

## Notes on the Gregarines in Japan 7.

A new species of Eugregarina, *Lecudina caudata* n. sp.

from *Perinereis brevicirris* (Grube)

by

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(Received September 9, 1976)

Several species of polychaetes collected on the coast of the Inland Sea of Japan were examined for gregarine parasites in the winter of 1974. At that time an interesting species of gregarines belonging to the genus *Lecudina* was found in the gut of *Perinereis brevicirris* (Grube).

In this paper the author wants to report the characters of its sporadins and the process of the cyst formation.

The genus *Lecudina* was created by Mingazzini in 1891 for a gregarine parasitic in two species of polychaetes found on the coast of the Mediterranean Sea: *Nereis cultifera* Grube and *N. beaucourdrayi* Aud. The characters of the genus are as follows: Body non-septate, Epimerite regularly simple, Spores ovoidal thickened at one pole, In the gut of polychaetes.

### Materials and Methods

The host polychaete *Perinereis brevicirris* (Grube) is common at the beach of the western part of Japan. The materials used in this work were collected at muddy beach of Aio, Yamaguchi Prefecture, in November, 1974.

The materials were brought back to the laboratory and kept in a refrigerator until they were used. They were dissected in sea water. Many sporadins and cysts were released in the water. Most of the observations were done by fresh specimens but sometimes fixed and stained ones by Bouin's fluid and Delafield's hematoxylin or by 10% formalin and Methylgreen.

*Lecudina caudata* n. sp.

Host : *Perinereis brevicirris* (Grube)

Habitat : Intestine

Locality : Aio (Yamaguchi Pref.)

Time : November, 1974

### I. Sporadin

1. Association                      Solitary

2. Measurements
- 2—1. Size (unit  $\mu$ )
- Maximum      TL 70, WB 30
- Average      TL 59, WB 31
- 2—2. Ratio      WB : TL=1 : 1.9  
                  (WB=width of body)
3. Shape      Tadpole-shaped, no septum.  
                  Anterior region dome-shaped, well rounded at apex,  
                  central region widens spherical, widest through this  
                  region, posterior region projects from the central part  
                  like tadpole tail, tapering gradually from the root of  
                  the projection to a bluntly pointed posterior extremity.
7. Nucleus
- 7—1. Shape      Spherical, average  $10\mu$  in diameter.
- 7—2. Position    Usually in central region but not fixed in this region,  
                  some specimens near anterior or posterior part of this  
                  region.
8. Endoplasm
- 8—1. Color      Light brown.
- 8—2. Granules    In anterior dome-shaped region fine, homogeneous,  
                  central region dense, rather large granules mixed with  
                  fine ones, posterior region sometimes transparent with  
                  small quantity of coarse granules.
9. Ectoplasm    Thin, often several longitudinal ridges become visible  
                  on the surface of posterior region.
- II. Cyst
- Before cyst formation two individuals come near and  
                  contact with each other, head to head. Then this  
                  combined body is covered with a common cyst  
                  membrane.
1. Structure     Spherical, about  $40-50\mu$  in diameter, cyst membrane  
                  rather thin,  $5\mu$  in thickness.
- III. Spore      Not known.
- IV. Movement    Gliding and bending, but not so active except just  
                  before cyst formation.
- V. Cephalin
1. Shape      Ovoidal, non septate.
2. Structure    Anterior region of body almost transparent, posterior  
                  main part of body contains fairly dense endoplasm.
3. Epimerite    A simple small papilla.

Remarks ;

The spore of this gregarine is not observed. But above mentioned, it is clear that this species belongs to the genus *Lecudina* with the characters of the sporadin. Among the members of the genus *Lecudina* this bears the close resemblances to *L. pellucida* (Kölliker) Mingazzini and *L. mammilata* H. Hoshide.

In *L. pellucida* the body is only ellipsoidal or "bottleshaped", broadly rounded at the posterior end but in this species it is more polymorphous; the central region more or less swells and projects backwards like a tadpole tail, terminating in a bluntly pointed extremity,. This species is much smaller than *L. mammilata*.

It shows very peculiar features in some respects: the size and shape of body, the movement of sporadins before the cyst formation.

Table 1. Measurements of some Sporadins

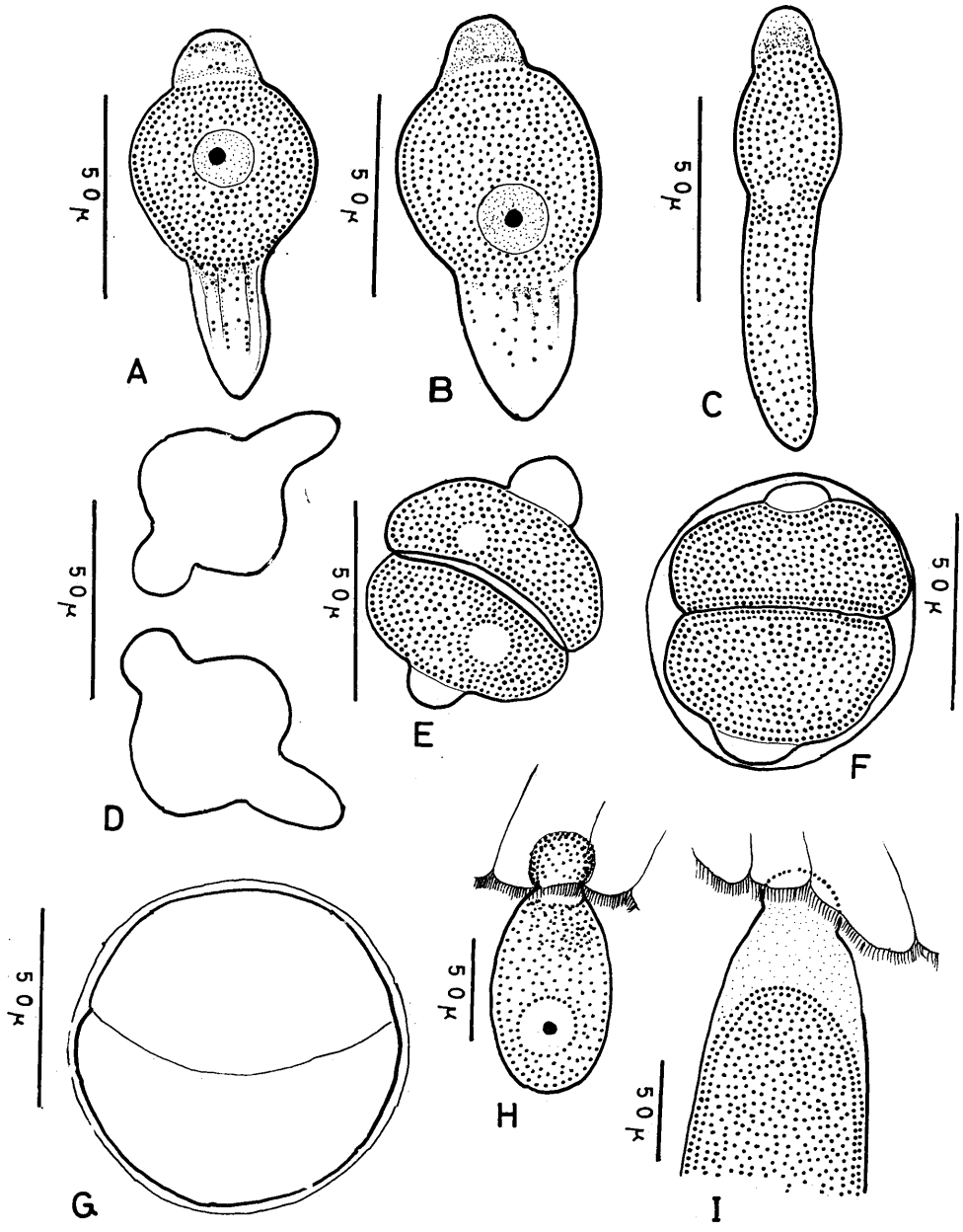
Number of specimens	Length of body (LB)	Width of body (WB)	Ratio WB : LB
1	66	38	1 : 1.7
2	62	38	1 : 1.6
3	58	28	1 : 2.1
4	56	28	1 : 2.0
5	54	27	1 : 2.0
6	58	28	1 : 2.1
7	58	33	1 : 1.8
8	60	30	1 : 2.0
9	60	28	1 : 2.1
10	56	32	1 : 1.8

#### References

1. Hoshide, H. 1944. Studies on the Eugregarines from Japanese Polychaeta. Jour. Sci, Hiroshima Univ. Series B Vol. 10 213—230.
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3. Kamm, M. E. 1922. Studies on Gregarines II. Illinois Biol. Monogr. Vol. 7.
4. Levine N. D. 1974. Gregarines of the genus *Lecudina* (Protozoa, Apicomplexa) from Pacific Ocean polychaetes. J. Protozool. 21 (1), 10—12.

The comparison of the species belonging to the genus *Lecudina* from Japanese Polychaeta

Host	<i>L. mammilata</i> <i>Errantia Neridae</i> <i>Neanthès diversicolor</i>	<i>L. longissima</i> <i>Errantia Eunicidae</i> <i>Lumbrineris japonica</i>	<i>L. amphora</i> <i>Errantia Glyceridae</i> <i>Glyceria rouxii</i>	<i>L. arbellae</i> <i>Errantia Eunicidae</i> <i>Arabella tricolor</i>	<i>L. candata</i> n. sp. <i>Errantia Neridae</i> <i>Primeris brevicirris</i>
I. Sporadin	.....	solitary TL 340, WB 70 WB : TL = 1 : 4.8 elongate lanceolate	.....	solitary TL 450, WB 60 WB : TL = 1 : 7.5 elongate spindle	solitary TL 59, WB 31 WB : TL = 1 : 1.9 long irregular spindle
Nucleus		spherical or ellipsoidal 25		spherical or ovoidal 30×25	spherical 10
II. Cyst	spherical 95 simple rupture	spherical 110 simple rupture	.....	spherical 150	spherical 40—50
III. Spore	ovoidal 6×4.5	ovoid 10×6	.....	.....	.....
IV. Movement	.....	gliding contorting active	gliding active	gliding twisting fairly active	gliding bending not so active
V. Cephalin	ovoidal TL 120, WB 55	elongate cylindrical TL 800, WB 30	elongate vase-shaped TL 1280, WB 170	ovoidal	ovoidal
Epimerite	small simple hyaline papilla	small simple hyaline knob	conical papilla	papilla	papilla



Explanation of Figures

*Lecudina caudata* n. sp.

Fig. 1.

- A. Adult sporadin. B. Another adult sporadin. C. Younger slender sporadin.  
 D. Two sporadins coming near with each other previous to cyst formation.  
 E. Two sporadins come in contact with each other.  
 F. Cyst still in rotation with thin cyst wall.  
 G. Cyst, the line of separation between the two sporadins is visible and the transparent cyst wall becomes thicker.  
 H. Cephalin attached to the host's epithelial wall.  
 I. Anterior region of another cephalin.

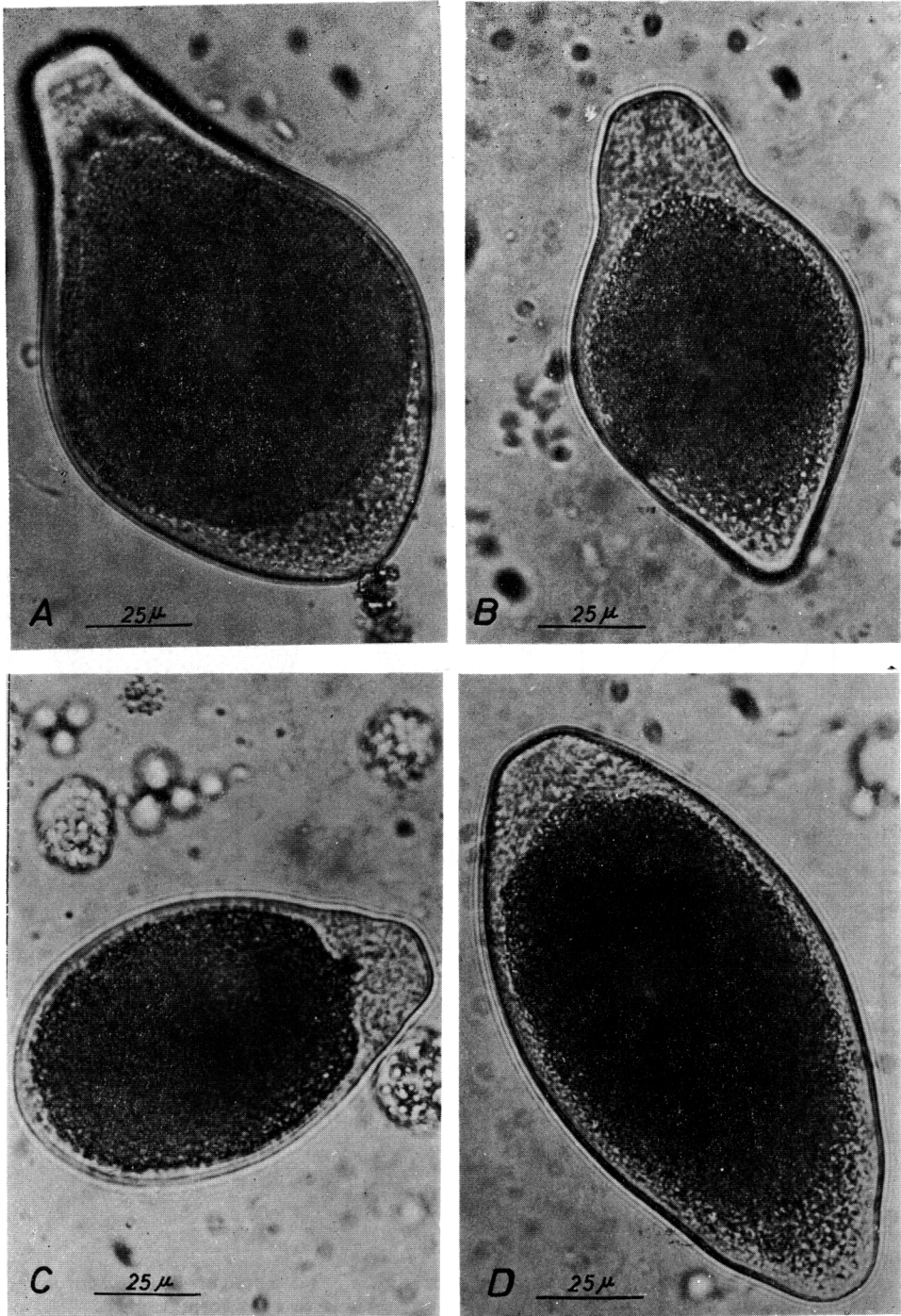


Fig. 2.

A, B, C, D . Small ovoidal sporadins.

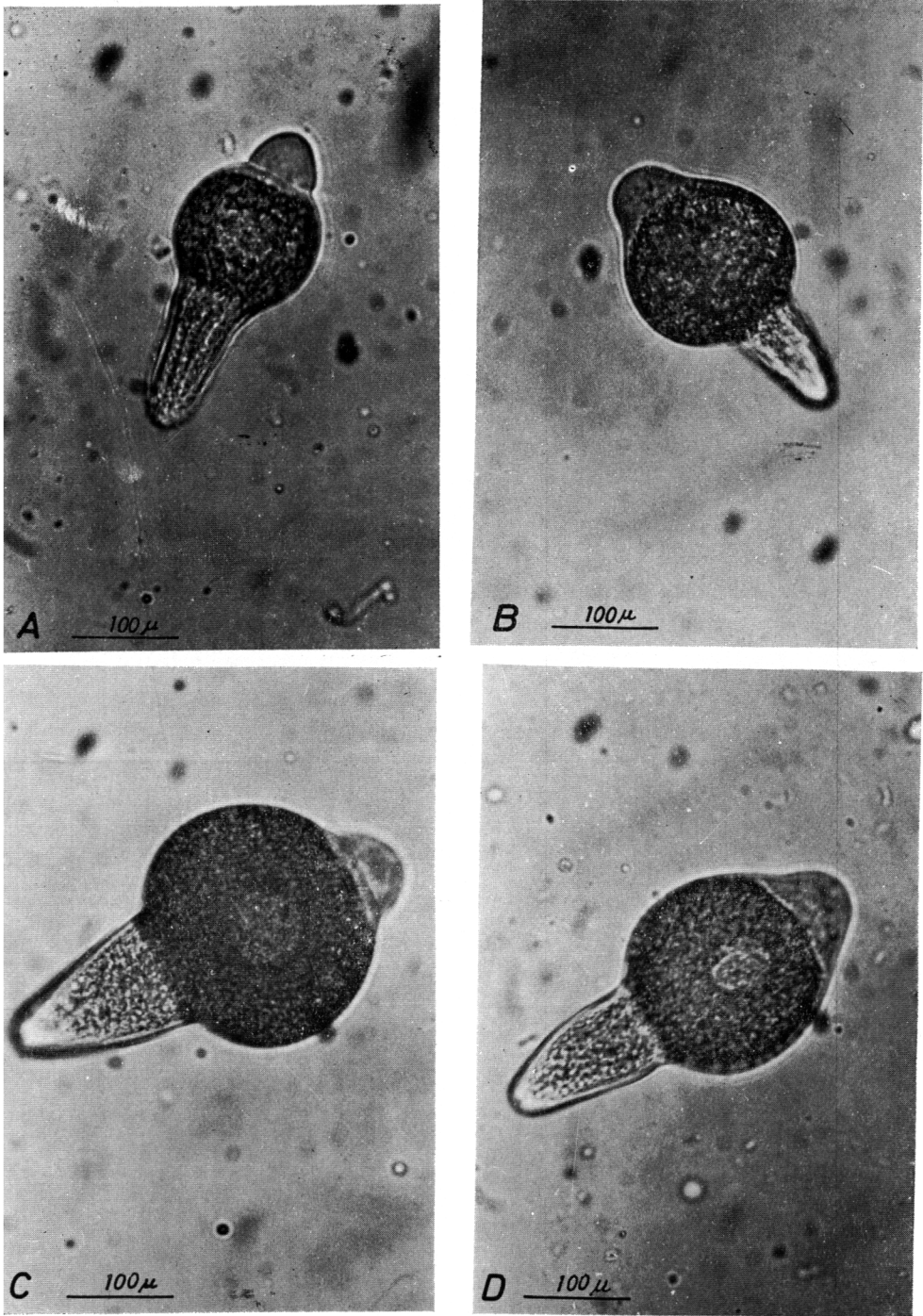


Fig. 3.

A, B, C, D. Matured sporadin with tail-like projection.

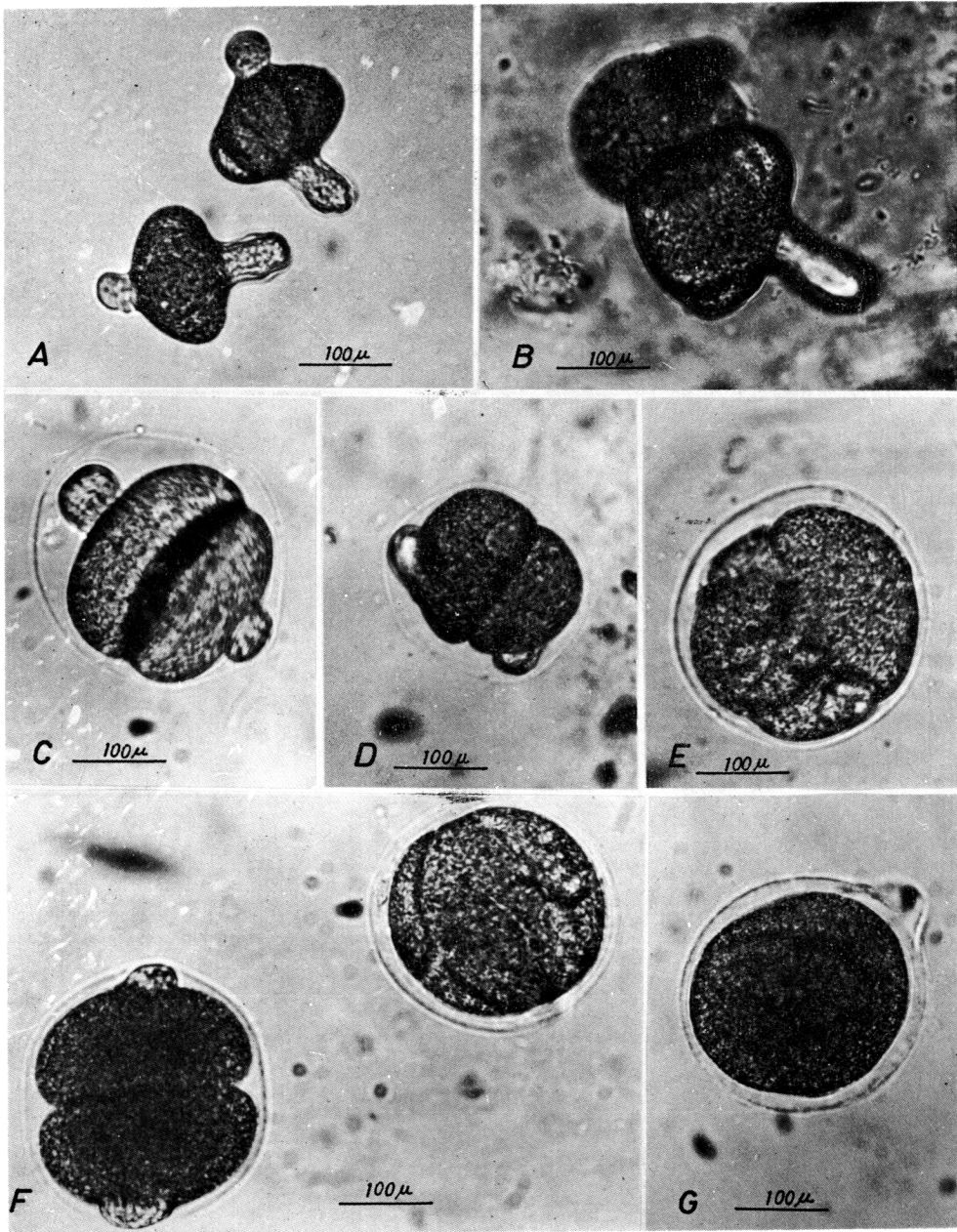


Fig. 4.

- A. Two matured sporadins.
- B. Two attaching sporadins.
- C, D. Cyst just after two sporadins attach to form cyst.
- E. Two cysts.
- G. Cyst.