

In Tennessee and Kentucky, the Ripley group is represented chiefly by micaceous clays and sand-beds; and, while the thickness is 400' to 500' in Tennessee, it becomes a few scores of feet in Kentucky.

Below it, in southern Tennessee, lie 200' to 300' of beds, sparingly calcareous, representing the Rotten limestone, and at bottom, the "Coffee sands of Safford, 200' thick"; which are Lower Cretaceous. The age of the beds below the Ripley group on the Gulf border, as Stanton remarks, is not clearly defined by the fossils, and the Colorado epoch is therefore not known positively to be represented. The Rotten limestone contains many Ripley fossils. During the Laramie epoch, according to White and Stanton, the Atlantic and Gulf borders were probably somewhat emerged, the Ripley beds being covered directly by beds with Eocene fossils.

#### *Western Gulf Border.*

In Texas, the Upper Cretaceous beds are 2000 feet thick (R. T. Hill). There are sand-beds and clays at base which are non-marine; and above these thick beds of limestone with much chalk, followed by marls and greensand. They extend northeastward into Arkansas, and westward through the Trans-Pecos region and its mountains, to northeastern Mexico, where they occur in the states of Chihuahua, Coahuila, and Tamaulipas, chiefly along the mountain region between Presidio del Norte and Tampico, resting on the Lower Cretaceous conformably, although upturned.

The subdivisions, as determined by Hill, are as follows:—

#### 4. LARAMIE EPOCH.—

*Laramie series in western Texas.*

#### 3. MONTANA EPOCH.—

*Exogyra ponderosa marls*, with glauconitic (or greensand) beds (Navarro beds, Eagle Pass beds) above: chalk, overlaid by marls and greensand.

#### 2. COLORADO EPOCH.—

2. *Austin limestone*, or Austin-Dallas chalk; 300 to 500 feet thick.

1. *Eagle Ford shales*; 500 feet thick.

#### 1. DAKOTA EPOCH.—

*Lower Cross Timber sands*; 300 feet thick.

The beds are marine, excepting the sand and clays of the Lower Cross Timber sands, and some beds of the Eagle Ford shales. The fossils are all different from those of the Lower Cretaceous beds. The Glauconite group contains over 40 species of fossils, identical, according to Stanton, with those of the Ripley fauna, and many also of the species of the Montana group in the Continental Interior.

#### *Continental Interior.*

The Cretaceous beds of the Interior Continental Sea were early studied by Meek and Hayden, and their subdivisions in the main are those still in use.