

**CONTRIBUTIONS TO
THE PALÆONTOLOGY
OF IOWA**

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Contributions to the Palæontology of Iowa by James Hall

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JAMES HALL

**CONTRIBUTIONS TO
THE PALÆONTOLOGY
OF IOWA**

CONTRIBUTIONS
TO THE
PALAEONTOLOGY OF IOWA;

BEING DESCRIPTIONS OF
NEW SPECIES OF CRINOIDEA AND OTHER FOSSILS.

BY JAMES HALL,
STATE GEOLOGIST AND PALAEONTOLOGIST.

Supplement to Volume I, Part II, of the Geological Report of Iowa.

PUBLISHED BY AUTHORITY OF THE LEGISLATURE OF IOWA.
1859.

ALBANY, August, 1859.

TO HIS EXCELLENCY RALPH P. LOWE.

SIR:

IN accordance with your directions given in November of last year, I have the honor to submit herewith a supplement to the Geological Report of Iowa, Vol. I, Part 2, containing descriptions of new species of Crinoiden and other fossils, chiefly from the Burlington and Keokuk limestones.

The greater part of these descriptions are of Crinoiden, and are accompanied by diagrams, without which the relations and proportions of parts cannot be well understood. Completed drawings of many species have already been made, so that less delay will be experienced on this account when the printing of the second volume shall be authorized.

The CRINOIDEA embraced in this paper, the descriptions of which are already completed at this date, are above sixty species.

I have the honor to be,

Very respectfully,

Your obedient servant,

JAMES HALL.

NOTE.

THE descriptions of the following species of Crinoides were, with a few exceptions, completed in July 1859, and it was my intention to print and publish the supplement immediately. A part of it was thus printed and forwarded to Governor LOWE soon after the date of the address, but the publication has been postponed by circumstances beyond my control.

I have been still farther indebted to Mr. WORTHEN for the use of his collection of Crinoides, already acknowledged in the volume, and many of the descriptions have been drawn from his specimens alone; while in others I have been able to avail myself of the extensive collection of Mr. C. A. WHITE of Burlington, which contains numerous new forms of this family of fossils, and affords valuable means of comparison. The greater number of species are from the Burlington limestones of Iowa, a locality frequently cited in the report already published. A few species have been added to those before known in the Keokuk limestone, from specimens recently sent to me through the kindness of Dr. G. M. KILLBOURN of Keokuk. The descriptions of the species from the Warsaw limestone, with one exception, were printed one year since (in 1858) in another form, but had not been given to the public, and are first published in this supplement. The diagrams have been drawn with great care by Mr. R. P. WHITEFIELD, and I have likewise been indebted to him for very essential aid in preparing the descriptions.

J. H.

NEW SPECIES OF CRINOIDEA.

Actinocrinus lirratus (n. s.).

Body broadly turbinate below, spreading in a wide thickened rim at the bases of the arms; summit nearly flat at the margin, rising in a low dome towards the centre, and surmounted by a proboscis: base truncate, somewhat deeply excavated for the reception of the column. Basal plates about half as long as the first radials: first radial plates about as high as wide; second radials much smaller than the first, hexagonal, with third radials nearly of the same size and form except narrower, being truncate at the top, supporting a first and second inter-supraradial plate in the same line, and on each side of their upper sloping edges a single supraradial bifurcating plate, which sustains upon its outer side a series of four brachial plates, and upon its inner side a series of supraradial plates, each of which supports brachials on one side and supraradials on the other, giving off the arms on opposite sides alternately, making six or seven arms to each principal division of the ray.

First interradial plate large, hexagonal: second and third ranges of two plates each, successively smaller, hexagonal, and supporting two subpentagonal plates in the fourth range, the last ones supporting the outer edges of the plates of the first supraradial series of the adjacent rays.

SURFACE of plates marked by ridges rectangular to the margins, and coalescing towards the centre; those from the lower side, on the first radials, joining in an arching ridge.

This species is of the type of those with wide-spreading summits and numerous arms. It differs conspicuously from any other of the type at present known to me, in the surface markings, by which it may be readily distinguished.

Geological position and locality. In the Burlington limestone: Burlington, Iowa.

Actinocrinus glyptus (n. s.).

Body urnshaped below, short, flattened above, with a broad expanded rim which commences at the top of the third radial plate, and extends to the arm-bases nearly at right angles to the axis of the body. Basal plates short, slightly thickened at their lower margins: first radials large, wider than high; second radials large, hexagonal, width equal to or greater than the height; third radials smaller than the second, octagonal, wider than high, supporting large supraradial plates on the upper sloping angles, and truncate above by the first of a group of small inter-supraradials.

The supraradials which rest upon the third radial are the first of a series of four plates (present in the specimen), each giving origin to an arm, the first on the inside, the next on the outside alternately. The number of arms in this species has probably not exceeded ten to each ray = fifty in all. The first brachial series of each division of the ray (in their order of bifurcation) consists of four plates, the second series of two, the third of two, and the numbers in the remaining series are not fully determined.

First interradial plate hexagonal, as large as the second radials, and supporting two small plates, one hexagonal and one pentagonal, with two still smaller plates in the third series and from two to five small irregular plates above, and sometimes a large interbrachial plate between the brachial series of the two adjacent rays.

Anal plate hexagonal, smaller than the first radials: two hexagonal plates in the second range, three in the third, and three small plates forming an arch over the middle one of these, completing the series.

SURFACE of plates elevated into large high transverse nodes or ridges, which are connected with those of the adjoining plates by short subangular ridges, while the principal nodes exhibit a transverse ridge. The lower surface of the expanded

rim is traversed by zigzag subnodose ridges, which follow the ramifications of the ray, and are highest at the centre of each plate, while between the ridges the surface is deeply indented.

Dome composed of a great number of very small, slightly nodose, polygonal plates, with a subcentral depression.

This species differs from others of the same type, by its short broad calyx, its heavily nodose plates, and the less number of arms to each ray; also the margin of the projecting rim has been less deeply sinuate than in most of the species of this type.

Geological position and locality. In the Burlington limestone : Burlington, Iowa.

***Actinecrius subumbrosus* (n. s.).**

Bony symmetrically urnshaped, spreading horizontally above in an expanded rim which forms the united bases of the arms : summit depressed convex, composed of small polygonal plates, and terminating in a strong proboscis situated nearer to the anal side ; base excavated for the reception of a large column. Basal plates high, sloping gradually to their superior margins : first radials large, higher than wide ; second radials hexagonal or pentagonal, higher than wide ; third radials smaller than the second, height and width nearly equal, hexagonal or heptagonal, sustaining on their upper oblique edges supraradial plates in double series, having one inter-supraradial plate between the upper, and resting on the edges of the lower supraradial plate. A series of three brachial plates is sustained on the outer edges of the supraradials, and above these commence the arm-plates proper.

The second supraradial plates of each division of the ray support upon their inner edges brachial plates, and upon their outer edges supraradials of the second order, which again support brachial plates on their outer edges and supraradials of the third order on their inner edges, and so on, giving