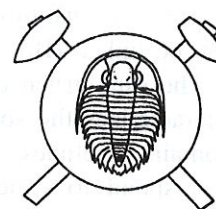


## Structural succession at Vysoký kámen in the Czech part of the southern Fichtelgebirge tectonic domain of the Central European Hercynides



**Strukturní posloupnost na lokalitě Vysoký kámen v české části jižních Smrčín; centrální evropské hercynidy (Czech summary)**

(4 text-figs.)

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A structural succession determined in predominantly competent quartzites and psammitic schists of presumed Cambrian-Ordovician age integrates four phases of translation – slip – transposition with nine phases of folding and represents an extensive history of deformation in cover rocks in the Hercynian orogenic belt. The dominant (composite) low greenschist facies metamorphic fabric is associated with the first two recognized phases of fold formation when many tight to isoclinal folds were developed together with more open folds in fold hinge zones in the most competent units during the second phase. A less penetrative planar mineral alignment associated with the formation of recumbent folds that deform the dominant metamorphic fabric was developed after the first two recognized phases of translation (SW-directed and NE-directed), and after the formation of slip folds. The next structures in the succession represent a brittle response to potential SW-directed overthrusting. The later stages of the deformational history are recorded by at least five sets of upright folds and related weak cleavages and then by potential N-directed translation.

Integration of the phases of translation and folding into the deformational sequence established in less-competent lithologies elsewhere in the southern Fichtelgebirge tectonic domain provides a reference succession of twelve sets of folds and four sets of translation structures. This succession, and the stress systems operative during the development of the successively-formed structures, provide a basis for checking the completeness of the data that have been used in discussions of deformational, metamorphic and igneous history and for erecting dynamic models of lithospheric plate movement during the development of the Hercynian orogenic belt in Central Europe.

**Key words:** Bohemian Massif, deformational sequence, fold, gash vein, metamorphism, polyphase deformation, relative chronology, Riedel shear, Saxothuringian zone, schistosity, slip

### Introduction

Extensive structural successions recording the effects of polyphase deformation and polyphase metamorphism are shown in outcrops throughout the Bohemian Massif in the Czech Republic. In many places, however, these successions represent the effects of more than one orogenic episode with structural and metamorphic features of the late Palaeozoic Hercynian orogeny superimposed on those of the late Precambrian Cadomian orogeny (e.g. Hopgood – Bowes 1987; Bowes – Aftalion 1991; Bowes et al. 1992; Hopgood et al. 1995). Depending on the attitude of pre-existing structures, some of the stress systems operative during the Hercynian episode have no obvious structural expressions (for instance, they simply changed interlimb angles of folds), while others resulted in the development of transposed schistosity that is generally

indistinguishable from the earlier-formed planar structure. It is in cover rocks, rather than basement assemblages, that the most complete expressions of successively-operative stress systems can be observed and changes in physical conditions affecting lithospheric segments during the Hercynian episode can be deduced. Such a cover assemblage of lower Palaeozoic sediments occurs in the southern Fichtelgebirge (in the Saxothuringian zone of the Central European Hercynides) of NW Bohemia. There, as in the vicinity of Cheb and southeastwards towards Mariánské Lázně (e.g. Dyleň) and northwards to Olví and Kraslice (Fig. 1), interbedded pelitic-semipelitic-psammitic rocks which show folded folds, folded schistosity and folded lineations and cross-cutting cleavages record local structural successions (cf. Holubec 1962) that have been integrated into a regionally-applicable deformational sequence into which phases of meta-