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A New Edrioasteroid

H. L. STRIMPLE¹

Abstract: Two specimens of an edrioasteroid in excellent preservation have been found in the Pella beds, Upper Mississippian, by Amel Priest of Peru, Iowa at an abandoned quarry northeast of Knoxville, Marion County, Iowa. The interior of the theca is exposed in the smaller specimen and the existence of a stone canal is disclosed. The species is described as *Discocystis priesti*, new species.

Specimens of edrioasteroids in indifferent or partial preservation are not uncommon in the Pella beds and have been found by the author in the abandoned County quarry north of Oskaloosa, Mahaska County, Iowa. The horizon in which echinodermal material is found in abundance is about five feet above the top of the limestone series in a grey shale. The shale is stripped in mining operations and placed in spoil heaps which are found to be very fossiliferous after some weathering. During the year 1965, Amel Priest of Peru, Iowa, collected two specimens in excellent preservation in a quarry northeast of Knoxville, Marion County, Iowa, which could be studied in detail. The species was found to be new and has been named *Discocystis priesti* in acknowledgment of this and other contributions of material made by Mr. Priest to echinodermal studies in process.

Of considerable interest is the preservation of what appears to be a stone canal in the paratype collected by Priest. A stone canal is part of the water-vascular system which is known to connect the madreporite with the circumoesophageal ring in living echinoids. The canal is hard and calcareous in some genera of echinoids, hence the term *stone* canal. Preservation in fossil form is certain to be exceedingly rare.

SYSTEMATICS

Class EDRIOASTEROIDEA Billings, 1954
Family AGELACRINITIDAE Bassler, 1935
Genus DISCOCYSTIS Gregory, 1897

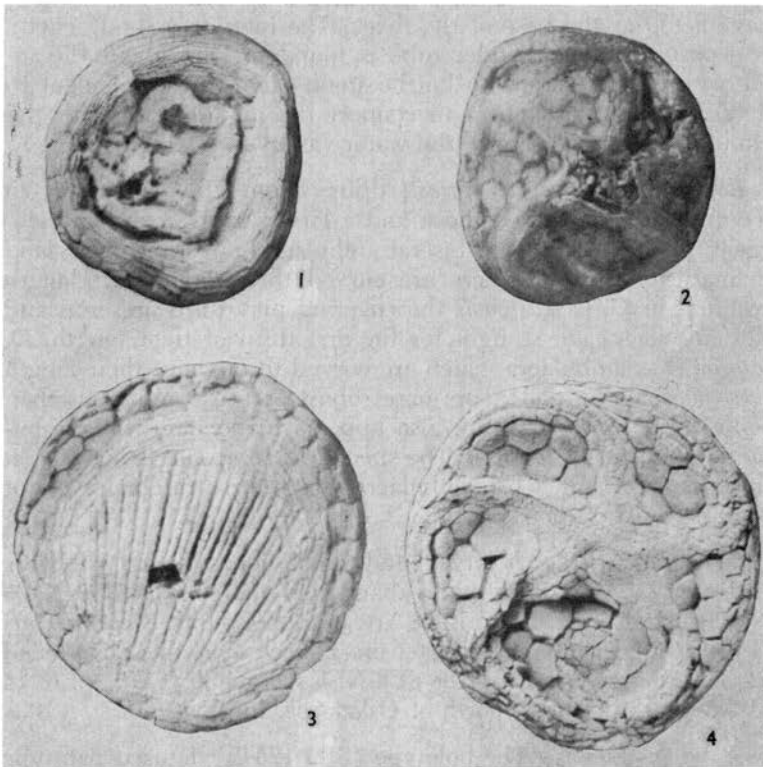
Type species: *Echinodiscus optatus* Worthen & Miller = *Agelacrinus kaskasiensis* Hall.

The genus *Discocystis* is like *Agelacrinites* except that four of the ambulacra are curved to the left and one, the right posterior, to the right. *Discocystis kaskasiensis* (Hall), 1858, (synonym *Echinodiscus optatus* Worthen and Miller, 1883) is the type of the genus according to Bassler (1935) and the theca is elongated as a sac with a small area of attachment. There are many rows of imbricating marginal plates which characteristic also serves

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to distinguish the genus from *Agelacrinites*. Bassler (1936) reported the species from the Chester group, Kaskaskia, Illinois, and Polk County, Missouri, from the St. Genevieve limestone, Huntsville, Alabama, and the Glen Dean limestone of Grayson Springs and Sloans Valley, Kentucky. There are two other species of *Discocystis*, *D. sampsoni* (Miller) from the Warsaw of Missouri and *D. laudoni* Bassler from the Gilmore City Formation, Kinderhookian, Gilmore City, Iowa.

DISCOCYSTIS PRIESTI Strimpe, new species



Figures 1-4 *Discocystis priesti*, n. sp. 1, aboral view of young paratype showing the stone canal, 2, same from oral side; 3, aboral view of holotype showing the shell to which the specimen attached, 4, oral view of same.

The theca is irregularly elliptical-shaped with a broadly convex oral surface, and several rows of closely imbricated marginal plates. The interambulacral plates are polygonal and are mainly large segments except for those which are adjacent to the ambulacra, the anus, and the margins, where they become small. Throughout their length, the right posterior to the right and the other four to the left. The

mouth is covered by minute covering plates. The covering floor plates of the ambulacra are small and are distinctly biserial. The anal pyramid is composed of about seven triangular-shaped plates.

The holotype has a maximum width of 15.9 mm, the paratype 11.9 mm.

The young figured paratype has ambulacra which are straight for about a third of their length and then curved. This indicates that the species has such an ancestor. The specimen is also unique in that it has become detached from the shell which in life would have acted as the base of the theca. The interior or body cavity is exposed. A long slender tube is found to loop about the interior and is presumed to be the stone canal, which element in living echinoids is known to connect the madreporite with the circumoesophageal ring of the water vascular system.

Remarks.—*Discocystis priesti* differs from *D. kaskasiensis* in having a less elongated theca and a larger basal area of attachment. *D. priesti* also has biserial ambulacral covering plates and in maturity the ambulacra are curved throughout their length whereas in *D. kaskasiensis* the covering plates are uniserial and the ambulacra are straight for the first third of their length. *D. laudoni* has ambulacra which are curved throughout their length but the covering plates are more robust and less numerous than found in *D. priesti*. There also appears to be more interambulacral plates in *D. laudoni*. The species *D. sampsoni* is not known in its entirety but it has ambulacra which are straight for about the first third of their length.

Occurrence.—The holotype and small figured paratype were collected by Amel Priest in an abandoned quarry located in NW $\frac{1}{4}$ NW $\frac{1}{4}$ section 9, T. 25 N., R. 18 W., Marion County, west of Harvey, Iowa. Several paratypes were collected in the abandoned County quarry located in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ section 30, T. 76 N., R. 14 W., Mahaska County, north of Oskaloosa, Iowa.

Type specimens.—The holotype (SUI 12545), figured paratype (SUI 12546), and paratypes (SUI 12547) are deposited in the Department of Geology, University of Iowa, Iowa City.

Literature Cited

- Bassler, R. S., 1935. Smithsonian Misc. Coll., v. 93, p. 1-11, 1 pl.
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