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A New Platycrinid from Gilmore City, Iowa

HARRELL L. STRIMPLE AND MICHAEL R. MCGINNIS¹

Abstract. A recently discovered crinoid from the Gilmore City Formation, Kinderhookian Stage, Lower Mississippian age, is in excellent preservation and is an undescribed species belonging to a highly specialized group within the genus *Platycrinites*. Charles F. Crane, of Ames, Iowa, the collector, realized the scientific importance of the specimen and allowed it to be described and repositied in the Repository, Department of Geology, The University of Iowa, Iowa City. The species is named *Platycrinites cranei* Strimple & McGinnis, new species, named for Charles F. Crane. Description and comparison with related species from Montana and southeastern Iowa is made.

The crinoid fauna of the Gilmore City Formation is distributed among 16 genera with 20 species and three subspecies all of which were reported by Laudon (1933), except two, one of which is being reported elsewhere and the other here. The presently considered species is described as *Platycrinites cranei* n. sp. and is the only representative of the genus found in the Gilmore City Formation, although a species of *Platycrinites* (*P. symmetricus* Wachs-muth & Springer, 1888), is known from the slightly older Hampton Formation.

Bassler & Moodey (1943), recognized 150 species and 5 sub-species of *Platycrinites* of which the arms are seldom known and which range from Silurian to Permian although the vast majority are Mississippian. The oldest Mississippian species, for which we know the arm structure, occurs in the Banff Formation (Kinderhookian), from which *P. sunwaptaensis* Laudon, Parks and Spreng (1952) has been described. *P. sunwaptaensis* branches three times producing 6 slender arms to a ray. Second branching takes place on secundibrach 2 and third on tertibrach 2. Nonaxillary brachials are cuneate. *P. decadactylus* represents a highly specialized lineage in which additional branching takes place (10 arms to the ray) and in addition the secondary arms are biserial though the main arms remain uniserial. There are two brachials in the main arms between branching but in the higher bifurcations the third brachials are axillary. The arms have not widened appreciably and the cup is still smooth. *P. cranei* n. sp. from the Gilmore City Formation, has added more arms (21 to a ray) which widen and there may be two or three brachials below the most distal bifurcation. The arms are long and after the last bifurcation the main rays become biserial. The surface of the cup is uneven, though no pat-

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term of ornamentation is apparent, and a flange is developed at the base of the cup.

P. incomptus White, 1963, (after Laudon & Severson, 1953, p. 532, pl. 54, fig. 9) from the Lodgepole Formation, represents the maximum development of arms found in the lineage (22 arms to a ray) with all bifurcations, above the proximal division, taking place with the second brachial. The cup is smooth but there is a flange development at the base of the cup as found in *P. cranei* which species is closely related.

P. pratteni Worthen, 1860, from the Lower Burlington has as many as 14 arms to the ray, uneven cup surface, a high cup and a flange at the base of the cup. *P. huntsvillae* Troost, 1849, (= *P. penecillus*) from the Ste. Genevieve has reduced the number of arms to 4 in a ray, has a high, ornate cup with a flange at the bottom and is probably the last of the lineage.

The primary lineage of *Platycrinites* develops biserial arms in the Kinderhookian and commonly has 6 arms to a ray. Some forms have smooth high cups and some have ornate high cups, both lacking a basal flange. A tendency toward lowering the cup appears to be evolutionary. Addition of arms may also occur. *P. aqualis* Hall, 1861, from the Upper Burlington has 16 biserial arms per ray, a high, smooth cup and no flange at the base. *P. geometricus* Wachsmuth & Springer, 1897, from the Upper Burlington has 10 to 12 arms per ray and a high, ornate cup with no flange at the base.

SYSTEMATIC DESCRIPTION

Genus PLATYCRINITES Miller, 1821

PLATYCRINITES CRANEI Strimple & McGinnis, n. sp.

Figures 1-3.

Description

The dorsal cup is rather short, truncate cone-shaped with a stout, flange-like rim about the base, confined to the basals, and a protective collar is formed about the large proximal columnals. A single large interbrachial rests in a notch between radial articular facets.

The crown expands evenly distalward forming a large cone. All arms bifurcate on primibrach *I* and thereafter there are two brachials to a bifurcation until the last which has three in some rays. The main arms are uniserial until after the last bifurcation when they become biserial. The branches are all biserial.

Measurements of holotype in millimeters: length of crown 55 mm., height of cup 10 mm., width of cup 14.6 mm., diameter of proximal columnals 6 mm.

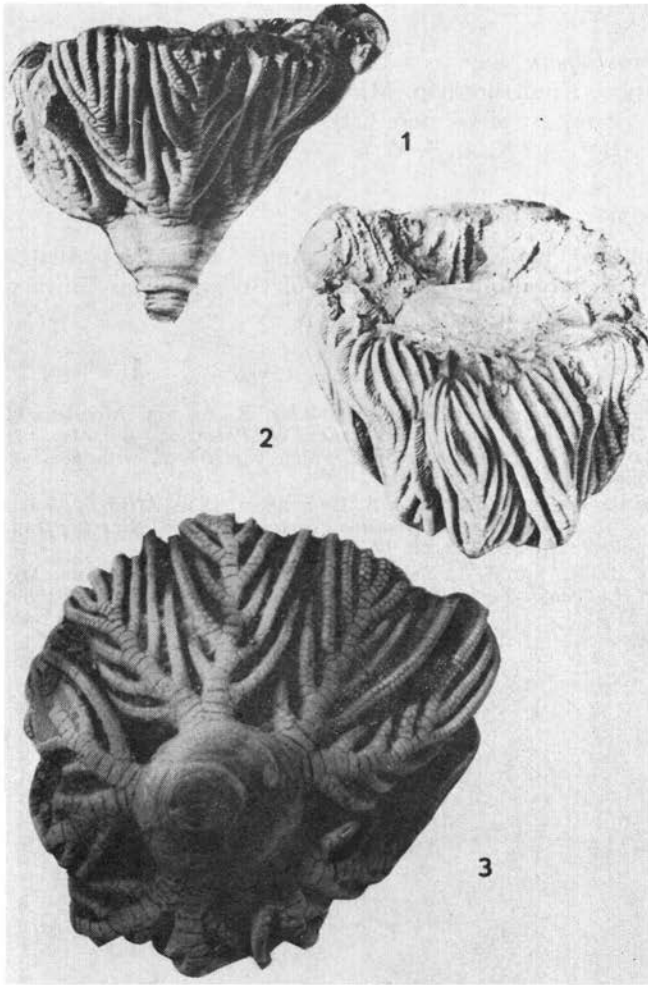


Fig. 1-3. *Platycrinites cranei* Strimple and McGinnis 1. Crown viewed from side. # XI; 2. oblique view from opposite side. #XI; 3. basal view of crown. #XI.3.

Remarks

Platycrinites cranei is more closely related to *P. incomptus* White (after Laudon & Severson), as previously discussed, than to other species. It is a multiple armed lineage within the genus as

Occurrence

Rhynchopora zone (of Laudon, 1933, p. 13) Gilmore City Formation, Kinderhookian, Mississippian; Midwest Limestone Co. quarry northwest of Gilmore City, Pocahontas County, Iowa (SW $\frac{1}{4}$, Sec. 25, T. 92 N., R. 31 W.).

Holotype

Collected by Charles Crane, Ames, Iowa, deposited (SUI 33842) in Repository, Department of Geology, The University of Iowa, Iowa City, Iowa.

REFERENCES CITED

All references may be found in Bassler, R. S., and Moodey, M. W., 1943, *Bibliographic and faunal index of Paleozoic pelmatozoan echinoderms*: Geol. Soc. America, Spec. Paper 45, 734 p., with the following exceptions:

LAUDON, L. R., J. M. PARKS, & A. C. SPRENG, 1952, *Mississippian crinoid fauna from the Banff Formation, Sunwapta Pass, Alberta*; Jour. Paleontology, 26: 544-575, pls. 66-69.

LAUDON, L. R., AND J. L. SEVERSON, 1953, *New crinoid fauna, Mississippian, Lodgepole Formation, Montana*; Jour. Paleontology: 27: 505-536, pls. 51-55.