SOME GEOLOGISTS IMPORTANT TO THE STUDIES OF THE VARISCAN BELT OF CENTRAL EUROPE – EXAMPLES FROM THE "GEOLOGEN-ARCHIV, FREIBURG"

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The posters are prepared to illustrate the biography of the following geologists: Eduard Suess (1831, London – 1914, Wien), Franz Kossmat (1871, Wien – 1938, Leipzig), Hans Stille (1876, Hannover – 1966, Hannover), Adolf Wurm (1886, Günzburg – 1968, Würzburg), Erich Bederke (1895, Grünberg – 1978, Göttingen), Hans–Rudolf von Gaertner (1906, Berlin – 1982, Hannover). Portraits, signatures and other biographical materials are presented.

TEXTURAL EVIDENCE FOR THE EXISTENCE OF TWO–PHASE GRANITES IN THE YOUNGER INTRUSIVE COMPLEX GRANITES OF THE KRUŠNÉ HORY/ERZGEBIRGE PROVINCE

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Intense studies of the major element and trace element geochemistry of the Krušné hory/Erzgebirge granites characterized compositionally the evolution of granitoids irrespectively of their textural variations. Evidence for existence of texturally mixed granites (two–phase variants) in the Main Range granites of the Southeast Asian tin belt by Cobbing et al. (1992) raised the question of whether such granites existed elsewhere, namely in the tin–bearing provinces of the Variscan belt of Europe.

The study of textures of fine–grained porphyritic granites also termed
- granite porphyry (Doubí near Karlovy Vary),
- porphyritic microgranites (Preisselberg near Teplice),
- hiatal–porphyritic granites from Sadisdorf/Schellerhau(Seltmann and Breiter 1993), and
- "Zwischengranite" (Krinitzberg and Walfischkopf in the Western Erzgebirge)(Schust 1965) revealed the presence of similar two–phase granites also in the Krušné hory (Erzgebirge) granite batholith.

Such granites can be differentiated into:
1) those with sharp contacts of phenocrysts with no interaction of the phenocrysts with the groundmass
2) those which show a marked interaction of their phenocrysts (quartz, biotite, plagioclase and K–feldspar) with the groundmass particles.

Whereas the first group can be well explained by an earlier growth of phenocrysts in rapidly crystallizing melt, the second type textures are ellucidated by two–phase crystallization whereby the fine–grained groundmass originated at a later stage by sudden change in physico–chemical environment compared to primary texture granites (Pitfield et al. 1990). From the same granites Aleva(1960) described phenocrysts which penetrate the groundmass in an amoeboid–like fashing and he attributed these textures to crystal growth in the solid state.

The second type of phenocrysts/groundmass relationships can be observed in the Krušné hory/ Erzgebirge batholith in the granites which are forerunners of the main granites of the Younger Intrusive Complex (coarse– and medium– grained).Gradational boundaries of earlier microgranites with medium–grained granites in Cínovec (Zinnwald),xenoliths of the microgranites in the medium–grained granites of the Slavkovský les and textural evidence for the blastesis of phenocrysts in the groundmass support the explanation that some fine–grained porphyritic granites (intermediate, Štemprok 1993) originated prior to the medium–grained ones and that the two–phase textures were mostly the result of discontinuous crystallization resulting in the formation of mixed rocks. In most cases, this was overprinted by additional growth of phenocrysts within the primary fine–grained groundmass, as suggested by Aleva (1960).The textures illustrated by Cobbing et al.(1992) as a distinct example of two–phase granites were observed in the so called granite porphyry from Doubí

near Karlovy Vary in association with two–phase granites whose origin can be also explained by the early origin of the groundmass in relation to coarse– or medium–grained primary textured granite.

Thus the two–phase granites apparently have a complex history of crystallization with the periods of

- primary crystallization of phenocrysts in the melt,
- rapid growth of the groundmass, and
- blastesis in the postsolidus stage.

References

Aleva, G.J.J. (1960): The plutonic igneous rocks from Billiton,Indonesia. Geologie en Mijnbouw 39, 427 – 436

Cobbing, E.J. – Pitfield, D.P. – Darbyshire, D.P.F. – Mallick D.I.J. (1992): The granites of the South–East Asian tin belt. Overseas Memoirs 10, British Geol.Survey, London

Pitfield, P.E.J. – Teoh, L.H. – Cobbing, E.J. (1990): Textural variations and tin mineralization in granites from the Main Range Province of the Southeast Asian Tin Belt. Geol.Jour. 25, 419 – 430

Schust, F. (1965): Zu den Granitvariäten des Eibenstocker Zinnreviers im Westerzgebirge.Z.angew.Geol. 11,4 – 11

Seltmann, R. – Breiter, K. (eds., 1993): Hercynian Tin Granites and Associated Mineralization from the Saxonian and Bohemian parts of the Erzgebirge.– IAGOD Erzgebirge Meeting, Geyer 1993, WGTT Excursion Guide, 118 p.

Štemprok, M. (1993): Magmatic evolution of the Krušné hory–Erzgebirge batholith.Z.geol. Wiss. 21 (1/2), 237 – 245,Berlin

PERMO–CARBONIFEROUS VOLCANISM IN THE NORTH–WEST SAXONY AND HALLE (GERMANY)

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1. In the seventies–eighties of the current century the Geological Enterprise of the Soviet–Germany joint–stock Company "Bismuth" carried out geological survey and exploration for uranium in the areas of Permo–Carboniferous volcanogenic rocks in the Saxony and Thuringia. Due to these work that was performed with significant volume of drilling, new data on geologic structure of the volcanic rock series, their stratigraphy, age, petrographic and geochemical peculiarities.have been obtained by a group of German and Soviet geologists.

2. It has been found that for the most part the volcanic rocks in the North–West Saxony, the largest Permo–Carboniferous volcanic area in Central Europe, belonged not to the "rot liegende "(Early Permian), but to "Stephan" (Late Carboniferous). This was confirmed by new geological data, obtained through drilling, as well as, by numerous isotope age determinations.

3. An important role of the ignimbrite type eruptions has been revealed. The overwhelming bulk of the volcanic rocks of the area involves variously sintered ignimbrites of the liparite, trachyliparite and trachydacite composition.

4. The new data have been obtained through the more detailed mapping based on the facies analysis method with differentiation of the effusive, extrusive, crater, subvolcanic and other volcanic facies, detailed petrographical studies, determination of the location and the shape of paleovolcanic centers, restoration of the history of the volcanic processes in the investigated regions.

5. The complex of volcanic rocks in the North–West Saxony is subdivided into 3 rock series, that differ from each other both by age and composition (from the bottom to the top):

1) early volcanic series of the intermediate to acidic composition;
2) volcanic–plutonic series of ignimbrites and intrusive rocks of primarily acidic composition;
3) late volcanogenic–sedimentary series of acidic composition.

All volcanic formations in the region are characterized by increased alkalinity both of acidic and intermediate rocks (the sum of $K_2O + Na_2O$ is in the range 7–11%), with the domination of K over Na (K_2O = 4–9%; Na_2O = 1–3%).

6. Based on the core data from the numerous boreholes, it has been found out that in the Halle–Delitch region there is no pronounced stratigraphic boundary between Carboniferous and Permian formations. There is no stratigraphic discordance, nor any considerable change in the rock facies. The boundary between the systems is fixed only by floral data. Some authors take the boundary to be between Wettin and Halle strata, the others take it to be in the upper part of the Wettin strata section. These is no doubt, that in the region considered it is reasonable to distinguish a single Per–