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Palaeozoic Conodonts

(Review)

Conodonts are widespread in Palaeozoic sequences. They are the isolated remains of free-swimming pelagic as well as benthonic or even near-shoreliving animals. However, in a recently published paper G. SEDDON & W. SWEET suggested a modified ecologic model for conodonts as small planctonic animals, different species of which were segregated by depth stratification. As the investigations of the last 20 years have shown, these microfossils are due to their rapid evolution very valuable for dating and mapping the beds, in which they locally occur in great numbers.

Conodonts range in size of less than 1 mm up to 5 mm. They are composed of calcium phosphate and can therefore be obtained from limestones through solution of the latter in acetic acid, whereas they will dissolve in other acids, for example hydrochloric acid. They also may be observed on bedding planes of shales or cherts, where they are preserved as moulds or fragments. They may be easily recognized with help of a magnifying glass and sometimes even be determined in the field.

With regard to the morphology of conodonts three principal types can be distinguished: simple, compound (blade-like) and platform conodonts. Simple conodonts are the oldest ones and occur in the upper part of the Middle Cambrian for the first time. They are widespread throughout the Palaeozoic with a great variability. Compound conodonts can be genetically derived from simple ones. They are characterized by lateral processes or denticles in addition to the main cusp of the simple conodonts. Their first occurrence is in the very early Ordovician. In various stages they are of great stratigraphic value. The platform types are generally derivable from compound conodonts, in which specific morphologic elements are widened and emphasized. Due to their rapid evolution these types are guide-fossils for parts of the Ordovician and younger systems. Especially in the Silurian and Devonian, as well as in the Carboniferous of North America and Europe conodont-zonations have been introduced on the base of the biozone concept. The worldwide validity of these zones

has often been checked and partly revised by finds of megafossils in the meantime.

During the short review on Palaeozoic conodonts the techniques of conodont research will be studied and then an attempt will be made to determine some important genera of the Ordovician, Silurian, Devonian and Carboniferous by following LINDSTRÖM's key to the conodont-genera.

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Macro- and Micropalaeontology as a basis of a modern stratigraphy of the Tertiary

The historical subdivision of the Tertiary was based upon marine mollusc faunas and continental vertebrates. This stratigraphy by means of faunal associations is sufficient for subdivision into bigger units, it does not suffice, however, for modern conceptions of a detailed Tertiary Stratigraphy.

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