very scarce. In Captain Hutton's work on the fishes of New Zealand he mentions *Sc. Australasicus* as inhabiting the seas of that island, but as he states that it has an air-bladder I do not doubt that his fish is *Sc. Antarcticus*.

The *Bonito* (*Thynnus Maccoyii*) is a large sort which rarely appears in the market, and as most fishes bearing the same vernacular name, it is of little value for the table.

The *John Dorey*, which is very similar to the European sort, has been named *Zeus Australis* by Richardson; it is considered a great delicacy, but it is not often obtained.

The *Boar fish* (*Histiogaster recurvirostris*) is remarkable by its long muzzle; it is striped, and presents beautiful colours when fresh; it is often sold in the market for the precedent, but its edible qualities are considered inferior.

I have the first described a beautiful fish (*Richardsonia Insignis*), of very large size, and almost similar to the last in form and colour, but different by its dentition; it appears to be very scarce, but I do not doubt that if it was obtained in quantities it would prove a valuable addition to the food of the country.

The following have been formed in a separate family (CARANGIDÆ), but in a natural system they belong to this:—The *Silver bream*, the *Skipjack*, the *Travale*, and the *Yellow tail*.

The first (*Caranx Georgianus*) is very common on the market; it is very silvery, with the back of a beautiful light purple blue; the larger specimens sometimes attain two feet long, but the greatest number are from eight to ten inches; it is good for the table.

The second (*Temnodon Saltator*) is just as common as the precedent; the young subjects are sometimes called *snubgall*. This fish is found in all the warm and temperate seas of the world; it is very common at the Cape of Good Hope, where it is called *elftoish*; and it is everywhere much esteemed.

The third (*Neptonemus Travale*) is also numerous on the market, and used as food.

The fourth (*Seriola Grandis*) appears by shoals during the warm months; it is a very large fish, generally weighing from twenty to thirty pounds, and sometimes over eighty.

The next family, GOBIIDÆ, only contains small sorts, which have little economical value; they constitute several species of *Gobius* and *Eleotris*. The BLENNIDÆ are nearly in the same case, only one sort of *Cristiceps* becoming large enough to be used as food, but it is very scarce; the fishermen call it the *blenny*, and speak very highly of its culinary qualities; its scientific name is *Cristiceps multifenestratus*.

In the family of NANDIDÆ I have obtained, since my publica-

tion on the fishes of Victoria, in the transactions of the Zoological and Acclimatisation Society, a very remarkable sort that the fishermen call the *devil fish*; it forms a new genus (*Bleeckeria*), characterised by the soft part of its dorsal, and of the anal being considerably prolonged, and its ventrals formed of one spine and only three rays. This species (*cutafracta*) is over a foot long, and is covered with rather large scales. In the next volume of the *Proceedings* above mentioned, I intend giving a full description of it.

The family of ATHERINIDÆ is well represented in Australia, but the sorts are too minute to be of much use.

MUGILIDÆ, on the contrary, contain some of the principal fishes of the market, such as the common mullet (*Agonostoma Diemen-sis*) and another sort of the same genus, found in the lakes of Gipps Land (*Ag. Lacustris*). The *Sand mullet* (*Mugil Waigi-ensis*), first observed in the New Guinea sea, is also much esteemed, not only on account of its esculent qualities, but also of its large size.

The POMACENTRIDÆ are represented by *Glyphisodon Victorice*, remarkable by its very large scales; it is of rare occurrence and of little account. The LABRIDÆ on the contrary are numerous; their large size and beautiful colours always attract notice, but as they are not generally considered good food, the fishermen rarely send to the market these *Parrot-fishes*, as they call them; the species are numerous, but very difficult to distinguish one from the other; all those I have seen belong to the genus called *Labrichthys* by the celebrated ichthyologist, Dr. Bleeker.

Another sort of this family is the *Stranger* (*Odax Richardsonii*), which is very common in all seasons on the market. It is remarkable by its parrot-like beak and its colours, which are sometimes very beautiful, but are so much subject to variations as to make it almost impossible to find two specimens exactly similar.

Olisthops cyanomelus is a most elegant fish, which is also subject to considerable variation in its colouring; it only occurs accidentally, and its flesh being of a green colour is not generally eaten, probably for no other reason.

GERRIDÆ have, to my knowledge, only one representative, which is rather small and presents no particular interest (*Gerres Melbournensis*).

GADOPSIDÆ are of a high interest to naturalists, on account of the singular composition of their fins. The only sort known is the *Blackfish* (*Gadopsis marmoratus*), which inhabits nearly all the rivers and streams of the southern part of the colony, and is also found in Tasmania; it is considered a good edible fish, and sometimes attains a length of over sixteen inches.

In the family of GADIDÆ, we find the *Pseudophycis barbatus*,

or *Rock cod*, which is much esteemed for food, and is commonly brought to the market, particularly in the cold months of the year; the chin bears a short barbel.

The following family is OPHIDIIDÆ, remarkable by its long, elongated, naked body. It contains the *Rock ling* (*Geniptyrus Australis*), which is very common in the market, and considered very delicate; it is sometimes two feet long, and is covered with large brown, marbled blotches; it has two long barbels.

The family of PLEURONECTIDÆ, or *flatfish*, offer a particular interest, as being almost entirely composed of sorts highly esteemed for the table. I have described under the names of *Rhombosolea Bassensis* and *Pleuronectes Victorice*, the common *Sole* and *Flounder* of the Melbourne market, but specimens seem to differ considerably in the number of the fin rays, in the form of the lateral line, and I have not yet ascertained if they form different species, or if these parts are subject to much variations.

SILURIDÆ, usually so numerous in the fresh waters of the warm countries, are only represented here by the *Murray catfish* (*Copidoglanis Taudanus*), from the Murray river. It is a hideous, looking fish, but fit for the table, as are most, if not all, the species of the family it belongs to; it attains over two feet in length, and presents much variations in its colours; the fishermen of the Murray distinguish, I am told, three different varieties (the black, the white, and the blue), but I believe that they present no specific differences.

The family of *Haplochitonidæ* has been formed on the Yarra herring, or *Prototroctes Maræna*, to which has been added another species from New Zealand. The Yarra herring used to be very common in the Yarra, but has nearly disappeared from that river, as since two years I have not been able to obtain one single specimen. It is still to be found in the Watts river, which is a tributary of the Yarra, but even there is becoming scarce. It is said that the cause of its disappearance has been the introduction of the voracious Murray eod. The rivers of the north of Tasmania have a sort perhaps similar to the Yarra herring.

The SCOPELIDÆ have only one representative in these waters; it is a large and most beautiful fish, very rare on the Victorian coast, but much more common towards Sydney, where it is known as *Sergeant Baker*; its colours are truly magnificent, being a mixture of grey, scarlet, and orange.

GALAXIDÆ are entirely confined to the Antarctic fresh waters, and only contain the genus *galaxias*, the sorts of which are numerous and are here known under the name of *Yarra trout*; they are of small size, but used for food.

In the family of SCOMBRESOCIDÆ I have only observed the single *Hemiramphus Melanocheir*, which is the *garfish* of the

colonists; it is very abundant during all the year, and is remarkable by the extraordinary length of its lower jaw. It is good for the table. A *Scombrosæ* (*Sc. Forsteri*), nearly identical with the European sort, is stated by Professor M'Coy to inhabit also Hobson's Bay.

The GONORHYNCHIDÆ are singular fishes, having something of the appearance of the genus *scincus* amongst the saurian reptiles; The *sand eel*, as it is usually called, is commonly found here, and is considered delicate food; it is the *Gonorhynchus greyi* of naturalists.

CLUPEIDÆ form a numerous family, represented here by—1st, *Chataessus Erebi*, a Murray fish, remarkable by the long filiform lower ray of its dorsal; it is a good edible fish. In my paper on the Victorian fishes I was mistaken when I stated that it inhabited the sea, as I have since learned that it is exclusively fluviatile.

2nd. *Engraulis Antarcticus*, or the *whitebait*, is very common in the fish market.

3rd. *Culpea Sagax*, or *Pilchard*, which appears usually in the hot season of the year, and is sometimes in such abundance as to be carried about Melbourne by cart-loads. Professor M'Coy finds that the tongue is armed with teeth, and this shows that he has examined a different sort from the one I have seen, probably *Meletta Melanosticta*.

4th. *Meletta Novæ Hollandiæ*, the *Smelt*, a pretty little fish of a very light green, with a silvery streak on each side; it is commonly brought to the market. All these fishes are suited to the table.

The family of MURENIDÆ comprises the *eels*, of which two sorts are found in the rivers which flow in Hobson's Bay (*Anguilla Australis* and *Reinhardtii*). They are both very similar to the European sort.

A large *Conger*, which I believe to be *Wilsoni* of Bloch, rarely appears in Hobson's Bay, but is very common towards Hobart Town, and is often brought salted to the Melbourne market. Another but very small sort (*Congromurena habenata*) is scarce, and on account of its size is of no economical use.

The family of *Sclerodermi* or *leather jackets*, comprises fishes which may almost be considered as belonging to the tropical seas; many are remarkable by their curious forms and the great beauty of their colours; but those of the Victorian waters are more modest and not generally used as food, although the fishermen say that when their thick skin has been removed they are not to be despised. The Australian sorts belong to the genus *Monacanthus*, and are not yet well known.

The GYMODONTES are only mentioned here on account of their dangerous qualities, many being poisonous. They are generally

known as *Toad fishes* (*Tetrodon*), *Globe fishes* (*Diodon*), and *Sun fishes* (*Orthogoriscus*); the last often attains very large dimensions, and a considerable quantity of oil can be extracted from it. I have never heard of any case of poisoning arising in Melbourne from the effects of eating the *toad fish*, but at the Cape of Good Hope such accidents are very frequent.

This finishes the list of the TELEOSTEI. The second order of fishes is called PLAGIOSTOMATA, and comprises the *Sharks* and the *Rays*. No sorts of the first are used in Melbourne for food, at least by the European population, but several sorts of Rays are brought to the market; the two most common are the *Raya Lemprieri*, of which the male has two or three series of crooked spines on the pectorals, and a sort I had taken for the *Raya Oxyrhynchus* of Europe, but which seems to be different, and that I will call *Raya rostrata*. A very large sort belonging to this family (*Myliobates*) is sometimes captured, but I believe that it is only used for the extraction of its oil.

The CYCLOSTOMATA contain the *Petromyzontidae*, and terminate the series of fishes. It contains the *Lamprey*, of which two sorts are found here (*Geotria Australis* and *Mordacia Mordax*). The first acquires sometimes a most extraordinary pouch, which gives it a very singular appearance. Several generic divisions have been formed on the *Lampreys*, principally characterised by the form and disposition of the teeth, but it must be remembered that these organs have horny coverings, which are very apt to fall, and thus change entirely the appearance of the mouth. *Lampreys* are in all countries esteemed as food.

The apparent absence in Australia of the *cyprinidae* is very singular, as these fish abound in the Indian waters. I have described in the transactions of the Zoological and Acclimatisation Society, a sort (*Neocarassius ventricosus*), that seemed of a doubtful origin, but has perhaps been imported.

Several sorts of fishes have been introduced in the colony, particularly by the exertions of the *Acclimatisation Society*, and it will be, in the future, an important object of study to compare them with their European parents, and to determine, from time to time, the changes in form and habits that different latitudes, different food, may have brought on them; this may help to solve the greatest problem of modern science—the *formation and constitution of species*.

397.09945

C 276

597 09945

C 276.