

TWO NEW SPECIES OF *CASSIDULINA*.

By HENRY SIDEBOTTOM.

(Communicated by Mr. Arthur Earland, October 25th, 1910.)

CARPENTER states in his *Introduction to the Study of the Foraminifera* that the "genus *Cassidulina* was first established by M. d'Orbigny, in 1826, for a peculiar type which does not appear to have been recognised by any previous observer."

He states that "the texture of the shell of *Cassidulina* is hyaline and finely porous, like that of the smaller *Buliminae*; and it resembles that type also in the character of its aperture. In fact, if we imagine a biserial *Bulimina* to be completely rolled upon itself, so as to form an equilateral or nearly equilateral spire, we should have the essential features of a *Cassidulina*. The arrangement of the chambers, as it shows itself externally, has a semblance of irregularity which does not really belong to it; the apparent irregularity being really due to the interdigitation of the chambers of the two alternating series, some of which may be made to appear by the obliquity of the spire as if they were small and intercalated."

Carpenter also states: "In the finely porous texture of its shell and its slit-like aperture, it is obviously more allied to *Bulimina* than to *Textularia*; whilst in the biserial interdigitate arrangement of its chambers, it is more closely akin to *Textularia* than to the typical *Bulimina*."

Brady, in the *Challenger Report*, writes: "The distribution of living *Cassidulinae* is world-wide, almost irrespective of latitude

or depth. In the fossil condition the genus is not very common ; it makes its appearance in the Eocene period and is represented from time to time in beds of later geological age."

***Cassidulina elegans* sp. nov. (Pl. 4, Fig. 1).**

Test somewhat globular, slightly compressed at the sides. Sutures sunk, the upper portion of the chambers being raised and sometimes almost angular. The lower parts of the chambers are more transparent than the upper. The orifice is an oblique, curved, loop-like slit with a raised edge. The test is of a delicate cream-colour, is slightly roughened and the interdigitation of the chambers is well marked.

The two specimens in my possession are evidently in the recent condition. They were given to me by my brother-in-law, who had them from the late Mr. Chaffers, of Manchester. Unfortunately no locality is indicated. I have, by the courtesy of Mr. Chaffers's son, gone through a large portion of his father's collection of Foraminifera in the hope of meeting with duplicate specimens marked with the locality, but have failed to find any trace of them. The two shells vary a little in shape, the one figured being rather longer than the other and, therefore, not so globular.

The one figured is also more regularly built up than the other specimen. This latter has the "coil" twisted a little to one side. There are not many species in this genus, so that it is very interesting to chronicle a really good find.

Within a few days of writing the above, I was looking through some slides of Foraminifera, now in my possession, belonging to the late Mr. Thornhill, of Castle Bellingham, Ireland, when I came upon a *decorated Cassidulina* with the locality given. Looking through the pill-box of material in which the specimen

was found, I was delighted not only to find some more, but, strangely enough, to come across five good examples of *Cassidulina elegans*, above described, and for which I had wanted a locality. They agree with the drawings, except that some of them are rather more globular in shape. Of course, as one would expect, they vary a little in size.

The locality and particulars are as follows: H.M.S. *Waterwitch*, S.W. Pacific, Station 159; lat. $19^{\circ} 04' S$; long. $179^{\circ} 43' E$; 1,050 fms.

***Cassidulina decorata* sp. nov.** (Pl. 4, Fig. 2).

Test nearly globular. The face slightly compressed. The orifice is an oblique, curved, loop-like slit with raised border, and the sutures (a little sunk) only show immediately below it.

The whole of the test, except in the region of the orifice, is decorated with a network of irregular costae. No indication of the sutures is traceable on the back of the test, but by using a weak solution of hydrochloric acid I was able partially to obliterate the costae, and to make out the interdigitation of the chambers.

The markings indicated in the drawings must not be taken as being exact, for they are too complicated to draw quite correctly on so small a scale, but they are quite near enough for the identification of other specimens. The groundwork between the costae is rough. The shape of the test is very similar to *Cassidulina calabra* Seguenza, as figured in the *Challenger Report*, which also occurs at this station, and of which *Cassidulina decorata* may possibly be a decorated variety. Even after using the acid I could detect no sinking of the sutures beyond that mentioned above.

Locality and particulars as follows: H.M.S. *Waterwitch*, S.W.

Pacific, Station 159; lat. $19^{\circ} 04' S.$; long. $179^{\circ} 43' E.$; 1,050 fms.
Also occurs at Station 256, lat. $16^{\circ} 9' S.$; long. $179^{\circ} 47' E.$;
505 fms.

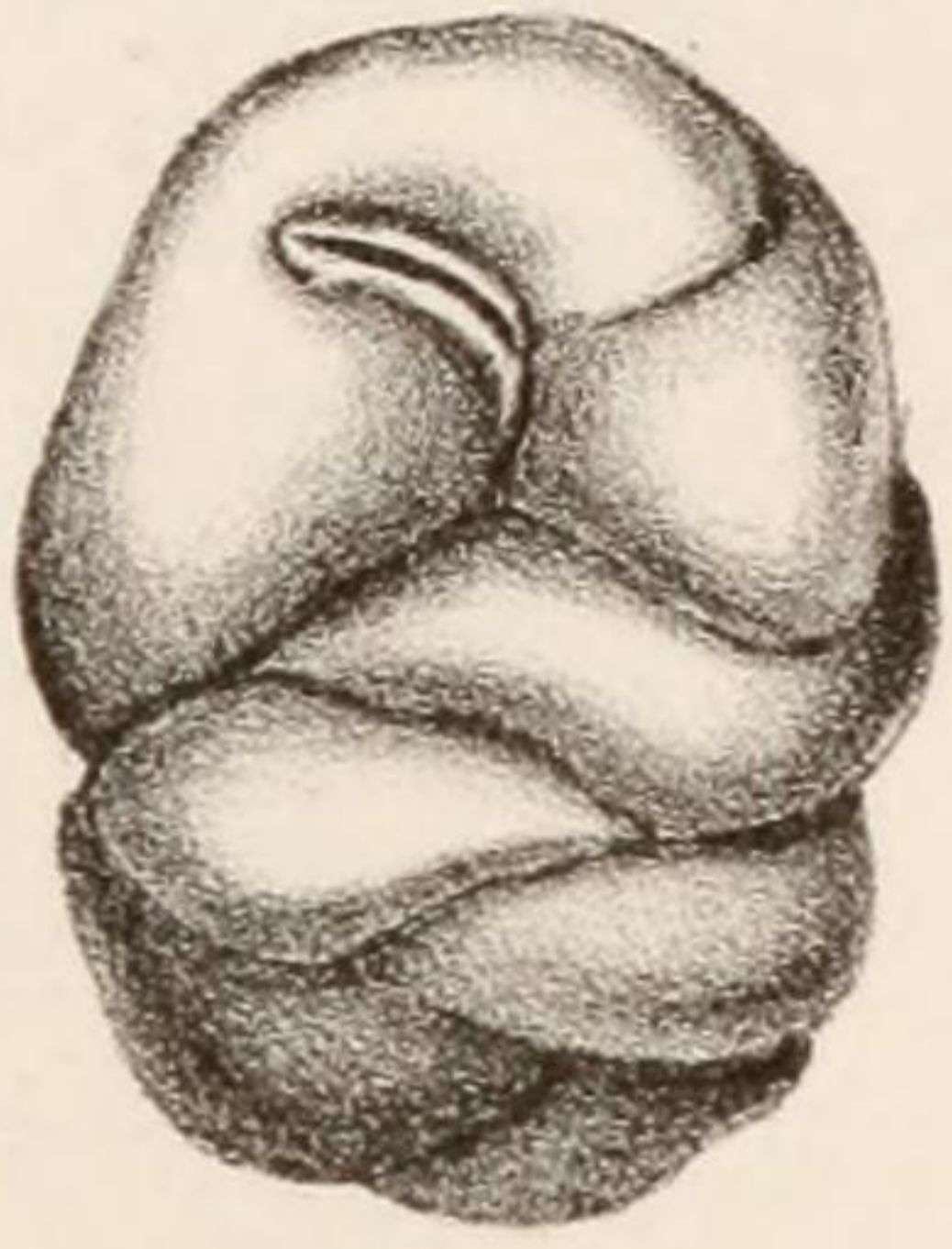
EXPLANATION OF PLATE 4.

Fig. 1. *Cassidulina elegans* sp. nov. $\times 50$.

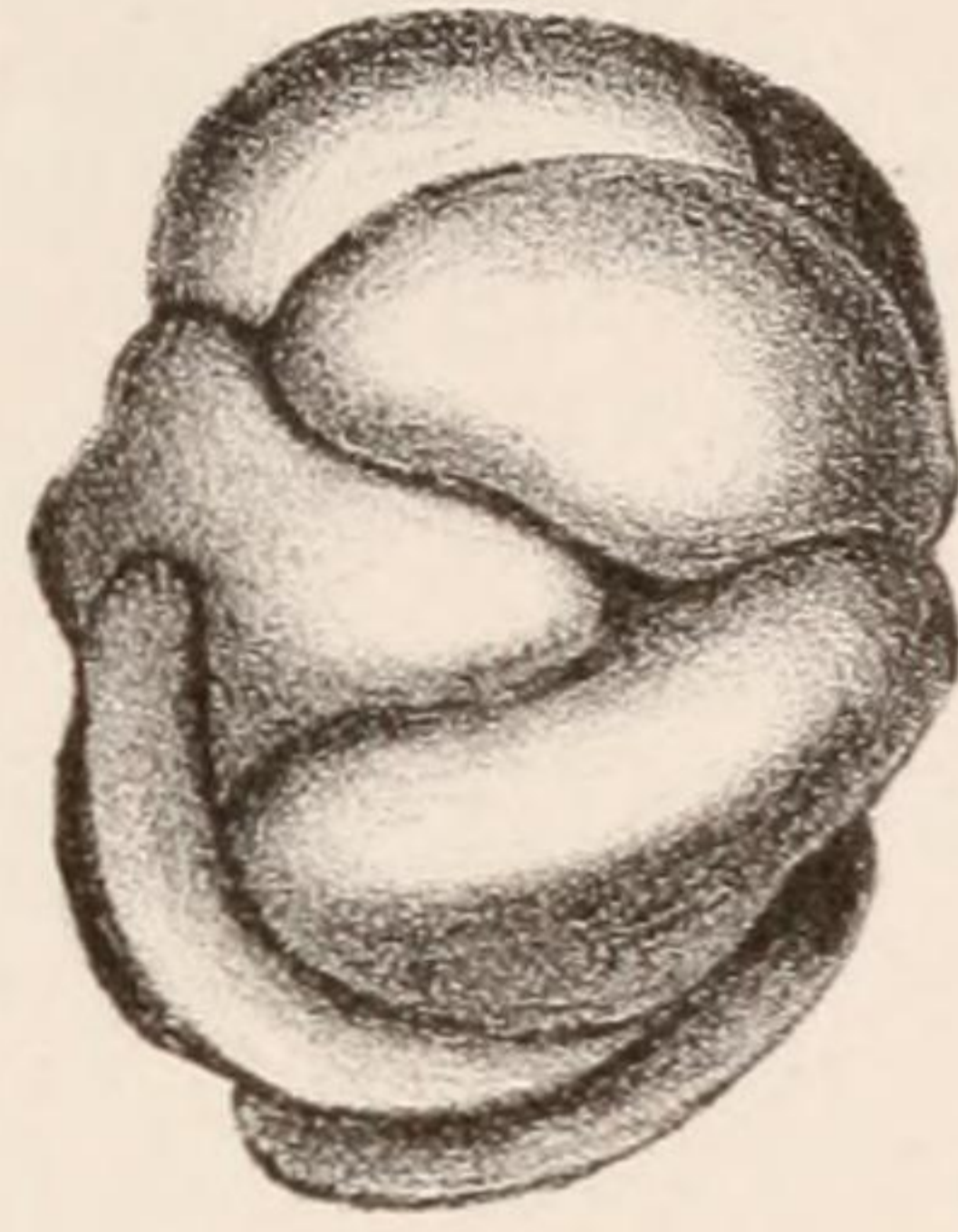
Ventral, (b) Lateral, (c) Dorsal aspect.

Fig. 2. *Cassidulina decorata* sp. nov. $\times 50$.

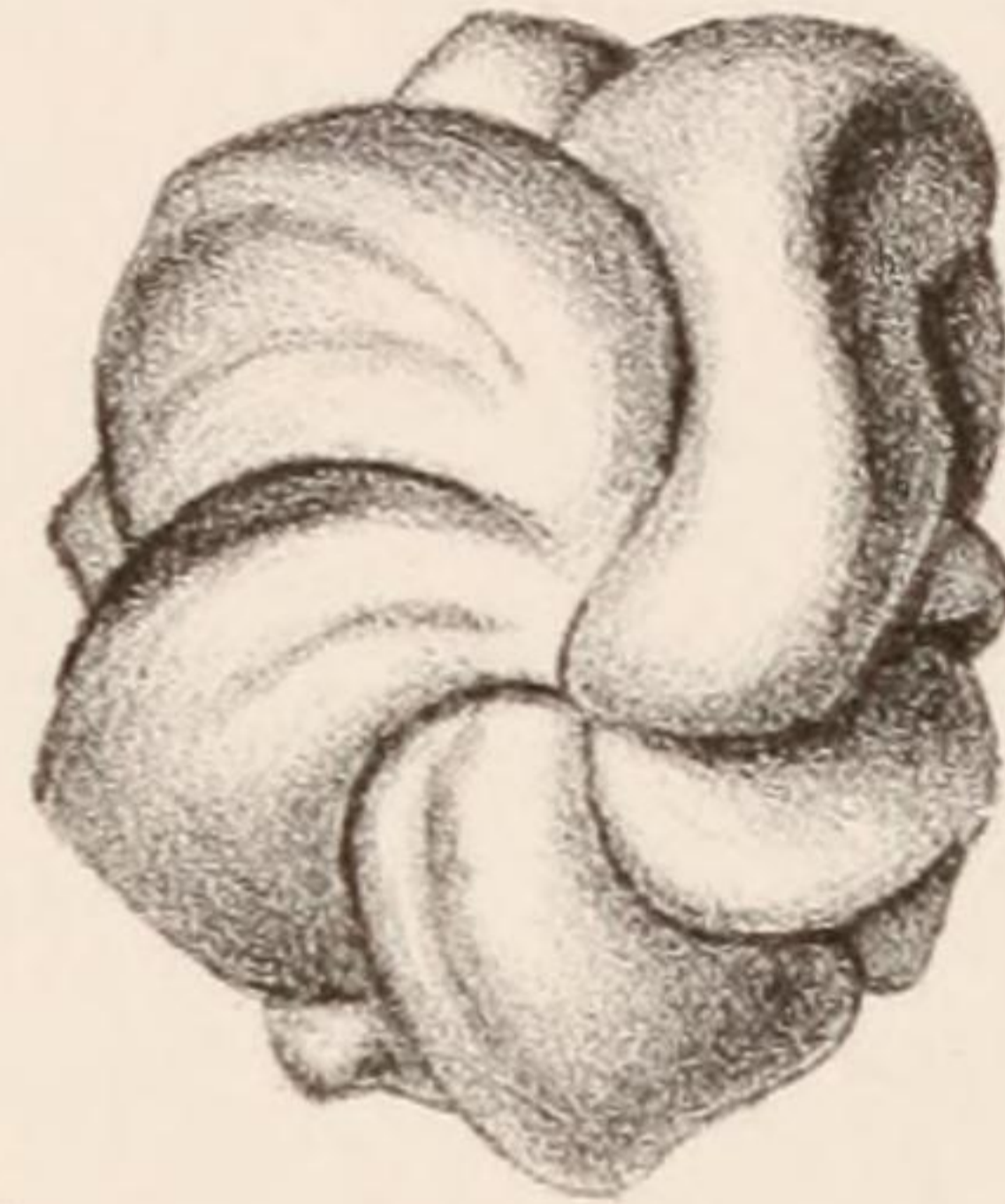
Ventral, (b) Lateral, (c) Dorsal aspect.



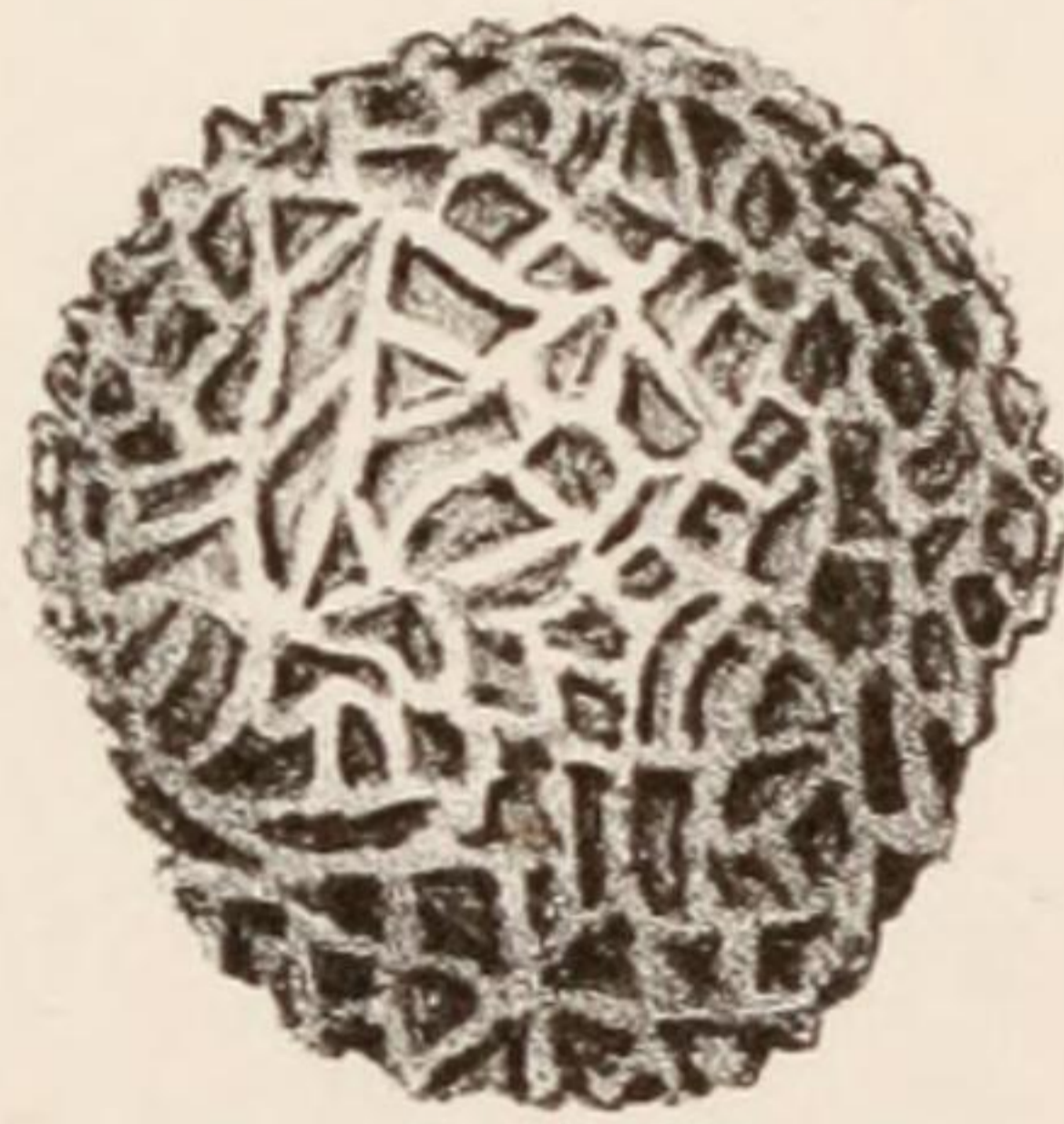
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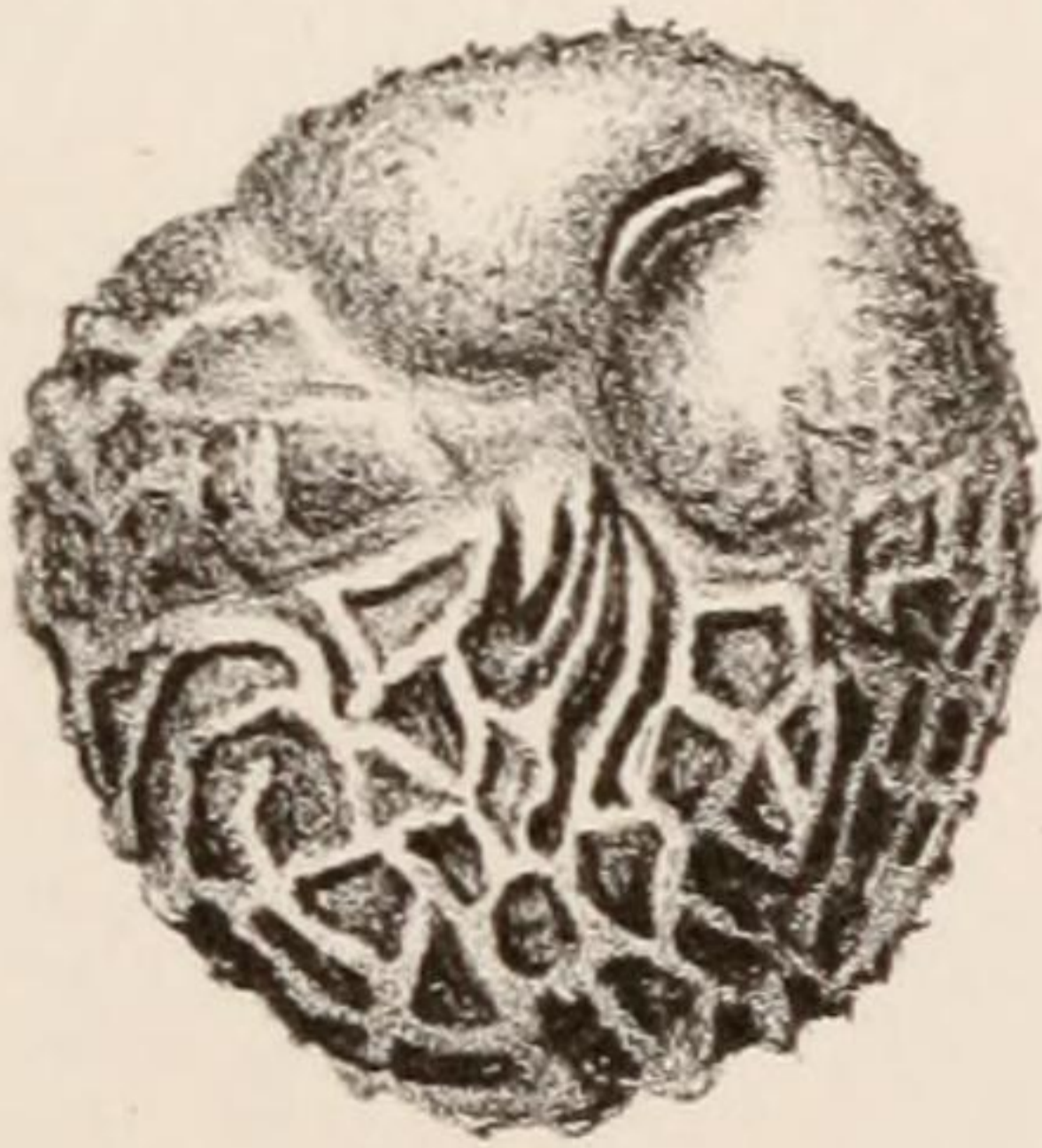
1 c.



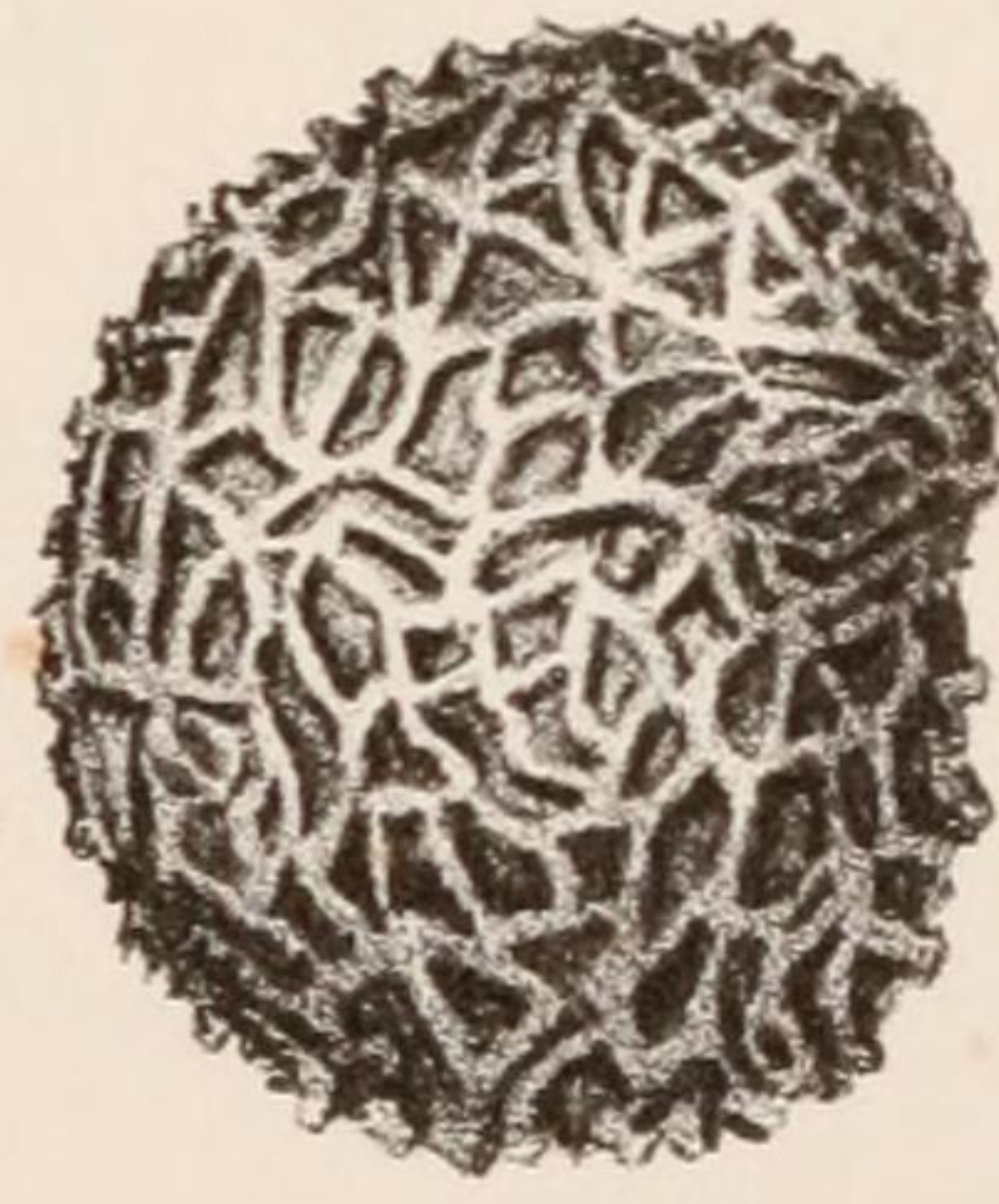
1 b.



2 c.



2.



2 b.

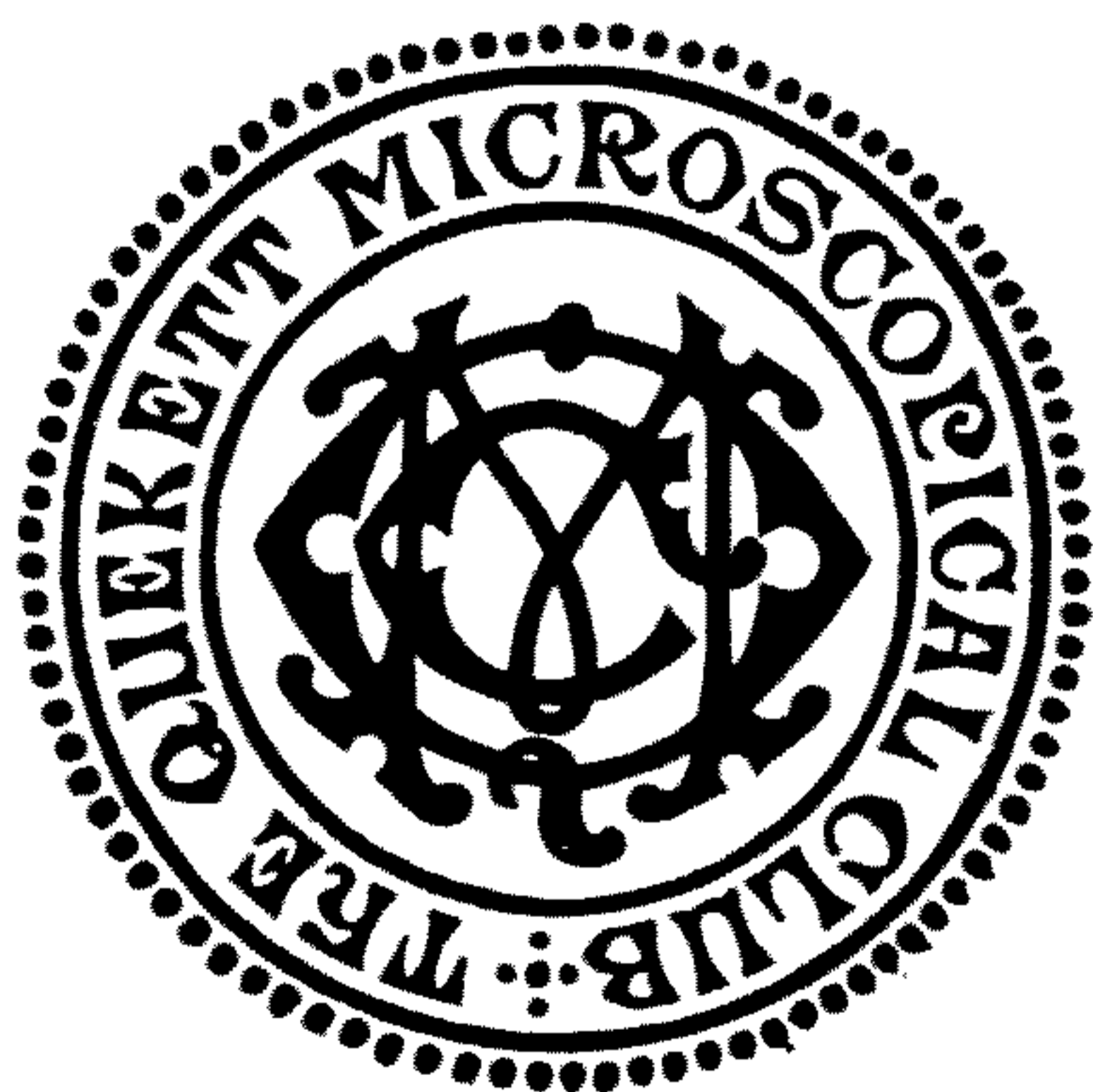
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