tributed plagioclase laths. They have basaltic composition (SiO_2=46–52%), high contents of TiO_2(>2%), Al_2O_3(16.6–17.7%), relatively low mg# (39–56) and flat REE patterns mostly without Eu anomalies and with pronounced negative Ce anomalies. Slight incompatible element enrichment together with negative HFSE anomalies on MORB-normalized spiderdiagrams show that these basalts originated in suprasubduction zone environment. Nd isotopic data are quite primitive (ε^{400}_{Nd} +8.6 to +9.1, T^{DM}_{Nd} = 0.37–0.41), suggesting that the dykes represent closed-system fractionation products of Devonian depleted-mantle derived magmas. These rocks may reflect a major change in geodynamic regime from Silurian extension to Early (?) Devonian onset of the Variscan subduction.

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References

CRAWFORD A. J., 1989. Boninites: Unwin Hyman, Boston.

CHLUPÁČ I., 1989. Stratigraphy of the Sedlčany-Krásná Hora metamorphic "islet" in Bohemia (Proterozoic? to Devonian). *Čas. Mineral geol.*, 34: 1-16.

FEDIUK F., 1992 a . Metaboninite in the Proterozoic Jílové Belt of Central Bohemia. *Věstník ČGÚ,* 67: 297-310.

FEDIUK F., 1992b. Metavulkanity boninitového typu v ostrovní zóne stredočeského plutonu. *Čas. Min. geol.*, 37: 329-332.

KACHLÍK V., 1992. Litostratigrafie, paleogeografický vývoj a metamorfní postižení hornin pláště v severovýchodní části ostrovní zóny stredoceského plutonu. Ph.D Thesis, PrF UK, Prague.

KOŠLER J., AFTALION M. and BOWES D. R., 1993. Mid–late Devonian plutonic activity in the Bohemian Massif: U–Pb zircon isotopic evidence from the Staré Sedlo and Mirotice gneiss complexes, Czech Republic. *N. Jb. Min. Mh.*, 1993: 417-431.

LE BAS M. J., 2000. IUGS reclassification of the high-Mg and picritic rocks. *J. Pet.*, 41: 1467-1470.

WALDHAUSROVÁ J., 1984. Proterozoic volcanics and intrusive rocks of the Jílové Zone in Central Bohemia. *Krystalinikum*, 17: 77-97.

Cambrian in the Netvořice–Neveklov Metamorphic Islet (Roof of the Central Bohemian Pluton)

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The Cambrian represents relatively independent sedimentary and tecto-magmatic cycle of the Teplá–Barrandian terrane (TBT). Its lower limit is given by noteworthy unconformity separating the Cadomian basement. The high-grade LP–HT metamorphism at the SW and possibly NW margin of the TBT, dated at *c.* 550–540 Ma (Zulauf et al. 1999), was followed by intrusion of syntectonic calc-alkaline granitoids (520–510 Ma: Dörr et al. 1998) and subaerial Late Cambrian volcanism. The upper limit is marked by unconformably deposited Ordovician–Devonian volcano-sedimentary complexes of the Prague Basin.

The paleogeographic extent of Early and Late Cambrian continental and Middle Cambrian marine sedimentation is only poorly known. This is due to only limited extent of Cambrian intracontinental NE-SW trending fault-bound troughs, in conjunction with pre-Ordovician as well as strong Variscan basin inversion.

Except for the paleontologically documented Cambrian in the Příbram–Jince, Skryje–Týřovice nad Železné Hory Mts. regions (Havlíček 1980 and references therein), its presence was assumed also in the Islet Zone of the Central Bohemian Pluton (Tehov and Ondřejov Islets – Havlíček and Šnajdr 1955, Vajner (1962, 1963). Moreover, expected Cambrian sequences to occur in the Rožmitál metamorphic Islet, which lithologically resembles the undisputedly Cambrian sediments in the Příbram––Jince area further to the NE.

In contrast to previous opinions, the new lithostratigraphic study of the Islet Zone showed that the basal parts of the Tehov islet, unconformably overlying the folded Late Proterozoic basement of the Kralupy–Zbraslav Group (Kachlík 1992), might be correlated with basal part of the Ordovician Krašovice Formation in the Sedlčany–Krásná Hora Islet (*sensu* Chlupáč 1989). As no evidence for the existence of an unconformity in the succession of the Tehov and Ondřejov islets could have been found (even though it was assumed by Vajner 1962), the whole stratigraphic sequence was assigned to the Ordovician (Kachlík 1992).

The new lithostratigraphic investigations and Sm-Nd isotopic study of metavolcanic rocks showed that the Cambrian is preserved in the Netvořice–Neveklov (NN) Islet and in small relics in the Zbořený Kostelec (ZK) Islet. In the NN islet, the Cambrian succession forms asymmetric NE-SW striking syncline overlying a range of Proterozoic units. The succession begins with mature yellow to grey quartz metasandstone with conglomerate intercalations, alternating with predominantly acid calc-alkaline volcanics in the eastern flank of the syncline. These rocks pass upwards into a thick succession of metaaleurites and metapelites transformed into various types of muscovite-biotite knotted schists and hornfelses.

The following evidence indicates the presence of Cambrian in the NN islet:

(1) The presumed Cambrian volcanosedimentary succession differs lithologically and geochemically from underlying Proterozoic metasediments and volcanics as well as, to a lesser degree, from the overlying, undoubtedly Ordovician siliciclastics (see Kachlík 1992 for details). Geochemical trends observed in the metasediments and metavolcanics of the NN islet strongly resemble those known from unmetamorphosed Cambrian analogues in the Barrandian area.

(2) Flat, gently to the E dipping, basal horizon of mature sandstone with conglomeratic intercalation overlies an anticline of the rocks of the Štěchovice Group at the western margin of the NN islet and, further to the S, also the volcanoclastics of

the Davle Formation. In the E the same horizon onlaps onto the volcanic complex made of metamorphosed tholeiitic, low--Ti basalts and boninites comparable with arc-related volcanics known from the neighbouring Jílové Belt.

(3) Close to village of Netvořice, the Proterozoic and Cambrian rocks are overlain by light sillimanite-andalusite quartzites and hornfelses with intercalation of conglomerates and amphibole matrix, which are typical of the lower part of Ordovician succession in other islets (Kachlík 1992) and whose age was paleontologically proved by ichnofossils (Chlupáč 1987). From the map is apparent that Ordovician basal successions overlap the underlying Proterozoic and possibly Cambrian sequence with marked structural unconformity.

(4) Sm-Nd isotopic data (ε^{530}_{Nd} + 8.2 to + 8.6, T^{DM}_{Nd} = 0.51 – – 0.56 Ga) show that the most basic magmas were derived directly from the Depleted Mantle reservoir in Cambrian times; these data offer a little scope for contamination by older, a more evolved material.

Due to relatively strong Variscan LP-HT overprint, the detailed correlation with unmetamorphosed Barrandian Cambrian without additional information (such as precise U-Pb dating of acid volcanics or detailed geochemical correlation of metasedimentary units) is difficult. Xenoliths of the Cambrian sandstones in the western part of the CBP and occurrences of the Cambrian in the Islet zone prove that the original extent of the Cambrian was significantly greater compared with the present erosion level. Differences in the facial development of Cambrian and younger units show that the Islet zone represented during Early Palaeozoic relatively independent basin separated for some time by an active ridge, whose material was periodically fed into the Islet zone basin.

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Late Devonian to Early Carboniferous Bimodal Volcanic Rocks of the Ještěd Range Unit (W Sudetes): Constraints on the Development of the Variscan Orogenic Wedge

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Late Palaeozoic volcanism characterizes the Ještěd Range Unit (JRU) (e.g., Gallwitz 1930; Chaloupský et al. 1989; Chlupáč 1993) forming the westernmost margin of the Krkonoše-Jizera terrane (KJT) and the lowermost part of the W- to NW-directed KJT orogenic wedge (W Sudetes). Taken both from NW to SE and upwards, two lithotectonic units compose the JRU (e.g., Kachlík and Patočka 1998):

(1) Autochthonous domain basement is composed of Lusatian granitoids (540–587 Ma – Kröner et al. 1994) and host rock mantle of weakly deformed and regionally metamorphosed Late Proterozoic flysch sequence (Chaloupský et al. 1989). The Cadomian basement is transgressively overlain by low-grade metamorphosed Early Palaeozoic volcano-sedimentary sequence which is presumed to pass into Middle/Late Devonian to Early Carboniferous succession of slates, greenschists, porphyroids, marbles and Variscan flysch. The marbles and slates provided rich fauna of late Givetian to Tournaisian age (Koliha 1928; Gallwitz 1930; Galle and Chlupáč 1976; Chlupáč and Hladil 1992; Chlupáč 1993 etc.).

(2) Parautochthonous to allochthonous domain is a slightly metamorphosed volcano-sedimentary sequence of Early Palaeozoic age (comprising sericite-chlorite phyllites, quartzites, mafic metatuffs and metadiabases) with graphite phyllites (±cherts) and limestones of Ockerkalk facies of Silurian age on top (e.g. Chlupáč 1993). It is flatly thrust over Middle/Late Devonian to Early Carboniferous succession of the autochthonous domain, and on the JRU eastern side it is overthust by allochthonous slice of the South Krkonoše Complex (Patočka et al. 2000).

The Late Palaeozoic metavolcanics of the JRU Middle/Late Devonian to Early Carboniferous sequence are represented by metarhyolite bodies, submarine basic amygdaloidal lavas and sills (± dykes) of doleritic basalts. The latter often show relics of ophitic textures and of mafic minerals as pyroxenes and amphiboles. The rocks are bimodal in SiO_2 contents displaying spans of 48 to 52 wt % and 74 to 76 wt %, respectively. The mafic rocks usually show moderate LREE/HREE fractionation. Chondrite-normalized REE distribution patterns of the metabasites have tholeiitic WPB-like $(Ce/Yb)_N$ ratios. The metabasite trace element abundances resemble those of modern basalts of both E-MORB and tholeiitic to transitional WPB compositions. The felsic metavolcanics are significantly enriched in LILE, HFSE and REE. They show pronounced negative anomalies of Ba and Eu in ORG- and chondrite-normalized trace element and REE distributions, respectively. Regarding these features, the porphyroids may be compared with within-plate felsic igneous rocks.

Basaltic rocks of WPB-like composition were protolith of the JRU metabasites. The primary magmas were produced by limited melting in the upwelling astenosphere associated with extension of continental lithosphere. Prior to the regional metamorphism, the porphyroids were high-silica rhyolites, and may be co-genetic with the basaltic rocks by prolonged fractionation of common mantle-derived melt.

The paraautochthonous to allochthonous domains of the KJT are interpreted as NW branch of the West Sudetic accretionary complex with inverted metamorphic pattern and stratigraphy, originated during the closure of the Saxothurigian oceanic seaway (Kachlík and Patočka 1998; Franke 1999; Pharaoh 1999). The