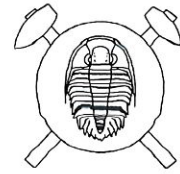


Barrande's stratigraphic concepts, palaeontological localities and tradition – comparison with the present state



Barrandovy stratigrafické koncepce, paleontologické lokality a tradice – srovnání s dnešním stavem (Czech summary)

(6 text-figs., 7 plates)

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The evolution of stratigraphic concepts of the Proterozoic, Cambrian, Silurian and Devonian in the central Bohemian Barrandian area is reviewed, starting with the classic works of Joachim Barrande and traced up to the present time. Barrande's palaeontological localities are listed with their original and present designations, stratigraphical assignments and comments (18 localities in the Cambrian, 63 sites in the Ordovician, 71 in the Silurian and 40 in the Devonian). The Barrande's tradition and popularity is commented and examples of his drawings in fieldbooks are presented.

Key words: Stratigraphy, history, Neoproterozoic, Cambrian, Ordovician, Silurian, Devonian, palaeontological localities, J. Barrande, Barrandian area, Czech Republic.

Introduction

The magnificent work of Joachim Barrande, devoted particularly to Palaeozoic rocks of central Bohemia, represents an important stage in the development of palaeontology and stratigraphy of the 19th century and deeply influenced later generations of Earth scientists. As the significance of J. Barrande in palaeontology was a subject of many works in the past, we turn our attention to the development of his and later stratigraphic concepts, localities of fossils and tradition persisting up to the present time.

Barrande developed his stratigraphic concept after more than ten years of field studies, and his idea of stratigraphic succession and principal synclinal structure of the "Silurian system" in central Bohemia appeared as a drawing at the end of his notebook from 1841–1846 (see Pl. I, fig. 1). Barrande's stratigraphy was first published in the preliminary report on the "Silurian system" and its trilobites in Bohemia (1846), and was thoroughly explained in the first volume of the "Système silurien du centre de la Bohême" (1852), where he subdivided his "Silurian system" into originally 7, later 8 *étages* designated A to H.

Apart from the *étages*, he distinguished three main faunas, among which the First – called "*faune primordiale*" corresponds in the present status to the Middle Cambrian, the Second fauna to the Ordovician and the Third fauna to the Silurian and Devonian Systems.

The designation of all rocks as the Silurian was in the mid-19th century well understandable, as the Silurian was at the beginning of Barrande's investigations in Bohemia the best characterized time-rock unit exhibiting the closest relationship to faunas studied by Barrande. The influence of R. I. Murchison's works and nomenclature (1839 and subsequent volumes of "Siluria") is evident and clearly reflected even in the document presented by Bar-

rnde at the First International Geological Congress in Paris, 1878 (Barrande 1880).

J. Barrande carefully recognized individual stratigraphic subdivisions and his notebooks contain numerous drawings of precisely measured sections. In this respect, his stratigraphy is easily transferable into the modern classification (see Pls. II to IV as examples). Regretably, only 15 Barrande's notebooks are preserved (deposited in the National Museum, Prague) and only few his sections were published (particularly in the 3rd volume of *Défense des colonies*, 1865). However, regardless of their exactness, Barrande's drawings in notebooks and his published descriptions allow only exceptionally an exact location of palaeontological sites. Consequently, the modern stratigraphic evaluation of fossils had to be done mostly by new detailed stratigraphic studies, mapping and collections during the past 50 years.

A short review of evolving stratigraphic concepts, the present assignment of Barrande's palaeontological localities and the still living Barrande's tradition are the main subjects of this paper.

Proterozoic – Barrande's *étages* A and B

These *étages* represented the oldest part of Barrande's "Silurian system" in central Bohemia. Due to the lack of fossils, he designated them as *étages azoïques* and compared them with the "schiefrige Urgebirge" of German authors. The Precambrian age was recognized already at the end of last century fifties, when Lipold and Krejčí (1860) reported them as the "Urthonschiefer" and named them the "Příbramer Schiefer".

The separate position of the *étage* A was problematic since its introduction, as it consisted mostly of metamorphic and volcanic rocks underlying the *étage* B in proximity of granitoids regarded at that time as the oldest rocks. The nature of the *étage* A was clearly recognized,

e.g., by Krejčí (1854, 1862), who named it later (1877) the Jílové Shale. This term is in a modified sense (Jílové Zone or Belt) used as a regional geologic term until now (metamorphic and magmatic rocks situated close to the contact between the Proterozoic of the Barrandian and the Central Bohemian Pluton of Variscan age).

The *étage* B represented, in Barrande's sense (1846, 1852), the unfossiliferous and non- or low-metamorphic rocks ranged now to the Upper Proterozoic and Lower Cambrian.

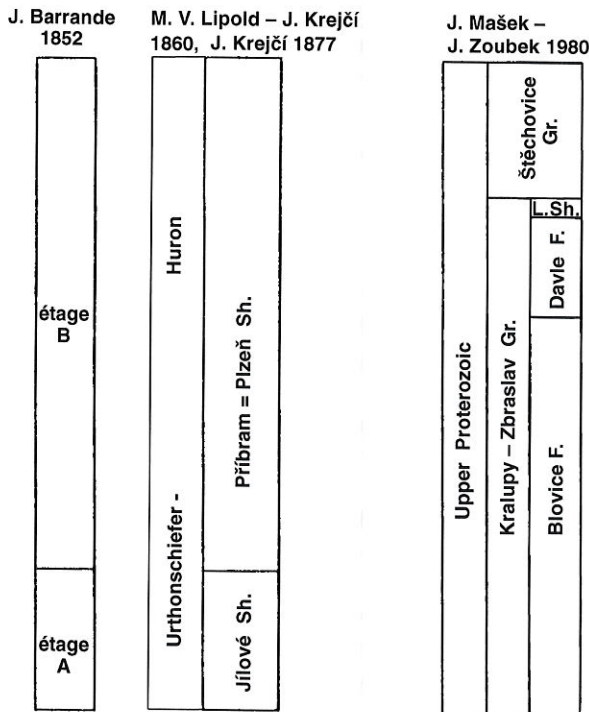


Fig. 1. Proterozoic of the Barrandian: comparison between schemes after Barrande and Krejčí with the present status (Gr. – Group, F. – Formation, Sh. – Shale, L. Sh. – Lečice Shale).

Important steps in the stratigraphic subdivision were as follows:

1. The recognition of an angular unconformity within the *étage* B by Grimm (1855), and correctly evaluated by Lipold and Krejčí (1860, Lipold 1863) as the unconformity between their Příbram Shale and Příbram Greywacke (the latter recognized later as being of Cambrian age and included into the *étage* C).

2. The correlation of the *étage* B with the North American Algonkian (Pošepný 1895).

3. Thorough studies of volcanic rocks ("spilites") by Slavík (summarizing paper: 1908) and his evaluation of the black shale facies (1904).

4. Subdivision of the Precambrian complex into three "stages" by Kettner (1917) using the volcanic rocks (Pre-spilitic, Spilitic and Post-spilitic "Stufe" – "Stage").

5. New studies of Proterozoic sequences in the SE flank by Röhlich (esp. 1961, 1965) resulting in the establishment of the Davle Formation with the Lečice Mem-

ber in its uppermost part, and in improved characteristics of Proterozoic formations. Röhlich (1962) also presented a historical review of investigations in the Barrandian Proterozoic.

6. Application of cyclostratigraphy in the NW flank (Holubec 1966).

7. New micropalaeontological finds by B. Pacltová, M. Konzalová, M. Vavrdová and O. Fatka allowing the correlation with the Upper Proterozoic (Neoproterozoic), specifically with the Riphean and Vendian (review in Fatka, this volume).

8. Stratigraphic revisions done by Cháb (1978) and Mašek – Zoubek (1980) expressed in the present stratigraphic concept used in official geological maps.

9. Recent progress in the study of interactions between volcanism, facies development, geochemistry and biota realized in the project on Precambrian carbonate rocks under the leadership of Z. Pouba (papers in press).

The lack of correlatable stratigraphic units and fossils cause that Precambrian stratigraphic subdivisions are of markedly lower quality and exactness than the younger, Phanerozoic formations. Hopefully, the introduction of new methods – both the palaeontological and physical – assists to improve this situation (cp. Cháb 1993).

Barrande's *étage* C – Cambrian

Barrande's original concept of the *étage* C corresponded only to the fossiliferous shales containing his primordial fauna, i.e., to the Middle Cambrian Jince Formation in the present sense.

After the recognition of the angular unconformity between the "Urthonschiefer" and the overlying conglomerates and sandstones (Příbram Greywacke) in the Příbram area (Grimm 1855, Lipold – Krejčí 1860, Krejčí 1862, 1877), the natural consequence was to include the conglomerates and sandstones of the Příbram Greywacke into the *étage* C (indicated e.g., by Lipold 1863).

The Cambrian age of the upper part of Barrande's *étage* B and the *étage* C was recognized by Marr (1880), who, however, used the Cambrian in the broader Sedgwick's sense and included in it also the whole Ordovician sequence. The incorporation of the redefined *étage* C into the Cambrian was finally adopted by Pošepný (1888).

The subsequent progressive steps can be chronologically arranged as follows:

1. Discovery of fauna in the basal conglomeratic layers near Týřovice (Kušta 1884).

2. Detailed investigation of the Skryje–Týřovice area (Jahn 1896) supplemented by palaeontological studies of Pompeckj (1896).

3. Stratigraphic revision of the Příbram–Jince and Skryje–Týřovice areas by Kettner (1923, 1925) with a new evaluation of the volcanic Křivoklát–Rokycany Complex.

4. Starting biozonal subdivision of the Jince Formation (Šuf 1926) which developed later up to the present time.

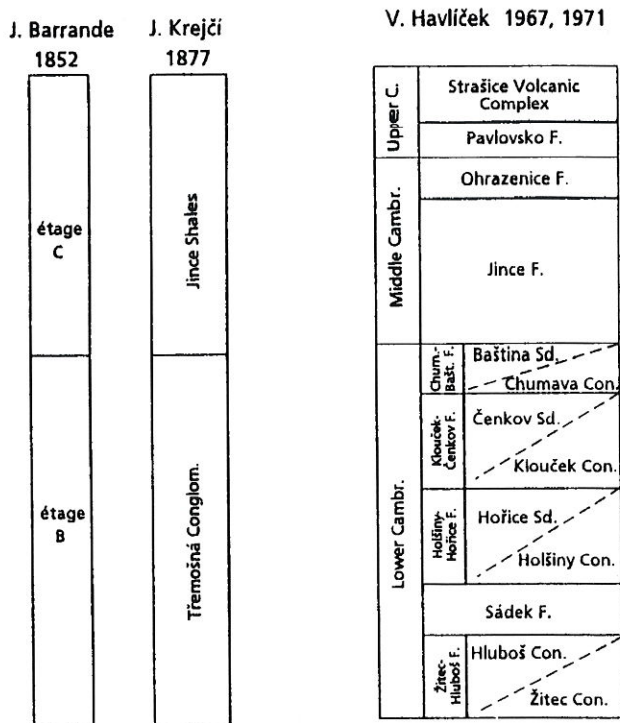


Fig. 2. The Cambrian of the Barrandian: schemes of Barrande and Krejčí compared with the present status (F. – Formation, Con. – Conglomerate, Sd. – Sandstone).

5. Detailed mapping and studies of Havlíček and Šnajdr (1951) in the Brdy area resulting in a new lithostratigraphic scheme.

6. Discovery of the oldest Bohemian fauna in the Paseky Shale by V. Havlíček, its description (Chlupáč – Havlíček 1965) and assignment to the Lower Cambrian (Havlíček 1968).

7. New reinvestigation of the volcanics of the Křivoklát–Rokycany Complex (review: Waldhausrová 1966).

8. New revision of Cambrian stratigraphy (Havlíček 1971) and lithology (Kukal 1971).

9. Finds of early Middle Cambrian faunas in the lower part of the Jince Formation (Fatka et al. 1992), refinement of zonal subdivisions and correlations of Middle Cambrian strata (Fatka – Kordule 1992, Kordule 1996).

10. Revision of the Lower Cambrian Paseky Shale arthropod fauna (Chlupáč 1995), evaluation of its brackish environment and analysis of accompanying microfossils demonstrating the Early Cambrian age (Fatka – Konzalová 1995).

The recent review of Cambrian stratigraphy is included in a joint monograph (Havlíček in Chlupáč et al. 1998) and further studies are in progress (see Fatka, this volume).

Barrande’s étage D – Ordovician

This étage was characterized by Barrande’s Second fauna and designated as *étage des quartzites D*. Sin-

ce 1852 it was subdivided by Barrande into 5 *bandes* (d1 to d5). Lipold and Krejčí (1860, comp. also Krejčí 1860–1863) supplemented local names of stratigraphic units and established several new subunits (“Krušná hora”, “Komorauer”, Kosov Beds) which were only partially accepted by Barrande (1869) but persisted in their majority as redefined units up to the present time. It should be emphasized that Barrande exactly recognized the separate character of Ordovician faunas far before the Ordovician System was established by Lapworth in 1879.

In the post-Barrande time, the stratigraphy of the Ordovician strata underwent many formal changes, caused particularly by different evaluation of recurring facies of siliciclastic rocks and introducing superfluous new stratigraphic names.

As the most progressive steps in the 20th century, the following can be quoted:

1. Discovery of the *Euloma*-fauna in shales of the Klábava Formation by Holub (1911).

2. Investigations of C. Klouček allowing the tripartite subdivision of the Krušná hora Formation and the distinction between the Šárka and Dobrotivá Beds (Klouček 1908, 1916, review: 1926), accepted in the scheme of Kettner and Kodým (1919), and used in studies and mapping by Kettner (1916a, b).

3. Investigations of B. Bouček in the Upper Ordovician which markedly improved the biostratigraphic characteristics and led to recognition of the Bohdalec Formation (1928).

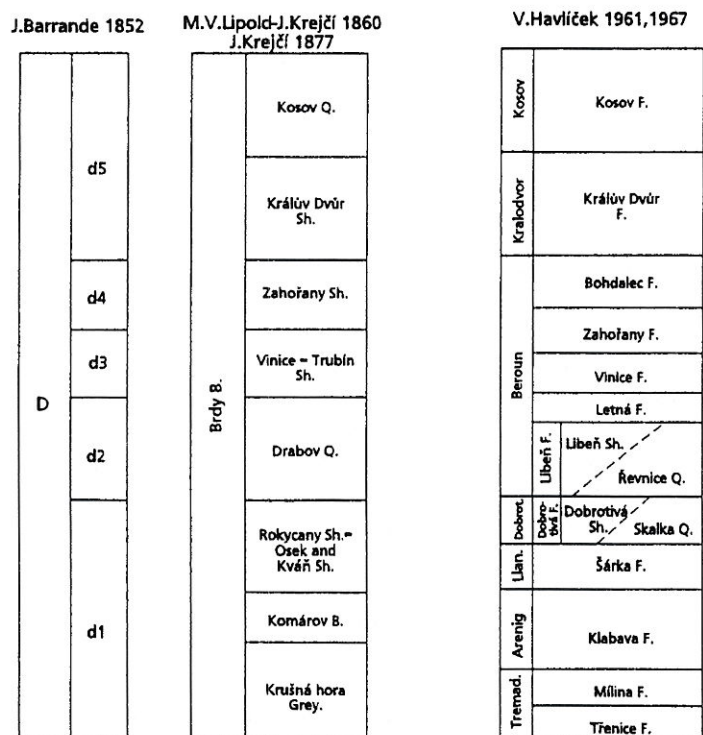


Fig. 3. The Ordovician of the Barrandian: schemes of Barrande and Lipold – Krejčí compared with the present status (F. – Formation, B. – Beds, Grey. – greywacke, Q. – Quartzite, Sh. – Shale).

4. Summarizing characteristics and international correlation of Lower (Koliha 1938) and Upper Ordovician (Bouček 1938) strata.

5. New detailed mapping carried out after the World War II by V. Havlíček and M. Šnajdr and supplemented by sedimentologic studies of Z. Kukul, which offered a more objective picture of stratigraphic and facies development, allowed a redefinition of individual units (Havlíček in Chlupáč et al. 1968), refined the biostratigraphy (Havlíček – Vaněk 1966) and clarified the sedimentary environment (review in Kukul 1963). Other authors in this period also contributed to a markedly better knowledge of the Bohemian Ordovician – e.g., Röhlich (1956) by stressing the heterochroneity of some lithostratigraphic boundaries, Marek (1951) by finds of fossils in the Kosov Formation and Svoboda – Prantl (1951) and Petránek (1965) by summarizing the stratigraphic results of numerous works (partly not published) dealing with the sedimentary iron ores.

6. A new correlation which accentuated the differences between the Bohemian Ordovician and other regions which resulted in the establishment of a separate regional chronostratigraphic scale for the Upper Ordovician (Havlíček – Marek 1973).

7. The study of graptolite zonation concentrated in the Lower and Middle Ordovician (Bouček 1973, Kraft 1977, review: Kraft – Kraft, this volume).

8. A significantly refined picture of palaeogeographic and biofacies development (esp. Havlíček 1981, 1982).

9. New discoveries in the Lower Ordovician (rocky-bottom fauna – Mergl 1983, Tremadocian faunas – Mergl 1984).

10. Introduction of the event-stratigraphy (Chlupáč – Kukul 1988), which, in its consequences, reopened the crucial problem of iso- or heterochroneity of individual lithostratigraphic boundaries.

11. Recent studies concentrated on characteristics of individual important boundaries (Králův Dvůr/Kosov Formations: Štorch – Mergl 1989, Klabava/Šárka Formations: Kraft – Kraft 1995), palaeogeographic relationships (Havlíček et al. 1994), ichnology (reviews in Mikuláš 1993, 1998), graptolite zonation (Kraft – Kraft, this volume), acritarch zonation (Fatka, this volume) and international correlations.

The biostratigraphic evaluation of individual fossil groups and the correlation problems which arose from the new international chronostratigraphic subdivision of the Ordovician System are subjects of the 8th Symposium on the Ordovician System scheduled for 1999 in Prague.

Barrande's *étage* E – Silurian

This "*étage*" was designated by Barrande (1846, 1852) as the Lower Limestone *étage* (*étage calcaire inférieur*) and was marked by the incipient Third Fauna. Starting with 1852, Barrande subdivided this *étage* into two *bandes*: e1 with dominant shales, and e2 with dominant li-

mestones. Lipold and Krejčí (1860) added local names – the Liteň (littener) Beds for e1, and Kuchelbad Beds for e2 (later renamed by Krejčí 1877 as the Budňany "Bande").

Barrande's evaluation of Lower Silurian faunas was negatively influenced by his own theory of "colonies" (supposed sites of immigration of the "Third" fauna into areas occupied by the "Second" fauna – in fact, tectonic blocks of Silurian rocks thrust by reverse faults into the Late Ordovician strata). Interesting history of this dispute was summarized by Perner (1938), Bouček (1970) and Kříž – Pojeta (1974).

The complex facies development of the Silurian rocks influenced by volcanic activity caused many difficulties prior to the establishment exact zonal schemes. A marked qualitative progress was achieved as late as in thirties of the 20th century, when B. Bouček started his systematic investigation of graptolite zones (later in collaboration with A. Přibyl). As a result of these studies, the Bohemian Silurian became in the forties and fifties the most detailed investigated Silurian area regarding the graptolite zonation (reviews: Bouček 1953, 1960). Bouček (1934) was also the first author who correctly recognized the influence of the submarine volcanism on the Silurian sedimentation. He correlated the Liteň Formation with the

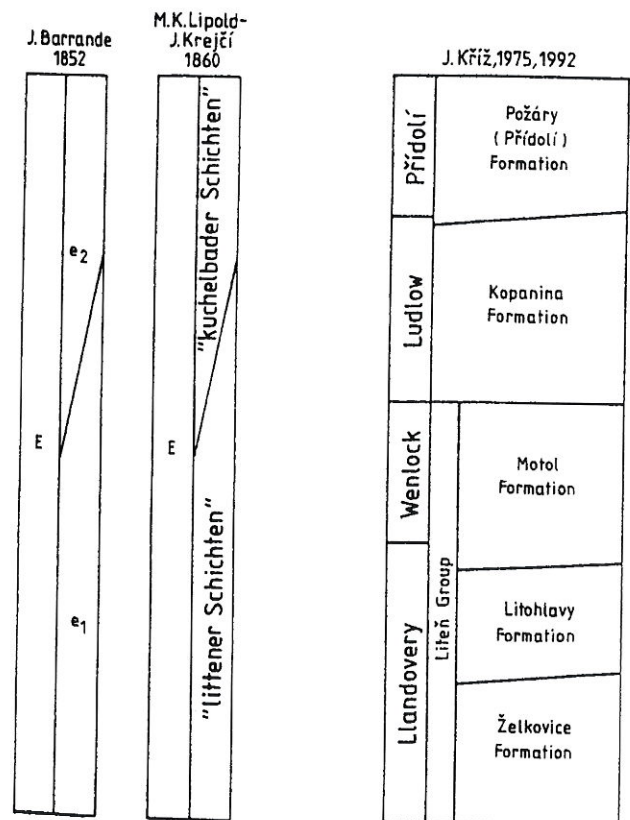


Fig. 4. Silurian stratigraphy of the Barrandian: schemes of Barrande and Lipold – Krejčí compared with the present subdivisions. The rank of Liteň and its lower units is variably interpreted by different authors, the Požáry is a junior synonym of the Přídolí Formation.

Llandovery = Valentian, and Budňany + Lochkov with the Ludlow.

The next important stage of investigations developed after 1945, when a new detailed mapping and biostratigraphic investigations started. The Budňany Beds were subdivided into the Kopanina and Přídolí Limestones (Prantl – Příbyl 1948), the oldest Silurian graptolite zones were discovered (Marek 1951, Bouček 1953, Horný 1956) and the picture of facies development was considerably supplemented by new detailed investigations, mapping and establishment of trilobite “Horizons” as correlative intervals parallel to the graptolite zonation (Horný 1955, 1962). The later discovery of volcani-carbonate development of the Llandovery at Hýskov (Havlíček – Kříž 1973) contributed to a better knowledge of early Silurian faunas.

A marked progress in knowledge involved the study and correlation of the broader Silurian–Devonian boundary interval. At the First Symposium on the Silurian–Devonian Boundary and Stratigraphy in Prague (1958, Svoboda, ed. 1960), two new “Silurian” stages – the Budňanian and Lochkovian were established. Though the Lochkovian was later reclassified as the earliest Devonian (Bouček et al. 1966), two separate chronostratigraphic units were recognized within the Budňanian: the lower unit correlative with the British Ludlovian, and the upper unit, proposed as a new stage called Přídolí (at the international Meeting in Leningrad 1968, discussion in Berry, Boucot et al. 1970). After the new international definition of the Silurian–Devonian boundary in 1972, the Přídolí was accepted in 1984 as a separate standard series representing the uppermost Silurian (based on the study of Kříž et al. 1983).

The recent stratigraphic investigations were concentrated on detailed characteristics of important boundaries (Ordovician–Silurian: Štorch 1986, Ludlov–Přídolí: Kříž et al. 1986, Wenlock–Ludlow: Kříž et al. 1993), analyses of faunistic assemblages (Chlupáč 1987 – trilobites, Havlíček – Štorch 1990 – mostly brachiopods, Kříž in press – bivalves), refinement of graptolite zonation (Štorch 1994a,b), event-stratigraphy (Chlupáč – Kukul 1988) and general facies and basin characteristics (Kříž 1991, Kříž in Chlupáč et al. 1998).

Barrande's *étages* F, G, H – Devonian

Barrande (1846, 1852) ranged these three *étages* in the upper part of his “Silurian System” and designated the *étage* F as the *étage calcaire moyen*, the *étage* G as the *étage calcaire supérieur* and the *étage* H as *étage des schistes culminans*. Individual *étages* were subdivided into *bandes* (f1 to h3) whose characteristics was presented especially in the 3rd part of Barrande's *Défense des colonies* (1865). Lipold and Krejčí (1860) and Krejčí (1877) added to Barrande's subdivisions local names which generally persisted up to the beginning of the 20th century and some are used until now (see Fig. 5).

The crucial question was whether these *étages* are of Silurian or Devonian age. Discussion on this matter started already in the fifties of the 19th century, but became internationally famous as the “Hercynian Question” after its clear formulation by E. Kayser in 1877 and 1878. The complex history of this dispute, which concerned the basic principles of the stratigraphical geology on the world-wide scale, exceeds the scope of this paper. At the end of the 19th century a consensus was reached that strata with graptolites should be ranged in the Silurian, and the overlying strata lacking graptolites should be ranged in the Devonian. The general status of correlation was summarized by Kayser and Holzapfel (1894) whose mostly wrong correlation of pre-Givetian strata persisted up to the middle of 20th century.

A progressive step was made during mapping by R. Kettner and O. Kodým (1919 and later), who emphasized the complex facies development (especially of their Braník Limestones), introduced the Zlíchov Limestone with its Coral Horizon and simplified the superfluous subdivision of the *étage* H (the Srbsko Formation).

A new stage of investigations started after 1945, when J. Svoboda and F. Prantl began the new detailed mapping of the Silurian and Devonian area of the Barrandian. They introduced many new formal units (Kotýs, Vinařice, Chýnice, Třebotov, Choteč Limestones, Kačák and Roblín Beds, reviews in Svoboda – Prantl 1949, Svoboda – Prantl – Kukul 1957).

Simultaneously with these works I. Chlupáč started his stratigraphic studies of individual formations and between 1952 and 1960 gradually revised and redefined all Devonian formations. The stratigraphy of the Koněprusy area was resolved together with its correlation with other areas, some new units were defined (Radotín, Dvorce–Prokop, Loděnice, Suchomasty Limestones) and biostratigraphic studies allowed a new international correlation particularly in the time-span Lochkovian–Eifelian (summarizing reviews and references in Chlupáč 1967, 1988).

New results from the Barrandian evoked a new international interest which resulted in several symposia and excursions of international stratigraphic bodies: the First Symposium (Prague 1958) proposed the new stages Lochkovian, Pragian and Zlíchovian for sequences of the Bohemian type (cf. Svoboda, ed. 1960), the Silurian–Devonian Boundary Committee was established at the XXIst International Geological Congress in Copenhagen (1960), and after the determination of the Silurian–Devonian boundary (XXIV. IGC Montreal, 1972), the newly established Subcommission on Devonian Stratigraphy evolved its activities including two meetings in the Barrandian (1977, 1986).

The principal results of new investigations connected with a wide-range international cooperation, can be summarized as follows: 1. Acceptance of the Silurian–Devonian boundary stratotype at Klouk near Suchomasty and auxiliary stratotype at Budňanská skála at Karlštejn as international standards (based on a paper by Chlupáč et

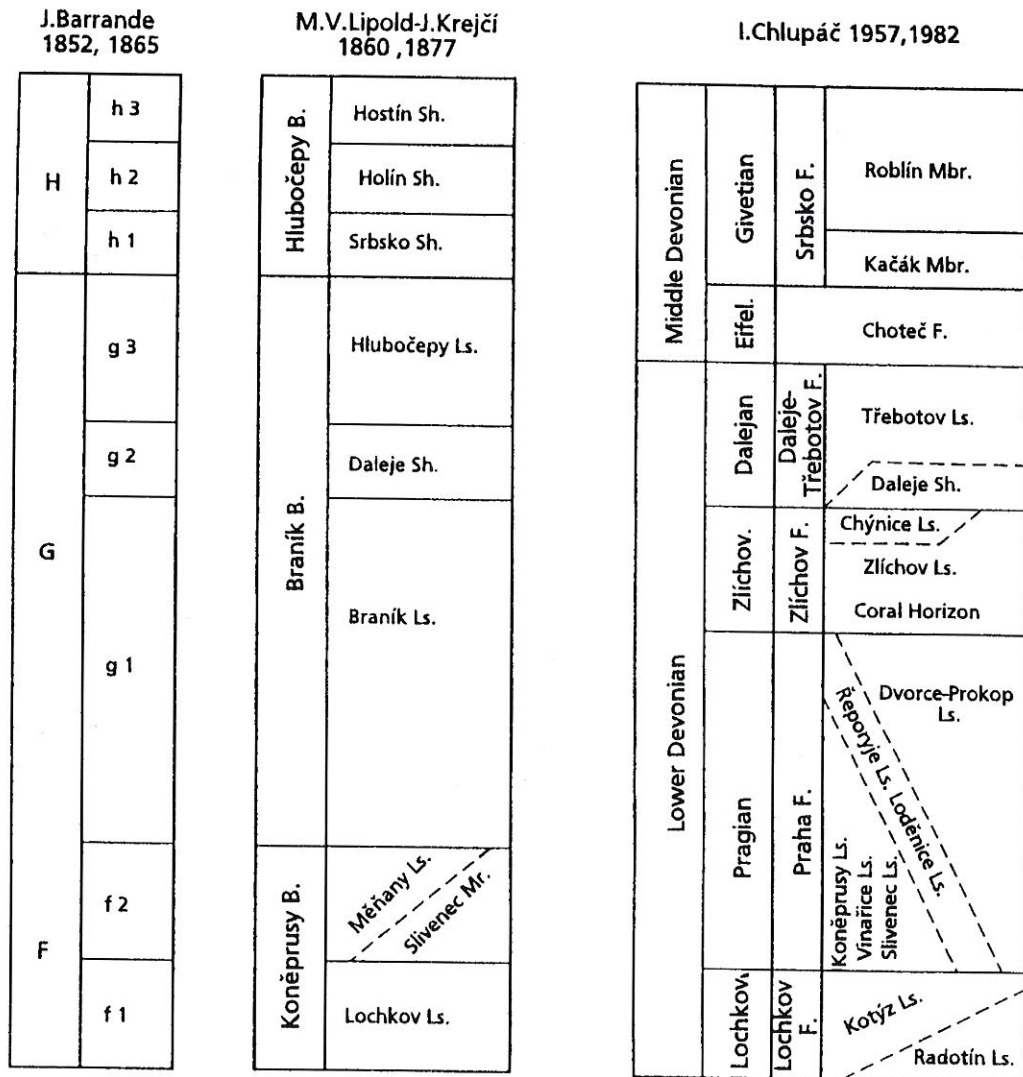


Fig. 5. Devonian stratigraphy of the Barrandian: subdivisions of Barrande and Lipold – Krejčí compared with the present status (F. – Formation, B. – Beds, Ls. – Limestone, Sh. – Shale, Mbr. – Member).

al. 1972, thorough discussion on the procedure by McLaren 1977). 2. Acceptance of the section at Holyně – Prastav Quarry as the parastratotype of the Lower–Middle Devonian boundary (1981, based on a paper by Chlupáč et al. 1979 and the proposal 1982a). 3. Acceptance of the Lochkovian and Pragian as standard stages of the international scale (1983, based on papers by Chlupáč 1976, 1982b). 4. Acceptance of the Lochkovian–Pragian boundary stratotype at Velká Chuchle (Chlupáč – Oliver 1989, based on the papers Chlupáč et al. 1985 and Weddige 1987) and renewed discussion on the Zlíchovian and Dalejan stages (now in progress within the Subcommittee on Devonian Stratigraphy).

During these activities new methods of detailed investigation of sections were developed and introduced for the first time in the Silurian–Devonian boundary beds. The biostratigraphy based on conodonts (e.g., Klapper et al. 1978, Schönlaub 1980), tentaculites (Bouček 1974, Lukeš 1986 etc.), spores and chitinozoans (see Fatka, this volume) was applied too. Analyses of assemblages also started (Chlupáč 1983a, 1994 – trilobites and phylloca-

rids, Havlíček – Kukul 1991, Havlíček – Vaněk 1998 – brachiopods and trilobites), and the event-stratigraphy was introduced (House 1985, Chlupáč – Kukul 1986, 1988).

Several unexpected discoveries also influenced some stratigraphic conclusions: the discovery of contemporary occurrence of tentaculites and graptolites stimulated the discussion on the Silurian–Devonian boundary (Chlupáč 1952, 1953). The find of graptolites in the uppermost Pragian by Bouček (1966) disproved the deep-rooted thesis that the extinction of graptolites indicates the end of the Silurian, whereas the oldest goniatites enabled the dating of the starting evolution of ammonoids (Chlupáč 1976b, Chlupáč – Turek 1983).

Recent stratigraphic investigations are concentrated on other important boundaries (Pragian–Zlíchovian, Eifelian–Givetian), refinement of the event-stratigraphy, conodont-, tentaculite-, spore- and chitinozoan biostratigraphy, sedimentology, cyclostratigraphy and application of physical stratigraphic methods (magnetic susceptibility and other).

Barrande's palaeontological localities

Barrande travelled very carefully the territory of his "Silurian system" in central Bohemia and with help of local collectors gathered an admirable collection of fossils (for his field activities see, e.g., Plas 1970).

As indicated in the introduction, Barrande's notebooks contain many drawings of carefully inspected and measured sections and panoramic views of terrain with numerous data on stratigraphy and lithology (examples on Pls. II–VI). However, new investigations were necessary to decipher the exact topographic position and stratigraphic assignment of many localities. Barrande's effort to be exact as much as possible was limited by feasibility of methods used at that time. For instance, he used for designation of localities old maps and topographic materials of the Austrian Monarchy with German version of local names, often incorrectly translated and spelled.

Barrande often used cumulative designations of localities that included under one name several different sites and stratigraphic units. This is the case of the Cambrian ("Skrey", "Ginetz"), but especially the Silurian and Devonian exhibiting a complex stratigraphy (typical examples are designations such as Lochkov, "Konieprus", "Mnienian", "Hlubočep"). Consequently, the actual number of Barrande's localities was markedly greater than can be deduced from their names, and, for example, near Koněprusy more than 100 small quarries were the sources of fossils as testified in notebooks of J. E. Marr who visited Bohemia in 1879 (Whittington 1970).

After Barrande's time, the activity of collectors of fossils markedly decreased and exact sites of many localities were forgotten (cf. Hanuš 1923, Kříž 1984), though some private collectors continued their work at some famous sites or in newly opened quarries, e.g., near Rokycany, Beroun, Koněprusy, Skryje etc. Among these, particularly M. Dusl, F. Hanuš, C. Klouček and R. Růžička, later V. Plas, J. Bouška, J. Kraft, J. Putzker, F. Hedvičák and F. Kalfus should be mentioned as examples.

Also, the landscape of central Bohemia has considerably changed since Barrande's time. Many small quarries, active in the 19th century, were abandoned and recultivated, as well as the iron ore mines in the Ordovician (comp. Lipold 1863). The permanent trend of overgrowth by vegetation became rapid particularly in the 20th century. Some important palaeontological localities were destroyed by intense quarrying (e.g., in the vicinity of Koněprusy, Tetín and Kosov) or building activities which is particularly the case of sites on the territory of the growing city of Prague. In spite of that, some Barrande's localities are still preserved in the field and observable in form of rows of old pits and trenches, often reaching the length of several tens of metres or even more (for example, near Loděnice, Hostim, Zahořany, Mount Děd). These sites are now protected by law.

The exact sites of some excavations are not known and outcrops made by Barrande's collectors are no more observable (this is especially the case of exposures in sha-

les or those situated on farmland). However, the stratigraphic assignment may be – after new detailed investigations – in most cases reconstructed according to the fossil content and lithology.

Many famous and accessible localities are described in geological guidebooks which have been edited since the mid-19th century and whose edition continues till now (Chlupáč 1993, 1999, Kříž 1992 as most recent examples).

For the purpose of correct stratigraphic evaluation of old collections, scattered since the 19th century in various world scientific institutions and museums, tables 1 to 4 with basic data on Barrande's fossil localities are presented. They contain the original topographic and stratigraphic designations used in Barrande's works, the present topographic and stratigraphic assignments, and some remarks on the recent status and/or few selected references which directly concern the localities. The lists are restricted to proper Barrande's localities which yielded palaeontologic materials described in his works. Other sites reported by his successors continuing in editing the "Système silurien..." (O. Novák, J. J. Jahn, J. Perner, F. Počta, W. H. Waagen, A. Fritsch) are not included. Some abbreviations are used in the lists, especially F. – Formation, Mbr. – Member, vill. – village.

Conclusion: Barrande's tradition

The works of Joachim Barrande represent the ground from which further investigations during the last 150 years evolved. Barrande's studies, working methods and human profile gave rise to Barrande's tradition which is still living and influencing even the youngest generation. Though Barrande was a respectable French scientist, his relations to Czech people and the Czech nation made him a personality well known not only to scientists and students, but also to a broad public. For example, the portrait of Joachim Barrande is included even in recent textbooks for children in primary schools.

The name of a modern section of the city of Prague-Barrandov (founded in 1928 by V. M. Havel, father of the President of the Czech Republic Václav Havel) and still extending with almost 20 000 inhabitants, is a unique honour which was granted to a geologist or palaeontologist.

Two streets in Prague and Beroun bear Barrande's name, two commemorative tablets in Prague (on Barrande's Rock and at Újezd, down town Prague) and the monument at Skryje, Barrande's bust in the National Museum, the name of the department and hall with collections of J. Barrande in the National Museum, Prague (Barrandium), Barrande's Rock at Prague, Barrande's Cave at Srbsko and the geological designation of the entire area of Barrande's "Silurian System" in central and western Bohemia as the Barrandian (proposed by Pošepný 1895, re-introduced by Kettner 1916, discussion in Kettner 1959), are only some examples of honours and still living popularity of Joachim Barrande in our country.

THE SILURIAN BASIN OF BOHEMIA, (IN PART)
 representing the principal fossiliferous localities.

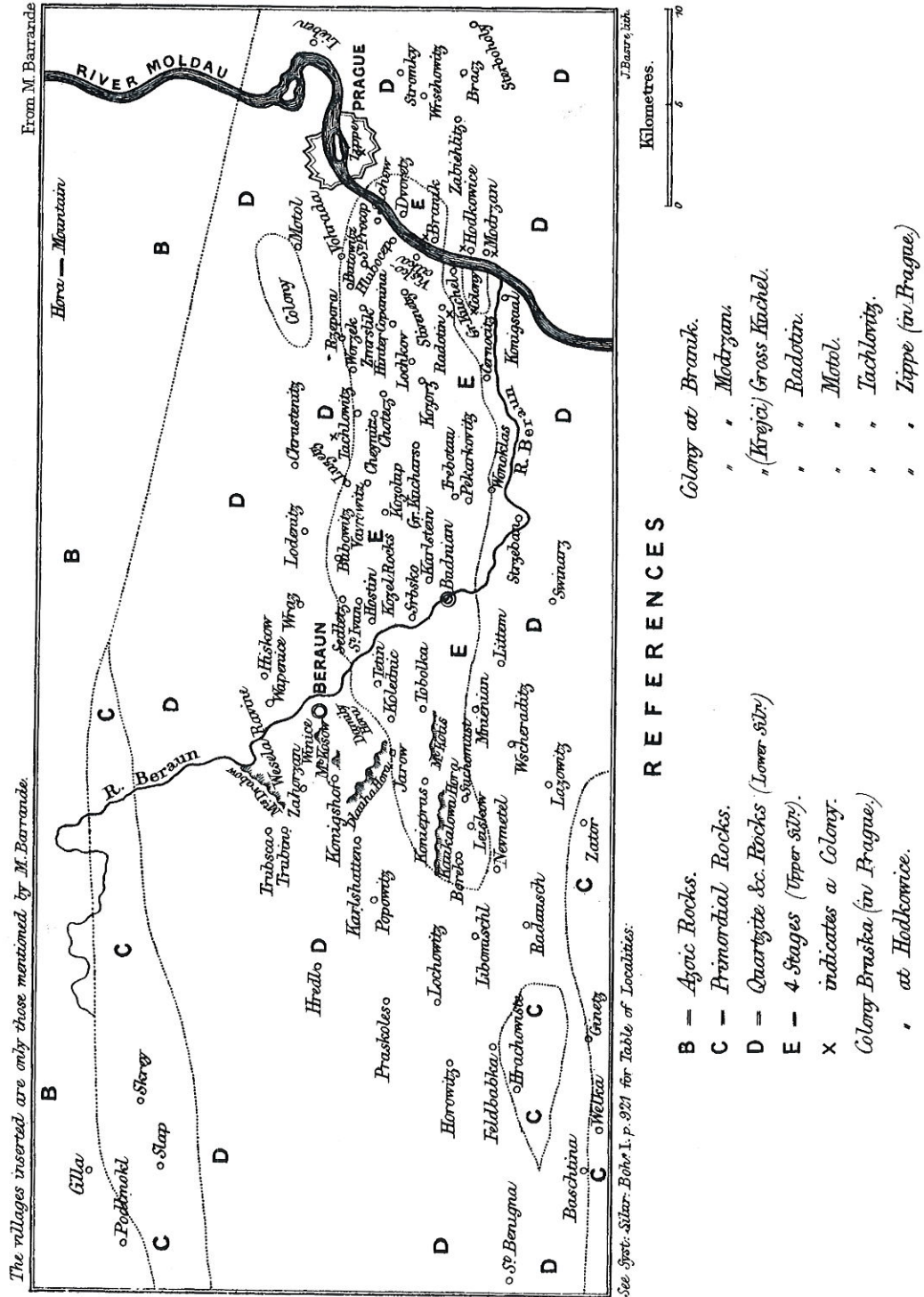


Fig. 6. Map of principal Barrande's palaeontological localities published in *Thesaurus siluricus* by Bigsby (1868).

Table 1. Barrande's Cambrian localities

original designation	original strat.	present designation	present stratigr.	revision, comments
Baschtina	C	Baština (in Brdy Mts.)	Jince F.	name of the former forester's, exact site unknown
Czilla (moulin)	C	Čilá (vill.)	Skryje Sh.	Jahn (1898)
Felbabka	C	Felbabka (vill.)	Jince F.	Havlíček – Šnajdr (1951), Šnajdr (1958)
Ginetz	C	Jince (town)	Jince F.	cumulative designation for diverse sites in the vicinity of Jince (Šnajdr 1958)
Hrachowischt	C	Hrachoviště (vill., Jince area)	Jince F.	Šnajdr (1958)
Klein-Lohowitz	C	Lohovičky (vill.)	Skryje Sh.	Jahn (1898)
Komorsko	C	Komorsko (local name)	Jince F.	S slope of the Písek Mt. (Havlíček – Šnajdr 1951)
Kouřimetz	C	Kouřimec (farm)	Skryje Sh.	Kettner – Slavík (1929)
Lipa Mt.	C	Lípa (hill)	Skryje Sh.	Jahn (1898)
Mleschitz	C	Mlečice (vill.)	Skryje Sh.	Jahn (1898), Šnajdr (1958)
Praschno Augezd	C	Prašný Újezd (vill.)	Skryje Sh.	exact site unknown
Reykowitz	C	Rejkovice (vill.)	Jince F.	Havlíček – Šnajdr (1951), Šnajdr (1958), diverse sites
Skrey	C	Skryje (vill.)	Skryje Sh.	cumulative designation for diverse sites (e.g., Jahn 1896, Šnajdr 1958, Chlupáč et al. 1998)
Slap	C	Slapský mlýn = Buchava (local name)	Skryje Sh.	Jahn (1896), Šnajdr (1958), Chlupáč (1993)
Teyržovitz, Teyržowitz	C	Týřovice (vill.)	Skryje Sh.	Jahn (1896), Šnajdr (1958), cumulative designation for diverse sites
Welka	C	Velcí (vill.), Vystrkov hill	Jince F.	Šnajdr (1958)
Wostrowetz (vallon)	C	Ostrovec (vill.)	Skryje Sh.	exact site unknown
Zator (moulin)	C	Zátor (local name), slope of Mt. Velká Baba	Jince F.	Šnajdr (1958)

Table 2. Barrande's Ordovician localities

original designation	orig. strat.	present designation	present strat.	revision, comments
Ausken Zeche	d1	former mine Ouzký near Holoubkov	Třenice F.	old dumps, Klouček (1924, 1925), Mergl (1994)
Auval	d1	Úvaly (town)	Šárka F.	Havlíček (1950)
Bakow, Bukow	d1	Mt. Bukov near Zbiroh	Třenice F.	Klouček (1924)

Table 2. (continued)

original designation	orig. strat.	present designation	present strat.	revision, comments
Bracž (brasserie)	d4	Praha-Nusle	Bohdalec F.?	covered (building activity)
Bruska (chemin creux)	d4	Praha, Pod Bruskou street	Letná F.	Bouček (1928), discussions on the covered "Colonie Zippe" in many papers
Butowitz	d5	Praha-Butovice	Králův Dvůr or Bohdalec F.	exact site unknown
Bohdalec Mt.	d4	Praha-Bohdalec (hill)	Bohdalec F.	covered (building activity), Bouček (1928), Röhlich (1957)
Chodaun	d5	Chodouň (vill.)	Králův Dvůr F.	gorge NE of the village
Chrštenitz (vallon, minerais de fer)	d2, d4	Chrštenice (vill.)	Letná F., Vinice F.	Havlíček in Kovanda et al. (1984)
Czerhowitz	d1	Cerhovice (vill.) Cerhovičká = Třenická Mt.	Třenice, Mlýna, Olešná F.	old quarries, partly covered
Czernin, Czernin	d3	Černín (vill.)	Vinice F.	Röhlich (1957), Havlíček in Havlíček et al. (1975)
Drabov, Drabow	d2	Mt. Děd near Beroun	Letná F.	Chlupáč (1965, 1993), cumulative designation
Emaus	d1	Praha-Emauzy	Dobrotivá F.	covered (building activity)
Gross Kuchel	d5	Praha-Velká Chuchle	Bohdalec F.	Bouček (1924), Röhlich (1957)
Hajek	d2	Háj - hill near Zahořany	Letná F.	Jahn (1892), Bouček (1928)
Hlava (minerais de fer)	d1	former mine Hlava near Komárov	Klabava F.	old dumps, Mergl (1991)
Holoubka	d1	former mine Ouzký near Holoubkov	Třenice F.	Klouček (1924, 1925), Mergl (1994)
Hradischt	d1	Hradiště (hill)	Klabava F. (Olešná Mbr.)	exact site unknown
Hrdlořeč	d4	Praha-Hrdlořezy	doubtful	covered (building activity)
Hředl	d3	Hředle (vill.)	Vinice F.	outcrops E of the village
Karés	d1	Kařezek (vill.), old mine Veronika	Dobrotivá F.	Klouček (1913), not accessible
Karlshütte	d5	Karlova Huť (now part of the town Beroun)	Králův Dvůr F.	covered
Katschina	d1	Kačina near Dobřív (old mine)	Třenice F.	not accessible
Klabava (vallon)	d1	Klabava (valley of the rivulet)	Klabava F., Šárka F.?	cumulative designation, different sites, Kraft – Kraft (1994)
Knižkowitz	d3	Knížkovice (vill.)	Vinice F.	exact site unknown
Koenigshof	d5	Králův Dvůr (town)	Králův Dvůr F.	covered (building activity)
Koschirz	d1	Praha-Košíře	?Dobrotivá F.	exact site unknown
KOSOV, Kosow	d5	Kosov hill near Beroun	Králův Dvůr F. (uppermost part)	Marek (1952), now mostly covered
Kruschna Hora (mineral)	d1	Krušná hora Mt. (old mine)	Třenice, Klabava, Šárka F.	refuse dump, now covered

Table 2. (continued)

original designation	orig. strat.	present designation	present strat.	revision, comments
Lahovska	d4	Lahovská near Praha-Radotín	Bohdalec F.	Bouček (1928)
Lažowitz	d4	Lážovice (vill.)	Zahořany F.	Havlíček – Šnajdr (1955)
Leiskov, Leiskow	d5	Lejškov (hill)	Králův Dvůr F.	exact site unknown
Libetschow	d1	Libečov (vill.) “Na močidlech”	Třenice F.	Jahn (1904), Havlíček (1987)
Libomischl	d5	Libomyšl	Králův Dvůr F.	outcrops E of the village
Lieben	d4	Praha-Libeň	Zahořany F.	Bouček (1924), Röhlich (1960)
Lodenitz	d4	Loděnice (town)	Zahořany F.	Bouček (1928), cumulative designation
Michle	d5	Praha-Michle	?Bohdalec F.	covered (building activity), cumulative designation
Motol, Motoly	d4	Praha-Motol	Bohdalec F.	covered (building activity)
Nussle	d5	Praha-Nusle	Králův Dvůr F.	covered (building activity)
Ober-Czernoschitz	d5	Černošice, slope of the Babka hill	Králův Dvůr F.	exact site unknown
Pleschivetz	d2	Mt. Plešivec near Beroun	?Letná F.	exact site unknown
Praskoles	d4	Praskolesy (vill.)	Zahořany F.	outcrops W of the village
Radotin	d4	Praha-Radotín, slope Staňkovka	Zahořany F.	Bouček (1928)
Rabenberg	d1	probably Vraní skála between vill. Hředle and Svatá	Klabava F. (Olešná Mbr.)	exact site unknown
Ratsch Mt.	d1	Mt. Rač near Lhota pod Račem (vill.)	Klabava F.	dumps from an old iron-ore mine
Rokitzan	d1	Rokycany (town)	Šárka F.	cumulative designation, Klouček (1916), Kraft – Kraft (1992)
Sancta Benigna	d1	Svatá Dobrotivá (vill.) near Zaječov, Kozojedy gallery	Mlýna a. Klabava F. (minor part of the material), Dobrotivá F. (most part)	outcrops and dumps of an old iron-ore mine, mostly covered
Scharka (vallon)	d1	Praha-Šárka valley	Šárka F.	cumulative designation, now mostly covered, Havlíček in Králík et al. (1984)
Sterbohol,	d4	Praha-Štěrboholy	Zahořany F.,	mostly covered (building activity), Röhlich (1957)
Straschnitz, Stražnitz	d4	Praha-Strašnice	Bohdalec F.	covered (building activity)
Swarow	d1	Svárov (vill.)	Klabava F. (Olešná Mbr.)	covered
Trubin	d3	Trubín (vill.)	Vinice F.	Bouček (1928)
Trubsko	d2	Trubsko (vill.)	Letná F.	Bouček (1927), Havlíček in Chlupáč et al. (1987)
Vesela, Wesela	d2	Veselá (farm near Beroun)	Letná F.	Chlupáč (1965)
Visočan	d4	Praha-Vysočany	Zahořany F.	Röhlich (1960), now covered

Table 2. (continued)

original designation	orig. strat.	present designation	present strat.	revision, comments
Vokovitz	d1	Praha-Vokovice	Šárka F., Dobrotivá F.	cumulative designation, now covered, Klouček (1916)
Vosek, Wosek	d1	Osek (vill.) near Rokycany	Šárka F.	cumulative designation, Klouček (1916)
Winice, Vinice	d3	farm Vinice near Beroun	Vinice F.	Bouček (1928)
Wraž, Vraž	d3, d4	Vraž (vill.) near Beroun	Vinice a. Zahořany F.	exact sites unknown
Wrschowitz,	d4	Praha-Vršovice	Zahořany F.	mostly covered (building activity)
Zabiehlitz	d4	Praha-Záběhllice	Zahořany a. Bohdalec F.	covered (building activity)
Zahoržan	d4	Zahořany (vill.)	Zahořany F.	Bouček (1928), Havlíček in Chlupáč et al. (1987), Parsley (1998)
Zditz	d4	Zdice (town)	Zahořany F.	between Zdice and Knížkovice, exact site unknown

Table 3. Barrande's Silurian palaeontological localities

original designation	Barr. strat.	present designation	present strat.	comments, revision
Bikosch	E, e1	Bykoš (vill.)	Liteň F. (Želkovice Mbr. a. younger)	exact site unknown, Horný (1955)
Borek	e1	Lejškov hill near Suchomasty	Liteň – Kopanina F. boundary interval	exact site unknown, Horný (1955)
Braník	e1	Praha-Braník	Liteň F. (Motol Mbr.), Kopanina F.	partly covered, Kříž (1992, 1999)
Bubowitz	e2	Bubovice (vill.)	?Kopanina F.	exact site unknown
Butovitz, Butowitz	e1, e2	Praha-Butovice	Kopanina F. (main part of coll.)	Kříž (1961, 1992)
Colonie d' Archiac	d5	Praha-Stodůlky	Liteň F. (Želkovice, Litohlavy, Motol Mbrs.)	now covered, Bouček (1937), Přibyl (1940)
“ Béranka	d5	Praha-Řepy (Bílý Beránek)	Liteň F. (Motol Mbr.)	now covered (building activity), Přibyl (1940), Kříž (1974)
“ Cotta	d5	Praha-Řeporyje	Liteň F. (Litohlavy?, Motol Mbrs.)	now covered, Přibyl (1940)
“ Haidinger	d5	Praha-Velká Chuchle	Liteň F. (Želkovice Mbr.)	Přibyl (1940), Štorch (1986), Kříž (1999)
“ Hodkoviček	d5	Praha-Braník, Hodkovičky	Liteň F. (all Mbrs)	Přibyl (1940), Bouček (1953), Kříž (1999)
“ Hradek – Moržin	d5	Mořina (vill.)	Liteň F. (Litohlavy Mbr.)	exact site unknown
“ Karlík	d5	Karlík (vill.) near Dobřichovice	Liteň F. (Želkovice Mbr.)	Přibyl (1940), Štorch (1994a)
“ Klučice	d5	Klučice at Karlštejn	Liteň F. (Želkovice Mbr.)	Přibyl (1940)
“ Krejčí	d5	Praha-Velká Chuchle	Liteň F. (Motol Mbr.)	Přibyl (1940), now covered
“ Lahovska	d5	Lahovská near Praha-Radotín	Liteň F. (Litohlavy, Motol Mbrs.)	Přibyl (1940), Kříž (1999)

Table 3. (continued)

original designation	Barr. strat.	present designation	present strat.	comments, revision
Lapworth	d5	between Smutný a. Holý hills near Zdice	Liteň F. (all Members)	Bouček (1930), Příbyl (1940), Štorch (1994)
Lipold	d5	Kosov hill near Litohlavy	Liteň F. (Želkovice, Mbrs)	Příbyl (1940), now covered
Marr	d5	Zdice (town)	Liteň F. (Želkovice Mbr.)	Příbyl (1940)
Motoly	d5	Praha-Motol	Liteň F. (all Members)	Příbyl (1940), Pouba (1949), Kříž (1999)
Rovina	d5	Rovina (vill.) near Řevnice	Liteň F. (?Želkovice, Litohlavy Mbrs.)	now covered, Příbyl (1940)
Solopisk	d5	between Černošice and Solopysky (vill.)	Liteň F. (Želkovice Mbr.)	Bouček (1953), Příbyl (1940), Štorch (1986, 1994a)
Tachlovitz	d5	Tachlovice (vill.)	Liteň F. (Litohlavy a. Motol Mbrs.)	Příbyl (1940)
Tullberg	d5	Studený hill near Chodouň	Liteň F. (all Mbrs.?)	Příbyl (1940)
Vinice	d5	Praha-Modřany	Liteň F. (Želkovice, Litohlavy Mbrs.)	Příbyl (1940)
Vohrada, Wohrada	d5	Praha-Velká Ohrada	Liteň F.	covered (building activity)
Dlauha hora	e1, e2	Dlouhá hora (hill S of Beroun)	Liteň F. (Motol Mbr.), Kopanina F.	Horný (1955), Kříž (1970, 1992)
Dworetz	e1, e2	Praha-Podolí	Přídolí F., Lochkov F.	Příbyl (1943), Chlupáč et al. (1972), Kříž (1992)
Gross Kuchel	e2	Praha-Velká Chuchle (Chuchelský háj)	Kopanina F.	Kříž (1970, 1999)
Gross Kuchel, vallon entre G. K. and Slivenetz	e2	Valley between Velká Chuchle and Slivenec (now parts of Prague)	Kopanina a. Přídolí F.	Kříž (1999), partly covered
Hinter Kopanina	e2	Zadní Kopanina (vill., now part of Prague)	Kopanina F.	Kříž in Kovanda et al. (1984), Kříž (1999)
Jarow	E	Beroun-Jarow	Liteň F.	exact site unknown
Karlstein	e2	Karlštejn, Budňanská skála, Plešivec, Haknová, etc. (hills)	Přídolí F., Lochkov F. (Devon.)	cumulative designation, Horný (1955), Chlupáč et al. (1972), Chlupáč (1993), Kříž (1992)
Klein Moržin	e2	Mořinka	Kopanina F.	exact site unknown
Koenigshof	e1	Králov Dvůr, slope of the Kosov hill	Liteň F.	exact site unknown
Koednik	e2	Koedník (farm) near Beroun	Kopanina F.	now covered, Kodym et al. (1931), Horný (1955)
Konieprus	e1, e2	Koněprusy (vill.)	Kopanina F., Liteň F. (Motol Mbr.)	cumulative designation, exact sites unknown, Horný (1955)
Konvařka (carrière près Slichow)	e2	Praha-Konvařka	Liteň F. (Motol Mbr.), Kopanina F.	mostly covered, Kříž (1999)

Table 3. (continued)

original designation	Barr. strat.	present designation	present strat.	comments, revision
Kosorž, Kozorž	e2	Kosoř or Radotín Valley	Kopanina F., Přídolí F.	cumulative designation
Kozel (roches de Kozel)	e1, e2	Berounka valley, rocks V Kozle near Beroun	Liteň F. (Motol Mbr.)	cumulative designation, Horný (1955, 1972), Vaněk (1990), Kříž in Galle et al. (1991), Kříž (1992), Manda (1996)
Kuchelbad	e2	Praha-Malá Chuchle	Liteň F., Kopanina F.	see Viskočilka
Launin	e1	Lounín (vill.)	Kopanina F.	exact site unknown
Libomischl	E	Libomyšl (vill.)	Liteň F., Kopanina F.?	Havlíček – Štorch (1990), Barrande's site unknown
Listice (collines de L.)	e2	Lištice near Beroun	Liteň F. (Motol Mbr.)	cumulative designation, Kodým et al. (1931), Horný (1955, 1965), Kříž in Havlíček et al. (1987), Vaněk (1990), Kříž (1992)
Litohlav	E, e1	Litohlavy (former mill near Králův Dvůr)	Liteň F. (all Mbrs.)	Bouček (1953), Kříž (1975, 1992), Štorch (1994), original site flooded
Lodenitz	e1,e2	Loděnice (town)	Liteň F. (Motol Mbr.-majority of collections, Želkovice Mbr. and Kopanina F. – small part of collections)	cumulative designation, Bouček (1941), Kříž (1970, 1992), Vaněk (1990), Chlupáč (1993), some sites unknown
Lodenitz–Bubovitz (collines entre L. et B.)	e2	hills between Loděnice a. Bubovice	Liteň F. (mostly Motol Mbr.)	cumulative designation, Horný (1965)
Lochkov	e2	Praha-Lochkov	Kopanina F., Přídolí F., Devonian (Lochkovian, Pragian)	cumulative designation for very different sites, many papers and Kříž (1999), see also Devonian
Lužetz	E, e1	Lužce (vill.)	Liteň F. (Motol Mbr.)	exact site unknown
Lužetz-Lodenitz (collines entre...)	e2	hills between Lužce a. Loděnice	Liteň F. (Motol Mbr.) exact sites unknown,	cumulative designation, Horný (1955), Kříž in Kovanda et al. (1994)
Nový Mlýn	e2	Nový mlýn in the Daleje valley, section near Opatřilka	Přídolí F. and Devonian	Chlupáč et al. (1972), Kříž (1999)
Ratinka	e2	Ratinka near Beroun	Liteň F. (Motol Mbr.)	exact site unknown
Ržepora	e2	Praha-Řeporyje	Liteň F. (Motol Mbr.), Kopanina F.	cumulative designation for different sites in the upper part of the Daleje valley, Bouček (1937), Kříž (1999)
Sedletz	e1, e2	Sedlec (vill.) near Loděnice	Liteň F. (Motol Mbr.)	Horný (1965), Vaněk (1990)
Slavík	e2	Slavíky (vill.)	Kopanina F.	exact site unknown
Slivenetz (vallon de S.)	e1, e2	Slivenec (valley between Praha-Velká Chuchle a. S.)	Kopanina F., Přídolí F.	see Gross Kuchel (vallon...)
Slichow	e2	Praha-Zlíchov	Liteň F. (Motol Mbr.), Kopanina F.	see Konvářka
St. Ivan	e1, e2	Svatý Jan pod Skalou (vill.)	Liteň F. (Motol Mbr.), Lochkov F. (Devon.)	Horný (1955), Chlupáč (1953), Havlíček – Štorch (1990), Vaněk (1990)

Table 3. (continued)

original designation	Barr. strat.	present designation	present strat.	comments, revision
St. Prokop (vallon de St. P.)	E, e2	Prokopské valley at Prague	mostly Kopanina F.	cumulative designation
St. Pankratz (prés Prague)	e2	Praha-Pankrác	Kopanina F.,	covered (building activity), Kříž in Králík et al. (1984)
Suchomast	E, e2	Suchomasty (vill.)	Kopanina F.?	exact site unknown
Tachlowitz	E, e2	Tachlovice (vill.)	Liteň F., Kopanina F.	cumulative designation, some exact sites unknown, Kříž in Kovanda et al. (1984)
Tetin	e2	Tetín (vill.)	?	exact site unknown
Tobolka	e2	Tobolka (vill.)	?	exact site unknown
Vohrada, Wohrada	E, e1, e2	Praha-Velká Ohrada Daleje Valley	Liteň F., Kopanina F.	cumulative designation, sites in the N slope of the Daleje valley, Bouček (1937), Kříž (1992), Štorch (1994b)
Vorder Stržeban	e1	Hlásná Třebaň and Rovina (vill.)	Liteň F. (Želkovice Mbr, Motol Mbr.?)	Bouček (1953), Štorch (1986)
Winaržitz	E	Vinařice (vill.)	Liteň F.	exact site unknown
Wiskočilka, Wyskočilka, Viskočilka	e1, e2	Barrandovské skály in Prague, locality Na Vyskočilce, etc.	Liteň F. (Motol Mbr.), Kopanina F.	cumulative designation, Bouček (1953), Vaněk (1962), Kříž (1999)
Zmrzlik	e2	Zmrzlík near Zadní Kopanina (now parts of Prague)	Kopanina F.	Kříž in Kovanda (1984), Kříž (1999)
Želkowitz	e1	Želkovice (vill.)	Liteň F. (Želkovice, Litohlavy Mbrs.)	Bouček (1953), Štorch (1994a), sites partly covered

Table 4. Barrande's Devonian palaeontological localities

original designation	orig. strat.	present designation	present strat.	comments, revision
Branik	G, g1	Praha-Braník, Branické skály	Praha F. (Dvorce–Prokop Ls.)	Chlupáč (1983b, 1993), Kříž (1999)
Bubowitz	F, G	Bubovice (vill.)	Zlíchov F., Choteč F.	exact sites unknown
Burian (moulin de B.)	g3	former Burian mill near Chýnvice	Třebotov Ls., ?Choteč Ls.	Chlupáč (1959)
Cheynitz	g1, g3	Chýnvice (vill.)	Zlíchov F., Třebotov Ls., Choteč Ls.	cumulative designation, Chlupáč (1983b)
Chotecz, Chotečz	g1	Choteč (vill.)	Zlíchov F., Daleje Sh., Třebotov Ls., Choteč F.?	cumulative designation, Chlupáč (1983b)
Damily, Damiely	G, g1	Damil hill near Tetín	Praha F. (Dvorce–Prokop Ls.)	mostly covered or destroyed by quarrying, Chlupáč (1983b)
Dvoretz, Dworetz	f1, G, g1	Praha-Podolí, Dvorce	Lochkov F., Praha F. (Slivenec, Dvorce–Prokop Ls.)	now rocks above the swimming pool, Chlupáč (1983b)
Franta (moulin)	g3, h1	Tůmův mlýn near Roblín (vill.)	Třebotov Ls., Choteč F., Srbsko F.	Chlupáč (1959, 1960)

Table 4. (continued)

original designation	orig. strat.	present designation	present strat.	comments, revision
Gelinek (moulin de G.)	G, g3	Former Jelínkův mill near Chýnčice	Třebotov Ls., Choteč F.	Chlupáč (1959, 1983b)
Gross Kuchařz	G, g2	Kuchař (vill.)	Zlíchov F., Daleje Sh.	exact site unknown
Gross Kuchel	f1, G	Praha-Velká Chuchle, Homolka	Lochkov F., Praha F. (Dvorce–Prokop Ls.)	Chlupáč et al. (1985), Chlupáč – Oliver (1989)
Gross Moržin	G, g3	Mořina (vill.)	Třebotov Ls.	exact site unknown
Hinter Kopanina	e2	Zadní Kopanina (now part of Prague)	Zlíchov F., see Silurian (most part of material)	exact site unknown, Chlupáč (1957)
Hlubočep	G, g1, g2, g3	Praha-Hlubočepy	Praha F. (Dvorce–Prokop Ls.), Zlíchov F., Daleje Sh., Třebotov Ls., Choteč F., Srbsko F.	cumulative designation for many sites, Chlupáč (1959, 1983b, 1993)
Holin	h1	Praha-Holyně	Srbsko F.	exact site unknown, Chlupáč (1960)
Hostin	G, g1, h1	Hostim (vill.)	Praha F. (Dvorce–Prokop Ls.), Zlíchov F., Srbsko F.	cumulative designation, Chlupáč (1983b)
Karlstein	e1, G, g1, g2	Karlštejn (town)	see Silurian, Lochkov F., Zlíchov F., Daleje Sh.	cumulative designation, Chlupáč (1959, 1983b)
Klukovitz, Klukowitz	G, g3	Praha-Klukovice	Třebotov Ls., Choteč F.	now covered, Chlupáč (1983b)
Konieprus	F, f2	Koněprusy (vill.)	Praha F. (Koněprusy Ls.), Suchomasty Ls., Acanthopyge Ls.	cumulative designation for wide area S of Koněprusy, Chlupáč (1983b, 1993)
Kosorž, Kosofz	G, g1, g2	Kosoř (vill.)	Praha F. (Dvorce–Prokop Ls.), Daleje Sh.	Chlupáč (1983b, 1993)
Kotis, prés Konieprus	F, f2	Kotýs near Koněprusy	Praha F. (Koněprusy Ls.), Suchomasty Ls., Acanthopyge Ls.	cumulative designation, western area of the Zlatý kůň hill, now mostly destroyed by quarrying
Lochkov, Lochkow	F, f1, G, g1	Praha-Lochkov, Černá rokle near Kosoř and Radotín valley	Lochkov F. (Radotín Ls.), Praha F. (Dvorce–Prokop Ls.)	cumulative designation, Chlupáč (1983b, 1993), see also Silurian
Lužetz	F, G, g1	Lužce (vill.)	Praha F. (Loděnice Ls.), Zlíchov F., Choteč Ls.	cumulative designation, Chlupáč (1983b)
Mnienian	f, f2	Měňany (vill.)	Praha F. (Vinařice Ls.), Suchomasty Ls., Acanthopyge Ls.	cumulative designation for different sites S of Koněprusy, Chlupáč (1983b)
Pekarkowitz, Pekarkovicz	g2	Pekárkův mlýn near Solopysky	Zlíchov F., Daleje Sh.	Chlupáč et al. (1979)
Roblín	G	Roblín (vill.)	Třebotov Ls.	Chlupáč (1959)
Rothe Mühle	G	Červený mlýn near Hlubočepy, Prokop valley	Zlíchov F., Třebotov Ls.?	exact site unknown
Ržepora	G, g1	Praha-Řeporyje, Daleje valley	Praha F., Zlíchov F.	exact sites unknown

Table 4. (continued)

original designation	orig. strat.	present designation	present strat.	comments, revision
Schwagerka	G, g1	Švagerka near Praha-Zlíchov	Zlíchov F.	Chlupáč et al. (1979), Chlupáč (1983b)
Slichow	F, g1	Praha-Zlíchov, near Konvářka	Praha F. (Slivenec Ls., Dvorce-Prokop Ls.)	covered (building activity), Chlupáč (1957, 1983b), Vaněk (1962)
Slivenetz	F, f1, g1	Praha-Slivenec	Lochkov F., Praha F. (Slivenec, Dvorce-Prokop Ls.)	cumulative designation, vicinity of the Cikánka quarry?
Srbsko	F, f2, g1, h1	Srbsko (vill.)	Praha F. (Slivenec, Dvorce-Prokop Ls.), Zlíchov F., Srbsko F.	cumulative designation, Chlupáč (1983b)
St. Ivan	F, f2 (e2)	Svatý Jan pod Skalou (vill.)	Lochkov F. (Kotýs Ls.)	Chlupáč (1953), Chlupáč et al. (1972)
Tetin	G, g1	see "Damily"	Praha F. (Dvorce-Prokop Ls.)	see Damil hill
Tobolka	G	Tobolka (vill.)	?	exact sites unknown
Tržebotov	G, g3	Třebotov (vill.)	Třebotov Ls., Choteč F.	covered by building activity
Vavrovitz, Wawrowitz	G, g2	Vávrův mlýn (former mill) E of Choteč	Daleje Sh.	Chlupáč (1959, 1983b)
Viskočilka, Wiskočilka	f2, G, g1	Praha, Barrandov Rocks (section below Praha-Barrandov)	Praha F. (Slivenec, Dvorce-Prokop Ls.), Zlíchov F.	Kettner (1917), Chlupáč (1957, 1983b, 1993)

Numerous scientific sessions, seminars and conferences were devoted to the personality and work of J. Barrande since 1884. Among them, the international conference scheduled for the 23rd International Geological Congress in Prague 1968 is of special historical interest: due to interruption of the Congress because of the Soviet invasion and occupation of Czechoslovakia, the Conference was postponed till May 1969 (collected papers edited by B. Bouček and L. Marek in 1970). In 1983, the Czechoslovak Post issued a stamp to commemorate the hundred year anniversary of Barrande's death, and a series of postage stamps should appear in 1999 to recall Barrande's 200 year anniversary.

There is no doubt that the greatest significance of J. Barrande lies in the systematic palaeontology. After the edition of the last volume of *Système Silurien* in 1911, the systematic palaeontology in the Barrandian started its new period in thirties, especially by studies on graptolites (B. Bouček, later A. Přibyl), corals and bryozoans (F. Prantl), conulariids (B. Bouček) and few other groups.

However, the major part of systematic monographs and papers dealing with revisions of Barrande's materials under new aspects fall into the last 50 years. This concerns particularly brachiopods (V. Havlíček, recently M. Mergl), trilobites (F. Prantl, A. Přibyl, M. Šnajdr, J. Vaněk a.o.), graptolites (B. Bouček, A. Přibyl, recent-

ly J. Kraft, P. Kraft, P. Štorch), goniatites (I. Chlupáč, V. Turek), tentaculites (B. Bouček, later P. Lukeš), eurypterids and other non-trilobite arthropods (F. Prantl, A. Přibyl, I. Chlupáč), echinoderms (J. Bouška, later R. J. Prokop and V. Petr), some groups of bivalves (J. Kříž), gastropods (R. Horný), nautiloids (R. Horný, V. Turek, I. Kolečaba), bryozoans (McKinney, J. Kříž), corals (A. Galle, J. Hladil, W. A. Oliver), ostracods (A. Přibyl), and other fossils, including plants (J. Obrhel).

New studies on ichnofossils (R. Mikuláš) and some microfossils (conodonts, acritarchs, spores) indicate new trends in palaeontological research with marked stratigraphic impacts. In spite of all these activities, a significant part of materials collected and described by Barrande and his successors still waits for a modern revision.

Though more than 100 papers are devoted to personality and work of J. Barrande, a comprehensive historical monograph is still missing and a rich correspondence, fieldbooks and personal materials are waiting to be still studied in future. Apart from few memoirs, e.g. by the famous Czech poet Jan Neruda (1883) and the traveller and teacher Josef Kořenský (1899), there is very little known about Barrande's personal, and almost nothing about his intimate life.

Further investigation of the Barrandian area, preservation of its nature, education of new generations of scien-

tists and nature lovers, and future historical evaluation of the personality of Joachim Barrande should be the best fulfilment of Barrande's heritage.

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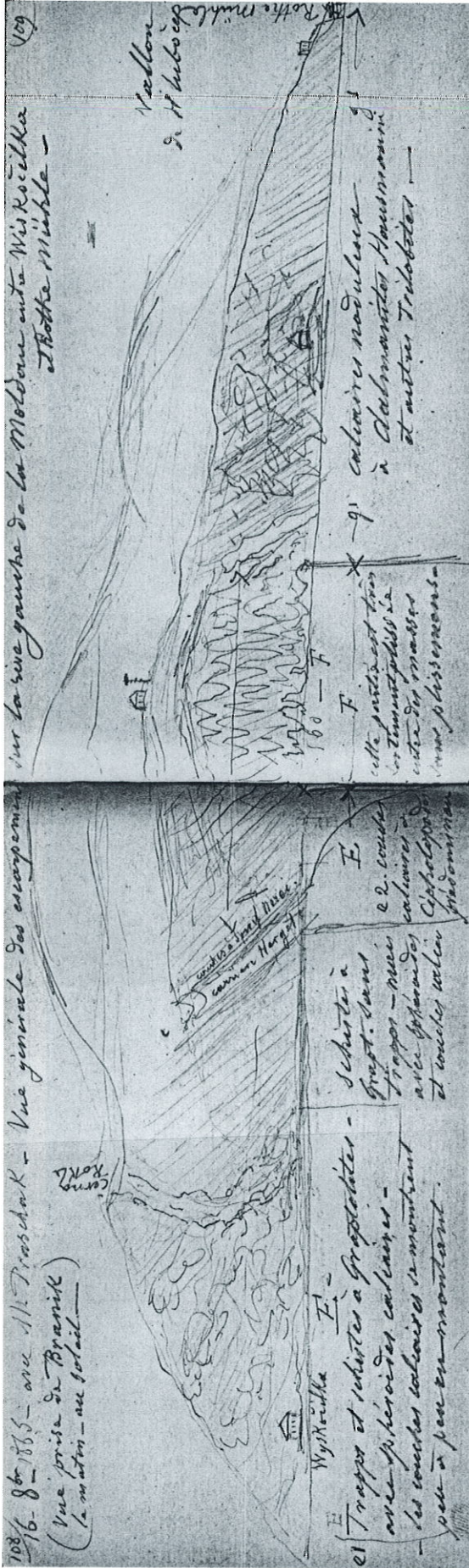
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Barrandovy stratigrafické koncepce, paleontologické lokality a tradice – srovnání s dnešním stavem

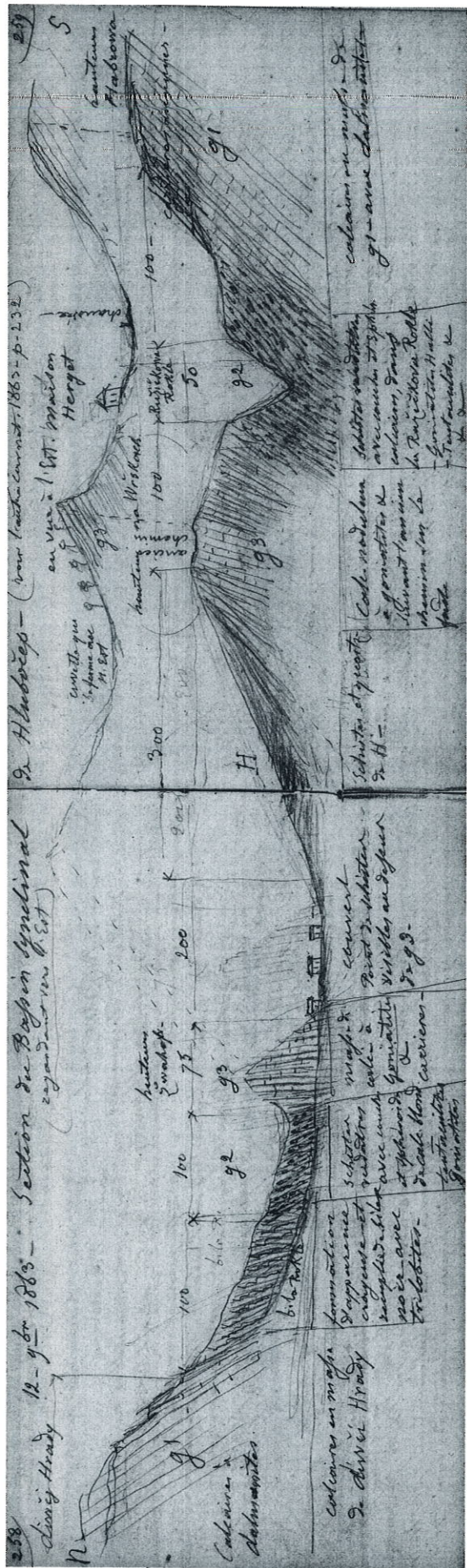
Barrandova stratigrafická koncepce ze čtyřicátých až šedesátých let 19. stol. se stala základem pro další výzkumy, které lze rozdělit do několika významných etap: 1. Geologické výzkumy prováděné J. Krejčím, M. V. Lipoldem a dalšími geology v rámci soustavných prací a mapování Říšského geologického ústavu ve Vídni od konce 50 let 19. století. 2. Období výzkumů R. Kettnera, O. Kodyma a jejich spolupracovníků vrcholící po 1. světové válce. 3. Období výzkumů B. Boučka, které znamenalo kvalitativní pokrok ve výzkumu ordoviku a siluru, 4. Rozmach výzkumů ve všech útvarech Barrandienu po 2. světové válce spojený s novým podrobným mapováním a aplikací nových metod terénního i teoretického výzkumu. 5. Postupný růst uplatňování výsledků nových výzkumů na mezinárodním poli (od r. 1958), spojený se vzrůstající mezinárodní spoluprací a prestiží – nejdříve v siluru a devonu, v současné době i v ordoviku. Úkolem nových výzkumů by měla být zvýšená aplikace nových metod.

V části o paleontologických lokalitách jsou diskutovány některé obecné aspekty (Barrandovo označování nalezišť, topografické problémy, záznamy v Barrandových zápisech, měnící se stav terénu aj.). V přehledných tabulkách je zaneseno původní Barrandovo označování lokalit a jejich stratigrafické příslušnosti, dnešní značení a stratigrafická pozice, příp. další poznámky a odkazy (uvedeno je 18 lokalit v kambriu, 63 v ordoviku, 71 v siluru a 40 v devonu). V závěrečné části je stručně shrnut i vývoj paleontologických výzkumů a význam Barrandovy tradice u nás.

I. Chlu p á ě : Barrande's stratigraphic concepts, palaeontological localities and tradition – comparison with the present state (Pl. II)

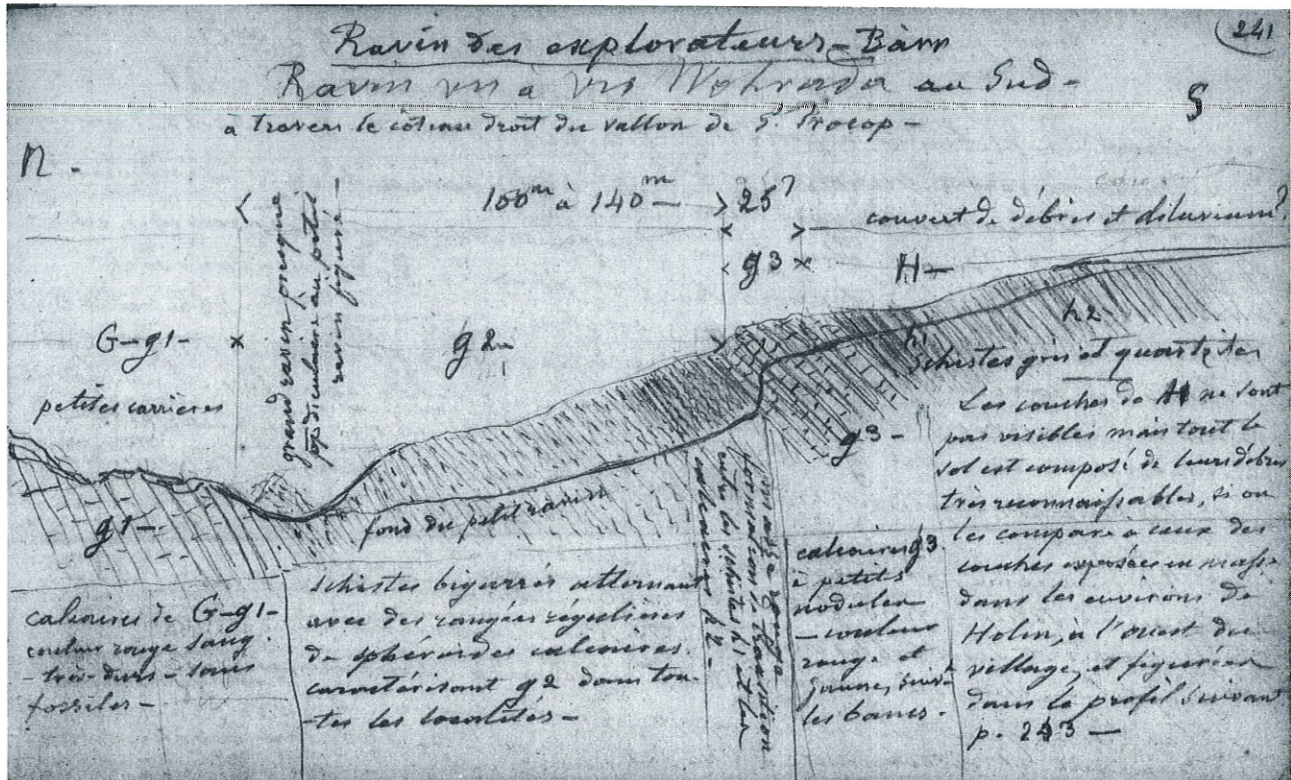


1. Barrande's drawing of the sequence exposed between Malá Chuchle (left) and Hlubčický (right), notebook 1864-1865, now the section below Praha-Barrandov. The folded beds in the middle constitute the famous Barrandé's Rock, since 1884 with the commemorial tablet of J. Barrande.

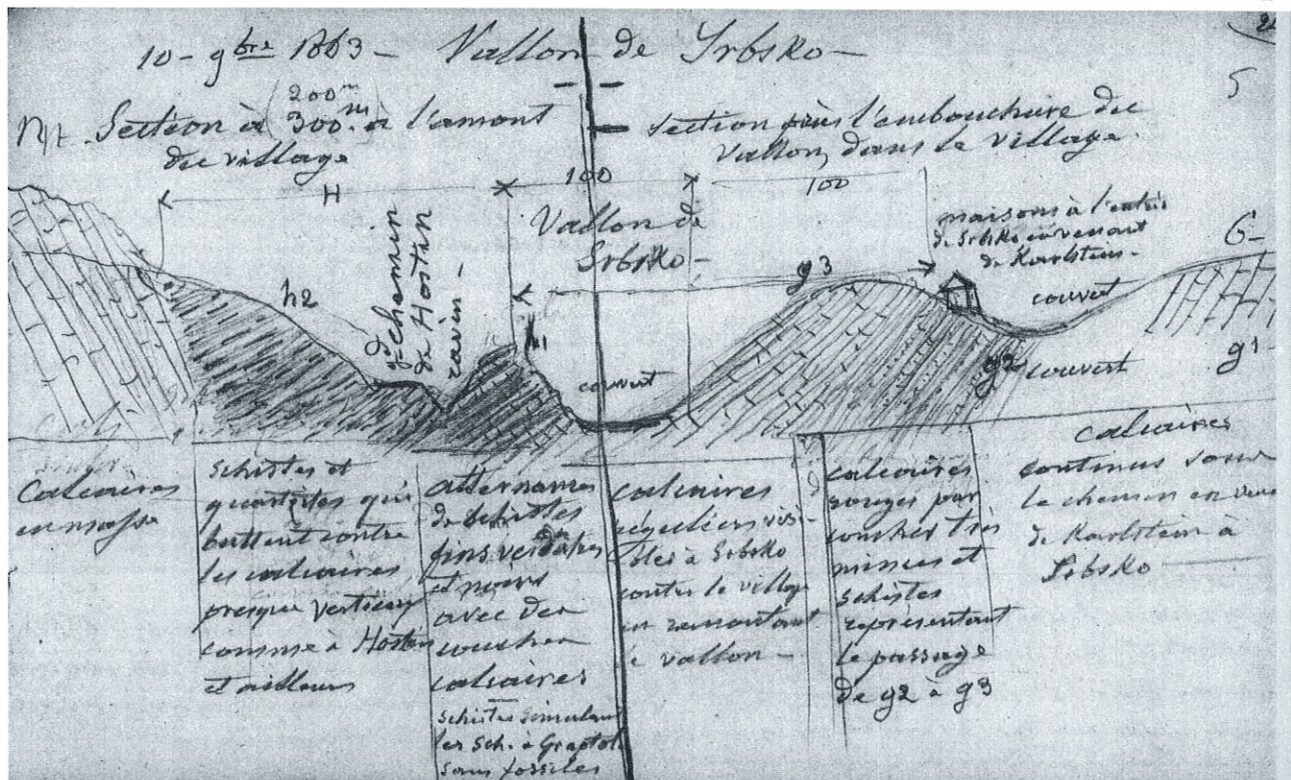


2. Transversal section of the Prokop valley at Praha-Hlubčický (notebook, 1863): g1 - Praha and Zlichov Formations, g2 - the Daleje Shale, g3 - Trebov and Choteč Limestones, H - the Srbsko Formation (all Lower to Middle Devonian).

I. Chlupáč: Barrande's stratigraphic concepts, palaeontological localities and tradition – comparison with the present state (Pl. IV)



1



2

1. Sequence in the Zabitá rokle (Barrande's "Ravin des explorateurs") W of Praha-Holyně (1863), Lower and Middle Devonian (explanation of symbols as in Pl. II, fig. 2).
 2. Sequence on the left bank of the Berounka river at Srbsko (1863), Lower and Middle Devonian (symbols as in Pl. II, fig. 2).

I. Chlupáč: Barrande's stratigraphic concepts, palaeontological localities and tradition – comparison with the present state (Pl. VI)

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über Graptolithen, v. H. H.B. Geinitz

il considère le Graptol. comme le *Ephedropoda*.
Le dents correspond à autant de branches qui
sont unies entre elles par un siphon ou canal
longitudinal —
peut être à qui on range 5 dents (1 sur côté)
le siphon est au des opposé aux dents —
il y a en dents de 2 côtés le siphon et un milieu

il cite 4 copies. univertés.

- 1- *G. foliaceus. murich.*
2. *Gr. Priston* (Lonsdalea Priston, Bronn -
campélin de Fougère alle en Normandie.
par Casen -
gr. Luridensis - murich. } ont de variété de 2.
gr. virgulatus Beck
3. *Gr. serratus.* (Orth. Serret. Schlotth.)
S. Bonnabury
4. *Gr. Sicularis - Lin. sp. Nat.*
5. *Gr. Apicalis. Gein.* — dents en dehors si cas est
de Bonnabury (pas mentionnée dans le - Ferrat. en dehors -
(lien de bronn)

99

Siphon léger du côté par
l'opposé des dents ?

jeunes

Neue -
siphon léger du côté
par l'opposé ?

Barrande's notes about the paper of Geinitz (1842) with drawings of graptolites (notebook from 1844-1846).

I. Chlupáč: Barrande's stratigraphic concepts, palaeontological localities and tradition – comparison with the present state (Pl. VII)



1



2

1. Monument of Joachim Barrande in Skryje established in 1969. The bust by M. V. Dobrovolný.

2. Commemorative tablet of foundation of the Prague-Barrandov in 1928. The tablet is fixed on the bedding plane of the Lower Devonian Dvorce-Prokop Limestone with nodular surface.