

PERTEMUAN PERSATUAN Meetings of the Society

Ceramah Teknik (Technical Talk)

Conodonts and mass extinctions in the Phanerozoic

D. JEFFREY OVER

Laporan (Report)

Dr. D. Jeffrey Over of the Department of Geological Sciences, State University of New York College at Geneseo, Geneseo, New York 14454, USA, (over@uno.cc.geneseo.edu), gave the above talk on Tuesday, 13 January 1998, at the Geology Department, University of Malaya.

Abstrak (Abstract)

The Frasnian-Famennian boundary that subdivides the Upper Devonian represents one of the five major mass extinctions in the Phanerozoic that mark major changes and turn over in biota. The Frasnian-Famennian extinction is most puzzling because there is no consensus as to the cause for the extinction. The extinction resulted in a major decline in shallow water stromatoporoids, corals, brachiopods, and trilobites. The boundary itself is defined by the abundant occurrence of the conodont *Palmatolepis triangularis* after the extinction of Frasnian conodont species. Conodonts are the phosphatic tooth-like remains of an extinct eel-like organism of chordate affinities. Conodonts are useful biostratigraphic indicators throughout their range and their color change under increasing thermal and pressure conditions is used to determine hydrocarbon maturation.

The Global Stratigraphic Section and Point for the Frasnian-Famennian boundary was recently established in southern France at Coumiac, but like numerous other localities there is a hiatus at the boundary. The highest Frasnian in Europe, North Africa, and North America is characterized by two distinct organic-rich intervals called the Kellwasser Events. These dark colored strata correspond to regional benthic anoxia and changes in organic isotope concentrations. In the shale facies of North America the boundary horizon has been recognized in numerous sections to a discrete horizon within essentially conformable strata. Locally in current alignment of orthocone nautiloids and hummocky cross-strata indicate high energy events in the extinction interval, but geochemical and microscopic analysis have not yielded evidence for a bolide impact. Ash layers at the base of the Upper Kellwasser Bed and the boundary horizon suggest volcanism as a factor in the extinction event and are potential zircon sources for accurate dating of the boundary horizon.

D. JEFFREY OVER

