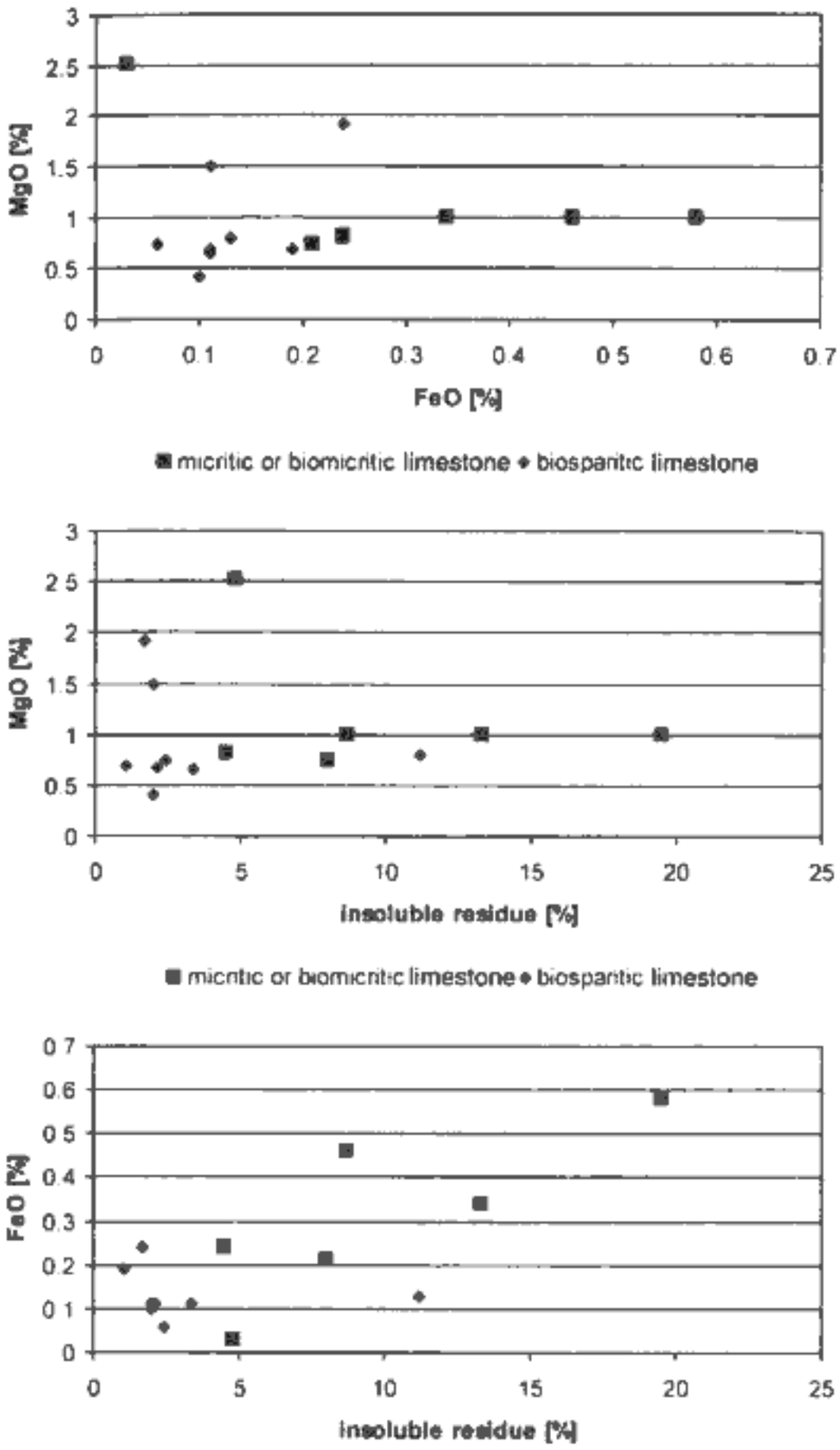

Figure 24. Graphs showing a correlation between FeO, MgO and insoluble residue.

stones both MgO and FeO are bound in the late diagenetic dolomite.

As expected, a positive correlation between MgO and FeO was found. This has been frequently observed in carbonates, and especially in the Barrandian sediments by SVOBODA et al. (1957) and KUKAL (1964). Their conclusions are based on thousands of analyses. Only several samples show a higher percentage of MgO without an elevated FeO content. This may be explained by the crystallization of dolomite with only reduced Fe in its crystal lattice.

9. Discussion

The utility of microfacies analysis

WILSON's (1975) and FLÜGEL's (1982) conception of standard microfacies (SMF) and facies belts (FB) is based on the study of Mesozoic and Cenozoic carbonates. However, the paleontological and sedimentological features of Early Paleozoic limestones differ from those of the Mesozoic. Thus, the relevance of using this method in the reconstruction of Paleozoic sedimentary environments is somewhat reduced. In spite of this, the microfacies analysis of Early Paleozoic carbonates can still be informative, if some variations are applied. This was shown by the study of VELEBILOVÁ and ŠARF (1996), who defined eight new microfacies partly comparable with SMF.

Wilson's microfacies analysis is fully applicable in relatively deep-water and transitional environments, where microfacies types correspond well to the SMF. However, the application is more ambiguous in shallow-water deposits where depositional mechanics were influenced by the presence of large crinoid biostromes. Such ecosystems are distinctly different from the Mesozoic reefs described by WILSON (1975) and FLÜGEL (1982). Crinoid forests excluded the development of most other organisms except some brachiopods and small trilobites. The morphology of such environments is not comparable to those of reefs or carbonate platforms. According to HLADIL (1994), the crinoid biostromes can be considered as elevations on flat continental shelves, often in an otherwise open marine environment.

Sections of micritic to biomicritic limestones with dark calcareous shales that correspond to SMF 9 or 3 often contain laminae or thicker layers of bioclastic limestones (SMF 5). This alternation cannot be explained by abrupt shallowing of the sedimentary basin and the onset of conditions favourable to the deposition of SMF 5, but by the redeposition of bioclastic material from shallow parts of the basin. A possible mechanism for this redeposition has been discussed above (see chapters 4–6).

10. General conclusions

The development of the Ludlow-Přídolí boundary beds differs among the localities considered in this paper. The Kosov section represents the shallowest develompent of the Upper Ludlow. The deposition of crinoidal limestones took place at a depth of a few metres, in an area of large crinoid biostromes. These crinoid forests produced great amount of organic detritus which formed taluses at their margins. Such development is observed in the Marble quarry, where the depth has been estimated at a few tens of metres, yet still above the wave base. A specific situation is documented in the Požáry quarry where the influence of local current conditions between the Svatý Jan and Nová Ves volcanic elevations is presumed.

The development of the Lower Přídolí is rather uniform – micritic to biomicritic limestones interbedded with calcareous shales. This deposition took place at a depth of several tens of metres, below the wave base. The episodic input of coarser, detrital material from the shallower parts of sedimentary basin seems to have occurred.