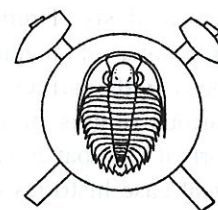


## Palaeomagnetism and Palaeogeography of the Variscan Formations of the Bohemian Massif, Comparison with other European Regions

Palaeomagnetismus a paleogeografie variských formací Českého masívu, srovnání s ostatními regiony v Evropě (Czech summary)



(45 text-figs.)

MIROSLAV KRS – PETR PRUNER

*Geological Institute, Academy of Sciences of the Czech Republic, Rozvojová 135, 165 00 Praha 6, Czech Republic*

Palaeomagnetic data published during approximately the last 30 years and derived from rocks from the Triassic to the Devonian periods have been statistically evaluated. The data cover the territories to the north of the Alpine tectonic belt, west of the Ural Mts. and reach up to Great Britain. The aim was to define the palaeotectonic deformations and the palaeogeography of rock complexes of the Hercynian orogene. The data document the consolidation of the European lithospheric plate in the Early Permian as a part of the formation of the Pangea supercontinent. They confirm that, due to continental drift, the European plate moved from the palaeo-equatorial Early Permian position to its present one. Rocks from the Middle to Late Carboniferous age from the western part of the Bohemian Massif, from the Middle to the Late Devonian from the Moravian Zone and rocks from the West-European Hercynides show clear clockwise palaeotectonic rotation deformations. For the West-European Hercynides, these rotation deformations reach very high values (Edel 1987). For the Middle Carboniferous rocks, they represent about  $50^\circ$  and, for the Early Carboniferous, they go up to  $120^\circ$  in a clockwise direction. Such large deformations are related to palaeomeridians of the Early Permian palaeogeographic net of the consolidated European plate. Deformations of comparable magnitude have been found in the Moravian Zone and on the Polish side, in the Holy Cross Mts. Palaeotectonic rotations of similar magnitude were demonstrated in a number of cases in the Alpine tectonic belt. In this paper, we discuss the similarities and differences between the palaeotectonic deformations recognized on rocks affected by the Variscan orogeny to the north of the Alpine belt and with those derived from rocks affected by the Alpine orogeny. Experimental palaeomagnetic data are tested on a model simulating palaeotectonic rotations. Such rotations are regarded as the characteristic sign of tectonic collision zones. A major part of the paper is devoted to the problem of overprint of several Early Variscan and pre-Variscan rock formations in the Bohemian Massif during the Variscan orogeny, which occurred during the Late Carboniferous epoch with possible extension to the Early Permian. The overprint effects were found by magnetomineralogical analyses and by means of the multi-component analysis of remanence applied to Devonian limestones from the Moravian Zone and the Barrandian, to Late Cambrian volcanics and Early Cambrian shales with micro-organic matter of the Barrandian.

*Key words:* Palaeomagnetism, palaeogeography, Variscan formations in Europe, Bohemian Massif, palaeotectonic rotations, model interpretations

### 1. Introduction

The goal of the present study consists of evaluating the Variscan palaeomagnetic data derived from the region of the Bohemian Massif and in comparing these findings with the coeval data from other European regions to the north of the Alpine tectonic belt in order to carry out palaeogeographic reconstructions and to determine some development features of the Hercynian fold belt from Early Devonian to Triassic times. To meet such a goal, it was necessary to survey all the major palaeotectonic deformations and palaeogeographic reconstructions regarding the development of corresponding formations during the Variscan orogeny. The analysis is based on previously published results and data compilations, the basic reference to these data may be obtained

from the Appendix attached at the end of this paper. Results of statistical evaluation of pole positions for respective regions in Europe, such as Russian Platform, Fennoscandia, England, Scotland, West European Hercynides and Bohemian Massif, from the Triassic to the Early Devonian are summarized in Tables 1 to 4. For the Bohemian Massif, three tables were set up summarizing primary palaeomagnetic data either previously published or recently derived, for the Early Permian, Carboniferous and Devonian (Tables 5-7).

The Variscan overprint of many rock formations might have a serious impact on palaeogeographic reconstructions so that this problem requires a critical discussion. Consequently, special attention is paid to this problem not only from the point of view of results of multi-compo-