IUGS International Commission on the History of Geological Sciences (INHIGEO)

"Anniversaries": Facies, a geological concept (1838-2018) — 180 years ago

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The Swiss naturalist Amanz Gressly (1814-1865) introduced the term *facies* as a new geological concept 180 years ago. Gressly (Fig. 1) was born on 17 July 1814, in Bärschwil (canton Soleure [Solothurn], Switzerland), and passed away on 13 April 1865, in Waldau's Psychiatric Hospital (on the outskirts of Bern).
At first, he went to Strasbourg in 1834 to study medicine, but he finally switched to geology under the influence of some naturalists, mainly Jules Thurmann (1804-1855), who was doing research on the Jura mountains (his native region), and also Louis Agassiz (1807-1873) and his studies on glaciology. The main fieldwork on the Jura was carried out over several years by Gressly, known in that time as "le géologue jurassien" (the Jurassic geologist). In 1838 he published his *Observations géologiques sur le Jura soleurois*, a long paper wherein the term *facies* was introduced into geology, in his own words:

> «...d'abord il est deux faits principaux, qui caractérisent partout les ensembles de modifications que j'appelle *facies* ou *aspects de terrain*: l'un consiste en *ce que tel ou tel aspect pétrographique d'un terrain quelconque suppose nécessairement, partout où il se rencontre, le même ensemble paléontologique*; *l'autre*, en ce que *tel ou tel ensemble paléontologique exclut rigoureusement des genres et des espèces des fossiles fréquents dans d'autres facies*»[*] (Gressly, 1838, p. 11; original italics).

Although Gressly did not specify the etymology, he was obviously using the Latin word *facies* (from *facio*: face), meaning *external appearance*, *form*, *aspect*, *condition*.
Some authors (from Teichert, 1958) have held that the term *facies* was introduced into geological literature by Nicolas Steno (1638-1686) in his *Prodromus* (1669). Because Steno's work is written in Latin, the term *facies* appears in it, but Steno's meaning differs from that of Gressly. Steno's use only refers to the external aspect of rocks and mountains, excluding fossils, and does not of itself possess any historical significance.

[*] «...firstly, there are two main facts, which characterize all the modifications that I call *facies* or *appearances of terrain*: the one consists *that a certain petrographic appearance of any terrain, wherever found, supposes necessarily the same palaeontological assemblage; the other* is that *any palaeontological assemblage excludes rigorously the classes and species of fossils which are usual within other facies*» (my translation).

Fig. 1. Amanz Gressly, after a drawing by Auguste Bachelin in 1864 (*in* Gressly, 1837-1841, frontispiece) [Public Domain].

Gressly's concept of *facies* was immediately accepted by naturalists everywhere, although later in the 19th century its usage among geologists, petrologists, palaeontologists, and even ecologists differed, causing a certain confusion in the definition. The concept of *facies*, however, as originated by Gressly, has allowed the deduction of both the environment and the conditions of formation of sedimentary rocks according to their petrographic features and associations of fossil groups. It has enabled the study of the depositional and palaeogeographic setting of sedimentary units. Furthermore, this combination of lithological and palaeontological data has contributed a profound historical perspective to Stratigraphy. In fact, the term *facies* has become a key (with the ideas of *change*, *causal succession* and *chronology*) to understanding the concept of geological time By pointing out the assemblage of strata and rocks, together with fossils, as pages and words in the Book of Nature, the concept of *facies* has made it possible to read, interpret, understand, and even reconstruct, with a historical sense and as a whole, the past of the Earth within the methodology of causality with an actualistic view.

For more information

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