

# **Walther, Johannes (1860-1937)**

## **Encyclopedia Article**

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# Walther, Johannes (1860-1937)

*German geologist*

Johannes Walther (1860–1937) was instrumental in the development of **stratigraphy**. Walther's two-volume work, *Modern Lithogenesis*, published in 1883 and 1884 was a pioneering work in classical sedimentary analysis.

Walther asserted that proper analysis of sedimentary facies could reveal important clues regarding the formation and movement of **rock**. Sedimentary facies are layers within a particular formation that are different in sedimentary history from surrounding layers within the same **area**. Facies may show vertical differentiation, lateral differentiation, or both characteristic differences. The differentiation defining a facies may be either lithological or paleontological.

Walther advanced the ontological method in the analysis of facies stratigraphy. Walther was an avid naturalist, devoted to fieldwork. His data reflected a passion for linking current observation to geologic history.

Near the turn of the century, Walther advanced what is now known as the Walther Facies Rule. Because sedimentary facies show vertical sequence **superposition**, a vertical progression of facies will reflect lateral facies changes. Sedimentary layers or rocks essentially preserve the environment of their deposition. These **depositional environments** change and the old depositional layers shift laterally and may transgress (become superimposed) on surrounding deposits. Regardless, these chronologically transgressive layers will show similar vertical and lateral succession. Walther's rule thus related lateral facies changes to vertical changes (vertical succession). Walther's rule provided a powerful explanation that facies and surrounding deposits change and shift laterally as Earth's surface undergoes change and that lithostratigraphy often reflected layers and formations that can not always be accurately used to date the formations (e.g., where **unconformities** exist). In essence, Walther's rule placed a limit on lithostratigraphic analysis and placed additional reliance upon paleontological analysis of the **fossil record**.

Walther's work was not immediately put to wide use, and Walther suffered the same isolation experienced by many German scientists in an early twentieth century and post World War I environment often hostile to Germany and German scientists. Ultimately Walther's work was appreciated for its wealth of data regarding sedimentary processes and sedimentary facies.

Walther's advancement of facies analysis ultimately proved highly useful in the prediction of formations that might contain **petroleum**, specific minerals, or ores of economic value.

Walther was also an avid and accomplished painter of natural scenes.

## See Also

Dating Methods; Marine Transgression and Marine Regression; Petroleum Detection; Sedimentary Rocks; Sedimentation