

has often been checked and partly revised by finds of megafossils in the meantime.

During the short review on Palaeozoic conodonts the techniques of conodont research will be studied and then an attempt will be made to determine some important genera of the Ordovician, Silurian, Devonian and Carboniferous by following LINDSTRÖM's key to the conodont-genera.

### Selected Conodont-literature

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## Macro- and Micropalaeontology as a basis of a modern stratigraphy of the Tertiary

The historical subdivision of the Tertiary was based upon marine mollusc faunas and continental vertebrates. This stratigraphy by means of faunal associations is sufficient for subdivision into bigger units, it does not suffice, however, for modern conceptions of a detailed Tertiary Stratigraphy.

A modern biostratigraphic subdivision is based in the first place upon nannoplankton and evolutionary lines of planctonic foraminifera; these are regarded as biostratigraphic indicators of primary importance. They are, however, since climatic zones are already prominent in the Tertiary, restricted to tropical and subtropical regions of sedimentation.

In marginal regions only a few of those planctonic zones are well established. In order to be able to subdivide also intervals between those intercontinental planctonic biozones, local or regional evolutionary lines of various groups of macro- or microorganisms are used, most of them benthonic, in marine as well as in non-marine sediments.

The Central Paratethys is such a region of sedimentation, including marine, brackish, limnic, fluvial and terrestrial sediments. Subdivision of these neogene sediments serves as an example for the manifold possibilities of modern detailed biostratigraphical analysis, based upon combination of micro- and macropalaeontology.

Dr. H. STRADNER, Geol. Survey of Austria

### Nannoplankton Stratigraphy

Plates and excerpts from recent papers dealing with the stratigraphic value and the zonation of nannofossils (coccoliths and discoasters, nannonids etc.) were distributed and discussed during the lecture.

For more detailed information on the standard Calcareous Nannoplankton Zonation of the Tertiary and the Quaternary the paper by E. MARTINI in the Proceedings of the II. Planktonic Conference Roma 1970 is to be consulted.

At present papers on nannoplankton stratigraphy are in press by THIERSTEIN (Switzerland) and MOSHKOVITZ (Israel). Also see the Initial Reports of the DSDP (Glomar Challenger), especially the reports by the shipboard nannoplankton paleontologist and by DAVID BUKRY (USA).

(See also review on page 132 of this report.)

### 1.4.b. Presentations by Participants

J. BENDECK OLIVELLA (Participants Scientific Contributions page 53).

BILAL UL HAQ, Stockholm University

#### Rates of Evolution in Cenozoic Calcareous Nannoplankton

(S u m m a r y)

Variations in the total frequency of the cenozoic nannoplankton and the evolutionary rates for coccoliths and discoasters were calculated accor-