

brown, base of joints (from the fourth) pallid. Thorax convex, but depressed near the hind margin; lateral tubercle small, conical; colour above bright tawny, with six blackish-brown vittæ; sides ashy, with a broader and paler dusky stripe. Scutellum pale tawny ochreous. Elytra dilated a little behind the middle, depressed, and thickly punctured (except towards the apex), rusty tawny, with a few short ashy streaks and a number of dark-brown strigæ a little behind the middle, the innermost of which runs near the suture to the apex: the basal half of the suture is broadly margined with dusky, and there is a short blackish stripe on each side near the scutellum, and a broad patch of similar hue beneath each shoulder, on the upper edge of which is an ashy streak, which continues in a curved line to the lateral margin, and then to the apex. Body beneath ashy; sides of breast and abdomen dark brown. Legs reddish; femora and tibiæ each with a blackish ring round the middle.

I met with the female only of this remarkable species, which differs so much from the other *Eudesmi* in the shortness of the muzzle. If the male, when discovered, should be found not to possess the swollen third antennal joint, the species will have to be removed from this genus. It was found at Ega.

[To be continued.]

XXIII.—*A Description of some Fossil Corals from the South Australian Tertiaries.* By P. MARTIN DUNCAN, M.B. Lond., Sec. Geol. Soc.

[Plate VIII.]

THE corals about to be described were derived from the same Tertiary beds which yielded the species noticed in the 'Annals' for Sept. 1864*. A new genus is represented by three well-marked species; the well-known genus *Sphenotrochus*† has two species in the collection; and the genus *Antillia*‡, which attains so great a development in the Nivaje shale of San Domingo, is represented by a very interesting new species.

List of Species.

1. *Sphenotrochus australis*, Woods & Duncan, sp. nov.
2. — *emarciatus*, sp. nov.

* The Rev. J. Woods, who collected those formerly described, classes the various beds of Muddy Creek, Geelong, and the Murray beds as the "Hamilton" Tertiaries. I have to thank him for the specimens now determined and for others which require some further study before their publication.

† Edwards and Haime, Hist. Nat. des Coralliaires, vol. ii. p. 65.

‡ P. Martin Duncan, Quart. Journ. Geol. Soc. Feb. 1864, p. 28.

3. *Conosmilia elegans*, gen. et sp. nov.
4. — *anomala*, gen. et sp. nov.
5. — *striata*, gen. et sp. nov.
6. *Antillia lens*, sp. nov.

1. *Sphenotrochus australis**, n. sp. Pl. VIII. fig. 1 *a, b, c, d*.

The coral is very compressed, especially inferiorly, where on either side of the centre of the base a process passes downwards, giving a "fish-tail" appearance. At the calice the compression is less; but the great axis is at least twice the length of the smaller. The coral is longer than its breadth. The costæ are broad, somewhat wavy, and are separated by well-marked lines: those of the inferior appendages arise from the extremities of the processes, and pass upwards and inwards; and the lateral costæ, wavy below, become straight above. All are plain. The wall is much thicker at the ends of the long axis than elsewhere (in sections). The calice is not shallow, is elliptical, and presents, deeply seated, a long lamellar columella, which is joined to the primary and secondary septa by processes. The septa are well developed and plain; they are not exsert, but pass straight downwards and inwards towards the columella; they do not correspond with the costæ, but with the intervals between the costæ, and they number thirty-two. There are three cycles, with the orders of a fourth, in two systems.

Height $\frac{1}{2}$ inch, breadth $\frac{1}{4}$ inch; small diameter, halfway, $\frac{1}{10}$ inch.

Hamilton, Victoria, South Australia. Coll. Geol. Soc.

2. *Sphenotrochus emarciatus*, n. sp. Pl. VIII. fig. 2 *a, b, c, d*.

The coral is generally much compressed, especially inferiorly, where two lateral processes give a notched or emarcate appearance to the base. Superiorly the relation of the long to the short axis is at least 2 to 1. The coral is short and broad; the base is nearly as wide as the calice is long. The costæ are large and plain, and are separated by well-marked lines: the costæ of the appendices are the largest; they pass upwards to the calice, and all are more or less wavy, the central widening out near the calicular margin. The calice is shallow and elliptical. The columella is not long, and, from being joined to the primary and secondary septa by processes which are rounded above, is confused in its appearance. The septa are in six systems of three cycles; they are wider at the wall than elsewhere, are granular, and those of the third cycle are much smaller than

* Mr. Woods gave the name; but I have not had the opportunity of seeing his MS.

the others. All the septa correspond to the depressions between the costæ.

Height $\frac{1}{4}$ inch, breadth $\frac{2}{10}$ inch.

Hamilton, Victoria, South Australia. Coll. Geol. Soc.

CONOSMILIA, nov. gen.

Coral simple, pedicellate, conical. Columella formed of one or more twisted laminae, which extend from the base upwards. Endotheca scantily developed. Septa apparently with simple margins, and variable in regard to the number of the primary.

3. *Conosmilia elegans*, n. sp. Pl. VIII. fig. 3 a, b, c.

The pedicel is large. The costæ, equal, sharp, and prominent at the base, become broad, flat, and granular above, where they are separated by very faint lines. The columella is formed by one twisted lamella, and occupies much space. The septa are in eight systems of three cycles. There are eight primary septa which reach the columella; the secondary are smaller and reach midway; and the tertiary are very small. The septa are nearly plain, are as thick at the columella as at the calicular margin, and appear to arise between the costæ. The calice is nearly circular.

Height $\frac{3}{10}$ inch; breadth of calice $\frac{1}{10}$ inch.

Geelong, Victoria, South Australia. Coll. Geol. Soc.

4. *Conosmilia anomala*, n. sp. Pl. VIII. fig. 4 a-e.

The coral is tall in relation to its small pedicellate base. The costæ are not prominent, but are traced by the faint lines which separate them, and by the fine herring-bone pattern which marks each of them. The columella is large, strong, and consists of two twisted ribband-shaped laminae. The septa are in eight systems of three cycles; the laminae are sparingly granular, and the primary are attached to the columella by processes. The secondary are smaller than the primary, and their inner edge is wavy; the tertiary septa are small. The septa arise between the costæ. The endotheca is sparingly developed. The wall is very thin. The calice is slightly elliptical.

Height $\frac{6}{10}$ inch, greatest breadth $\frac{2}{10}$ inch.

Hamilton, Victoria, South Australia. Coll. Geol. Soc.

5. *Conosmilia striata*, n. sp. Pl. VIII. fig. 5 a-c.

The coral has a very narrow base, and does not expand gradually. The costæ are very broad, have marked lines between them, are very flat, and have wavy transverse markings like those of a pellicular epitheca. Septa in six systems of three cycles; the primary, which are granular, reach the columella,

which appears to be formed by one twisted process. The septa arise between the costæ. The calice is more or less elliptical.

Height $\frac{6}{10}$ inch, greatest breadth $\frac{2}{10}$ inch.

Geelong, Victoria, South Australia. Coll. Geol. Soc.

6. *Antillia lens*, n. sp. Pl. VIII. fig. 6 a-e.

Coral in the shape of a cyclolite *Fungia*. The base is circular in outline, nearly flat, the concavity being very slight. The epitheca is pellicular and faint. The costæ are seen as radiating flat elevations, those corresponding with the smallest septa being the smallest. The margin of the base presents slightly exsert, equal processes, which are the septa. The upper surface of the coral is convex and nearly hemispherical, the depression for a small essential columella, formed by processes from the base and septal ends, being slight. The septa are in six systems of four cycles; the primary and secondary septa are equal, and the tertiary are nearly as large; those of the fourth and fifth orders are somewhat less: all are very convex superiorly, and less so and nearly straight externally. The laminae are thin, and are very strongly marked by sharp ridges, which, radiating from the basal part of each septum, are more or less parallel, and give at the free margin a laterally dentate appearance. The appearance is less in the smaller septa. There is often a paliform process on the larger septa near the columella; and the terminations of the ridges give the dentate character to the free margin of the septa. The endotheca is scanty, stout, and inclined.

Breadth $\frac{3}{10}$ inch, height $\frac{2}{10}$ inch.

Hamilton, Victoria, South Australia. Coll. Geol. Soc.

Remarks on the new Genus and Species.

There is much that is very interesting in these Australian forms; they are so novel to those who are acquainted with the coral-fauna of the past in Europe and America, and moreover they present structural peculiarities which remove some broad lines of demarcation between some of the principal families in our classification.

The new genus *Conosmilia* possesses the twisted riband-shaped columella of the subfamily Caryophyllaceæ, the endotheca and septal margin of the Trochosmiliaceæ, and the irregular septal arrangement which was so common in the corals of the Oolitic age, and which, from its octomeral type, reflected the *rugosa* of palæozoic times.

A simple conical coral with a twisted "sérialaire" columella, an endotheca, and an octomeral arrangement of its septal sys-

tems, is as abnormal as the *Echidna hystrix*, as far as European classifications are concerned. The new genus must be placed in the neighbourhood of *Axosmilia*; and it connects the families of the Turbinolides and the Astræides.

The connexion between the septal and costal arrangements in the species of the genus is very remarkable. The bases of the septa and of the costæ are not continuous, but the septa appear to correspond with the line of depression between the costæ. This is common in species of other genera in Australia, but is very rare indeed in any specimens from any other part of the world. It was noticed in the 'Annals' of September 1864 in *Flabellum Victoriae*, nobis, and the arrangement is seen in the two species of *Sphenotrochus* described in this communication. It gives a sort of Australian stamp to the corals. The costæ are much broader than the septa; and it will be observed that in *Sphenotrochus emarciatus* the line of depression between the costæ is continuous with the line which separates the two laminæ of which the septa are composed. The costæ to the left and right of the depressed line give each a root to the septum. The species of the new genus are readily distinguished.

The *Sphenotrochi* are at first sight not unlike well-known European older Pliocene and recent forms; but the emarciate base and appendages, with the direction of the plain costæ, and the septal arrangements, distinguish the Australian species, and prevent their being confounded with the genus *Platyatrochus*.

The cyclolitoid *Antillia* is a most interesting species. The genus superseded *Montlivaltia* during the Miocene (it is a *Montlivaltia* with a well-formed columella); and it would appear that all the various forms of the elder genus are represented in the more modern. The tall cylindro-turbinate, the shorter, the forms with oval, elliptical, or circular calices, those with large bases and short or tall sides, and those with many or but few septa, amongst the *Montlivaltia*, are represented in the Miocene of San Domingo, Guadeloupe, Jamaica, and since by *Antillia* of corresponding shape. In the Hamilton Tertiaries the interesting cyclolitoid *Montlivaltia* of the Oolites have a representative in the *Antillia lens*.

EXPLANATION OF PLATE VIII.

- Fig. 1. Sphenotrochus australis*: *a*, lower half, natural size; *b*, part of calice and columella, magnified 4 diams.; *c*, transverse section, magn. 4 diams.; *d*, costæ, magn. 2 diams.
- Fig. 2. Sphenotrochus emarciatus*: *a*, nat. size; *b*, side view, magn. 4 diams.; *c*, calice, magn. 6 diams.; *d*, continuation of septa and intercostal lines, magn. 6 diams.
- Fig. 3. Conosmilia elegans*: *a*, nat. size; *b*, side view, magn. 3 diams.; *c*, calice, magn. 6 diams.

Fig. 4. *Conosmilia anomala*: *a*, nat. size; *b*, columella, magn. 4 diams.; *c*, costæ, magnified 4 diams.; *d*, transverse section, magn. 4 diams. (one system is closed below by endotheca); *e*, septum with endotheca, magn. 4 diams.

Fig. 5. *Conosmilia striata*: *a*, nat. size; *b*, costæ, magn. 6 diams.; *c*, transverse section, magn. 6 diams.

Fig. 6. *Antillia lens*: *a*, nat. size, view from above and side; *b*, base, nat. size; *c*, side view (part of), magn. 4 diams.; *d*, base (part of), magn. 4 diams.; *e*, septum, magn. 4 diams.

XXIV.—*Notes on the Australian Species of Arripis*. By FREDERICK M'COY, Professor of Natural Science in the University of Melbourne, and Director of the National Museum at Melbourne.

I FIND that nearly all the scales of the Victorian fishes of the genus *Arripis* have a more or less distinct fan-like structure of the base, from the supposed absence of which the genus was originally named.

Having dissected a great number, I am sure there must be some mistake (probably a clerical error) in Dr. Günther's statement that the pyloric appendages are from seventeen to fifty in number, as I find them always about one hundred and sixty.

The Australian species to be found in books are *Centropristes Georgianus* (Cuv.), *C. salar* (Richardson), *C. Tasmanicus* (Homb.), *C. truttaceus* (Cuv.), *Perca trutta* (Cuv.), and probably *Perca marginata* (Cuv.). I have perfectly satisfied myself, from a laborious examination of a great number of fresh specimens, at different seasons and of all ages, that the whole of these six supposed species should be reduced to one, and that the more important characters relied upon by Cuvier, Richardson, and Günther are the peculiarities only of different ages of the fish.

The adult form is the *Centropristes (Arripis) Georgianus* (Cuv.) and the *C. Tasmanicus* (Homb.). It reaches nearly 2 feet in length; and, although abundant in the market, it is eaten with great hesitation, owing to the many cases (sometimes fatal) reported of poisonous effects produced on certain persons eating it, although others at the same table suffered comparatively little. It is the fish improperly called "Salmon" by the colonists. It is of a nearly uniform pale olive-colour. Probably from having counted the fin-rays of so large a number of specimens, I am able to announce an extraordinary variation in this character: thus the pectorals vary from 14 to 16, the soft anals from 9 to 11, soft dorsals from 16 to 19.

The young, up to about 10 or 11 inches in length, are commonly supposed by the colonists to be a different fish, which they call "Salmon-trout" in the markets; and they are the



Duncan, P. Martin. 1865. "XXIII.—A description of some fossil corals from the South Australian Tertiaries." *The Annals and magazine of natural history; zoology, botany, and geology* 16, 182–187.

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