

A human being and scientist – Joachim BARRANDE (1799–1883)

Jiří Kříž

12 Text-Figures

Joachim BARRANDE (1799–1883) – Mensch und Wissenschaftler

Famous men and women transform during the years into figures in the form of monuments, statues, busts and paintings who look down on the common people. A century is time enough to forget that they once were also children, that they had the same everyday problems, that they had fun and that they were simply people like we are.

The town of Sagues in southern France, where JOACHIM BARRANDE was born on August 11th, 1799 to the family of CHARLOTTE LOUISE and AUGUSTIN BARRANDE, a shopkeeper of linen and blankets, witnessed BARRANDE'S first steps. The name BARRANDE is probably of noble Spanish origin, but the family never used the hereditary title. BARRANDE'S relationship to nature was certainly formed during his childhood. His father made it possible for JOACHIM to study at the most expensive STANISLAV'S lycée in Paris after which, during the years 1819–1824, BARRANDE continued with his studies with two-years at the "École polytechnique" (where he was the most successful graduate of the year) and two years at the "École des ponts et chaussées". During that time besides learning how to build bridges and roads he also learned a lot from the natural sciences. His personal interest in the lectures and publications of leading French naturalists such as CUVIER, BRONGNIART, JUSSIEU, PREVOST, d'ORBIGNY, d'ARCHIAC, DESHAYES and others was also important. After his studies BARRANDE worked for several years as a civil engineer in Bordeaux and Saumur where to this day the quality of his work may be seen as the massive bridge across the Loire River. On the recommendation of his teachers, BARRANDE was appointed by King CHARLES X, King of France, as the tutor to his grandson, the heir Prince HENRY COUNT CHAMBORD. It appeared that BARRANDE would take care of the education of the Prince and that later he would acquire a position which would ensure him a peaceful life under the protection of the Royal Court. JOSEF, BARRANDE'S younger brother, graduated from the same schools in Paris and later became, as colonel of the engineering forces of the CZAR'S army, renowned for his work on the preparation of the construction of the Russian railway system.

The Revolution in July 1830 when the Bourbons were expelled from France represented a fundamental change in BARRANDE'S life. BARRANDE, faithful to the Royal Court, followed the King and his pupil into exile. King CHARLES X. and his entourage settled first in 1831 for a short time at Edinburgh Castle in Scotland. Then in 1832 they moved to the Bohemian Chateau Buštěhrad, granted to the Royal Court by the

Austrian Emperor FERDINAND V. However, the French expatriates did not survive also there for very long. One of the last great cholera epidemics in Bohemia forced them out of the country in October 1832 and they went to the Prague Castle.

BARRANDE, as the tutor of Prince HENRY, was very soon introduced to Bohemian scholars. The most famous among them was FRANTIŠEK PALACKÝ, an historian, one year younger than BARRANDE. He taught German to Prince HENRY but was also in close contact with the Bourbons, acquiring confidential information for them. PALACKÝ undoubtedly introduced BARRANDE to Count KAŠPAR ŠTERNBERK who in 1818 initiated the establishment of the Czech Museum. Count ŠTERNBERK collected fossils long before the French family came to Prague and he certainly boasted to the king's tutor about his collection deposited at Březina Chateau. BARRANDE was probably a frequent visitor to the ŠTERNBERK Palace at Malá Strana Square, which housed the Geological Survey and at present is the seat of the Czech Parliament. During the years 1835–1845 BARRANDE lived across the square in the house "At the three stars" (no. 37 – III), which belonged to the family of the Malá Strana district health officer Dr. JAN JOSEF JINDŘICH BAUER from Adelsbach, a member of the Czech Scholarly Society. Today this is the Kaiserstein Palace, seat of the Economic Chamber of the Czech Republic. BARRANDE was certainly served during his visits to the Czech Royal Museum by the custodian FRANTIŠEK XAVER MAXIMILIÁN ZIPPE, and by the librarian VÁCLAV HANKA, an infamous forger of old Czech literature.

BARRANDE ended in 1833 his part in the education of the thirteen year old Prince Count HENRY who later, in 1836, settled at Frohsdorf Chateau south of Vienna. BARRANDE shortly returned in 1834 to his former occupation. He was employed through Count KAŠPAR ŠTERNBERK to examine the project of the railroad extension from Lány to Plzeň through the coal basins near Radnice. Count KAŠPAR ŠTERNBERK was at that time also the president of the "First privileged Pragian railway company" established in 1827 for the realisation of the project. BARRANDE on that occasion got to know the richness of the trilobite localities near Skryje and Týřovice, well-known since the eighteenth Century.

The Paleozoic fossils had been already shown to BARRANDE in Scotland by the renowned RODERICK MURCHISON in 1831. Fossils found in the vicinity of Prague deposited in the Czech Museum and those which BARRANDE found himself during



Text-Fig. 1.
JOACHIM BARRANDE – portrait from the period of BARRANDE'S tutorship in the Royal Court of CHARLES X.

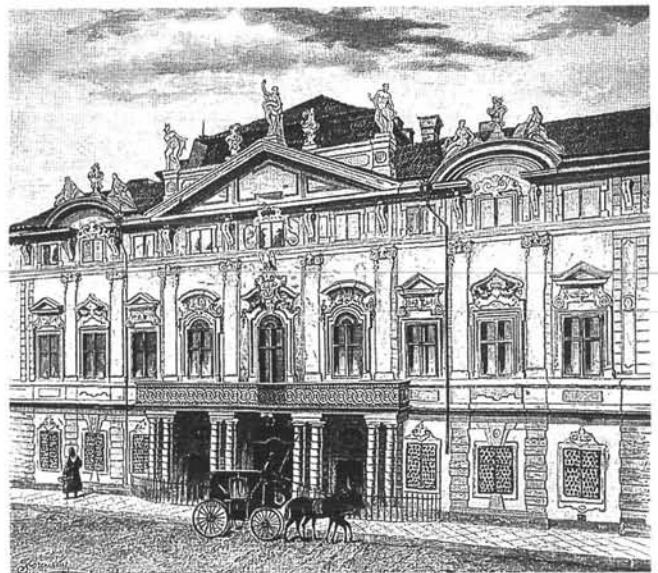
1833, made it possible for BARRANDE to comprehend that the fossils from the Bohemian transitional strata, described by professor ZIPPE, were similar but differed from those found in Scotland and England by MURCHISON. Above all BARRANDE very soon realised that the Bohemian fossil localities were among the World's best. While reading MURCHISON'S first results from the Lower Paleozoic rocks and fossils sometime between 1831–1834 in the "Proceedings of the Geological Society, London, and especially in 1839, when MURCHISON published his "Silurian System", BARRANDE seriously decided to study the same "Silurian System" in Bohemia. Besides collecting fossils he also became interested in the rocks from which the fossils came. During the period 1840–1848 BARRANDE travelled on foot through central Bohemia, recognised its geology and discovered a number of new fossil localities. In his detailed notes from 1841–1882 we have the best documents available on this period of his work.

BARRANDE'S notebooks represent a superb example also for contemporary geologists. BARRANDE described fossil localities in them, drew geological sections and measured the dip and direction of the rocks. He correlated sections and systematically covered the area of central Bohemia, especially between Prague and Beroun. He was searching for fossil localities and he made detailed notes on everything of interest to him. It is possible to find in his notes data on the amateur collectors and about all the people who gave him interesting information and who helped him. We find here for example the names of the "intelligent" Berounian carpenter FRANTIŠEK MAREK, MR. NEJEPSA from Karlštejn, no. 6, where BARRANDE was given accommodation for six days in October 1864, and also MRS. HANIK and her three daughters from the hotel "At the three coronets" in Beroun. The names of many workmen are mentioned who contributed to building up BARRANDE'S fossil collection: MAREK, KARYZEK, ŠKODA, HONS, SRPEK, SVOBODA, the ZIKA brothers and MR. ŠTÁSTKA. The names of hundreds of nowadays unknown people are noted as are also the names of famous geologists with whom BARRANDE went on field trips to the Bohemian and Moravian Paleozoic.

The classic cross-section through the formations of the Prague Basin occurred in his notebook for June 13th, 1844

in connection with BARRANDE'S field trip to Beroun. BARRANDE quickly realised that the "Silurian" formations formed a giant bowl, basin or syncline, between Prague and Beroun and that on the surface they were parallelly exposed in stripes of which the oldest formed the margins of the bowl and the youngest were in its centre. He also realised that each formation contained a slightly different association of fossils. BARRANDE was also helped by experienced geologists. For example BARRANDE went in 1843 together with MURCHISON and ZIPPE on a field trip to the vicinity of Praha – Dvorce, Malá Chuchle, Hlubočepy and Slivenec. During the field trip MURCHISON ensured BARRANDE that the formations they had seen were true Silurian. After they had visited the collections of the Czech Museum together in Prague, Barrande noted, that MURCHISON considered the fossil collection there insignificant. But in the evening at his home, when BARRANDE showed MURCHISON his cephalopods from Butovice, MURCHISON declared that "this is the most beautiful European collection". Between June 20th and 25th, 1847 BARRANDE visited sections in the vicinity of Beroun and Koněprusy together with MURCHISON and de VERNEUIL. They also visited the locality of Vápenice near Hýskov, where lime was produced from the tectonic block of the Devonian limestones within the older rocks. They visited also the vicinity of Jince together with the mining councillor GRIMM from Příbram.

BARRANDE became devoted to his interest in the Bohemian Paleozoic during a time when in other parts of the World the development of natural sciences was just starting, during a time when amateur naturalists collected data for later synthesis. It is very interesting to compare BARRANDE with his ten years younger contemporary CHARLES DARWIN. Both men started their career in natural sciences due to an unexpected and abrupt change in their lives. BARRANDE arrived almost unwillingly to Bohemia in the same year that DARWIN boarded the HMS Beagle to realise his trip around the World. Although they both started simultaneously to collect quantities of data, their ways parted from the beginning. DARWIN gradually worked to a point for understanding broader relationships. This was for him possible since his view as an universal natural scientist was directed to everything from geology to insects to the history of man. BARRANDE, who was in reality a technician, respected precision and facts. He started to collect and classify fossils



Text-Fig. 2.
NOSTIC Palace in Prague street "na Příkopech" to which the Czech Museum was moved in 1848.



Text-Fig. 3.
The City Újezd Gate, CHOTEK Steet and chain bridge of Emperor FRANZ I. J. BARRANDE lived at the third floor of the corner house directly next to the Újezd Gate. Photograph from 1865.

but he never regarded them to be sufficient to change the traditional views of nature. BARRANDE collected and described countless data by such a precise method, that we can consider his masterpiece to be the first and the most important evidence for the study of the evolution of life on the Earth.

Both men were also similar in their approach to work. DARWIN isolated himself deliberately with his family in Down House in Kent far from the majority of social duties and devoted his life entirely to scientific work. BARRANDE was literally living and intensively working in the middle of his huge fossil collection in the quiet provincial Prague of the nineteenth Century. In Bohemia he was only a member of the Bohemian Royal Museum Society and since the establishment of the Emperor's Academy of Sciences in Vienna its corresponding member. Nevertheless, the approach to life of both men differs. DARWIN was in Down House surrounded by his large family and by all the possible comforts of those days. JOSEF KOŘENSKÝ, the famous Czech traveller of the nineteenth Century who was familiar with BARRANDE remembers that the private flat where BARRANDE was living only offered "but the

smallest civil comfort; the flat was spacious, filled by quiet witnesses and evidence of his scholarship, by our Silurian fossils, from the floor up to the ceiling, so that he found only a modest place for his table, usually in the kitchen, where he described his monumental research".

It is interesting that DARWIN refers to BARRANDE six times in his chapters "On the Imperfection of the Geological Record" and "On the Geological Succession of Organic Beings" in his book "The Origin of Species" published in 1859. BARRANDE only refers indirectly to DARWIN in his volume of the "Silurian System" of 1870, devoted to the cephalopods, in the chapter "Évolution des Céphalopodes". But BARRANDE did not see evolution like DARWIN, he understood it as the sequence of the types appearing one after another in the stratigraphic sequence. BARRANDE remained convinced of creationism and cataclysmats in his heart. He was also strongly influenced by his method of collecting fossils. First he looked for rich layers or horizons with fossils, for example cephalopod limestones, levels with rich brachiopod associations, or beds with common complete trilobites. In these levels pits or quarries were dug by his workers and from here 99 % of the paleontological material BARRANDE had for disposal was collected. In apparently unfossiliferous transitional beds between rich levels the finds of fossils were rare, occasional, not systematic and difficult to obtain. This led BARRANDE to understand evolution as the periodical creation of completed and marked species without ancestral forms which were missing in apparently sterile parts of the sections. During the last fifty years most interest has been paid to these unfossiliferous transitional rocks, overlooked by BARRANDE, during detailed biostratigraphical research. In these parts of the sections numerous new species have been observed for the Prague Basin and commonly species which represent evolutionary transitional forms between the species described by BARRANDE.

Let's return to BARRANDE as the man, as the human being. We can use the pictures and memories of his contemporaries. He has side whiskers in all portraits, but the rest of his face is carefully clean-shaved. Since his twenties he has scarce brown hair, perceptive sharp blue eyes and a sharp nose. We know that he was only 172 cm tall, but in his time he made a very different impression. From 1849 we have an account by the famous Austrian geologist E. SUSS: "well-proportioned, attractive tall cracker, beardless, with white head, white scarf high on neck and with long mantel down to ankles". Our poet JAN NERUDA remembers him as "elegant, chivalrous, carefully dressed in a suit of uncommon cut, nice, kind, tall and upright, briskly walking with a determined step. BARRANDE'S face is full of expression, unspeakably calm with something quite magnificent. I have seen him since my childhood for many years, day after day, I spoke with him commonly but caught sight of a feathery smile on his face only very rarely. He never participated in entertainment, worked from dawn, and only in late afternoon went for his lonely walk or spent some hour in a friendly circle...". Another contemporary, PETR DURDÍK, who lived together with BARRANDE for several years, remembers that BARRANDE had a small breakfast and ate only a little. At noon he had a light meal, eating everything in moderation. He enjoyed meat, vegetables, flour dishes and good wine. After a meal he loved to have fruit. Late at night, when he finished working by the paraffin lamp, which stood on an upside down saucepan, he talked loudly to himself about what he had to do, to write, to manage the next day. He never smoked or took snuff. For dinner he usually walked using his Spanish cane across the chain bridge of Emperor FRANZ I. to the "English King" or "Golden Angel" restaurants in the Old Town. J. KOŘENSKÝ left to us an account of the eighty year old BARRANDE in 1879. He

J. Barrande.

Kleinseitner Ring, im Hause
Des Doctors Bauer. 37.

Prag

7^{te} 1842.

Text-Fig. 4.

Title page of BARRANDE'S notebook from 1842 proves that J. BARRANDE lived at that time in the house of Dr. BAUER on Malá Strana Square no. 37.

described him as a tall white hair old man who "is permanently very active, completing his monumental work. Morning and afternoon he untiringly works, only before lunch does he treat himself every day to a walk in or out of the town. His steps are unhurried but still firm, his face is always calm. He is gracious and kind to everybody, but does not seek company, being withdrawn and hiding himself from the world with an unprecedented modesty". In 1899 KOŘENSKÝ remembers that "BARRANDE was of a very religious mind as a true Christian. He observed Sunday according to God's commandment and he regularly attended Mass before noon in St. Nicholas cathedral. The Public bustle of social life did not disturb BARRANDE at his work. Political changes did not change his mind. He was angry with KREJČÍ that he was interested also in politics besides geological studies".

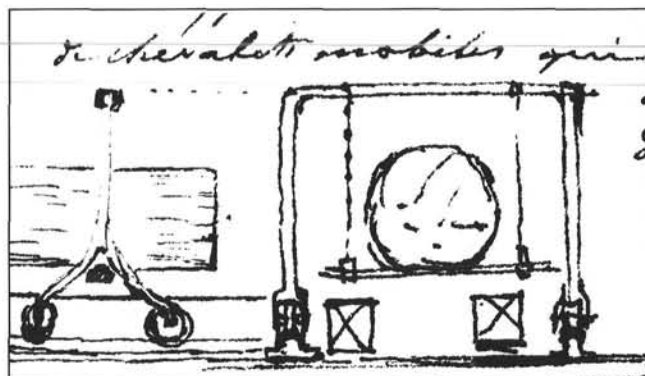
BARRANDE was certainly a very distinct person among the Malá Strana District characters to which he belonged during his long life. The poet JAN NERUDA had an exceptional possibility to get to know BARRANDE and the famous scholar was perhaps a model for his story "Water Sprite" about the man who collects rocks, minerals and fossils. NERUDA'S mother BARBARA was in 1831, in service at the Prague Castle with DUKE GUICH who was member of the French Royal Court, when she married ANTONÍN NERUDA. After the BOURBON'S left Bohemia and most probably after NERUDA was born in 1834 she started to run BARRANDE'S household. First in the house "At the three stars" on Malá Strana Square and since 1845 in the empire house "At the chain bridge" in Chotek Street, near Újezd Gate. BARRANDE was only four years younger than MRS. BARBARA NERUDA and they probably understood each other well. She took small JAN NERUDA with her and he later remembered that his mother was speaking with BARRANDE in his native language. But BARRANDE also learned the Czech language quickly with the help of MRS. BARBARA and by reading the Czech "Pragian Journal". It is possible that he heard for the first time from NERUDA'S mother the nice and clearly Czech sounding words Maminka, Babinka, Tetinka, Spanila, Panenka, Tenka, Mila and others, which he later used and internationally forced through as generic names of Bohemian Paleozoic bivalves. NERUDA also remembers that he spent summer holidays as a small boy together with BARRANDE'S collector FRANTIŠEK MAREK in Beroun. NERUDA made himself a small collection of fossils and wanted to boast about it to BARRANDE: "I brought the fossils cheerfully and expected with eagerness what would happen.

BARRANDE spread the fossils on three wood boards, gave one to me, taking two of them himself. We entered the room. – Thus! – he said, when I put the board carefully on the table, and waved that I could leave him again. With tears in my eyes I went. – There were only two pieces left from my splendid collection. I threw them out of the window to the Újezd town ditches immediately. I looked behind them hoping that they would kill at least several people. Unfortunately they didn't".

From the memoirs of the same Mr. MAREK we know that BARRANDE'S Czech vocabulary was large enough that they were able to speak not only about fossils but also about pretty girls they met during their joint field trips. BARRANDE also learned to write Czech well enough as we know from a recently re-discovered private letter to FRANTIŠEK PALACKÝ from 1848. In a hurried and obviously unprepared written letter he correctly used difficult Czech punctuation, which for foreigners (but also for many Czech people) is difficult. In 1858 BARRANDE was already able to understand even Czech poetry. We know this again from JAN NERUDA: "When I was grown up, matured, and my first anthology of poems had been published I presented a copy also to BARRANDE. After several days he told to me: – Well, I read them and some I enjoyed. But you know – to write poetry, it is nothing for your nation. Maybe that your friends propose toasts to you with champagne. But if you really want to benefit your nation, leave the poetry and take some strict science –". After the Czech language BARRANDE learned German with the help of private lessons from FRANTIŠEK PALACKÝ.

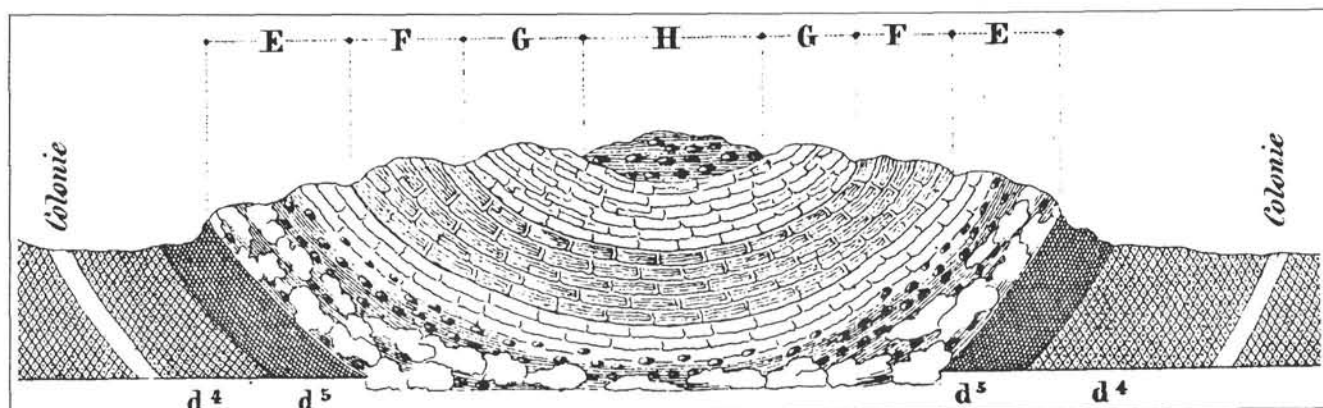
BARRANDE kept extensive correspondence in the French but less in the German language with the majority of his contemporary scholars in geology and palaeontology. With many of them he exchanged fossils as comparative materials. There is a vast correspondence with regard to the publishing of his "Silurian System". For each lithographic plate he made suggestions, he sent his rough drawings and particular fossils to draughtsmen and lithographers (e.g. J. FETTERS, Prague; LANGHANS, Prague; A. SWOBODA, Vienna and HUMBERT, Paris), he had to negotiate with several printing companies (e.g. A. HAASE, Prague; K. BELLMANN, Prague; Th. BANNWARTH, Vienna; J. HAUPT, Vienna; APPEL and Co., Vienna and LEMERCIER and Co., Paris), he had to take care of the numerous corrections of text and the proofs. BARRANDE employed several secretaries during his life who helped him with such a work. After Mrs. BARBARA NERUDOVÁ he employed Miss. FANNY MYSLIVEČKOVÁ in 1861 as his last housekeeper.

BARRANDE devoted an incredible effort and resources to purchasing fossils. He had good contacts with many quarry workers who were putting away for him the fossils they found



Text-Fig. 5.

BARRANDE'S notebooks contained besides geological notes also technical sketches.



Text-Fig. 6.

On June 13th 1844 occurs the first schematic geological cross-section of the Prague Basin in the BARRANDE'S notebook. The section was published in 1852 in the first volume of the *Système Silurien du Centre de la Bohême*.

during the hand breaking of limestone blocks. Workers, trained by BARRANDE, were digging extensive collecting pits, following layers rich in fossils. Many of these pits are preserved to this day. According to the British geologist J. E. MARR who personally visited BARRANDE on September 18th, 1879, there existed just in the vicinity of Koněprusy near Beroun more than 100 little quarries operating for BARRANDE for several years. When BARRANDE studied the ontogenetic development of the trilobite *Aulacopleura konincki*, he had about 6000 complete exoskeletons available from the pits on the Čerňidla Hill near Lodenice. He needed to obtain similar series of the individuals of the trilobite *Sao hirsuta* and for this he employed 3–4 workers for many years in Skryje. At the pits the collecting was carried out for some years, all through the year, even in winter when workers were protected by wooden shelters. BARRANDE first paid his workmen weekly, later on by piece according to the rarity of the fossil. BARRANDE spent during more than 40 years almost half a million francs to cover expenses necessary to build his collection, deposited now in the National Museum in Prague.

It is also interesting to take another look into BARRANDE'S notebooks. From them it is obvious that his thinking was not devoted just to geology. Evidence for his relationship to techniques are in notes BARRANDE made of bridge construction, machines and especially of mining machinery. The notes are accompanied by drafts and detailed descriptions of the design and construction. BARRANDE was especially interested to the mining in Bohemia. It is worth mentioning that as a very old man, on his 80th birthday, he went 1 000 m down the Vojtěch shaft in the Přeborn area. From 1841 to 1883 he was the property manager and consultant of Henry Count CHAMBORD. We may see in his notebooks also columns of the numbers, price lists and notes concerning the agriculture and forestry in Bohemia, Moravia and in the Austro-Hungarian Monarchy. In 1850 BARRANDE realised longer trips abroad, probably as Count CHAMBORD'S secretary. BARRANDE'S notebook that year is full of lists of persons who applied for audiences with the Count CHAMBORD. Besides these are addresses of scholars which BARRANDE met during the trip. He visited MURCHISON in London and also Dudley and Cambridge. From the trip to England he made notes related to publications he read and to the casting of fossils. His notes from 1851 concern his studies in the Munich and Paris museums.

BARRANDE was not living only in Prague. He stayed almost every year for several months in Paris where he rented a flat on Rue de l'Odeón, nr. 22, near the St. Sulpice Square. During his stay in Paris he regularly attended meetings of the French Geological Society. French contemporaries who met BARRANDE

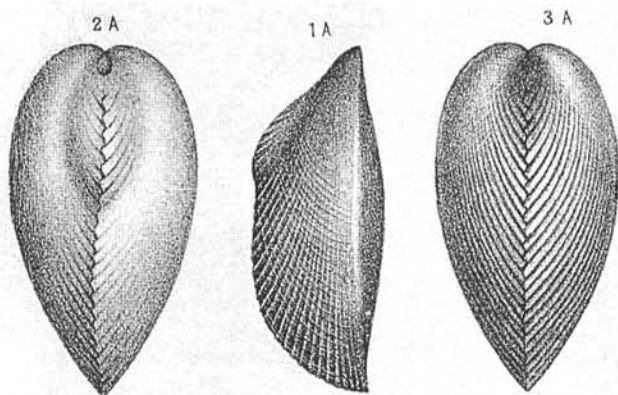
in France remembered him as a cold, withdrawn man dressed with severe elegance. His duties as manager necessitated infrequent visits to Frohsdorf near Vienna where HENRY COUNT CHAMBORD was living. By stagecoach it took 37 hours on the imperial system of roads completed in 1840. Since 1872 he could use the much faster railway connection Prague – Vienna through Tábor and České Velenice. BARRANDE travelled to most of the European Paleozoic areas - France, Belgium, Spain, England, Germany and Scandinavia.

In 1846 BARRANDE published his first works in Leipzig on the Bohemian trilobites and about the Silurian of Bohemia. Response to the first BARRANDE papers was different in



Text-Fig. 7.

JOACHIM BARRANDE in his most productive years of his life.



Text-Fig. 8.
A sample of the perfect lithographic figure of the Silurian bivalve *Spanilla gracilis* (BARRANDE, 1881) from the VI. volume of the *Système Silurien du Centre de la Bohême*, published in 1881 when BARRANDE was 82 years old.

Bohemia and in other parts of the World. Abroad they caused interest in learned circles to which BARRANDE was already well known thanks to his lively correspondence and personal contacts. In Bohemia the response was rather negative. Human envy together with a feeling of patriotic injustice made A. J. C. CORDA, custodian of the Czech Museum natural history collections and I. HAWLE, a collector of trilobites from Beroun to prepare for publication within less than a year the "Prodrom einer Monographie der böhmischen Trilobiten", published in 1847 in Prague. It was at that time the largest work on the Bohemian trilobites. This work contained descriptions of 274 new species of trilobites from Bohemia and numerous new data but was devalued by the number of drawbacks as a result of the haste in which it was prepared. It gave BARRANDE a chance for his scathing criticism of 1847, 1848 and in 1852. Nonetheless, it is necessary to mention that from the priority point of view the work fulfilled the expectations of CORDA and HAWLE because they became scientific authors of a great number of Bohemian trilobite taxa of the species, genus and family group.

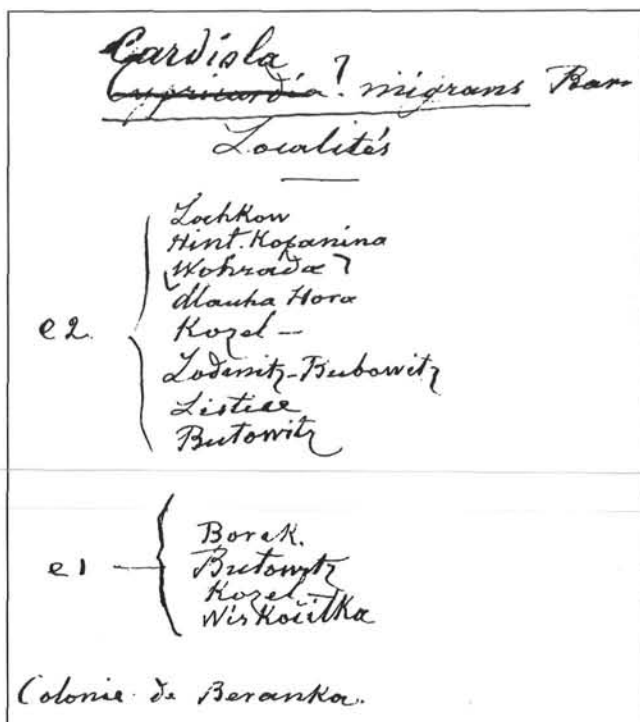
In 1852 BARRANDE brought out his first volume of his monumental work on the Bohemian Paleozoic "Système Silurien du Centre de la Bohême", the result of twenty years of collecting and research of trilobites which he described and figured in such a precise way that he immediately gained the respect of all his contemporary scholars. It is interesting that DARWIN published his fundamental work on "The Origin of Species" seven years later, in 1859. The description of trilobites was accompanied by lithographic plates with perfect and precise figures which still arouse the envy of palaeontologists today who are dependant on photographs.

BARRANDE was more than forty years old when he started his work which has not yet been surpassed. 22 volumes of his "Système Silurien" were published up until 1881, mostly at his own expense. The publication was donated by HENRY COUNT CHAMBORD and by the Imperial Academy of Sciences in Vienna. The Academy of Sciences was supporting BARRANDE'S work every year since 1848 with 1500 guilders and from the end of 1870 with 750 guilders annually. However, BARRANDE had to apply for this support every year. It is interesting that BARRANDE'S first application letter was read on April 13th, 1848 at the first session of the Imperial Academy of Sciences. BARRANDE justified his application for help with publication of his work on the Silurian of Bohemia by the fact that he spent between 1836 and 1848 more than

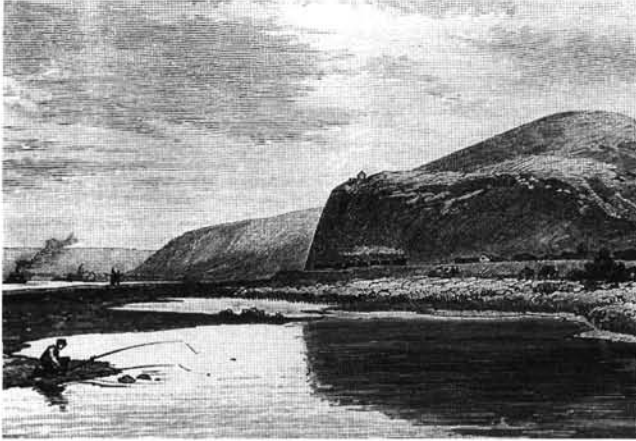
25 000 francs for collection of fossils and travelling expenses. The scope of BARRANDE'S work has never been and probably will never be surpassed by another naturalist. There are more than 3550 species of fossil organisms from the Early Paleozoic of Bohemia described on almost 5696 pages and figured on 1076 lithographic plates. It is also interesting that the whole "Système Silurien" was sold for 1575 francs. Nevertheless, BARRANDE presented it generously to many scientific institutions in the Austro-Hungarian Monarchy and abroad and also to many scholarly colleagues throughout the World. He showed to the World by his work that the Early Paleozoic of Bohemia is one of the richest Lower Paleozoic areas for fossils on Earth. Thanks to BARRANDE, Bohemia became a classic area for the study of Earth History to all geologists and educated naturalists.

Besides published volumes BARRANDE prepared data and even printed plates for description of another 1500 fossil gastropods, crinoids, corals, bryozoans and other organisms and plants. But they were treated after BARRANDE died. In his testament from March 18th, 1883, BARRANDE designated as his successors W. H. WAAGEN and OTOMAR NOVÁK from Prague and he even bequeathed financial resources to cover expenses for such a work. BARRANDE also bequeathed his whole library and in particular his giant collection to the Czech Museum. The collection nowadays fills one of the large halls in the National Museum building in Wenceslas Square and also a large part of the space in the basement.

BARRANDE published just the first part of his work on the fossils from the Bohemian Paleozoic. He did not manage to write and to publish the second part concerning the detailed geology and stratigraphy of the Paleozoic rocks. However, he left to us valuable knowledge on the geology of central Bohemia in the five volumes of his work "Défense des Colonies" in which he defended his non-tectonic and cataclysmatic explanation of the Silurian tectonic blocks along



Text - Fig. 9.
BARRANDE'S hand written notes concerning the localities of the bivalve *Butovicella migrans* (BARRANDE, 1881). BARRANDE was using the names of villages in the form as they were presented on the Austro-Hungarian maps.



Text-Fig. 10.
BARRANDE'S Rock was in the last Century close to the Vltava River.

the longitudinal thrust faults within the Upper Ordovician of recent conception. A number of contemporary geologists opposed his idea and pushed BARRANDE to publish at least part of his geological knowledge in order to be able to defend his cataclysmatic opinion. BARRANDE also showed his peculiar sense of humour in this long-standing dispute (1861–1881). He named single exposures of the Silurian tectonic blocks

"colonies" after his opponents so we call them to this day "colony D'ARCHIAC", "colony KREJČÍ", "colony LIPOLO"...

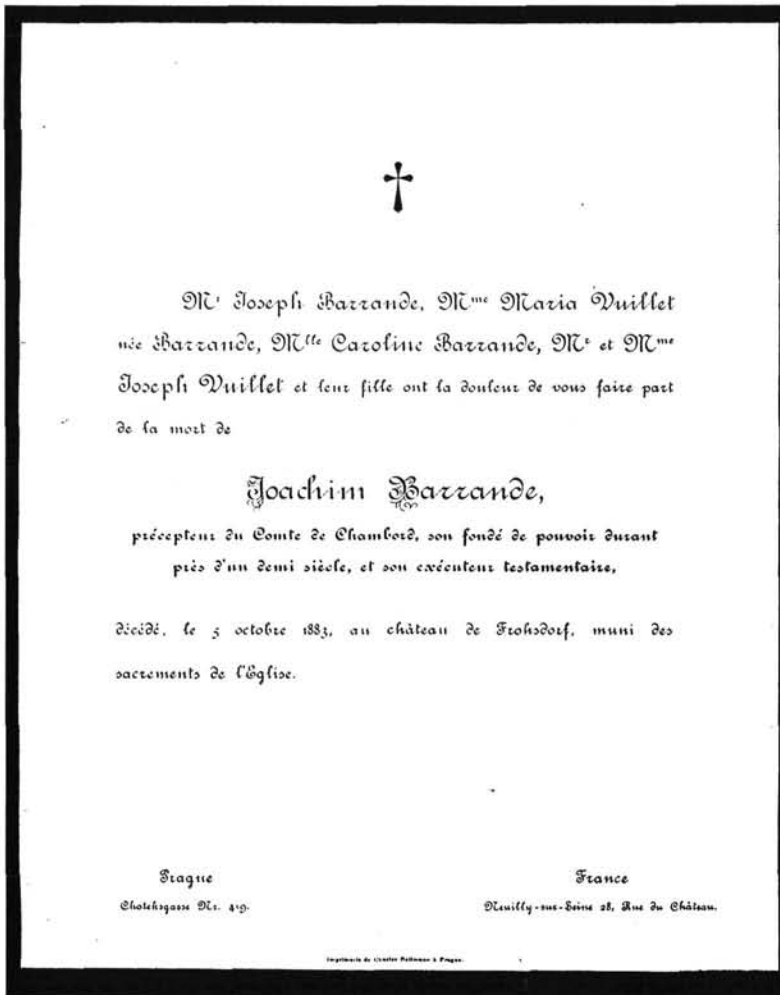
The 84 year old BARRANDE visited in 1883 the gravely ill HENRY COUNT CHAMBORD in Frohsdorf. COUNT HENRY died soon after BARRANDE arrived. The emotional trauma and physical exertion in connection with the funeral service and testament execution confined BARRANDE to bed and pneumonia ended the life of this devoted servant on October 5th, 1883. BARRANDE was buried on October 8th, 1883 in Lanzenkirchen graveyard near Wiener Neustadt.

BARRANDE lay by his work the foundations for the study of the Early Paleozoic in Bohemia and for the study of the evolution of life during this geological era. At the same time BARRANDE made Prague famous throughout the whole World. Pragians did repay him by naming BARRANDE'S Rock after him. A sheet of metal with the single word BARRANDE (4.8 m long, 1.4 m high and weighting 1600 kg) was festively unveiled on June 14th, 1884 from the steamboat Stephany anchored close to the rock on the Vltava River. On February 24th, 1928 a district of Prague, Barrandov, was named after BARRANDE. Also geologists valued the work of BARRANDE by naming the region of the Proterozoic and Lower Paleozoic rocks in central Bohemia after him – Barrandien.

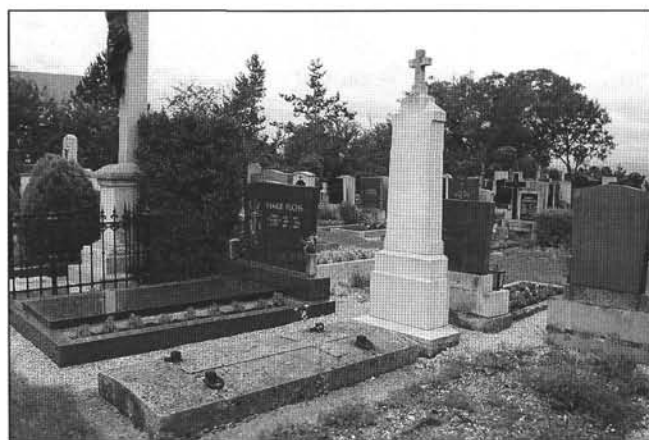
A very nice relationship developed between BARRANDE and OTOMAR NOVÁK. They first met in the Czech Museum where NOVÁK was sorting the collection of Strahov abbot ZEIDLER as assistant to ANTONÍN FRIČ. Barrande very soon became fond

of the bright young man. Although BARRANDE did not seek contact with other people, he invited NOVÁK frequently to his flat and gave him his initial scientific training. BARRANDE also convinced NOVÁK, who was slow to do examinations, to take the doctorate exams. BARRANDE arranged for NOVÁK the position as assistant for two summer seasons with the geologist E. SUESS from Vienna with whom he travelled in Switzerland and Italy. NOVÁK was appointed by BARRANDE in his testament to complete the volume of his "Système Silurien" on corals and similar organisms. After BARRANDE died, NOVÁK took care of the transport of BARRANDE'S collection to the Czech Museum and became its first curator. NOVÁK was later appointed to a professorship of geology and palaeontology at the Czech University. He was, in his time, generally considered to be the best successor to BARRANDE. He proved it by several modern studies of outstanding quality on trilobites, hyolithids and on the stratigraphy of the Silurian-Devonian boundary in the Prague Basin. Unfortunately, NOVÁK died quite soon, in 1892 in his 41st year, only eight years after his teacher...

Other distinct personalities did not exist afterwards in Bohemia who could continue BARRANDE'S work at the same level and be able to preserve his unpublished knowledge for the future. A lot of BARRANDE'S fossil localities soon became unknown, a number of fossils from BARRANDE'S collection which were not types disappeared to schools. Research of the Early Paleozoic stratigraphy and palaeontology in Bohemia slowed down until the thirties when professor BEDŘICH BOUČEK and others continued again appropriately with BARRANDE'S work.



Text-Fig. 11.
BARRANDE'S death notice.



Text-Fig. 12.
BARRANDE'S grave in Lanzenkirchen graveyard near Wiener Neustadt.

However, the main development of the geological sciences in Bohemia took place in fact after the Second World War. The leading research institutions of Czechoslovakia were occupied with the research of the classical Early Paleozoic area for practical reasons, important resources of iron ores and limestones. The main emphasis of the work has been in the Geological Survey, Prague but important research was realised also in the National Museum and in the Czechoslovakian Academy of Sciences. During the seventies and eighties this research also became a part of the International Geological Correlation Programme (I.G.C.P. – UNESCO). The programme lasts to the present day and has markedly strengthened the international cooperation in our country. The importance of the classical Early Paleozoic area increased during the last three decades. This is testified also by the establishment of already three international stratotypes in the Prague Basin which do not represent only the international standards of chronostratigraphic scale but also the international recognition of the Czech geology. In spite of the fact that the research of the Early Paleozoic has recently become somewhat stagnant, the Czech Geological Survey can take credit for the legal protection of most of the important geological sections and paleontological localities in the Prague "Silurian" Basin. In this way it is guaranteed that the research of the Early Paleozoic rocks in Bohemia will be possible also in the future.

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