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## On the Keokuk Beds and Their Contained Fossils in the Vicinity of Keokuk, Iowa

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shows coarsely the costate structure of *Sigillaria*. The arrangement of the areoles cannot be made out though probably distant and not continuous. As stated by Lesquereux the decorticated layers are of little if any specific value, but the fact that, so far as we can learn, this formation has thus far proven destitute of land plants gives this example peculiar interest and on this account a name may prove serviceable. We therefore designate it *Sigillaria wallacii*, in honor of its finder.

#### GEOLOGICAL HORIZON AND LOCALITY.

From the Keokuk limestone six or eight feet below the base of the Geode bed; found in the bluff just below the Keokuk and Des Moines depot, Keokuk, Iowa.

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## ON THE KEOKUK BEDS AND THEIR CONTAINED FOSSILS IN THE VICINITY OF KEOKUK, IOWA.

BY PROF. C. H. GORDON.

(Abstract.)

#### AREA AND THICKNESS.

Outside the region covered by this paper, the most notable exposure of this formation occurs at Crawfordsville, Indiana, where its thickness is said to be two hundred and eighty feet.

South of the Iowa line, exposures occur along the Mississippi in limited areas, and southwestward in Missouri, yielding most of the lead mined in that region.

At Keokuk it consists of two well defined divisions—the lower or Calcareous and the upper or Geode division. The Calcareous division consists of forty to sixty feet of limestone in varying layers, with clay or shale partings one to six inches thick. About the middle of this division occurs a pure massive layer termed the “white ledge” which furnished

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1—American Geologist, Vol. II, p. 407.

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the stone for the noted Mormon temple at Nauvoo. Some of these layers abound in chert.

The upper division or Geode bed consists principally of argillaceous shale through which the geodes are more or less thickly disseminated. Below it is more calcareous and contains the largest geodes.

II. GEODE BED.

- 11. Fine, blue sandy layer. Rarely found. Seventeen species. *Poteriocrinella*. *Batocrinus la-gunculus* Hall.....5 inches
- 10. Soft gritty shale that decomposes readily. Filled with geodes from size of marble to four inches in diameter.....15 feet
- 9. Shale, more calcareous. Geodes larger; occasional bands of limestone.....20 feet

I. CALCAREOUS DIVISION.

- 8. Limestone, hard in thin variable layers..... 2 feet
- 7. Shale, argillaceous..... 2 feet
- 6. Limestone; layers thin and cherty below. *Dory-crinus* bed at top containing *D. mississippiensis* Rømer; *Batocrinus nashville* Troost; *B. biturbinatus* Hall; *Agaricocrinus wortheni* Hall; *Barrycrinus tumulus* Hall; *Archimedes oweni-ana* Hall; and other forms..... 5 feet
- 5. Blue, sub-crystalline limestone in layers six to twelve inches thick alternating with similar layers of shale. Shell bed; notably *Spirifer keokuk* Hall; *Orthis keokuk* Hall; and fish teeth. The upper part is termed the upper fish bed.. 9 feet
- 4. Limestone, massive, white, sub-crystalline. Occasional fish teeth and spines. Termed the white ledge..... 4 feet
- 3. Shale, hard, calcareous, approaching a rotten limestone. Occasional bands of chert. Pockets of calcite. *Actinocrinus*, *Agaricocrinus*, *Barrycrinus magister* Hall. The layer containing crinoids is not persistent. It occurs in the upper part and usually associated with reniform or lenticular masses of chert; called the rolyboly bed..... 6 feet

2. Blue or drab, sub-crystalline limestone, massive. Good quarry rock. Lower crinoid bed above. *Agaricocrinus* with shallow concavity. *A.* with sixteen arms. *Actinocrinus pernodosus* Hall. Stems and plates of *Eucladocrinus* below. Fish remains..... 3 feet
1. Limestone in thin layers. Cherty. Lower fish bed. *Platyceras fissurella* Hall. *Platyceras equi-eatera* Hall..... 6 feet

No. 1 is but partially exposed here, its full thickness probably aggregating twenty feet.

CORRELATION.

The uppermost layer, No. 11, was discovered at a single locality by Mr. L. A. Cox. In its lithological character as well as its fossil remains, it very much resembles the crinoid beds of Crawfordsville. The most common forms in the calcareous division at Keokuk are wanting at Crawfordsville. We are disposed to consider the lower part of those beds consisting of twenty-five feet of shale as the equivalent of the goede bed at Keokuk.

FOSSILS.

The crinoids, the most prominent form, though not the most numerous. One-half the Keokuk forms appear at Keokuk and about one-fourth at Crawfordsville.

Brachipods numerous, *Spirifera* and *Productida* predominating. Most interesting collections of crinoids made by Mr. L. A. Cox and Mr. N. K. Burket.

OBSERVATIONS ON THE KEOKUK SPECIES OF AGARICOCRINUS.

BY PROF. C. H. GORDON.

(Abstract.)

Six species of *Agaricocrinus* obtained from the Keokuk beds, of which three, viz: *A. americanus* Rømer; *A.*