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Additional note on the freshwater Bryozoa of Tenerife (Phylactolaemata)

by

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Abstract: The distribution of the freshwater Bryozoa *Plumatella repens* (Linné, 1758) and *Plumatella fungosa* (Pallas, 1768) in Tenerife (Canary Islands) is studied. New sites are described.

Key words: Bryozoa, Phylactolaemata, *Plumatella repens, Plumatella fungosa*, Tenerife, Canary Islands.

Introduction

We have been studying the freshwater Bryozoa of Tenerife since 1987 and in 1989 we wrote a first paper on the subject (Massard & Geimer, 1990).

Besides this article there is no definite reference to Canarian Bryozoa except for Richard (1898) referring to statoblasts of *Plumatella* sp. found in the Canary Islands.

Materials and methods

The materials of the present study were collected from 11 sites on Tenerife (Canary Islands) during summer 1990. Fig. 1 shows the location of the different collection sites. In opposition to our previous investigations we succeeded this time in finding living colonies of *Plumatella fungosa* (Pallas, 1768) which up to then had only been known to us by statoblasts. Moreover we met a greater number of colonies of *P. repens* (Linné, 1758). The SEM analysis of the statoblasts was made with the Jeol JXA-840 scanning electron microscope of Du Pont de Nemours (Luxembourg) S.A.

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List of the collecting sites (1990) and the species found

Site 1: TF07, Tenerife, El Guincho, 21.7.1990, road TF-621 to El Abrigo, already visited in Aug. 1987 (TF04), altitude: 130 m, UTM 28R CS 417037, longitude: 16°36'35", latitude: 28°02'49", reservoir, species found: *Plumatella fungosa* (Pallas, 1768).

Site 2: TF08, Tenerife, Casas de Guargacho, El Monte, 21.7.1990, road TF-6221 Las Galletas to the Autopista del Sur, altitude: 60 m, UTM 28R CS 392015, longitude: 16°38'07", latitude: 28°01'43", 2 reservoirs, isolated sessoblasts and floatoblasts in the inferior reservoir, no Bryozoa in the superior reservoir, species found: *Plumatella fungosa* (Pallas, 1768), *Plumatella repens* (Linné, 1758).

Site 3: TF09, Tenerife, near El Médano, 23.7.1990, basin on the right side of the road TF-614 (K. 8), direction Autopista del Sur to El Médano, altitude: 150 m, UTM 28R CS 477055, longitude: 16°32'58", latitude: 28°03'57", some rare isolated floatoblasts, species: *Plumatella fungosa* (Pallas, 1768), *Plumatella repens* (Linné, 1758).

Site 4: TF10, Tenerife, Playa de las Americas, La Caldera, 23.7.1990, altitude: 120 m, UTM 28R CS 311067, longitude: 16°43'05", latitude: 28°04'30", reservoir, numerous living colonies, species: *Plumatella fungosa* (Pallas, 1768).

Site 5: TF11, Tenerife, El Médano, Embalse de Mocan, 23.7.1990, same storage reservoir as TF01 visited in Aug. 1987, altitude: 20 m, UTM 28R CS 491035, longitude: 16°32'03", latitude: 28°02'52", dead colonies, isolated floatoblasts and sessoblasts, species: *Plumatella fungosa* (Pallas, 1768).

Site 6: TF12, Tenerife, near Pencatinta o Iboybo, 26.7.1990, on the road TF-6237 (K. 4), 3 km from Armeñime, bifurcation towards Callao Salvaje, altitude: 90 m, UTM 28R CS 253133, longitude: 16°46'40", latitude: 28°08'03", reservoir, species: *Plumatella fungosa* (Pallas, 1768), *Plumatella repens* (Linné, 1758).

Site 7: TF13A, Tenerife, Puerto de Erjos, near Ruigomez, 26.7.1990, on the road from Icod de los Vinos to Santiago del Teide (C 820), next to Erjos del Tanque, 1 km ahead of the bifurcation to San Jose de los Llanos, altitude: 1020 m, UTM 28R CS 228335, longitude: 16°48'19", latitude: 28°18'54", site 7 referring to the biggest of the 5 ponds at the bottom of the valley, very numerous floatoblasts, sessoblasts, no colonies; species: *Plumatella fungosa* (Pallas, 1768), *Plumatella repens* (Linné, 1758).

Site 8: TF13B, Tenerife, Puerto de Erjos, near Ruigomez, 26.7.1990, on the road from Icod de los Vinos to Santiago del Teide (C 820), next to Erjos del Tanque, 1 km ahead of the bifurcation to San Jose de los Llanos, altitude: 1020 m, UTM 28R CS 228337, longitude: 16°48'19", latitude: 28°19'03", site 8 referring to one of the smaller of the 5 ponds at the bottom of the valley, numerous living colonies, species: *Plumatella repens* (Linné, 1758).

Site 9: TF14, Tenerife, Maria Jiménez (near San Andres), 28.7.1990, Barranco del Bufadero, Charca del Cuchillo, altitude: 90 m, UTM 28R CS 797 541, longitude: 16°13'51", latitude: 28°30'28", reservoir, numerous colonies: *Plumatella repens* (Linné, 1758).

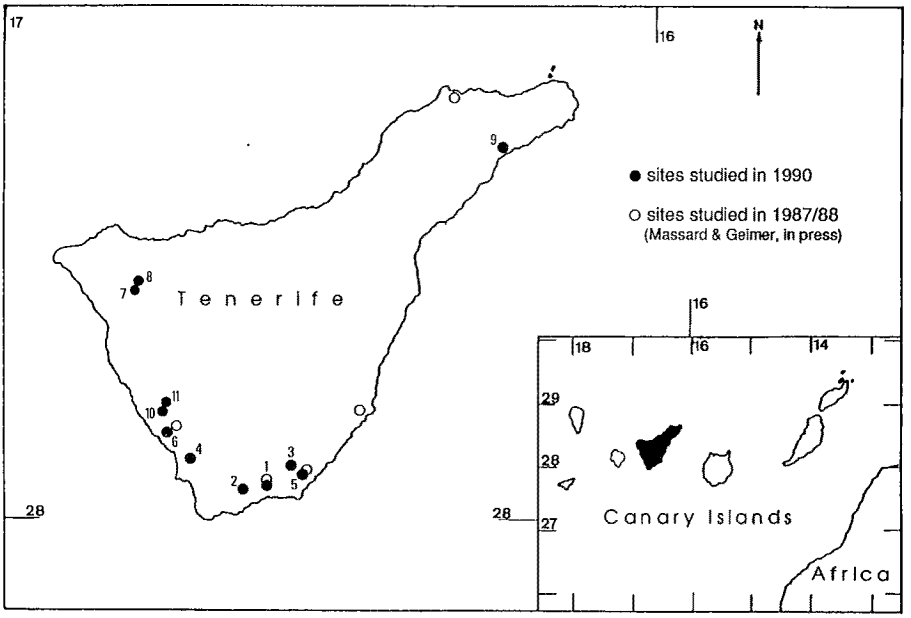


Fig. 1: General map of the Canary Islands showing the location of the studied Bryozoa sites (map after Aristegui, 1984, Coleccion monografias N° 13, Univ. de Laguna).

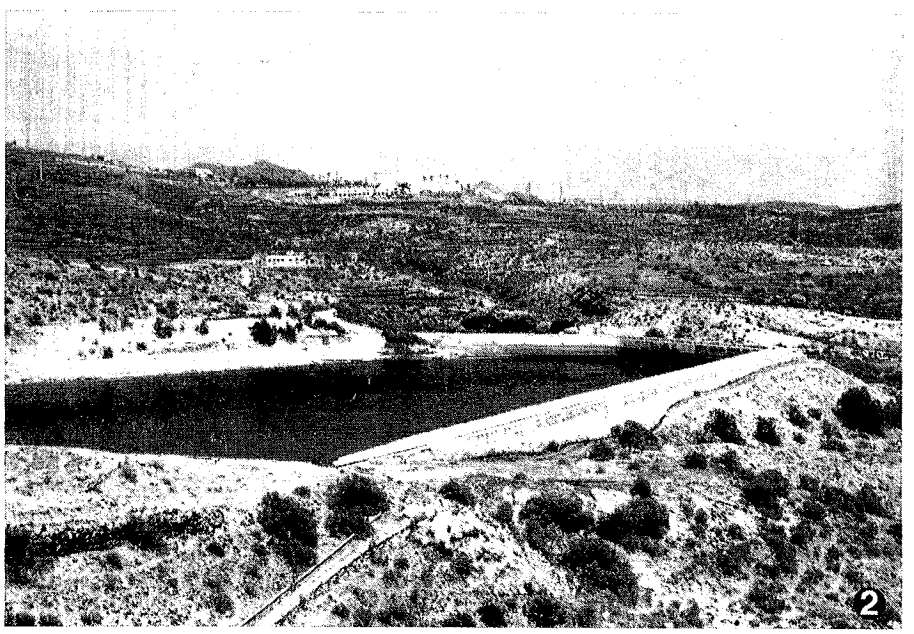


Fig. 2: Reservoir of site 4 (TF10), Playa de las Americas, La Caldera.

Site 10: TF15 (=TF15A), Tenerife, near Casa de Don Matias (K. 117), 31.7.1990, road from Tijoco de Abajo to Los Menores, Barranco de Ibaybo, altitude: 350, UTM 28R CS 270148, longitude: 16°45'42", latitude: 28°08'50", reservoir, floatoblasts, species: *Plumatella fungosa* (Pallas, 1768).

Site 11: TF16 (=TF15B), Tenerife, near Casa de Don Matias (K. 117), 31.7.1990, road from Tijoco de Abajo to Los Menores, Barranco de Ibaybo, reservoir just above TF15, to which it is linked by an underground pipe passing beneath the road, altitude: 360, UTM 28R CS 271149, longitude: 16°45'39", latitude: 28°08'53", living colonies, species: *Plumatella fungosa* (Pallas, 1768).

Results

All in all two species only were found: *Plumatella fungosa* (Pallas, 1768) and *Plumatella repens* (Linné, 1758) occurring alone or together, the latter mode fitting to four sites: site 2 (TF08), site 3 (TF09), site 6 (TF12), site 7 (TF13A).

Plumatella fungosa (Pallas, 1768)
(figs 3-6)

Living colonies were collected in site 1 (TF07), site 4 (TF10), site 11 (TF16). Remnants of dead colonies were found in site 5 (TF11) and site 6 (TF12). Floatoblasts only occurred in site 2 (TF08), site 3 (TF09) and site 10 (TF15), floatoblasts and sessoblasts in site 7 (TF13A).

Most of the colonies were young and small; the zoaria repent, branching, with a tendency to lateral fusion of neighbouring branches; the polypides of the basal parts of the colonies often more or less densely regrouped; the septa generally strikingly apparent; the older tubes well chitinized. Floatoblasts and sessoblasts were present in the colonies of site 1 (TF07), site 4 (TF10), site 5 (TF11), site 6 (TF12) and site 11 (TF16).

Many floatoblasts and above all sessoblasts were just budding. A certain number of «*flabellum*»-like colonies still attached to the valves of their original statoblast were observed, especially in site 1 (TF07).

Somehow compact colonies were only found in site 11 (TF16). But not a single of these colonies had developed the typical spindle-, bulb- or cushion-like form we are accustomed to from the European sites. The definite identification of these forms very strongly resembling *P. repens* is only possible by SEM analysis of the floatoblasts and - to a certain extent - of the sessoblasts. In site 6 (TF12) repent colonies looking just like *P. repens* - except for the very apparent septa separating the different cystids - could only be correctly differenciated by the SEM analysis of the floatoblasts.

The SEM identification is based on the presence of a reticulated pattern with interstitial tubercles on the capsule as well as on the annulus of the floatoblast (Geimer & Massard, 1986, 1987). In some cases the reticulation of the annulus surface was extremely faint, somehow obscured by the well-developed tubercles.

	LO	LA	LO/LA
Measures	26	26	26
Maximum	440	310	1.59
Minimum	378	260	1.35
Average	410	282	1.44
Median	409	279	1.44
Std. Deviation	15.2	8.7	0.05

Table 1: *Plumatella fungosa* floatoblast measurements (site 11, TF16)

The floatoblasts are still somewhat smaller than in European material, but especially concerning the length the difference is not so striking as in our previous Canarian measurements (Massard & Geimer, 1990).

Plumatella repens (Linné, 1758)
(figs 7-9)

Living colonies were collected in site 8 (TF13B) and site 9 (TF14); floatoblasts only were found in site 2 (TF08), site 3 (TF09), site 6 (TF12), floatoblasts and sessoblasts in site 7 (TF13A).

The zoaria are repent with an antler-like branching and not agglutinated tubes containing floatoblasts, the septa are less visible and less frequent than in the precedent species; in site 9 (TF14) the tubes were slightly encrusted, with a keel and a more or less distinct furrow.

The definite identification is based on the SEM analysis of the floatoblasts characterized by the reticulation and tuberculation of the capsule and the smooth annulus surface studded with small nodules (Geimer & Massard, 1986, 1987).

Discussion

A thorough zoogeographical discussion has been made by Massard & Geimer (1990). We only want to emphasize that having explored in the meantime most of the potential freshwater Bryozoa sites of Tenerife, we tend to the conclusion that the freshwater Bryozoa fauna of the island is poorer than we thought before and that possibly no other species are occurring on the island, not even *Plumatella emarginata* Allman, 1844 we were definitely expecting to find, some arguments pleading moreover for the possible occurrence of *Fredericella sultana* (Blumenbach, 1779) or even *F. australiensis* Goddard, 1909.

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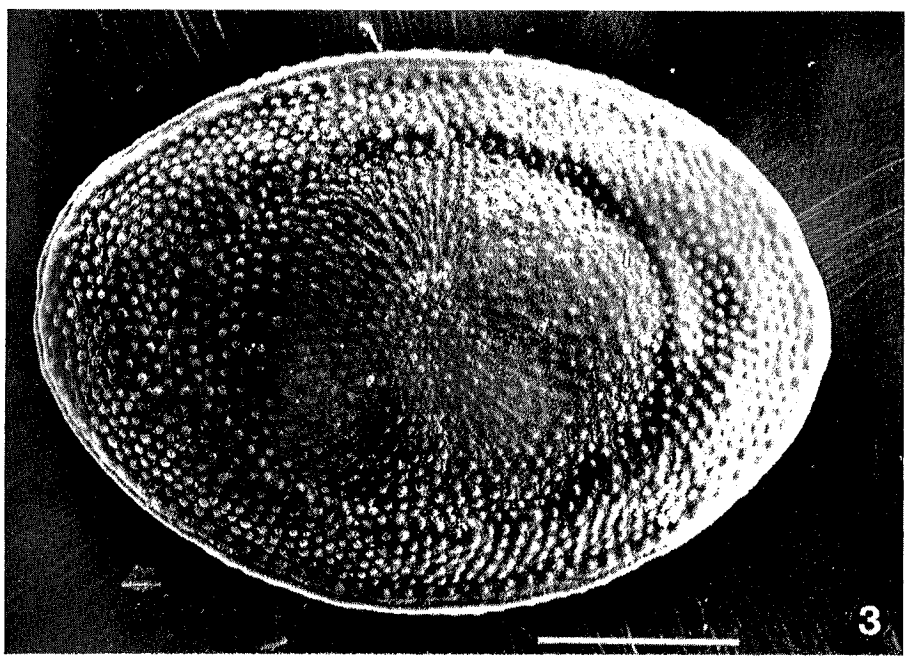
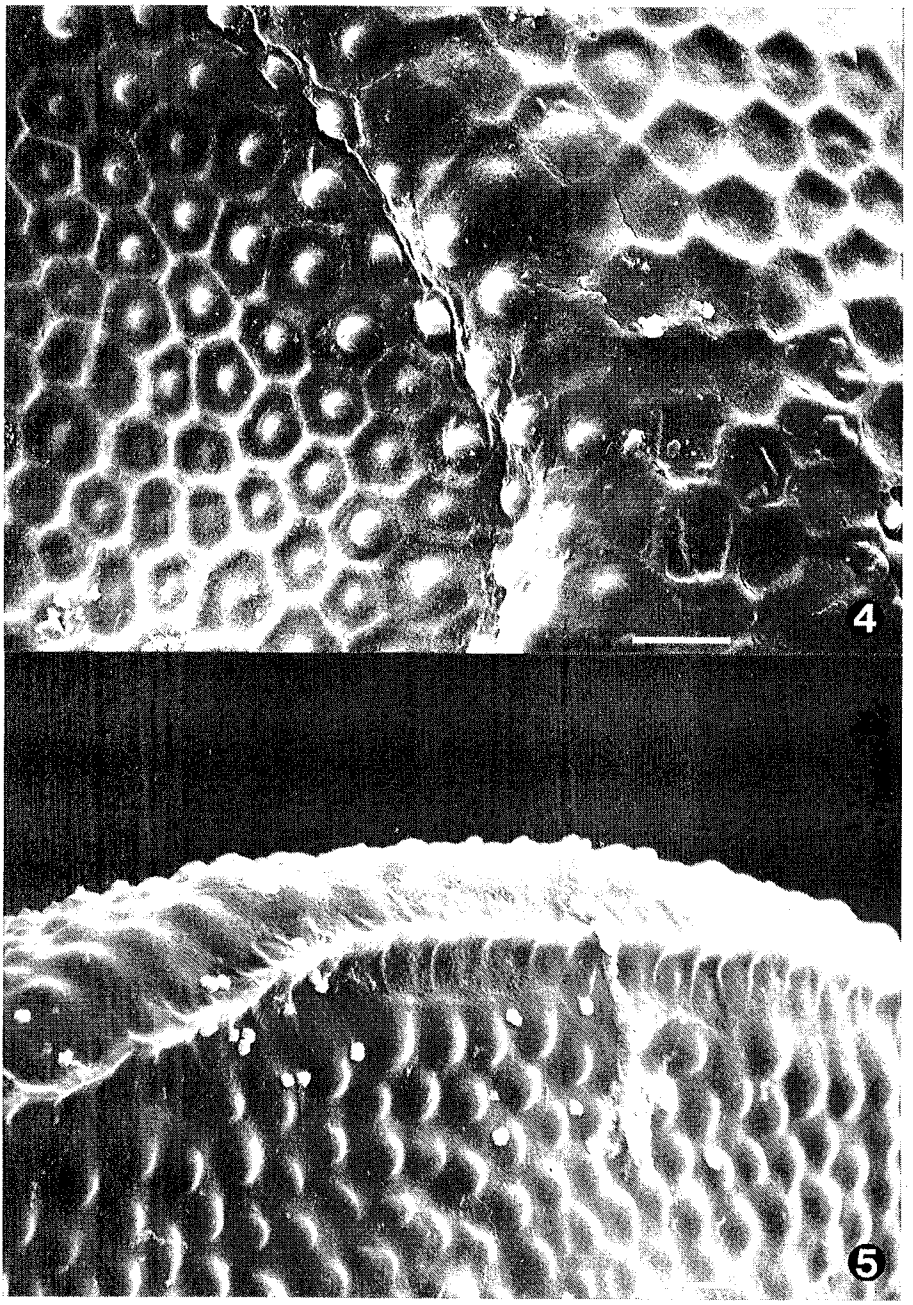


Fig. 3. - *Plumatella fungosa* (Pallas, 1768), floatoblast, dorsal side; capsule and annulus with tubercles; capsule reticulation locally visible, annulus reticulation extremely faint; outer margin of the floatoblast locally serrated (annulus tubercles seen from the side); x 250, scale bar = 100 µm, site 11 (TF16).



Figs 4-5. - *Plumatella fungosa* (Pallas, 1768) - fig. 4: floatoblast, dorsal side; capsule and annulus with reticulation; tubercles well visible on the capsule, faint on most of the annulus; x 1200, scale bar = 10 µm, site 10 (TF15). - fig. 5: floatoblast, suture line with a proeminent medial rib flanked by small lateral ribs; x 1100, scale bar = 10 µm, site 11 (TF16).

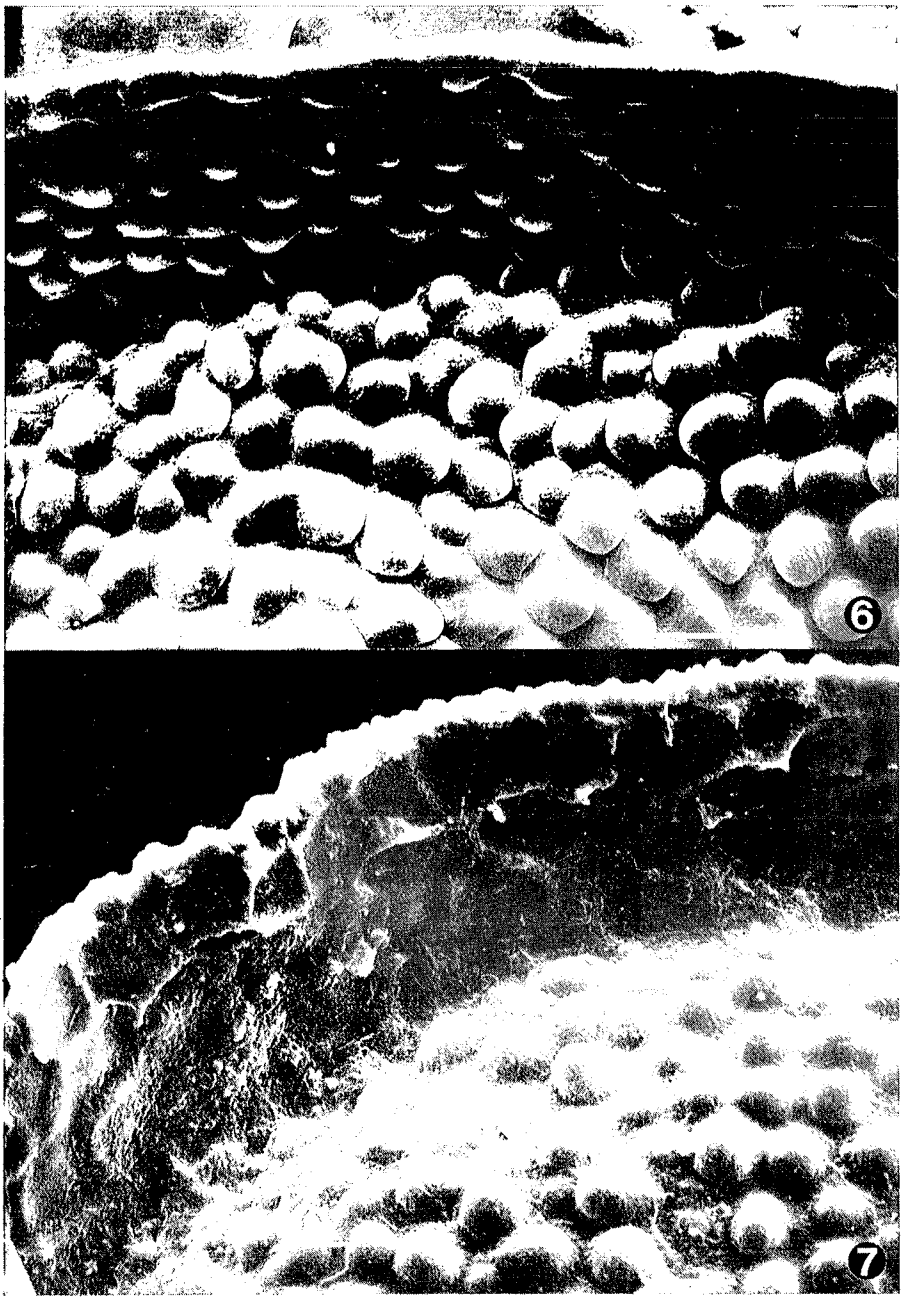
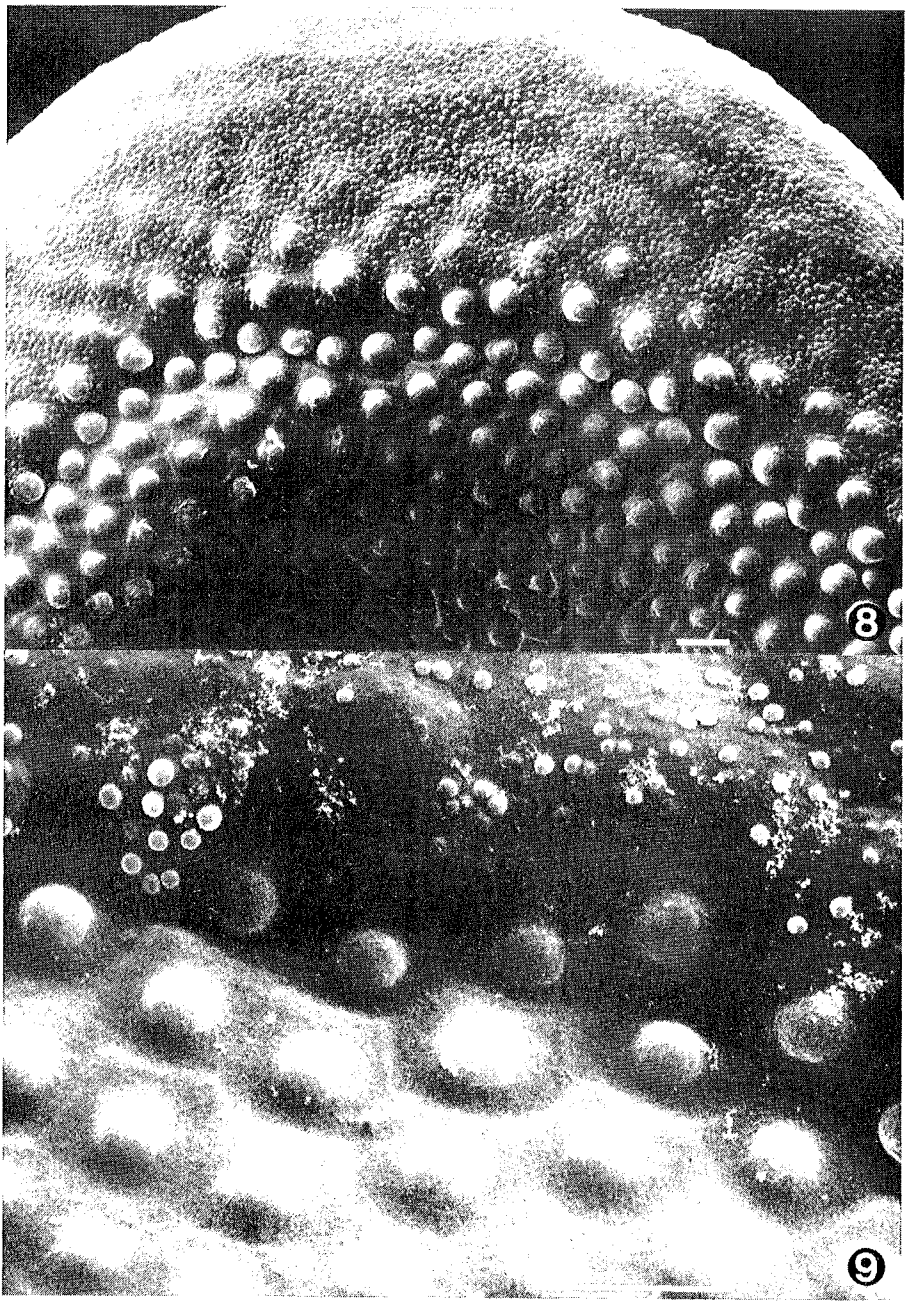


Fig. 6. - *Plumatella fungosa* (Pallas, 1768), sessoblast, capsule and annulus lamella with tubercles (distortion due to inclination of the preparation); x 1100, scale bar = 10 µm, site 11 (TF16).

Fig. 7. - *Plumatella repens* (Linné, 1758), sessoblast, capsule with tubercles, annulus lamella with irregular reticulated pattern; x 1000, scale bar = 10 µm, site 8 (TF13B).



Figs 8-9. - *Plumatella repens* (Linné, 1758) - fig. 8: floatoblast, ventral side; capsule with reticulation and tubercles slightly extending on the annulus which otherwise is smooth but densely studded with small nodules; x 650, scale bar = 10 µm, site 9 (TF14). - fig. 9: floatoblast, dorsal side; detail of the capsule and the annulus; x 2500, scale bar = 10 µm, site 8 (TF13B).