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OUTCROP OF CRETACEOUS SANDSTONE IN CHEROKEE COUNTY

E. J. CABLE

The Cretaceous system in Iowa is composed of shales, argillaceous limestones and sandstone, and argillaceous sandstones. The former are generally referred to the Fort Benton horizon of the Colorado, while the latter are placed with the Dakota.

It is not an easy matter to determine with any degree of accuracy the eastern extension of the old Cretaceous shore line in Iowa. This is due to two causes. After the withdrawal of the Cretaceous sea, these soft, friable rocks were exposed to a long, continuous period of erosion by running water. As a result the Cretaceous rocks were removed entirely in places, while in others only remnants of these sediments were left. During the successive ice invasions which followed later, many of these isolated patches of Cretaceous rocks may have been removed, or if not removed, they were buried under a thick mantle of glacial drift. Because of these difficulties, the distribution of the Cretaceous rocks within the state must be determined by information secured through well logs and exposures made accessible through river erosion.

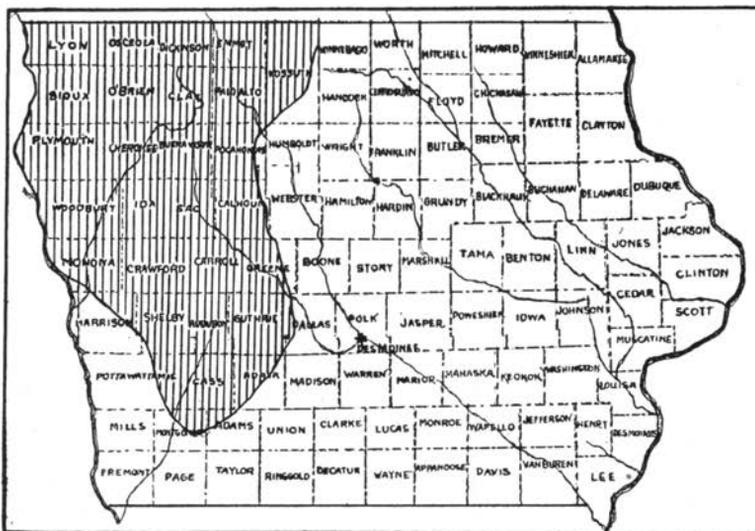
The first man to publish the fact that Cretaceous rocks occur in Iowa was D. D. Owen,¹ although Messrs. Meek and Hayden were the first men to make a detailed study of the Cretaceous rocks of the Upper Missouri, of which Iowa was a part. Figure (1) is a map showing the supposed distribution of the Cretaceous rocks as drawn by C. A. White.²

Figure (2) is a map showing the distribution of the Cretaceous as the result of more recent investigation.

While studying the drift problem in Cherokee county the writer discovered what appears to be an outcrop of Dakota sandstone. The location of the outcrop is in section 17, Silver Township, about one hundred yards to the north and west of a small country cemetery. The outcrop occurs on the top of a knoll and covers an area of several square yards. Diggings were made all around, some distance back from the outcrop, to determine, if possible, the extent. To the east, the rock dipped at a high angle so that it was

¹ Iowa Geological Survey, Vol. I, 1870, p. 285.

² Iowa Geological Survey, Vol. I, 1870, p. 35.



CRETACEOUS ROCKS AS MAPPED BY C. A. WHITE, 1870

Fig. 1

COUNTIES SHOWING CRETACEOUS ROCKS.



Fig. 2

impossible to strike it at the distance of a few yards from the outcrop. On the other sides the dip was gradual as the rock was encountered some distance away at a few feet beneath the surface. The outcrop is, no doubt, an isolated outlier of the Dakota sandstone.

Mr. C. A. White³ describes the Dakota sandstone as found along the Nishnabotany river in southwestern Iowa as follows: "In many places this sandstone contains so much brown oxide of iron as to give it a dark brown color, while in others, the iron acts as a fine cementing material for the sand grains forming hard, brown, irregular layers and concretions in the softer and lighter portions of the rock. Often these portions of the sandstone have the color and appearance at a distance of brown hematite."

The sandstone in Cherokee county is composed of well rounded quartz grains, in places coarse, in others, fine. The entire mass is highly streaked and mottled with iron in such quantity as to give it a distinct brownish-yellow color. Throughout the entire mass are irregularly rounded pieces of brown hematite. This is quite peculiar to the sandstone described by Mr. White. In most of the specimens secured, sharks' teeth were abundant. A few specimens of what appears to be fish vertebrae were also found.

The writer was informed of another outcrop in the vicinity of the one above described. Careful investigation was made but, owing to the fact that considerable slumping had taken place along the stream's bluff where the outcrop had been reported, it could not be located.

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³ Iowa Geological Survey, Vol. I, 1870, p. 290.