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Morphological comparison of *Coscinodiscus lentiginosus* Janisch and *Coscinodiscus obovatus* Castracane

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Morphological comparison of the diatom species *Coscinodiscus lentiginosus* Janisch and *Coscinodiscus obovatus* Castracane reveals that the two forms may actually be conspecific. The most common centric diatom species in the Southern Ocean today, *C. lentiginosus* is reported as first occuring in the mid-Pliocene (McCollum, 1975; Gombos, 1976), along with *C. obovatus*. *C. obovatus* appears to have been restricted to the Pliocene.

C. lentiginosus is quite variable both in size (from 40 to 120 micrometers) and in aereolation pattern (from essentially radial to essentially oncentric). Most specimens display an irregular combination of the two extreme types (figures 2, 6, 7). *C. obovatus* displays an aereolation type identical to that found in many specimens of *C. lentiginosus* (compare figures 1, 3, 4, and 5 with figures 2 and 6). Both species are similar in size, spacing, and arrangement of aereolae, and both have a single prominent apiculus (figures 1, 2, 5, 8) that Fenner, Schrader, and Wienigh (1976) state is characteristic of *C. lentiginosus*. It appears that the two species differ only in outline. Length/width ratios in *C. obovatus* range from 2 to a little over 1 (figures 1, 4). Ratios approaching 1 make differentiation between the two in Pliocene samples arbitrary.

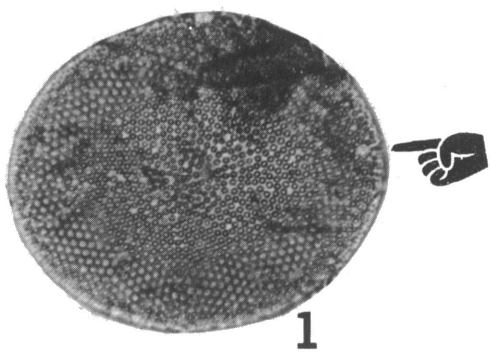

Figure 1. *Coscinodiscus obovatus* Castracane, 1176-76, 178–180 cm, 60μ.

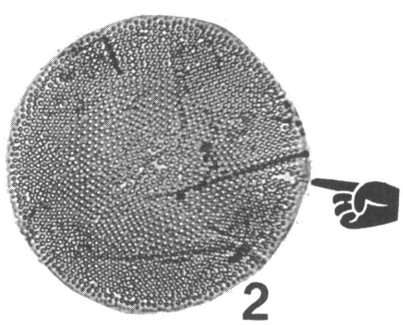

Figure 2. *Coscinodiscus lentiginosus* Janisch, 1176-81, 0–1 cm, 60μ.

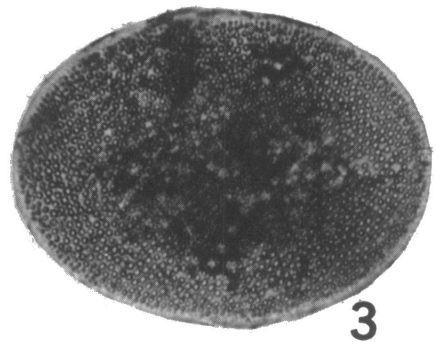

Figure 3. *Coscinodiscus obovatus* Castracane, 1176-76, 178–180 cm, 65μ.

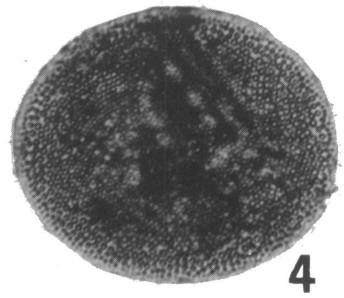

Figure 4. *Coscinodiscus obovatus* Castracane, 1176-76, 178–180 cm, 57μ.

Figure 5. *Coscinodiscus obovatus* Castracane, 1176-76, 178–180 cm, 77μ.

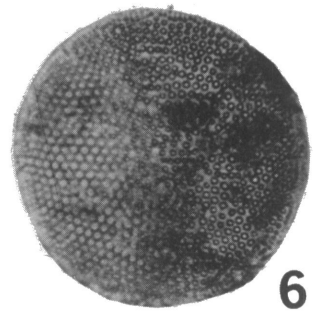

Figure 6. *Coscinodiscus lentiginosus* Janisch, 1176-76, 178–180 cm, 60μ.

On account of these similarities in morphology, gradational outline, and overlapping ranges, it appears that *C. obovatus* is probably an extinct form of *C. lentiginosus*. The gradation in outlines between the two forms suggests that some sort of genetic communication existed in the Pliocene and allowed for intraspecific variation. *C. obovatus* should most likely be included within *C. lentiginosus* as *Coscinodiscus lentiginosus* var. *obovatus*.

At this time it is impossible to state with any assurance what possible advantage or disadvantage would have accrued from a round outline as opposed to an ovate outline and whether frustule form was linked to any other

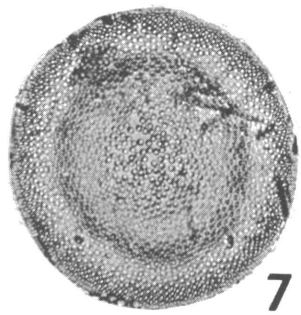

Figure 7. ***Coscinodiscus lentiginosus*** **Janisch, 1176-81, 0-1 cm, 67μ.**

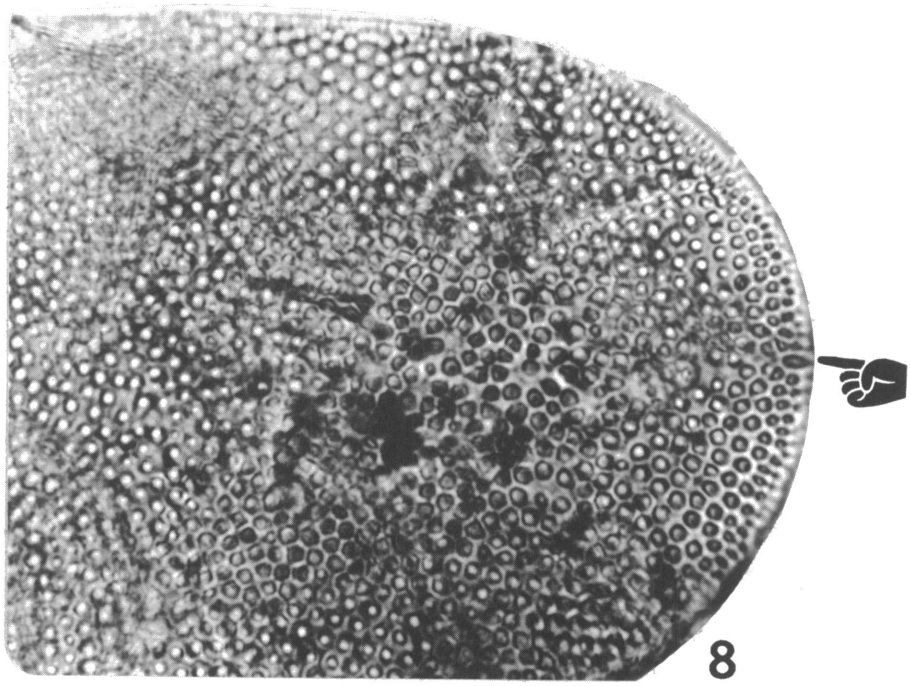

Figure 8. ***Coscinodiscus obovatus*** **Castracane, 1176-76, 178–180 cm.**

characteristics that might have a bearing on adaptability.

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