

PHYSIOGRAPHY OF IOWA

The following is a brief summary of the bedrock history and development of the present surface. At the close of the Cretaceous Period the area which is now Iowa was a land surface. The soft Cretaceous deposits and older rocks were subjected to erosion. During the long Tertiary Period all the land was eroded to a surface with gentle slopes and a relief of about 200 feet. Before the end of the Tertiary time, change in the relative elevations of land and sea caused the streams to be rejuvenated and they developed new valleys. At the new grade, the streams widened their valley floor and weathering reduced the wall slopes to form a more rugged topography than before but still one with moderate slopes and with flat-topped divides at the level of the older surface. The new level is about 200 feet lower; this relief, added to that on the older surface, gives a total relief of about 400 feet. Over such a surface came the first ice sheet of the Pleistocene. The melting of the ice and dropping of the glacial debris left a new surface – a drift surface – superimposed over the bedrock surface. New drainage was inaugurated. This was modified by succeeding ice sheet invasions that buried the new valleys and more deeply covered the preglacial surface.

Today, Iowa is a prairie state having a generally moderate relief and gentle slopes. In some places there are broad uplands, in other places the valley floodplain is conspicuous. In general, the state is well drained by tributaries of the Mississippi and Missouri Rivers at its borders. Some parts of the state show extensive erosion, whereas other parts show little erosion and have distinctive constructional features. It is difficult to say which is the more important in development of the topography – erosion or deposition. However, the origin of the present surface is related very closely to the glacial history of Iowa. Several kinds of topography can be differentiated. The Mankato and Cary drift in north-central Iowa are depositional terrain. So are the alluvial bottoms of the Mississippi and Missouri Rivers and the loess deposit bordering the Missouri River flatland. The Mankato and Cary surfaces have some of the characteristics of extreme youth of the erosion cycle of glaciated area with valleys just being formed and relatively poor drainage. The surface of the Kansan drift area is much more rolling and approaches the stage of maturity. The Iowan and Tazewell surfaces are intermediate in development but probably more erosional than depositional. In the “driftless area” of northeast Iowa the surface is even more mature.