Sexual reproduction in some sponges : *Chondrilla nucula* O.S. and *Chondrosia reniformis* Nardo (Tetractinomorpha)

by

L. SCALERA LIACI, M. SCISCIOLI and A. MATARRESE

Istituto di Zoologia ed Anatomia comparata, Università, Bari (Italie)

Sexual reproduction in sponges belonging to the order Homosclerophorida is very little known, with the exception of a few data from the literature. It is anyway different than in the Tetractinellids we have studied in some previous work. Two species have been studied, *Chondrilla nucula* O.S. and *Chondrosia reniformis* Nardo, represented respectively by 1080 and 831 specimens. Of the samples, collected in various stations of the Adriatic, Jonian and Tyrrenian littoral, we have calculated the percentage of those in reproduction (with oocytes and with cysts). The sexual condition of the two species is gonochoristic; they are oviparous, whereas the Homosclerophorida in general are viviparous, as reported by LÉVI [1956]. This is a found which must have its phylogenetic importance.

The sexual cycle of the two species has its peak in August for *Chondrilla nucula* and in July-August for *Chondrosia reniformis*. In these months we found the largest percentage of oocytes and of spermatic cysts : the eggs are in both cases always provided with nourishing cells. *Chondrilla nucula* shows a constant association with symbionts of the Zoocyanellae type : *Aphanocapsa feldmanni*, as already described by SARÀ & LIACI [1964]. We have observed the localization of the symbionts in the thesocytes and in the oocytes. Their presence in the oocytes may be explained by the fact that, as we have observed in the course of our study, in this sponge the oocytes originate from amoeboid cells of thesocyte type. The presence of the symbionts in the oocytes seems to support the thesis of their congenital transmission to the new individuals.

In *Chondrosia reniformis* these associations are lacking; there is instead in the cortical layer a strong condensation of melanin, which apparently prevents the establishment of any type of symbionts.

The sexual behaviour of the two species is about the same. No differences have been observed in specimens collected at different depths (0-25 m) of different stations.

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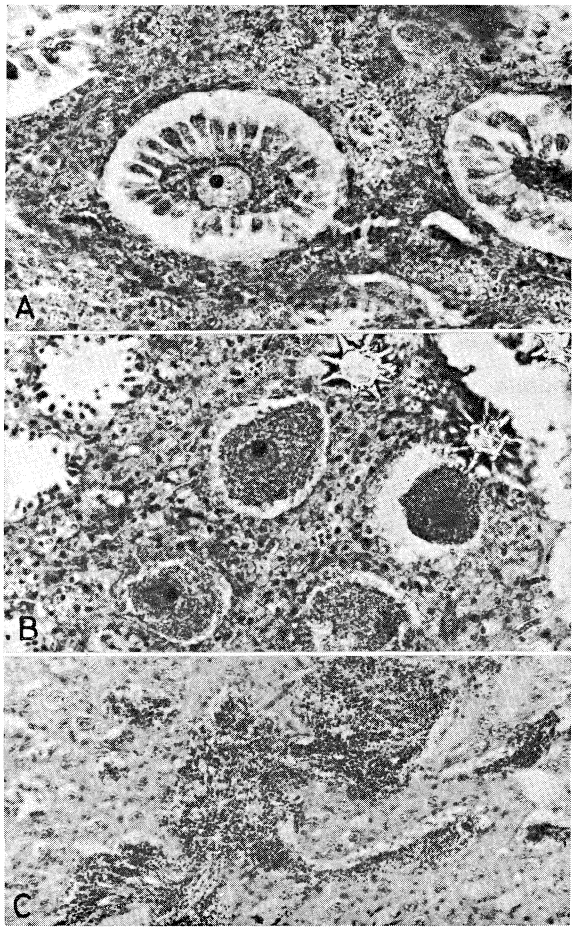

FIG. 1. — *Chondrilla nucula :*
A, oocytes with nourishing cells.
B, oocytes.
C, spermatic cysts.
Bouin fixative; Carazzi eosin-hemalum stained.
A,B,550 × ; C, 440 ×.

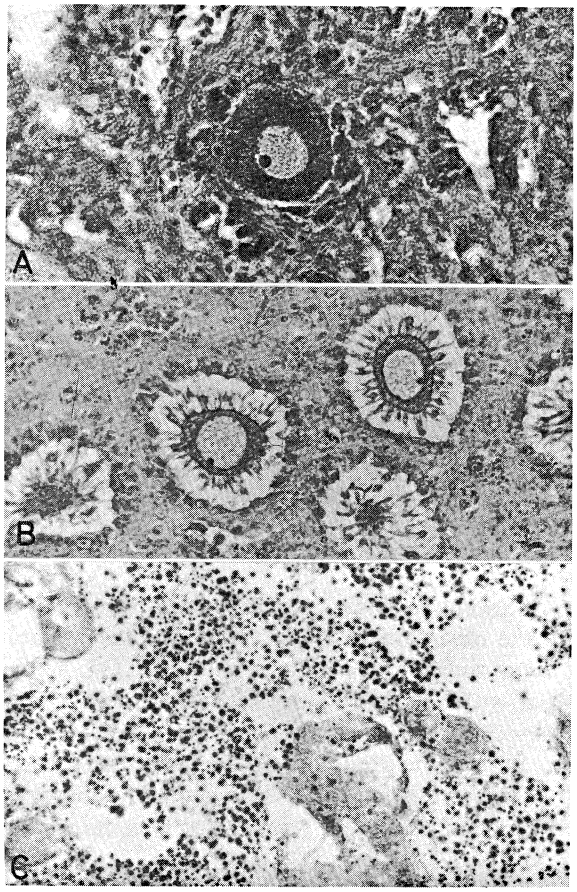

FIG. 2. — *Chondrosia reniformis :*
A, B, oocytes with nourishing cells.
C, spermatic cysts.
10 % formalin fixative; Carazzi eosin-hemalum stained.
A,C, 550 ×; B, 400 ×.