platform (Sp) element is the most characteristic. The Sp element is most commonly gondola-shaped, but more blade-like („naked") forms are present in some units with or without broadly platformed elements. The relationship between the two kinds of Sp elements is uncertain in most cases (von BITTER and MERRILL, 1980).

Gondolella is the most environmentally restricted Carboniferous conodont that can be called „abundant", occurring in great numbers in the few units and generally small aggregate thickness where it occurs. In addition to the sharply restricted *Gondolella*-biofacies, we now recognize microbiofacies within it involving broad and „naked" platforms.

The phylogeny of *Gondolella* features iterative developments of „naked", simple broad, and complex broad platforms. In our collections of middle and Upper Carboniferous conodonts (uppermost Atokan or lowermost Desmoinesian through middle Virgilian) the following species are recognizable and restricted: *gymna, laevis,* n. sp. a, *bella, magna, elegantula, symmetrica, „symmetrica", merrilli,* n. sp. b, n. sp. c, n. sp. d, and a new species that is in press. We offer these as the basis of a tentative biostratigraphic zonation subject to the following qualifications. First, these „zones" are sharply controlled by environments *externally* and possibly *internally* as well. Second, this zonation leaves a substantial part of the Upper Carboniferous and Lower Permian *outside* the zonation and the majority of the section *within* the zonation does not contain *Gondolella.* Third, these intervals leave large gaps in the phylogenetic synthesis that complicate taxonomy.

Ordovician Conodont Zonation and Paleogeography of the Canadian Arctic.

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Over the past decade extensive conodont collections have been made from Ordovician strata in the Canadian Arctic. Limited material is available from the Franklinian eugeosynclinal deposits and from those of the Pearya Geanticline on its northern flank. Over 40,000 conodonts have been recovered from the widespread carbonate-evaporite facies that exceeds 3000 m in thickness in the Franklinian Miogeosyncline, which extends for over 2000 km into northern Greenland, and that thins to less than 1000 m in the platform sequence of the Arctic Lowlands.

The conodonts present in the miogeosyncline-platform sequence belong to the Midcontinent Province. An apparently continuous Ordovician sequence is present in the miogeosyncline and a succession of twelve conodont zones is proposed for the Lower and early Middle Ordovician strata. These zones are primarily assemblage zones and can be traced throughout the miogeosyncline and platform deposits and most are recognizable in other parts of North America. The zones are a replacement for the succession of Faunas defined by SWEET, ETHINGTON and BARNES in 1971.

The conodont faunas have enabled accurate correlations to be achieved throughout the Arctic for these generally sparsely fossiliferous strata. A series of paleogeographic maps has been developed which illustrate the changes in the carbonate and evaporite facies in relation to the main structural features for each of ten stages during the Ordovician.

Problems and Models of Conodont Reworking in the Upper Devonian of the Alps.

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Large scale submarine reworking of fossils may be related to either turbidity currents or to storm events transferring material from the shallow shelf to the basin. Such processes usually imply vertical (stratigraphic) reworking, but in a few cases produce only lateral reworking (actually within the time span of a subzone). In both cases analyzing pattern of reworking may provide useful information about sedimentation and environment.

An Upper Devonian pelagic carbonate sequence with allodapic intercalations and large amount of intraclastic micrite breccias from the base of the lowermost *Polygnathus asymmetricus asymmetricus*-Zone (do I α, Lower Frasnian) to the base of the Upper *Palmatolepis gigas*-Zone (do I δ, Upper Frasnian) has been studied. Within this interval the standard zonal sequence is practically undisturbed at

the zone as well as the subzone level, with exception for the Upper *asymmetricus*-Zone which seems to be missing. However, distribution patterns are markedly uneven or discontinuous and ranges of some important species are reduced by later appearance or partly postponed with regard to the zonal scheme. Moreover, mature specimens are usually broken whereas complete specimens are often only juvenile forms.

On the other hand all the sections in this area are continuous with minor submarine erosional gaps truncating less than few cm of sediment, which are negligible in respect to the tickness of any subzone.

It is therefore assumed that this kind of reworking preserving the original stratigraphic polarity took place by repeated, frequent resuspension of a thin layer of unconsolidated sandy-silty carbonate material through the distal part of the shelf to the adjacent basin.

Perm-Conodonten in Slowenien (NW Jugoslawien).

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In den letzten Jahren wurden folgende fossilführende Oberkarbon- und Permschichten Sloweniens auch nach Conodonten untersucht: 1. die mergeligen Kalke mit gesteinsbildenden *Rugosofusulina alpina antiqua* (oberes Oberkarbon), 2. die unterpermischen Pseudoschwagerinenkalke mit der zahlreichen *Schwagerina carniolica,* 3. die Neoschwagerinenkalke mit gesteinsbildenden Neoschwagerinen, 4. die tiefsten Oberperm-Mergelkalke mit *Palaeofusulina nana* und einer reichen Brachiopodenfauna *(Linoproductus, Leptodus, Chonetes,* u. a.), 5. die Oberpermkalke mit sehr häufigen Brachiopoden der Gattung *Tyloplecta* und 6. die oberpermischen Bellerophonten-führenden Kalke. Alle diese Kalke erwiesen sich conodontenleer. Andererseits lieferten die Kalkeinschaltungen in den unterpermischen Argilliten westlich von Solčava in den Ostkarawanken eine gut erhaltene Conodontenfauna. Das Plattformelement ist durch zahlreiche *Gondolella slovenica* n. sp. vertreten; die ramiformen Elemente stellen enantiognathiforme, hindeodelliforme, ozarkodiniforme, ? pollognathiforme und prioniodiniforme Elemente und ein hibbardelliformes Element dar. Als Plattformelement kommt auch *Anchignathodus minutus* vor.

Ein hohes unterpermisches Alter der ganzen Schichtfolge, bestehend überwiegend aus dunkelgrauen Klastiten und charakteristischen verschieden farbigen Kalkeinschaltungen beweisen auch die hochentwickelten Pseudofusulinen, höchstwahrscheinlich *P. rakoveci.* Aus diesem Abschnitt des Unterperms sind bisher in Jugoslawien und in Südeuropa noch keine Conodonten bekannt.

Early Ordovician Fused Conodont Clusters from the Western United States.

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Excellently preserved fused clusters of conodonts from the Lower Ordovician in Nevada add new knowledge about the form, function, and taxonomy of these apparatuses. Clusters of euconodonts as well as protoconodonts were found, but occurrences of the latter are much more common. Several lines of evidence point to the conclusion that the fusion, by phosphate mineral(s), was diagenetic (probably very early post-mortem) rather than biologic. Fusion of externally secreted euconodont elements was necessarily post-secretion. Internal and external phosphate crusts vary in thickness from specimen to specimen and fusion may be between adjacent external crusts rather than between adjacent elements s e n s u s t r i c t o . These and other protoconodont clusters are from continental slope/rise sediments rich in diagenetic phosphate. One of the specimens is a partial apparatus of *„Prooneotodus" tenuis* (MÜLLER) in the „parallel reversed" orientation. Interfingering of individual elements in this cluster occurred before fusion, indicating that the elements were laterally discrete during life. Fused clusters of *Oneotodus* sp., *Proconodontus notchpeakensis* MILLER, and *Cordylodus lindstromi* DRUCE and JONES are the oldest known clusters of euconodonts. *C. lindstromi* is represented by three elements of the nominate form species that are juxtaposed laterally and form a nested series of straight, curved, and strongly curved bars. The basal plates are preserved and also are fused laterally. Remnants of probably three other oppositely tapering elements indicate that this partial apparatus was situated, and probably operated, in opposition to another one. The cluster also shows that bar curvature and exter-