

Proceedings of the Iowa Academy of Science

Volume 1 | Part 4, 1893; (1887) -

Article 10

1893

Cretaceous Formations of Northwestern Iowa

Charles R. Keyes

Copyright ©1893 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

Recommended Citation

Keyes, Charles R. (1893) "Cretaceous Formations of Northwestern Iowa," *Proceedings of the Iowa Academy of Science*, 1(Pt. 4), 24-25.

Available at: <https://scholarworks.uni.edu/pias/vol1/iss4/10>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

seems to occupy. Lithologically and paleontologically the fossiliferous beds resting on these limestones at Davenport, referred by Barris to the Corniferous, are believed to be equivalent to the *Gypidula occidentalis* and *Rhynchonella intermedia* limestone, whose presence defines the third stage of the breccia in Linn county, and which in Buchanan county has been named the Gyroceras beds. At Davenport, as in the counties to the northwest, the Gyroceras beds are succeeded by a soft, shaly limestone with a characteristic fauna.

The writer has felt the need of definite terms to designate these beds, and therefore suggests for the consideration of workers in this field the name, *Lower Davenport beds* for the lower unfossiliferous limestone at Davenport, the limestone which furnished the fragments for the second stage of the Fayette breccia. If a geographical as well a paleontological term should be found convenient for the fossiliferous limestone overlying these lower beds, the term Upper Davenport beds could be appropriately used as a synonym of the Gyroceras beds.

The change in fauna is so distinct at the summit of the Gyroceras beds that it seems to the writer that they should be separated from the Cedar Valley limestones, as the Independence shales have been.

If the inferences we have drawn are correct, the "Upper Helderberg" of Hall, and the "Corniferous" of Barris, at Davenport, are superior to the horizon of the Independence shales. They must therefore be included in that broad biotic unity whose termini are the Independence shales and the Lime creek shales, whose fauna have been shown by Calvin to be so similar.

It is an interesting fact that the new Devonian terrane, the Otis beds, found beneath the Independence shales, contains, as we have stated, as its characteristic fossil a Hamilton and Chemung species, and carries no species, so far as known, allied to pre-Hamilton faunas in other states.

Geological Laboratory of Cornell College, December 28, 1893.

CRETACEOUS FORMATIONS OF NORTHWESTERN IOWA.

BY CHARLES R. KEYES.

(Abstract.)

Until recently little definite information has been accessible concerning the distribution and subdivisions of the Cretaceous deposits of Northwestern Iowa. Strata of Cretaceous age have been recognized from time to time at various points, but, as a rule, little detailed information has been recorded. As early as 1840 Nicollet called attention to certain sections near the mouth of the Sioux river which he regarded as Cretaceous in age. Since that time Cappellini, Marcou, Meek, Hayden, White and others have been through this region. In all these cases the rocks noted were in the immediate vicinity of the Missouri river. White gave more attention, perhaps, to

the Iowa strata than any of the other writers mentioned, and recognized outliers as far east as Guthrie county and as far south as Montgomery county.

Recently numerous deep well records and field observations have shown that the Cretaceous deposits cover a much larger area than has hitherto been recorded. The northwestern fourth or fifth of the State may now be regarded as occupied by deposits of Cretaceous age. White, in considering the Iowa Cretaceous, divided the beds as found in the Sioux river region into the Woodbury shales and sandstones and the Inoceramus beds. As recently shown by Calvin the Woodbury shales are equivalent to the Dakota sandstone and the Fort Benton shales of Meek and Hayden and the Inoceramus beds are the same as the Niobrara of the same authors. Thus three of the formations differentiated by Meek and Hayden are known to be well represented in Iowa. During the past season another formation of the Cretaceous age has been found to extend into Iowa. This is the Fort Pierre shale. It was first noticed in the State by Mr. H. F. Bain, who found it well developed in the vicinity of Hawarden, in Sioux county, where it attains a considerable thickness. The easternmost location heretofore known showing the Fort Pierre beds has been Yankton, South Dakota, at which place the deposits are used largely in the manufacture of Portland cement.

There is another division of the Cretaceous of the upper Missouri valley which Meek and Hayden have recognized. This is the Fox Hills group. It will be seen, therefore, that four out of the five Cretaceous formations of the region are now known to extend into the State of Iowa.

Incidentally it may be mentioned that the Niobrara chalks have been recently recognized as far east as Auburn in the southeastern part of Sac county, eighty miles east of any hitherto reported locality. The Cretaceous deposits have also been extended southward by Mr. E. H. Lonsdale nearly to the Missouri line. The gypsum deposits of Webster county, Iowa, are also thought to belong to this age. It may not be out of place here to mention the fact that in the drift of northwestern Iowa boulders have been found consisting of soft friable ferruginous sandstone, highly fossiliferous, the organic remains being characteristic Fox Hills forms. As remarked by White the presence of the friable sandstone blocks indicates that they are not far removed from their original localities. It would not, therefore, be wholly unexpected should outliers of the Fox Hills group yet be found within the limits of Iowa.

DERIVATION OF THE UNIONE FAUNA OF THE NORTHWEST.

BY CHARLES R. KEYES.

One of the most striking features in the zoological history of the Mississippi basin is the exceedingly rich and varied moluscan fauna, which is characterized particularly by the *Unio* family, including all the common river mussels. The great abundance of individuals, the large number of