

Present data on the Devonian/Carboniferous boundary in
Western Europe

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Several sections showing sequences near the Devonian/Carboniferous boundary in northern France, Belgium and western Germany, have been studied in detail by many specialists. Those situated in the northern belt of Hercynian strata in the Ardennes and the Rheinisches Schiefergebirge are abundantly fossiliferous, and are particularly useful for the recognition of this boundary (figs. 3 and 4). The intensive study of these sections has demonstrated the distinct change in the development of the fossils they contain. The successive incoming of several new species of cephalopods and trilobites near the Devonian/Carboniferous boundary is as useful for stratigraphy as that of the more prolific microfossils -- spores, foraminifers and conodonts (figs. 1 and 2).

At the Heerlen Congress, in 1935, the Devonian/Carboniferous boundary had been placed at the first appearance of the goniatite Gattendorfia subinvoluta; this boundary can be seen in the railway cutting in Oberrödinghausen (Congr. Stratigr. Carbonif., C.R. vol. 1, p. 7-8). In 1971, the Subcommission on Carboniferous Stratigraphy accepted as a desirable basis for discussion a boundary as close as possible to the base of the Gattendorfia subinvoluta Zone. For this purpose, the first appearance of Siphonodella sulcata was considered (Congr. Stratigr. Géol. Carbonif., C.R. vol. 1, p. 177-178). The first appearance of Siphonodella sulcata seems to be a definite character, because this element was derived from Siphonodella praesulcata (SANDBERG et al., 1972). However, as this element is rare and

Verschlag von Mennel (1921)

locally absent in many of the NW European sections, the first appearance of Protognathodus kuehni might be used as a complementary indication, because it coincides with the first appearance of Siphonodella sulcata (SANDBERG et al., 1972). -- It seems reasonable to underline the fact that the base of the Wocklumeria Zone (or Stage) as defined by SCHINDEWOLF (1937, p. 20) is placed in the lower part of the Kiddle Bispathodus costatus Zone.

Siphonodella sulcata and Protognathodus kuehni appear about at the same time that a marked change takes place in other groups of fossils: a "Devonian aspect" changes into a "Carboniferous aspect". These faunal changes seem to offer a workable approach to delineate the position of the System boundary -- nevertheless it cannot be accepted as a principle for its definition, because the simultaneous first appearance of several groups of organisms depends upon the interaction of different conditions -- viz. changes in climate, palaeogeography, current directions, appearance and disparition of faunal and floral barriers -- which we are generally unable to define.

Until now, studies have been concentrated in rock sequences and their cephalopod, trilobite and microfossil record. It might be useful to extend these studies to other sections and other fossil groups. It will be a task for the working group on the Devonian/Carboniferous boundary to select and to propose the definition

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