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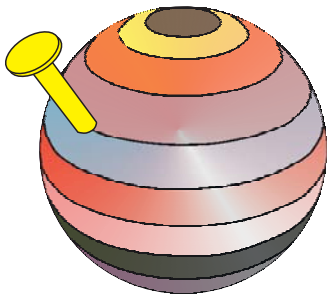

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Conodonts in Ordovician Chronostratigraphy

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Although the study of conodonts was initiated by Pander's 1856 monograph, pre-1900 conodont investigations were few, restricted to northern Europe and North America, and not concerned about the potential biostratigraphic value of these fossils. Although primarily of taxonomic nature, the pioneer studies by Branson and Mehl and Stauffer in North America during the 1930s represent the beginning of the use of conodonts as guide fossils but no formal zones were introduced for the Ordovician anywhere in the world until in the 1960s, which represents the beginning of the modern era of conodont biostratigraphic research. The revolutionary change from form taxonomy to multielement taxonomy also took place at this time. Because the striking provincialism exhibited by Ordovician conodonts, separate biostratigraphic classifications were necessary for Baltoscandia, North America, and some other parts of the world. The first formal conodont zone classification of the Ordovician was established in Baltoscandia around 1970 whereas at that time, 17 numbered units, referred to as 'Faunas', were recognized through the Ordovician in North America. A milestone volume, published in 1971 and entitled 'Conodont Biostratigraphy', provided a broad summary of the conodont biostratigraphy known at that time. The Baltoscandic zone scheme presented in that volume, which was based largely on changes in evolutionary lineages, has subsequently undergone only minor changes. The number and scope of the North American 'Faunas' were somewhat modified during the late 1970s. In the late 1970s and early 1980s, Sweet introduced a classification of Middle and Upper Ordovician chronozones based on graphic correlation, and in 1984, he also proposed an alternative biozonation of the Darriwilian through Katian interval that included 17 named biozones based on the first appearance of index taxa. This classification has been used mainly in the North American Midcontinent. The Baltoscandic zonal scheme, which includes 17 zones and 8 subzones, has been closely tied to graptolite zones and recently also to $\delta^{13}C$ and Sr chemostratigraphy. It has, locally slightly modified, also been used in, among other key regions, Argentina, China, United Kingdom, and Australia. The great importance of conodonts in Ordovician chronostratigraphy is shown by the fact that conodonts are used for the definition of two of the seven global stages, and seven of the 18 stage slices, now recognized within this system.