

**Some Acritarchs from the San Pedro Formation (Gedinnien)
of the Cantabric Mountains in Spain,**

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Several species of Acritarchs are recorded in a sample from the San Pedro Formation near the former village of Oblanca in the Cantabric Mountains in Spain.

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The occurrence of well-preserved sporomorphs, acritarchs and chitinozoans in samples from Precarboniferous sediments in the Cantabric Mountains has been recently recognized.

Rich assemblages were met with in formations ranging from Ordovician to Middle Devonian.

The assemblage to be described here comes from an outcrop of the San Pedro Formation near the viaduct of Oblanca (de Luna) on road number C. 623, 44 kms NW. of the Capital León, in the Cantabric Mountains.

The San Pedro Formation at this locality is composed of two members : the lower one, ± 50 m, consisting of alternating thin layers of brown sandy shales and sandstones with mica. This member is very rich in worm tracks. The other member, ± 60 m), consists of red and blueish ferruginous massive sandstones and quartzites, alternating with thin dark brown and green, very fissile shales without mica. Many layers with ripple-marks are found here.

The exact age of the San Pedro Formation is still uncertain; according to COMTE (1959), the upper member of the formation is of Lower Gedinnian age.

The present assemblage is prepared from a sample of the first layer of green shales of the upper member of the San Pedro Formation.

Below are listed the species of Acritarchs which occur with frequencies $> 1\%$:

- Veryhachium trispinosum (EISENACK).
Veryhachium trisulcum DEUNFF.
Veryhachium reductum DEUNFF.
Veryhachium downiei STOCKMANS and WILLIÈRE.
Veryhachium valiente CRAMER.
Veryhachium lairdi DEUNFF.
Veryhachium carminae CRAMER.
Veryhachium europaeum STOCKMANS and WILLIÈRE } and tran-
Micrhystridium stellatum DEFLANDRE } sitional
Micrhystridium fragile DEFLANDRE } forms.
Leiofusa bernesa n. sp.
Leiofusa cantabrica n. sp.
Leiofusa striatifera n. sp.
Leiofusa estrecha n. sp.
Leiofusa fusiformis (EISENACK).
Leiofusa banderilla n. sp.
Baltisphaeridium molinum CRAMER.
Baltisphaeridium gordonense CRAMER.
Baltisphaeridium cf. polygonale (EISENACK).
Baltisphaeridium microfurcatum DEUNFF.
Micrhystridium vulgare STOCKMANS and WILLIÈRE.
Micrhystridium sp. A.
Micrhystridium alperni STOCKMANS and WILLIÈRE.
Micrhystridium kufferathi STOCKMANS and WILLIÈRE.
Deunffia cf. monospinosa DOWNIE.

The underlined species occur in quantities of more than 10 % of the total amount of Acritarchs.

Compared with samples of approx. the same geological age from other localities the Obblanca samples are relatively very rich in members of the subgroup of the Netromorphitae.

The assemblage is composed of acritarchs (approximately 70 %), sporomorphs (approximately 30 %), chitinozoans and scolecodonts, less than 1 %. The sporomorphs and the microplankton from this, and other sections in the Cantabric Mountains, are subject of further investigation. The results will soon be published.

SYSTEMATIC DESCRIPTIONS.

Group **ACRITARCHA** EVITT, 1963.

Subgroup **NETROMORPHITAE** DOWNIE,
EVITT and SARJEANT, 1963.

Genus **LEIOFUSA** EISENACK, 1938.

Leiofusa cantabrica n. sp.

(Figs. 1 and 7.)

Species of *Leiofusa* with a hollow, inflated body. The fusiform test is provided with a spine at each pole. The wall of the test is fossulate, direction of fossulae more or less parallel to the longitudinal axis of the test. The wall of the spines is psilate; there is a gradual transition between the sculpture of the test and the sculpture of the spines. The walls are of one layer and transparent.

Dimensions : Length of body about 50 μ ; breadth about 25 μ ; total length about 125 μ . Walls less than 1 μ of thickness.

Location : Oblanca, Cantabric Mountains, Spain.

Age : Probably Lower Gedinnian.

Holotype : Figure 7.

Leiofusa striatifera n. sp.

(Figs. 9 and 13.)

Species of *Leiofusa* with a hollow, inflated body. The fusiform test is provided with a very short spine at each pole. The walls are uniformly psilate, very thin and transparent. The species always seems to have wrinkled walls, the striae being more or less parallel to the longitudinal axis of the test.

Measures : Length about 100 μ ; breadth about 25 μ or more. Wall less than 1 μ of thickness.

Location : Oblanca, Cantabric Mountains, Spain.

Age of holotype : Probably Lower Gedinnian.

Holotype : Figure 9.

Leiofusa estrecha n. sp.

(Figs. 8 and 11.)

Species of *Leiofusa* with hollow body having the form of a thick needle, there is a gradual transition from the test to the spines at each pole. The wall is psilate, consists of one layer and is not transparent. The spines at the poles are usually broken.

Measures : Breadth 30 μ or more; length to 270 μ . Wall about 1 μ of thickness.

Location : Oblanca, Cantabric Mountains, Spain.

Age of holotype : Probably Lower Gedinnian.

Holotype : Figure 11.

Leiofusa banderilla n. sp.

(Figs. 4, 5 and 12.)

Species of *Leiofusa* with an inflated fusiform test, which is provided with a very long, thin spine at each pole. The wall of the test is psilate, transparent and very thin. It consists of one layer.

Measures : Maximal breadth 25 to 40 μ ; length 100-150 μ . Wall less than 1 μ of thickness.

Location : Oblanca, Cantabric Mountains, Spain.

Age of holotype : Probably Lower Gedinnian.

Holotype : Figure 12.

Leiofusa fusiformis (EISENACK), 1934.

(Fig. 6.)

Species of *Leiofusa* with a flat, thinly walled, hollow test, without polar spines. The wall is transparent and psilate, it consists of one layer.

Measures : Maximal breadth 15 μ ; length 75 μ . Wall less than 1 μ of thickness.

Location : Oblanca, Cantabric Mountains, Spain.

Age : EISENACK (1938) described *L. fusiformis* from the Silurian of the Baltic. The species has been recorded from samples of the upper member of the San Pedro Formation (Gedinnian) at several locations.

Leiofusa bernesa n. sp.

(Fig. 10.)

Species of *Leiofusa* with a flat hollow test, provided with a spine at each pole. The spines are about 1 μ in breadth and are generally curved. The wall is psilate, transparent, and consists of one layer.

Measures : Maximal breadth 25 μ ; length about 60 μ . Wall less than 1 μ of thickness.

Location : Oblanca, Cantabric Mountains, Spain.

Age of holotype : Probably Lower Gedinnian.

Holotype : Figure 10.

Comments : *L. bernesa* has been recorded from many localities throughout the San Pedro Formation of the Cantabric Mountains. It has much the same form as *L. banderilla*, which is much larger and has relatively much longer spines. Specimens with dimensions between those of *L. banderilla* and *L. bernesa* have not been met with.

Deunffia cf. monospinosa DOWNIE, 1960.

(Fig. 16.)

Species of *Deunffia* with hollow inflated test, provided with a spine at one pole. A very fine scabrate sculpture forms a faint lineation parallel to the longitudinal axis of the body.

Measures : Length of specimen shown by figure 16 : 17 μ , width about 7 μ .

Location : Oblanca, Cantabric Mountains, Spain.

Age : DOWNIE (1960) recorded the species from the Wenlockian Buildwas Shales of England; it occurs in small amounts throughout the upper member of the San Pedro Formation (Gedinnian).

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PLATE I

EXPLANATION OF PLATE I.

1. — *Leiofusa cantabrica* n. sp.
 2. — *Leiofusa banderilla* n. sp.
 3. — *Micrhystridium vulgare* STOCKMANS and WILLIÈRE.
 - 4 and 5. — *Leiofusa banderilla* n. sp.
 6. — *Leiofusa fusiformis* (EISENACK).
 7. — *Leiofusa cantabrica* n. sp.
 8. — *Leiofusa estrecha* n. sp.
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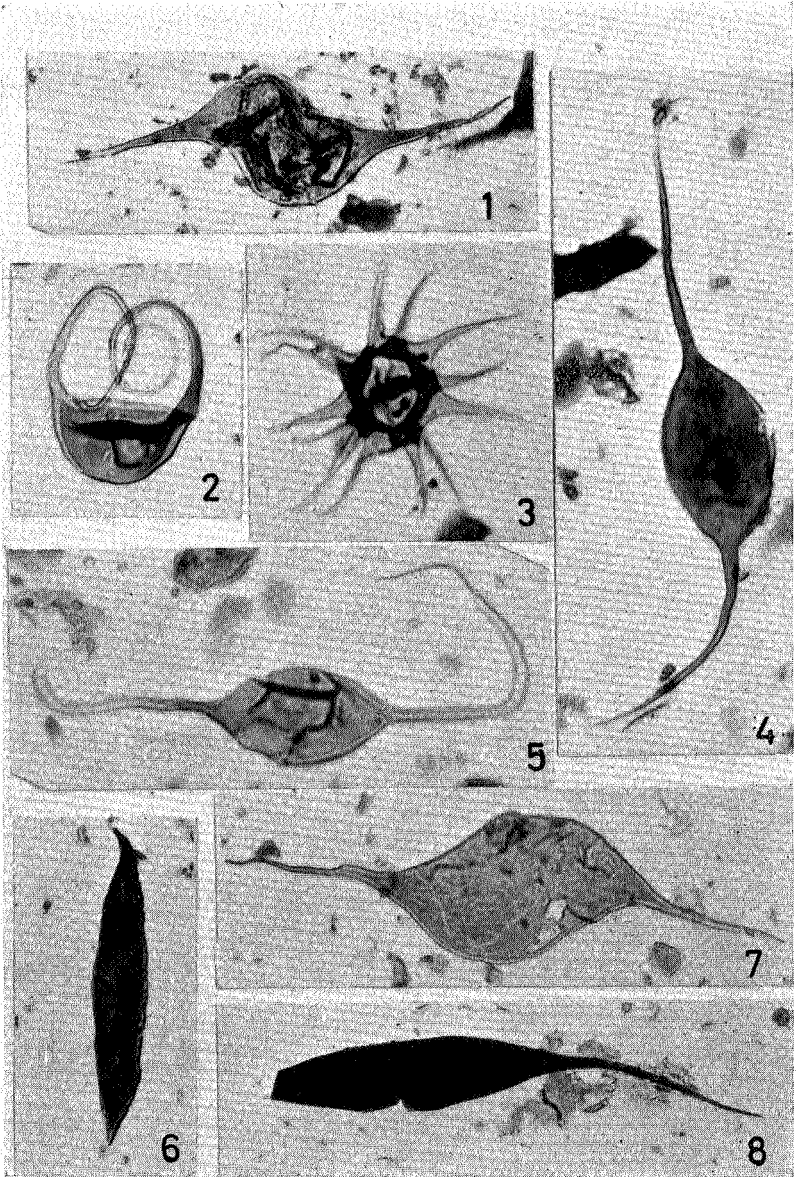


PLATE II

EXPLANATION OF PLATE II.

9. — *Leiofusa striatifera* n. sp.
10. — *Leiofusa bernesga* n. sp.
11. — *Leiofusa estrecha* n. sp.
12. — *Leiofusa banderilla* n. sp.
13. — *Leiofusa striatifera* n. sp.
14. — *Micrhystridium* sp. A.
15. — *Veryhachium carminae* CRAMER.
16. — *Deunfia* cf. *monospinosa* DOWNIE.
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