MAGMATIC ROCKS WITH ANOMALOUS MAGNETIC SUSCEPTIBILITIES AND SUBVOLCANICS FROM THE AUSTRIAN PART OF THE MOLDANUBIAN PLUTON

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In the last three years the author carried out geological mapping for the Department of Geophysics, G. S. of Austria, in the Austrian part of the Moldanubian (South Bohemian) Pluton. The fundamental purpose of the investigation was to explain large magnetic anomalies found earlier by aerogeophysical research (HEINZ & SEIBERL, 1990) in three areas:

a) Reingers - Kozí hora at the Czech/Austrian state border;
b) Nebelstein and St. Martin - St. Wolfgang south of Weitra;
c) Karlstift - Liebenau.

There was newly mapped about 350 km^2 in the scale: 1:10 000. Almost at all documentation points (more than 1500) the magnetic susceptibility (MS) was measured using the portable "Mikrokappa KT-5" susceptibility meter. During the field work there were found four special types of granitic rocks with anomalously high MS and in addition to it acid subvolcanites that have not been described yet from the Austrian part of the Moldanubian Pluton. From the areal point of view, the most important rock with the anomalous MS is the Karlstift granite (PŘICHYSTAL, 1992, 1993). Its MS is usually 2 - 10 . 10^{-3} SI, exceptionally up to 28 . 10^{-3} SI. This porphyritic medium-grained biotite granite is the source rock of the horse-shoe-shaped anomaly near Karlstift - Liebenau and the magnetic anomaly between St. Martin and St. Wolfgang. For comparison, surrounding granitic rocks i.e. the Weinsberg granite and the Mauthausen granite have MS only 0.12 - 0.22 . 10^{-3} SI and 0.08 - 0.14 . 10^{-3} SI. The MS of the Eisgarn or two mica granite ranges between 0.03 - 0.07 . 10^{-3} SI.

The Nebelstein granite (aphyric peraluminous muscovite granite, see GÖD & KOLLER, 1989) has partly anomalous high MS (up to 13 - 21 . 10^{-3} SI). Some greisens in the area of Nebelstein and Hirschenschlag have shown very high values of MS too. Lastly, dike rocks with anomalous MS classified as syenites (CHLUPÁČOVÁ, 1985) have been known from the Czech part between Nová Bystřice and Maříž. The author found similar dike rocks with MS up to 10 . 10^{-3} SI on the Austrian side between Reinolz and Groß-Taxen and at the road from Grametten to Eisgarn. The rocks follow the southern margin of the oval magnetic anomaly between Reingers and Staré Město p. L. The anomaly has the upper part of its source body supposed at the depth of 0,3 - 0,5 km and the bottom at the depth of 2 - 3 km (GNOJEK et al., 1991).

Microscopic study of thin and polished sections (partly together with Z. Losos and M. Slobodník, MU Brno) revealed the secondary origin of magnetite (metacrystals with very frequent inclusions of rock-forming minerals) in above mentioned rocks.

Acid dike rocks of subvolcanic character (felsitic granite porphyries, felsitic and vitreous microgranites) represent another important find. On the Czech side they are concentrated in so called Lásenice volcanotectonic zone (KLEČKA, 1984). In Austria, the continuation of the zone was found from Rubitzkoteich up to Schmidbrunner Bach (about 12 km). There was also ascertained the intrusive equivalent of the dike rocks - microporphyric fine-grained muscovite granite (the Rubitzko granite). It differs from the Homolka (topaz-bearing) granite.

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GENETIC CLASSIFICATION OF THE MOLDANUBIAN GRANITOIDS IN THE SW PART OF THE BOHEMIAN MASSIF

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The granitoids of the SW part of the Bohemian Massif build up several separate bodies cropping out in the central parts of the anticlinal structures in the Moldanubian of the Šumava and the Bayerischer Wald Mts. In several cases their position is controlled by disjunctive tectonics but their inner structure is conformable with that of the adjacent crystalline complex. The granitoids of the Moldanubian zone are usually divided into several groups or magmatic phases. FINGER & HÖCK (1987) proposed the division of the Moldanubian granitoids of Austria into two large groups. Within the framework of the two groups, LIEW et al. (1989), established four subgroups of granitoids, in accord with the CHAPPELL & WHITE (1974) genetic classification. The division of granitoids is supplemented and modified for Czech part of the Moldanubian batholith by KLEČKA & MATĚJKA (1992). The establishment of the group of transitional granitoids emphasizes the absence of the bimodal separation of I-type and S-type granitoids in the Moldanubian zone of the Bohemian Massif. The transitional type is represented by weakly to medium peraluminous granitoids with the molar $Al_2O_3/(K_2O + Na_2O + CaO)$ ratio of 1.0 to 1.1.

Area of the study cover SW part of the main body of the Moldanubian batholith and Plechý, Vydra a Prášily granitoid massifs. In these bodies the granites of the Weinsberg, Eisgarn and Srní types and granite and granodiorite of Freistadt are present. Additionally, a sample of the foliated diorite from the Velešín area (S of České Budějovice) has been analyzed. The Rastenberg type from the Knížecí stolec