PLATE XXXII.—*continued.*

II. Spicules of *Sycon ornatum.*

a. Large oxeote of distal cones.
b. Oxeote of peristome.
c, c. Ordinary oxea of distal cones.
d, d. Slender oxea of distal cones.
e, e, e. Parenchymal triradiate spicules.
f, f. Subgastral triradiate spicules.
g. Subgastral spicule with incipient fourth ray.
h. Triradiate spicule from funnel.
i, i. Gastral quadriradiate spicules.
k, k. Quadriradiate spicules from base of funnel.

ART. XXXV.—*On the Sponges described in Dieffenbach's "New Zealand."*

By ARTHUR DENDY, D.Sc., Professor of Biology in the Canterbury College, University of New Zealand.

[*Read before the Philosophical Institute of Canterbury, 3rd November, 1897.*]

Plates XXXIII. and XXXIV.

Some years ago my friend Mr. H. B. Kirk, M.A., called my attention to the fact that certain sponges had been described by Gray in Dieffenbach's "Travels in New Zealand," published in 1843. The descriptions of that period being quite insufficient for purposes of identification, and it being a matter of some interest to know what these sponges really were, I applied to my friend Mr. R. Kirkpatrick, in charge of the sponges at the British Museum, for further light on the subject. Mr. Kirkpatrick most kindly instituted a search for the original types, and fortunately succeeded in finding them. I desire to express my deep sense of gratitude to Mr. Kirkpatrick for his trouble, and also to the keeper of the Zoological Department for his kindness in permitting the specimens to be forwarded to me here in New Zealand. Thus after a lapse of more than half a century the actual specimens collected by Dr. Sinclair in the early days of the settlement of the colony have again found their way to New Zealand, and it is possible to redescribe them in the light of modern knowledge. Whether or not the specimens sent are only portions of the originals I do not know, but at any rate they are quite sufficient to make a specific description easy. They will be deposited in the Canterbury Museum, Christchurch, where

they were photographed for the purposes of this paper by Mr. W. Sparkes. All the specimens had been dried.

Axinella sinclairi, Gray, sp.

1843: *Spongia sinclairi,* Gray, Dieffenbach's "Travels in New Zealand," vol. ii., p. 295.

The original description runs as follows:—

SPONGIA SINCLAIRI, *Gray.*

Inhabits New Zealand. *Dr. A. Sinclair.*

Branchy; branches cylindrical, forked; apices conical, yellow; surface with branched subcylindrical grooves, in certain spots; ostioles small, numerous.

Var. 1. Branches elongate, cylindrical, free.

Var. 2. Branches short, repeatedly forked, apices often anastomosing.

I have received two specimens of this species from the British Museum, marked in Plate XXXIV. as F and G.

F is labelled "*Spongia sinclairii,* Gray, var. 1. Type. New Zealand: Dr. Sinclair," and there is no reason to doubt the correctness of this label. The specimen (*vide* Plate XXXIV.) consists of three rather slender subcylindrical branches of a pale-yellow colour, each about 65 mm. in length and 5 mm. in diameter. The branching is apparently dichotomous. The surface is minutely hispid, and is marked by irregularly stellately-arranged grooves, doubtless representing convergent exhalant canals. (These are not well shown in the figure, as they are visible chiefly on the other side of the specimen.) Texture rather hard, with friable surface and strong axial condensation. The skeleton is typically axinellid, consisting of a very dense axial portion extending over nearly one-third of the diameter of the branch, with irregular subplumose columns springing from the axial portion and curving outwards and upwards to the surface, where they terminate in irregular close-set tufts. Both in the axial and peripheral portions of the skeleton numerous spicules cross the principal lines in all directions, rendering the whole indefinite. There is no conspicuous horny matter. The spicules are of three chief forms, but, as usual in the genus, they are very variable: (1.) Smooth oxea, usually gradually sharp-pointed and more or less curved; size, say, about 0·3 mm. by 0·0125 mm., but very variable. (2.) Smooth styli, similar to the foregoing, but broadly rounded at one end and less abundant. (3.) Very long, smooth, sinuous spicules (strongyla), with both ends broadly rounded off but often unequal. Owing to their great length, it is difficult to see both ends of any given spicule *in situ,* one being generally either broken off or concealed by adjacent spicules in the sections. They occur abundantly, mixed with the other spicules and lying in various directions, in the axial portion of the sponge,

and are two or three times as long and proportionately very much more slender than the average oxea. Preparations boiled out in hydrochloric acid show these sinuous strongyla so numerous and of such length as to be extremely characteristic, measuring up to about 0·8 mm. by 0·008 mm.

G is labelled "*Spongia sinclairii*, Gray, var. 2. Type. New Zealand: Dr. Sinclair," and here again there is no reason to doubt the correctness of the label. The specimen (*vide* Plate XXXIV.) consists of short branches forking in a very regular dichotomous manner, slightly stouter than in var. 1 and occasionally anastomosing. In other respects, including the skeleton, it agrees so closely with var. 1 as to require no further description.

Chalina ramosa, Gray, sp.

1843: *Spongia ramosa*, Gray, Dieffenbach's "Travels in New Zealand," vol. ii., p. 295. 1887: *Ceraochalina levis*, Lendenfeld, "Die Chalineen des Australischen Gebietes," Zool. Jahrbuch, vol. ii., p. 782, pl. xix., fig. 19.

The original description runs as follows:—

SPONGIA RAMOSA, *Gray*.

Inhabits New Zealand. *Dr. Sinclair.*

Pale-brown, soft, spongy, branchy; branches elongate, subcylindrical, of a very fine uniform texture, with a few small scattered ostioles in a line on each side; fibres horny, very thin.

Var. 1. Branches moderately elongate, sometimes anastomosing.

Var. 2. Branches very long, free.

I have received four specimens nominally belonging to this species from the British Museum, marked in Plate XXXIII. as A, B, C, and D.

A is labelled "*Spongia ramosa*, Gray, var. 1. Type. New Zealand: Dr. Sinclair." It is evidently really var. 2. It consists of three long slender branches and one much shorter. The total length of the specimen is 265 mm., and the width of the somewhat compressed branches is about 8 mm. in the widest parts. The vents are minute but numerous, arranged in single series along the margins. The surface is smooth, but finely granular. The colour is pale-brown and the texture now decidedly hard. The main skeleton towards the surface is a pretty close subrectangularly-meshed network of stout horny fibre of a pale-yellow colour. The primary lines contain a narrow multispicular core, the secondaries a sparse single series of similar spicules. The primary and secondary fibres are both of about the same thickness, averaging about 0·075 mm. in diameter, while the meshes measure about 0·28 mm. across. Passing inwards the meshes become wider and very loose and irregular, while the fibres are many of them slenderer and with fewer spicules. The dermal skeleton

is a close polygonal-meshed network of rather slender horny fibres containing spicules for the most part scattered uniserially in the axis of the fibre, occasionally projecting in small irregular tufts; the meshes of the network are about 0·1 mm. in diameter, the fibres varying under 0·055 mm. The spicules are short but rather stout, hastately-pointed or spindle-shaped oxea, with very conspicuous axial canals—size about 0·04 mm. by 0·005 mm.—occurring sparsely in the fibres and forming a very inconspicuous part of the skeleton in comparison with the spongin.

B is labelled "*Spongia ramosa*, Gray, var. 2. Type. New Zealand: Dr. Sinclair: 42, 12, 2, 122." It is evidently really var. 1, as shown by the shorter branches anastomosing in one place. The vents are fewer, but arranged similarly, and there are no external differences worth mentioning. The skeleton also is practically identical with that of A, though better preserved, and therefore less irregular in the interior of the section examined, with the spicules a trifle smaller, and with much less conspicuous axial canals.

C is labelled "*Spongia ramosa*, Gray, var. 2. Type. New Zealand: Dr. Sinclair." It is identical in structure with the preceding, though a little softer in texture.

D is also labelled "*Spongia ramosa*, Gray, var. 2. Type. New Zealand: Dr. Sinclair," but it is doubtful whether it really belongs to the same species as the preceding. The branching is more bushy, and the branches more slender and nodose, while the oxea are fewer, slightly longer, and much slenderer, measuring about 0·05 mm. by 0·0021 mm. It is, at any rate, a closely-related *Chalina*.

Spongelia varia, Gray, sp.

1843: *Spongia varia*, Gray, Dieffenbach's "Travels in New Zealand," vol. ii., p. 295.

The original description runs as follows:—

SPONGIA VARIA, *Gray*.

Inhabits New Zealand. *Dr. Sinclair.*

Pale-brown, soft, flexible, branchy; branches elongate, subcylindrical, soft, of a fine texture, with large scattered ostioles; tips of the branches subclavate, sometimes united to one another.

Like the former,* but of a larger size, rather looser texture, and with larger ostioles.

I have received one specimen of this species from the British Museum, marked on Plate XXXIV. as E, and labelled "*Spongia varia*, Gray. Type. New Zealand: Dr. Sinclair," with the number "180" on a smaller label. It is an irregularly-branched sponge (*vide* Plate XXXIV.), and the

* *i.e.*, "*Spongia ramosa*."

branches are now much compressed; but this is evidently in part, though not entirely, due to artificial pressure. The branches are about 85 mm. long and vary much in breadth.

The vents are fairly numerous and irregularly scattered, each about 1 mm., or a little more, in diameter. The texture is tough and resilient, fibrous; the colour light-brown; the surface even but minutely conulose and reticulate from the exposed fibre, only the skeleton remaining. The skeleton is a fairly close-meshed irregular network of very pale-coloured horny fibre. The primary fibres, running more or less parallel with one another towards the surface, are about 0·1 mm. thick and, say, 0·2 mm. distant from one another; they have an uneven outline, and are filled with small particles of sand or mud. They are connected by an irregular network of much slenderer secondary fibres, free from foreign matter, and about 0·03 mm. in diameter.

DESCRIPTION OF PLATES XXXIII. AND XXXIV.

PLATE XXXIII.

Fig. A. *Chalina ramosa* (*Spongia ramosa*, Gray) × $\frac{11}{18}$.
Fig. B. *Chalina ramosa* (*Spongia ramosa*, Gray) × $\frac{11}{18}$.
Fig. C. *Chalina ramosa* (*Spongia ramosa*, Gray) × $\frac{11}{18}$.
Fig. D. (?) *Chalina ramosa* (*Spongia ramosa*, Gray) × $\frac{11}{18}$.

PLATE XXXIV.

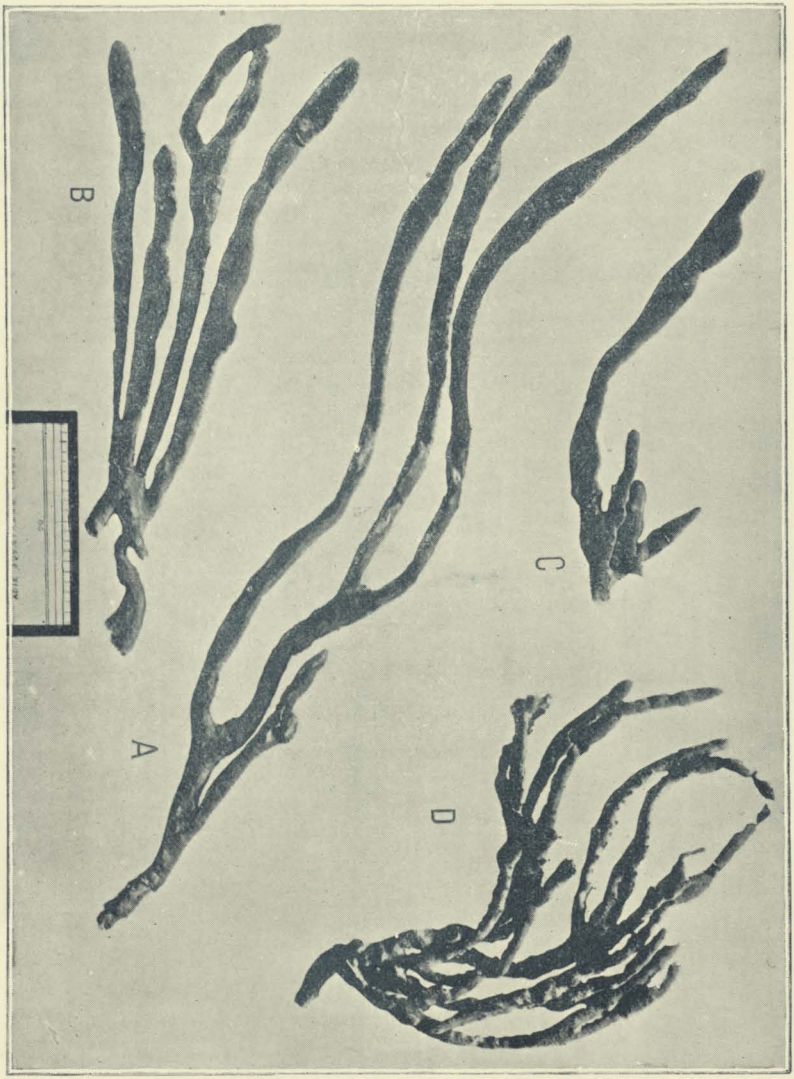
Fig. E. *Spongelia varia* (*Spongia varia*, Gray) × $\frac{7}{8}$.
Fig. F. *Axinella sinclairi* (*Spongia sinclairi*, Gray) × $\frac{7}{8}$.
Fig. G. *Axinella sinclairi* (*Spongia sinclairi*, Gray) × $\frac{7}{8}$.

ART. XXXVI.—*Notes on a Remarkable Collection of Marine Animals lately found on the New Brighton Beach, near Christchurch, New Zealand.*

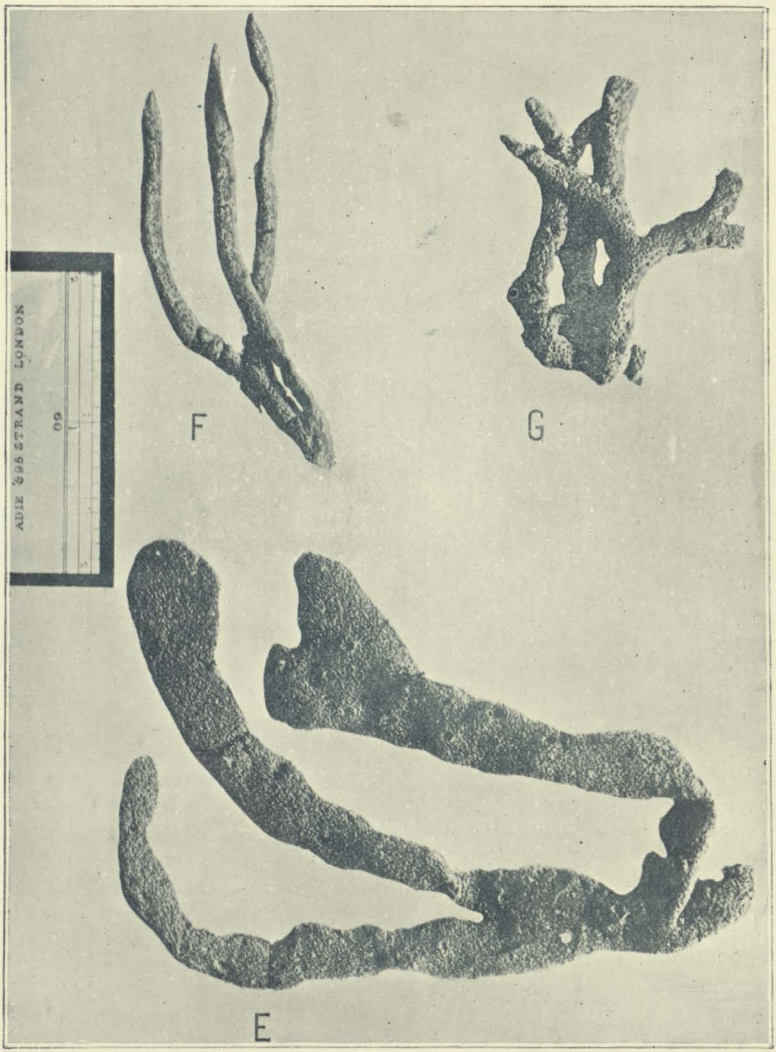
By ARTHUR DENDY, D.Sc., Professor of Biology in the Canterbury College, University of New Zealand.

[*Read before the Philosophical Institute of Canterbury, 1st September, 1897.*]

THE New Brighton Beach does not usually afford a very rich harvest to the collector of marine animals. Formed by a gently-sloping expanse of sand, rising inland into low dunes, it is entirely devoid of those rock-pools which, on other parts of the coast, afford such a happy hunting-ground to the naturalist.



N.Z. SPONGES
Dendy



N.Z. SPONGES
Dendy