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Book Review: Landforms of Iowa

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Book Review

Landforms of Iowa. Jean S. Prior. 154 pp. University of Iowa Press, 1991.

Many of us are interested in the landscape around us. We ask: Why is this hill so steep or why is that valley so wide? Why does my garden's soil have so much clay? Why does Iowa have no mountains? *Landforms of Iowa* should capture a broad audience of teachers, students, agriculturalists of all sorts, historians, homemakers, naturalists, botanists, biologists, foresters, geographers, civil engineers, as well as geologists and pedologists—in short, just about any Iowan who has ever wondered how and when the landscape at his or her doorstep or outside the car window was fashioned. Its stated purposes are "to awaken an interest in Iowa's landscapes and to develop an awareness of their diversity." It should succeed on both counts.

Jean C. Prior is a senior research geologist at the Iowa Geological Survey Bureau, Iowa Department of Natural Resources, in Iowa City (and currently President-Elect of the Iowa Academy of Sciences). *Landforms of Iowa* is organized similarly to its predecessor, Prior's *A Regional Guide to Iowa Landforms*. (Iowa Geological Survey Educational Series 3; 1976). Following a reflection on how landforms in the state have been assessed in the past and the kind of technology that is currently used for this purpose, Prior presents a brief review of the geological events that have molded Iowa's terrain, from the volcanic activity of Precambrian time to the enormous depositional and erosional activities of several Pleistocene glaciations. Then she describes in an orderly fashion the physiography of each of Iowa's seven landform regions: the Des Moines Lobe, the Loess Hills, the Southern Iowa Drift Plain, the Iowan Surface, the Northwest Iowa Plains, the Paleozoic Plateau, and the Alluvial Plains. The book closes with an annotated list of some 155(!) public areas in the state where landforms may be visited and studied. Photographs, diagrammatic illustrations, and maps are presented throughout.

The focus is on landforms — hills and hill slopes, valleys, terraces, kames, moraines, depressions, escarpments, interstream divides, bluffs, sinkholes, and others. Addressing a general readership, Prior writes little about the technical aspects of landform morphometry and much about the processes that resulted in the land surface we see today. Throughout the text are references to easily accessible landforms such as Ochevedan Mound in Osceola County (a kame), Balltown Ridge in Clayton County (the Silurian Escarpment), and Marietta Sand Prairie in Marshall County (a sand dune). Such references should give the lay reader a sense that the book describes not what can be appreciated only by the trained specialist but what is available to all who can open their eyes and imagine the past. Generously mixed with the geological narrative are brief, relevant discussions of vegetation, soils, and wildlife that, together with the landforms, comprise Iowa's landscape.

For each region, an outline of the scientific reasoning used to interpret landform origins is presented. For example, Prior's descriptions of glacial surges and stagnations, of debris flows and enormous meltwater streams, of proglacial lakes and marooned blocks of ice are offered in a skillful synthesis that is current with contemporary scientific investigations on the Des Moines Lobe. She describes how kettle lakes, prairie potholes, and alluvial lowlands in central Iowa are often extensively linked in surface and subsurface drainage systems — a recent revelation that has profound implications for both groundwater and surface water quality in the region.

While describing the variety of depositional materials in the state, *Landforms of Iowa* also presents the common processes that connect

landform regions to one another. In this regard, Prior justly emphasizes erosion and its impact on topography. She carefully reconstructs the geological and pedological evidence that the southern Iowa Drift Plain, created by multiple glacial advances hundreds of thousands of years ago, has since been altered by headward erosion and dissection along drainageways. Erosion is also central to the evolution of the Iowan Surface and to the Northwest Iowa Plains, which are described as having received an "erosional scrubbing" during the cold, severe climate of the Wisconsinan ice sheet's advance. In her chapter on the Paleozoic Plateau, Prior discusses the topographic control offered by sandstone, limestone, dolostone, and shale bedrocks as well as the superposition of Wisconsinan periglacial colluviation and the filling of valleys tributary to the Mississippi River with slackwater sediments.

Designed and illustrated by Iowa Geological Survey artist Patricia J. Lohman, *Landforms of Iowa* is replete with photographs, illustrations, and maps, contributed by a number of collaborators. There is a large variety of color photographs of landforms, including full-page, half-page, and multiple presentations on a single page. Although the photographs are variable in color quality and sharpness, a few of the aerial photographs are truly stunning. The otherwise excellent photographs of landform materials (e.g., till, loess, alluvium, etc.) should have been provided with scales. Captions on most of the figures are very complete and helpful to the reader. Lohman's color illustrations are perfect for the lay reader. They are balanced for simplicity and accuracy, consistent with descriptions in the text, and reasonably suggestive of the complexity that lies beneath our feet.

State-wide maps are presented to show, among other things, bedrock geology, glacial advances, topographic relief, and scenic public areas. The glossary of terms was expanded from that of the book's predecessor, and some of the definitions are greatly improved as well. For the non-geology audience that would need a glossary, it might have been helpful to identify glossary entries in boldface the first time they were mentioned.

One of the things to like most about this book is its consciousness of previous workers and the evolution of interpretations of Iowa landforms. Each chapter opens with a brief, eloquent description of an Iowa landscape, typically written by one of the research geologists who "surveyed" the state in the late nineteenth or early twentieth century. Prior's text is also an eloquent one, eminently organized and informative, yet wrapped in familiar descriptive terms that invite the reader to imagine churning meltwater streams, thick clouds of loess, or rolling swales of prairie grass. Clearly, Prior shares with those early geologists a reverence for and joy in the landscape and its stories.

I am always surprised when I talk to friends who, having driven through Iowa, tell me that the scenery was flat and featureless. I think: Were their eyes open? Have they no imagination? Or is it simply a matter of training the eye and the mind to "see" what we normally "look at"? Perhaps Iowa is not the state for those who must be knocked over by a mountain to recognize a landform or who must swim in the ocean to appreciate the influence of depositional and erosional processes scaled larger than human dreams. But for the many who see beauty in the evening-shadowed shape of a rolling hayfield or for those who seek to understand the larger ecological and evolutionary context of landscape changes wrought so recently by human beings, Iowa has much to offer. Jean Prior's book is an excellent point of departure for that journey of appreciation and understanding.

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