still farther north, and subduction of Pacific crust also started in northern Chile.

GRANITE BODIES IN DEEP SEISMIC PROFILES OF THE URALS AND THE MID-EUROPEAN VARISCIDES

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One of the advantages of deep seismic sounding profiles is the possibility to get information on the occurrence of magmatic bodies in the crust. In this regard seismic profiles especially in the eastern Urals and in Central Europe have improved the geological models on the role of granites for the Earth's crust development.

Variscides and Urals, mainly in the Saxothuringicum and the Moldanubicum in Central Europe and the Main Granite Belt of the East Urals, are characterized by numerous granite bodies, many of them of the same size, e.g. the Eibenstock massif of the Erzgebirge and the Dschabyk massif of the East Urals (40 x 40 km). But they differ from another in structure. Most of the Southern Urals granites are deformed, mainly by large shear zones of several km width. Within the Main Ural fault zone the intensity of deformation varies extremely (solid state deformation with elongation of xenoliths up to 1: 40).

The deep seismic expression of the bodies is similar:

* In many cases the diapiric granites are represented by seismic transparency.
* Even the large plutons are to verify in the upper crust only. Together with gravity data the material allows to draw the lower boundaries with approx. 2 km accuracy, which are mostly "diffuse" and are interpreted in Uralian granites as shear zones, in the Bohemian massif (including the Erzgebirge) as gneiss inlayers.
* Only a few are clearly contoured (Falkenberg granite). Many contain internal reflexion bands either of tectonic origin or of contrast in composition (Mursinski complex). This hints to a laccolithic shape of the granites near to their lower boundary. Nearly never the specific intrusion structures (cone-in-cone intrusions, repetition of chilled margins, brecciated exocontacts, metasomatic overprinting etc.) are detected in the seismic material.
* Some massifs (e.g. Chesmenskij massif) are highly reflective.
* The primary generation of the granitic melts is to suppose in the middle and lower crust. Orthogneisses are difficult to distinguish from weakly deformed granites and from gneisses with acid composition, the latter seems to be not rare in the Saxothuringian belt.

In general, the tectonic style of the Variscides and the Urals is of a significant different type. The deformation of the Urals is dominated by the influence of large deep reaching fault zones, marked by mafic intrusions and shear tectonics (cataclasites to blastomylonites) of several km width, whereas

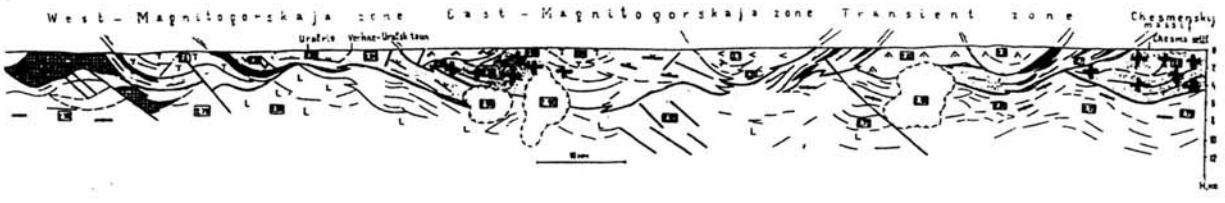

Fig.1. Reflection profile (E–W) through the South Urals, 50 km north of Magnitogorsk. Crosses: granitic massifs

in the Saxothuringian zone an inner deformation is dominating and in general the Hercynian granites are undeformed. This fact is reflected by the different structure of the granite bodies. That can be the cause for recognizable reflection bands in granites of Ural seismic profiles.