Kamenička 6/V, P. O. Box 227, YU-11000 Belgrad.

While Triassic conodonts are recently increasingly studied in Yugoslavia, with notable results, conodonts are little referred to as typical fossils of the Triassic. In the present report, results of stratigraphic and biostratigraphic analyses of Triassic sediments are considered, based on the studies of conodonts in the country of the Inner Dinarides of Yugoslavia, which confirmed the extraordinary significance of conodonts for detailed stratigraphic or biostratigraphic division of Triassic formations in Yugoslavia.

The Inner Dinarides (Dinaric eugeosyncline) is a tectonic unit on the territory of Yugoslavia bounding, according to M. ANDJELKOVIĆ (1977, 1980) on the Central Alps and Pannonides in the north, the Shumadides in the east, Central Dinarides in the west, and the Helenides in the south-east. Within these boundaries, the Triassic has an extensive distribution and is characterised by terrigenous material, carbonatic rocks, and volcanogeno-sedimentary formations, and by development of an Ophiolite-Radiolarite complex.

In Lower Triassic (Campilian substage) carbonatic rocks, conodonts are identified in west (Gučevo Mountain) and south-west (the Uvac River canyon) Serbia. Conodont microassociation in Gučevo Mountain (Brasina) is very rich. Its location enabled a precise biostratigraphic subdivision of the Campilian substage (K. BUDUROV and S. PANTIĆ, 1974).

The conodont richest sediments of the Middle Triassic are red Bulog Limestones of the Anisian stage, located in Bosnia and Herzegovina (Han Bulog, Haliluci, Trebević Mountain) and in Serbia (the Uvac River canyon). Diverse and rich in number of species and individuals, conodont microassociation of red Bulog Limestone includes forms of middle (Pelson) and upper (Illyrian) Anisian Stage, and contain far less abundant conodont species typical of younger Triassic sediments.

In several localities of central Slovenia, Ladinian conodont fused clusters have been found representing portions of *Pseudofurnishius murcianus* natural assemblage (A. RAMOVŠ, 1978). It was the first natural conodont assemblage found in Yugoslavia, that opened the ways to new modes of conodont investigation in this country.

Among sediments of Upper Triassic in the Inner Dinarides, conodonts are found in the Carnian and Norian stages and none in the Rhaetian stage. Carnian and Norian formations of Slovenia (the Mirna River valley, Šmarjetna Gora), Bosnia and Herzegovina (Draguljac, Ravne-Brus), Montenegro (proximity of Pljevlje) and west Serbia (Gučevo Mountain) could be subdivided stratigraphically and biostratigraphically in detail by conodont identification. The results are particularly notable in localities near Pljevlje, Sarajevo and Gučevo Mountain (M. SUDAR, 1979, D. UROŠEVIC and M. SUDAR, 1980), where conodonts are used to document Carnian and Norian formations (uniform series of limestones with cherty nodules and neritic limestones) which were considered before it the Ladinian or transitional from the Ladinian to the Carnian.

Fused Clusters of Paraconodonts

By H. SZANIAWSKI

Polska Akademia Nauk, Zakład Paleobiologii, Al. Żwirki i Wigury 93, Pl-02–089 Warszawa.

Fused clusters of *Prooneotodus? tenuis* are comparatively often in the subsurface Upper Cambrian of northern Poland. Comparative anatomical study shows that they have strikingly similar structure to the grasping apparatus of recent Chaetognatha. The similarity involves the shape, details of morphology, internal structure and manner of growth of isolated elements as well as construction of the whole apparatus. The inner structure of *P. ? tenuis* elements is the same as in „protoconodonts" investigated by BENGTSON (1976). Chaetognath grasping spines are also constructed of three layers. Although the thickest, middle layer, having lamellar structure in „protoconodonts", has a fibrous structure in chaetognath spines, but the fibrills are arranged in laminae. Protochaetognatha grasping spines (= *P. ? tenuis* and possibly other „protoconodonts") are known only from Cambrian and Tremadocian probably because they were then composed partly of calcium phosphate and/or there were exceptionally good conditions for secondary phosphatization.

Natural assemblages of *Prooneotodus gallatini* and juvenile *Furnishina* ? co-occur with *P. ? tenuis* in the Upper Cambrian of Poland. They, for the most, are preserved in clusters composed of two elements only and their complete skeletal apparatuses can not be reconstructed as yet. In both types of the clusters the elements contact with fragments of their bases. In *P. galletini* the elements differ slightly in

shape while the elements of *Furnishina*? differ in size.

Conodont Zonation and Paleoecology in the Silurian of Estonia.

By V. VIIRA

Institute of Geology, Academy of Sciences, Tallinn, Estonian SSR.

Conodonts are widespread in all facies of the shelf and slope area of the Paleobaltic basin. But only four European conodont zones have been identified: *celloni* (Adavere Stage), *amorphognathoides* (the uppermost Adavere and the lowermost Jaani Stages), *sagitta* (subspecies *sagitta* in Jaani and lower Jaagarahu and Rootsikula Stages), *eosteinhornensis* (Kuressaare, Kaugatuma and Ohesaare Stages). There are no distinct European zones in the Baltic Ludlow.

The conodonts from the Jaani and Jaagarahu Stages resemble the Clarita Formation, Oklahoma ones. As in the case of the latter, in Estonia the *amorphognathoides*-Zone is followed by the *ranuliformis*-Zone (in Jaani and lower Jaagarahu Stages). In the middle Jaagarahu specimens similar to Pa element of *Kockelella amsdeni* occur.

In the shallow water facies of the late Wenlock Rootsikula Stage there is only one multielement conodont *Ctenognathodus murchisoni,* considered as the index-species of a local zone.

Ludlow Paadla Stage and Přidoli Kuressaare, Kaugatuma and Ohesaare Stages are dominated by multielement genus *Ozarkodina: O. confluens, O. excavata, O. steinhornensis eosteinhornensis* (only Přidoli). Spathognathodontan elements of *Ozarkodina* are abundant and variable, there is possible to distinguish some subspecies and morphotypes useful in local correlations.

The upper Paadla Stage is marked by occurrence of *Pelekysgnathus dubius* and may be correlated with the uppermost Hemse Beds of Gotland. Specimens similar to *O. crispus* are found in the uppermost beds of Paadla Stage.

There are differences in conodont distribution in the five facies belts of the Paleobaltic basin. Characteristic are: in the lagoon facies *C. murchisoni,* in the shoal-inshore and open shelf facies abundant conodonts, especially multielement species of *Ozarkodina, Oulodus* etc., in the slope facies *Pterospathodus amorphognathoides, Panderodus,* etc.

Conodont Metamorphism: Grain Size – Temperature Relationship

By G. FLAJS

Institut für Paläontologie, Universität, Nußallee 8, D-53 Bonn, FRG.

Grain size of recrystallized apatite on the surface of metamorphic conodonts have been studied in the Harz Mts. by means of SEM. The conodonts are derived from an Upper Devonian section from the contact zone of the Variscan Oker Granite to slightly metamorphic regions of the surrounding sedimentary sequence. They represent the metamorphic grade ranging from CAI 5 to CAI 7.

Mean grain sizes vary from 3–5 μ in the contact zone to about 0,5–0,8 μ of almost unaltered conodonts in a distance of 5–6 km from the intrusive. Preliminary results show a clear relationship between grain size and temperature of the metamorphic event. However, grain sizes as well as conodont colours evidently depend on primary carbonate petrology and carbonate chemistry. Presumably, grain size analyses provide more reliable data of higher metamorphic conodonts than do conodont colours.