Doliognathus, Eotaphrus, Gnathodus, Protognathodus, Pseudopolygnathus, and *Scaliognathus* – are revised, and 5 species and 17 numbered morphotypes of 7 previously known species are described as new. Between the highest range of *Siphonodella* and lowest range of *Cavusgnathus* (in North America) and *Gnathodus bilineatus* (in Europe) a zonation is proposed to consist in ascending order, of the Lower and Upper *typicus-*, *anchoralis-*, *latus-*, and *texanus*-Zones. Taxa proposed by COOPER (1939) and VOGES (1959) are reidentified.

Organic Metamorphism and Thermal Maturity of Paleozoic Strata of Southern Ontario Based on Studies of Conodont and Acritarch Altèration.

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Micropaleontological studies were undertaken to establish the burial temperature of the Paleozoic sedimentary sequence in southern Ontario through investigation of colour alteration of conodont and palynomorphs. Over 800 samples were used from both surface and subsurface localities that penetrated various units of Ordovician, Silurian and Devonian age in the subsurface.

Three thermal alteration zones are recognized along the surface and in the subsurface. The first extends from the top of the Paleozoic sedimentary sequence to depths extending into Upper Middle Ordovician strata. In this zone, the conodont alteration index (CAI) is 1.5 and reflects a burial temperature of 60–80°C. The second zone includes the remainder of the Ordovician section in southwestern Ontario and part of the Ottawa Valley in eastern Ontario. The CAI values for this zone lie in range 2–2.5 and suggest burial temperatures of about 80–90°C. Superimposed on this broadscale thermal alteration pattern that reflects burial depth, are several areas with higher alteration indices of 2.5–3 in the Ottawa Valley. These are interpreted as being the result of unusually high heat flow related to Cretaceous rifting that produced the Ottawa-Bonnechère graben. Study of acritarchs shows three changes in colour from light to dark yellow, to orange and dark brown within the zone defined by CAI 1.5.

The micropaleontological studies of thermal maturation have also been integrated with studies of the geochemistry and carbon isotope composition of Ontario's natural gases. The carbon isotopic composition indicates that most gases appear to have been generated from mature and overmature source rocks outside of southern Ontario.

Late Bashkirian – Early Moscovian Conodonts in a Section of the Cantabrian Mountains (Spain).

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Several conodont faunas were collected in a section composed essentially by gray coloured limestones.

This section consists of 120 m of gray massive limestones (upper part of Valdeteja Formation), followed by 114 m of dark-gray thin bedded limestones with interbedded shales and chert at its basal 50 m and gray massive and bioclastic limestones in the uppermost 64 m (lower part of Caliza de Picos de Europa).

Platform conodonts are dominant. The genera are mainly composed by species of *Declinognathodus, Gondolella, Idiognathodus, Idiognathoides* and *Neognathodus,* among them, *Idiognathodus* and *Idiognathoides* are the most abundant genera.

Phylogeny and Biostratigraphy of the Conodont *Gondolella* (Carboniferous-Permian), Eastern and Central North America.

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Gondolella STAUFFER and PLUMMER, 1932 (type-species G. *elegantula,* O. D.) possessed a multielement apparatus consisting of as many as seven kinds of elements (von BITTER, 1976) of which the

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