

How Rocks are Named

To identify layers of rock, geologists have created several categories, the most common of which are called formations, groups, and members. In the same way that biologists use the categories of families, genera, and species to identify animals and plants (*Homo sapiens* is a familiar genus and species), geologists use formations, groups, and members to distinguish one rock layer from another.

The basic unit in this system of classification is the formation. A formation is a rock unit that has a distinctive appearance—in other words, a geologist can tell it apart from the rock layers around it. Formations must also be thick enough and extensive enough to plot on a map.

The **sedimentary rocks** of Kansas have been formally divided into many different formations, each named for the geographic locality where it was first recognized and described. The Oread Limestone, a formation common in eastern Kansas, was named in 1894 by Erasmus Haworth, the first Director of the Kansas Geological Survey, for outcrops on Mount Oread, the hill on which the University of Kansas is located. A familiar formation in central Kansas, the Dakota Formation, takes its name from a county in Nebraska, where it was first described. A rock formation keeps its name no matter where it is found.

Another important thing to remember about formations is that they often encompass a variety of rock types. For example, the Dakota Formation, although often associated with sandstone, also includes clay and shale layers. And the Oread Limestone, despite its name, contains layers of shale as well as limestone.

Formations can be lumped together into larger units called groups. For example, the Chase Group, which crops out at the surface in the Flint Hills region of Kansas, includes several different formations deposited during part of the **Permian Period**.

Formations can also be subdivided into smaller units called members. For example, the Oread Limestone is divided into seven such members. One of these, the Leavenworth Limestone Member, is a

foot-thick layer that can be traced for hundreds of miles. It was named for outcrops near Leavenworth, Kansas. Like formations, members keep their name no matter where they are found in Kansas.

Members make up formations. Formations make up groups. And the rocks of different groups are included under one system, according to the age of deposition. Thus, the Leavenworth Limestone Member is part of the Oread Formation, which is part of the Shawnee Group, which is part of the Pennsylvanian System.

When geologists propose a new name, they must publish a formal description of the rock unit and the location of the type locality. The procedures for classifying and naming rock units are contained in the North American Stratigraphic Code, prepared by the North American Commission on Stratigraphic Nomenclature (www.agiweb.org/nacsn/).

Glossary

Permian Period—The interval of geologic time from 290 to 245 million years ago. In Kansas, rocks from the early part of the Permian include many of the limestones and shales that form the Flint Hills; later Permian deposits include the red beds of south-central Kansas.

Sedimentary Rocks—Rocks formed from sediment, broken rocks, or organic matter. Many sedimentary rocks are formed when wind or water deposits sediment into the layers, which are pressed together by more layers of sediment, forming underground beds of rocks.

Sources

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