ANTIQUITATES MATHEMATICAE
Vol. 17(1) 2023, p. 69–99
doi: 10.14708/am.v17i1.7223

EUROPEAN MATHEMATICS

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Josef František Smetana – A Remarkable Naturalist

Abstract. Josef František Smetana (1801–1861), a professor at the Philosophical Institute and Gymnasium in Pilsen, was a multifaceted individual, excelling as a naturalist, historian, and poet. Affiliated with the canonical order of Premonstratensian at the monastery in Teplá, he adopted the name Josef as part of his religious identity. Revered in Pilsen and beyond, he was a dedicated patriot and revivalist. Following in the footsteps of his elder colleague and friend, Josef Vojtěch Sedláček, Smetana contributed significantly to various fields. His teachings encompassed physics, natural sciences, and Czech language, and he authored textbooks on history, astronomy, and physics. Although many of his poems remained unpublished until the early 20th century, some persisted in manuscript form.

2010 Mathematics Subject Classification: 00A17, 01A60, 01A70.

Key words and phrases: Josef František Smetana, 19th century, Premonstratensian monastery in Teplá, Philosophical Institute and Gymnasium in Pilsen, History of Natural Sciences, History of Mathematics, Czech Textbook of Physics, Astronomy, Arithmetic and History.

1. Smetana's Childhood and Studies František Smetana was born on March 24, 1801 in Svinišťany, which is located near Česká Skalice, between Jaroměř and Náchod. His father Josef Smetana (1768–1810) was a gardener on the estate of the Dukes of Courland. With his wife Valburga (Barbora), née Killingerová (1769–1834), he had six children: Johana Terezia (1797–1831), Josefa (1799–1870), František (1801–1861), Marie (1803–1862), Anna Karolina Josefa (b. 1805) and Eduard Jan (1807–1876). Brother Eduard Jan, an excellent musician, especially a violinist, was a teacher in Česká Skalice between 1826 and 1840 and later a managing teacher in Úpice.

František Smetana obtained his elementary education in Velký Třebešov, where he went every day from Svinišťany. When he was nine

years old, his father died on May 22, 1810, and his mother Valburga then moved with the children to nearby Chvalkovice to live with František Smetana (1777–1857), the younger brother of her deceased husband[1], who was the tenant of the brewery in Chvalkovice between 1808 and 1818. He was extremely capable and, therefore, respected by the authorities. In 1818 he went to Nové Město nad Metují, where he rented a manor brewery. In 1823 he moved to the manor brewery in Litomyšl as a brewer.

Little František also went to school in Velký Třebešov from Chvalkovice, even though it was considerably further than from Svinišťany. After three years, his uncle decided that the teenage František would continue his education, because he had an understanding for his talented nephew.

Between 1814 and 1819 František studied at the Gymnasium in Hradec Králové with the support of his uncle. There he very briefly met Václav Kliment Klicpera (1792–1859), a Czech writer and founder of Czech drama.

In the first year, he had certain study problems because he could not speak German well. Starting from the second year he was already the best in the class, he was repeatedly honored and entered into the Golden Book. Later, he said with exaggeration that as a prize winner, he was "Klicpera's first pupil". His classmate and friend at the grammar school was František Škroup (1801–1862), who became a music composer and conductor, among other things he is the author of the music of the Czech national anthem.

After grammar school graduation, Smetana studied at the Faculty of Arts of the University of Prague from 1819 to 1822, where he met the Czech linguist, translator and leading figure of the Czech national revival Josef Jungmann (1773–1847), who was his lifelong friend. Smetana was once again a prize winner in all subjects, he also attended optional Czech language classes. In the years 1821 to 1823 and 1824 to 1826, he studied at the Faculty of Theology of the University of Prague, where he was preparing to become a priest. As an excellent student, he was exempted from tuition fees throughout his studies.

2. Josef František Smetana – A Member of Premonstratensian Order. In the fall of 1823, František Smetana went to the Premonstratensian monastery in Teplá and began his novitiate on October 19. He took his religious vows on October 23, 1825, and took the re-

[1]He was the father of the future world-famous Czech music composer Bedřich Smetana (1824–1884).

ligious name Josef. In 1826, he completed his studies in theology and was ordained a priest on August 14, 1826. From the autumn of 1826 until 1829, he probably stayed in the monastery in Teplá and prepared for his future mission as a priest and teacher.

At this time, he studied physics and natural sciences in Vienna. However, he was not enrolled to study either at the University of Vienna or at the Vienna Institute of Technology, not even as an extraordinary student. He probably attended some lectures as a guest with the approval of the respective professors.

From 1829 to 1831, he was a chaplain in the town of Úterý, in the birthplace of Karel Kašpar Reitenberger (1779–1860), who was the Abbot of the Teplá Monastery from 1812 to 1827. The town of Úterý then belonged to the estate of the Teplá monastery. Smetana diligently prepared for the career of a high school professor in Teplá and in Úterý, to which he was directed by the order. In 1831, he passed the science and mathematics exams, which authorized him to work in secondary schools.

3. Professor at the Institute of Philosophy in Pilsen. In 1831, Josef František Smetana began working at the Institute of Philosophy in Pilsen, which was an "extension" of the local six-year high school (Premonstratensian Gymnasium). He joined as a substitute, but already from 1832 he was a full professor of physics and natural sciences. In Pilsen, he had two older colleagues who were not only experienced pedagogues but also important experts and widely recognized personalities. They were Josef Stanislav Zauper (1784–1850), a famous classical philologist who worked at the Pilsen Gymnasium from 1809, and Josef Vojtěch Sedláček (1785–1836), who came to the Institute of Philosophy in Pilsen a year later. On the Pilsen Gymnasium, the Institute of Philosophy, Zauper and Sedláček, (see [1] and [2]).

Smetana mainly taught physics, but his interests were very broad – he was interested not only in natural sciences, physics, astronomy, and mathematics but also in history. Under Sedláček's influence and with his support, he began to develop several patriotic and revivalist activities (Czech language, Czech theater, education, writing textbooks and articles).

In the first half of the thirties, Smetana was more or less loyal to the church and the authorities. He wrote celebratory odes to the monarch, the archbishop, distinguished Czech nobles, and colleagues. Unlike Sedláček, this activity was more or less marginal for him. From the beginning of his teaching career in Pilsen, he turned his attention

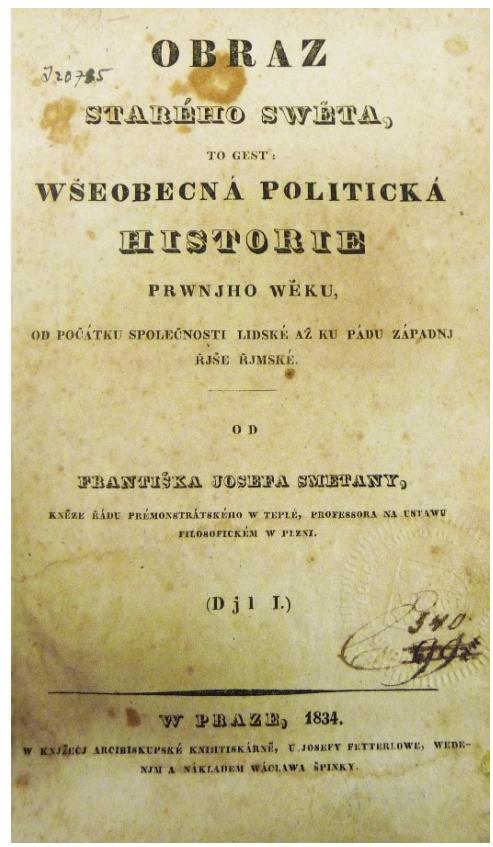
in a completely different direction.

After successfully passing the rigorous exams, he obtained his Doctor of Philosophy diploma on November 18, 1834 in the Old Famous Hall of the University of Prague. His friend Sedláček participated in this festive event. In 1835, Smetana became a contributing member of the *Wlastenské Museum* [Museum of Patriots], and a year later, a collecting member. Alongside Sedláček, Smetana worked at the Institute of Philosophy for less than five years. Sedláček died in February 1836.

The activities of the Pilsen patriotic society suffered considerably because of Sedláček's death. Smetana took over the teaching of Czech and very quickly became the main organizer of the Czech Pilsen patriotic society.



(a) Josef František Smetana[2].


OBRAZ

STARÉHO SWĚTA,

TO GEST:

WŠEOBECNÁ POLITICKÁ

HISTORIE

PRWNJHO WĚKU,

OD POČÁTKU SPOLEČNOSTI LIDSKÉ AŽ KU PÁDU ZÁPADNJ ŘÍŠE ŘJMSKÉ.

OD

FRANTIŠKA JOSEFA SMETANY,

KNĚZE ŘÁDU PRÉMONSTRÁTSKÉHO W TEPLÉ, PROFESSORA NA USTAWU FILOSOFICKÉM W PLZNI.

(D j l I.)

W PRAZE, 1834.

W KNÍŽECJ ARCIBISKUPSKÉ KNIHTISKÁRNĚ, U JOSEFY FETTERLOWE, WEDENJM A NÁKLADEM WÁCLAWA ŠPINKY.

(b) Obraz starého swěta.

Figure 1: Josef František Smetana and the title page of his *Picture of the Old World*.

3.1. Smetana and history. Smetana's great love was history, he studied it diligently. He devoted considerable energy to compiling an extensive textbook of world history. In 1834, during Sedláček's lifetime, he published her first volume entitled *Obraz starého světa* [Picture of the Old World] [9], which he attributed to Josef Jungmann. Smetana intended to publish the second and third volumes in a short time. However, they were suspended by censorship due to the author's too free-spirited ideas. Smetana refused to make submission; he did not want to edit his texts according to censorship requirements and he preferred to postpone the publication of the second and third volumes indefinitely. This principled position on censorship foreshadowed his later positions.

In the following years, Smetana published several articles on general history that were related to his three-volume work on general history. In 1835, his articles *Bog Fridricha Barbarossy s Milánskými* [Fight of Friedrich Barbarossa with the Milanese] and *Kleopatra* [Cleopatra] were published in the journal *Časopis Českého museum*[3]. In 1839 to 1841, his long article *Taženj křižácká od roku 1093–1100* [Crusades from 1093–1100] appeared in the journal *Časopis pro katolické duchowenstwo*. In 1841, he published the article *Wjtězstwj Čechů nad Tatary roku 1241 ku šestsetleté památce* [Victory of the Czech over Tatars in 1241 to the Six Hundred Year Old Memories][4] in the same journal and the article *Zlomky z udalostj věku středního* [Fragments of the Events of the Middle Ages][5] in the same year in the journal Wlastimil.

4. Is Enlightenment Dangerous to Church and State? In 1835, Smetana published a long article in the journal Časopis pro katolické duchowenstwo entitled *Zdali gest oswěta lidu obecného nebezpečná cjrkwi a státu?* [Is Enlightenment of Common People Dangerous to Church and State?] (see [10]), in which he tried to show the importance of education for man and society, for the church and the state.

He reasoned that enlightenment is not dangerous for either the state or the church; it leads to general progress; that education helps a person to realize the meaning of civic, religious, and moral obligations; it leads the people to their conscious and responsible fulfillment, in no way enlightenment leads to rebelliousness and unscrupulousness. He tried to

[2]The author of the picture is Alois Řeháček, the picture was made in 1883.

[3]*Časopis Českého museum* 9(1835), volume 2, pp. 141–152, respectively volume 4, pp. 353–366.

[4]*Časopis pro katolické duchowenstwo* 12(1839), pp. 78–96, 434–452, 709–727, 13(1840), pp. 318–331, 14(1841), pp. 51–61, respectively 14(1841), pp. 678–689.

[5]*Wlastimil. Přjtel oswěty a zábavy* 2(1841), part II., pp. 228–247.

disprove the idea that an uneducated person would submit more easily to authority and that the church and the state would be happier with less education. The question is whether Smetana thought so.

First, he pointed out that the Enlightenment is blamed for all the problems of the present day, and that it led, among other things, to the French Revolution and its consequences. He disputed the opinions that an uneducated person is obedient compared to an educated person, that an uneducated person does not oppose authority, is satisfied with little, and is more useful to the church and the state than an educated person. He rejected the idea that the church and the state would be "happier" with less enlightenment, arguing with several examples from history. He showed how terrible wars were in times when enlightenment was minimal. He emphasized that an uneducated and superstitious person does not properly understand even the meaning of confession and absolution. He also described the fatal consequences of superstition and religious fanaticism, pointing to the persecution of heretics. At the end of the article, he celebrated enlightenment and emphasized the role of teachers in spreading it and educating the people.

It is possible that with this consideration "on the enlightenment of the common people" Smetana responded to the problems he had with the publication of the second and third volumes of his large textbook of world history. Perhaps he was trying to convince the authorities of the general usefulness of education, perhaps he was trying to justify the pointlessness of censorship objections in a general way and to support the uncensored publication of his suspended volumes. It is possible that he was motivated to write this long article by Sedláček, who supported education and enlightenment with all his might.

5. The 1840s, a Gradual Change of Opinion, Education. In 1840, Smetana contributed to the establishment of the Czech Industrial Sunday School in Pilsen. He took charge of the education of craftsmen, apprentices, journeymen, and masters, he lectured them in Czech on Sunday afternoons and accompanied his lectures with various experiments. At the same time, he organized collections to support the Prague Industrial School[6]. The Czech Industrial Sunday School in Pilsen, however, soon disappeared due to lack of funds.

Between 1840 and 1843, Professor Smetana was in charge of his cousin Bedřich in Pilsen, who had serious problems with his studies. Be-

[6]See A. B.: Průmyslová škola v Plzni [Industrial School in Pilsen], *Kwěty. Národnj zábawnjk pro Čechy, Morawany a Slowáky* 7(1840), No. 18 from 30 April, pp. 141–143.

tween 1833 and 1840 he studied at Gymnasiums in Jindřichův Hradec, Jihlava, Německý (Havlíčkův) Brod and in Prague. Under the supervision of his "uncle", as he called him, he did finish his studies in Pilsen on August 6, 1843, though with problems. Bedřich's studies in Pilsen are commemorated by a plaque by Jan Štursa (1880–1925), which has been on the building of the former Premonstratensian Gymnasium since 1924, and a statue by Alois Sopra (1913–1993), which has been located in Kopecký's Gardens since 1978.

In the early 1840s, Josef František Smetana established a public reading room and library in Pilsen's Lochotín financed with voluntary contributions. It made it possible to read Czech journals, entertaining and educational books. Unfortunately, it soon ceased to exist due to lack of funds and lack of interest from readers, which was also contributed to by the fact that Lochotín was, after all, far outside the city[7].

During one of the evening returns from Lochotín in December 1844, Smetana fell on a stone seat in the local orchards in the dark and seriously broke his head[8]. He had to lie down for five weeks, his sister and her husband cared for him, students also helped. Fortunately, he recovered, which pleased his co-workers, current and former students, and Czech patriots[9].

In 1845, Smetana founded a Czech library for students and the public at the Institute of Philosophy in Pilsen. Every Saturday, the library lent out high-quality Czech literature, which Smetana, his friends, students and pupils selflessly bought, using their own funds. After Smetana's death, the books became part of the Gymnasium library, today they are in the funds of the Study and Research Library in Pilsen.

6. Holiday Trips and Smetana's Friends. During holidays, Smetana socialized with friends, on his travels he liked to participate in social life. He regularly visited Jan Jindřich Marek (1803–1853) and classmates Karel Alois Vinařický (1803–1869) and Filip Čermák (1798–1877), leading Czech Catholic priests who were among the prominent revivalists, writers, poets, translators and publishers of Czech books and

[7]See L. Silovský: *Když blesk trefil knihovnu* [When Lightning Hit the Library], pp. 42–43, in [8].

[8]See Wilém: *Z Plzně (Truchlivá událost)* [From Pilsen (A sad event)], *Květy. Národní zábawník pro Čechy, Morawany, Slowáky a Slezany* 11(1844), No. 151 from 17 December, p. 603; Malá zpráwa [A Little Piece of News], *Květy. Národní zábawník pro Čechy, Morawany, Slowáky a Slezany* 11(1844), No. 154 from 24 December, p. 616.

[9]On the accident, see also L. Silovský: *Smetanův lochotínský pád* [Smetana's Lochotín Fall], pp. 120–122, in [8].

journals and philanthropy of enlightenment.

During the holidays, Smetana liked to go to his birthplace, to nearby Česká Skalice and to Náchod, where he visited the family of his sister Johana Terezia, whose husband was the excellent musician Viktorin Kejzlar (Geisler, 1769–1837), a teacher in Úpice and later in Česká Skalice.

Smetana also visited the priest František Hurdálek (1790–1847), a passionate gardener and flower grower, who was at the birth of the Dahlia Society in Bohemia and organized the Dahlia Festival. These took place in Česká Skalice in the famous inn named *U Bílého Lva* [At the White Lion] and were important Czech patriotic events in the 1830s and 1840s. They were attended by patriots from all over Bohemia, guests from Slovakia, Germany and Poland. In September 1839, the traditional Dahlia Festival was held in honor of Josef František Smetana. He attended it together with his cousin Bedřich; there he met Klicpera again. On that occasion, Smetana wrote the poem *Ku slawnosti giřinek ...* [For the Dahlia Festival ...], which the Geisler brothers set to music. This song was regularly sung at other Dahlia Festivals. The winning dahlia was named Smetana in 1839.

During the holidays of 1842, Smetana traveled around Pilsen and Klatovy regions, in the summer of 1843 he was accompanied by Jan Jindřich Marek on his way through the Rokycany, Žatec and Litoměřice regions. They visited, among others, Roudnice, Liběchov, castle Pravda and Doksany. They ended their journey in September in Prague.

On his vacation trips, Smetana saw with his own eyes the progressing Germanization of the Czech population, especially the youth. He was keenly aware of the sad situation of the Czech nation and the rapid decline of the Czech language. He recognized the damage caused by Germanization in education. He expressed his findings and opinions in the comprehensive article *Slowo o wychowáwánj mládeže české* [Word on Education of the Czech Youth] [13]. In it, he demanded the introduction of the Czech language in all schools where the Czech population was educated and emphasized the importance of caring for education for future craftsmen and farming professions.

During his travels in Pilsen and Klatovy regions, Smetana tried to delineate the boundaries between Czech and German nationality in this region, i.e. the Czech-German language boundary. It was inspired by Šafařík's book *Slovanský národopis* [Slavic Ethnography] from 1842, which was accompanied by an ethnographic map depicting the spread of the Slavs. Smetana observed with great sadness the progressive de-

nationalization and Germanization of the Czech youth, he saw how few schools there were where Czech was taught, how the Czech language was declining and impoverished. He also thought about how to return the Germanized villages to their original names, he looked for Czech monuments in them. He described his travel experiences in an article named *Pomůcka k národopisné mappě králowství Českého* [Aid to the Ethnographic Map of the Kingdom of Bohemia] [14] which was published in the journal *Časopis Českého museum*.

Smetana's views began to develop more significantly in the 1840s, influenced by his experiences from vacation trips. The political development of the entire society, which gradually became radicalized during this time, contributed to this.

7. Smetana's Textbooks on General Civil History. In the second half of the 1840s, the political situation relaxed somewhat. The situation gradually changed for the better, and Smetana was enchanted by the growing freedom. In 1846 and 1847, he published all three volumes of his textbook *Wšeobecný dějepis občanský* [*General Civil History*] [15], [16] and [17]. In it, he paid quite a lot of attention to the history of the Slavic peoples, which was not usual at the time. In the second volume, he discussed the Hussite wars with insight, described the atrocities of both sides, and condemned them. He considered the worst consequences of this time to be the breakdown of national unity, which negatively affected the entire next centuries. It seems that, based on his long-term study of history and his own life experiences, he increasingly understood the reform efforts of Jan Hus (approximately 1370 to 1415).

Although Smetana's *Wšeobecný dějepis občanský* [15], [16] and [17] became a popular book very soon, its second and third volumes were not officially accepted. Among the recommended literature for Czech grammar schools, only the first volume was listed. Smetana's history was popular; it is said that the Czechs who left the US in the 19th century took it with them when emigrating. A new edition of the first two volumes of Smetana's textbook of general history was published in 1910 by Justin Václav Prášek (1853–1924), a high school professor, historian and orientalist, under the title *Wšeobecný dějepis občanský* [General Civil History].

8. Revolutionary Year 1848 – Hope.

In 1848 and 1849, a number of revolutions took place in Europe; they were suppressed. In some countries, however, they did bring certain fruits – the abolition of serfdom, the abolition of compulsory work,

the confirmation of certain civil liberties, the establishment of municipal self-government. National consciousness was significantly awakened, educational tendencies and educational activities were strengthened. The press began to play a big role.

At the end of the 1840s, the Habsburg monarchy was shaking at its foundations; the absolutist system was crumbling. The March Revolution in Vienna (clashes with the army, dozens of victims) forced Emperor Ferdinand I (1793–1875) to dismiss Chancellor Klemens Metternich (1773–1859) and to establish new ministries. On April 25, the government issued a constitution (the so-called *Triple Constitution*), which, however, did not bring peace to the monarchy, as the May uprising in Vienna showed. Already on May 15, the government revoked the constitution. On 22 July, the *Constituent Assembly of the Reich* was opened in Vienna, where representatives of the people of the individual countries of the monarchy met to discuss the public interest. The main goal was the drafting of a new basic law of the state, i.e. the constitution. On September 7, 1848, Ferdinand I announced the abolition of serfdom. However, on October 6, a spontaneous uprising broke out in Vienna, which was suppressed by the army led by General Alfred Windischgrätz (1787–1862). After these events, the Constituent Assembly was moved to Kroměříž on November 22. Ferdinand I stepped down and on December 2, 1848, his nephew Francis Joseph I (1830–1916) took over the reign.

In Prague, on March 11, 1848, a petition to Emperor Francis Joseph I was drafted at a meeting of the people in the St. Wenceslas Spa. It demanded the creation of a state-law entity of the countries of the Czech Crown, the equality of Czechs and Germans in all areas, the abolition of serfdom, and the introduction of civil liberties. The deputation to the emperor brought only promises as a response to the petition, which, however, caused great enthusiasm in Bohemia. National Guards were formed; the press was liberated; on April 5 the first issue of *Národní Nowiny* was published under the leadership of Karel Havlíček Borovský (1821–1856), a Czech journalist, writer, and politician. At the end of the *Slavonic Congress* (June 2 – 12, 1848, 340 delegates, a large number of foreign guests), which demanded the transformation of the monarchy into an association of equal nations, there were riots in Prague provoked by General Windischgrätz's army and fighting at the barricades. However, the army easily suppressed the uprising within days. The state of siege, which was declared on 18 June, lasted until 20 July. There were numerous persecutions, house searches and arrests.

9. Smetana in the Late Forties In the 1840s and 1850s, Smetana was a member of a patriotic circle that met regularly every early evening at the inn *U Bílé růže* [At the White Rose] next to the Pilsen Town Hall. In the 1840s, he gathered younger and older colleagues around him, who supported him in his activities and later continued them. They were especially Jan Nepomuk Sýkora, Josef Pýcha, Antonín Wiesner, Václav Záruba, Jan Beran, Jan Rychtářík, František Guldener, Antonín Hlavan, František Jizba and Ignác Schiebl.

Under the impression of his vacation trips and the influence of the country's political development, Smetana became radicalized. During the 1840s, his educational and revivalist activities gradually took on political aspects. In the tumultuous year of 1848, he entered politics. On March 28, he welcomed the promised constitution in the journal *Kwěty* with an enthusiastic article humorously titled *Z Plzně. Která planeta wládne rokem 1848?* [From Pilsen. Which Planet Will Rule the Year 1848][10]?

He fearlessly criticized the evils in the state and in the church, and he also spoke out against the ruling Habsburgs. He was the main initiator of the establishment of the Pilsen branch of the *Lípa Slovanská* [Slavic Lime-Tree] political association, which was founded in Prague on April 30, 1848, and whose first chairman was Pavel Josef Šafařík (1795–1861), a famous Czech writer, linguist and historian. Its goal was to strengthen national awareness and Slavic mutuality. Its branches were soon established in larger cities, and shortly after, at their convention; *Jednota Lip Slovanských* [The Unity of the Slavic Lime-Trees] was established.

Smetana participated in the Slavic Congress in Prague and contributed to the political newspaper *Posel ode Mže* [Messenger from Mže], which was founded by the Pilsen *Slovanská lípa* [Slavic Lime-Tree in Pilsen]. He formulated several patriotic proclamations concerning, in particular, the equality of the Czech and German languages. He called for the observance of the rights of the Czechs, but also the rights of the Germans. He was even twice put up as a member of the Reichstag but was not elected.

On October 31, 1848, Smetana became the mayor of Pilsen *Slovanská lípa*. He contributed to the fact that in October *Slovanská lípa* founded a reading room and rental office of Czech books and newspapers in Pilsen. At this time, he published the article *Stejné oprávnění obau národností w Čechách* [The Same Rights of Both Nationalities in

[10] *Kwěty.* Národní zábawník 15(1848), No. 38 from 28 March, p. 170. Signed with the abbreviation –a.

Bohemia] in the second issue of the journal Posel ode Mže[11]. In it, he expressed satisfaction with the acquired rights for the Czech nation, but also some dissatisfaction and concerns related to their insufficient use. See for example [3] and [4].

10. Year 1849 – Disappointment During 1849, the political situation worsened; Emperor Francis Joseph I gradually tightened the regime. On March 4, the government issued a centralist, ostracized constitution, regardless of the proceedings of the Constituent Assembly with the seat in Kroměříž. The Assembly was dispersed by the army on March 7. According to the constitution, legislative power was now in the hands of the emperor and the bicameral *Reichstag*, executive power in the hands of the Emperor Francis Joseph I. New laws were issued (press, association, and assembly). The state was heading towards absolutism. On July 28, Alexander Bach (1813–1893) took office as Minister of the Interior.

Smetana still tried to push through the teaching of some subjects in Czech at the Pilsen Gymnasium. At the same time, he sent appeals to rural communities about the need for further school education for craftsmen and farmers, and called for the distribution of Czech books, newspapers, and journals. In January 1849, he wrote and distributed a proclamation for Czech compatriots from the vicinity of Stříbro – he called on them to be loyal to the nation and the Czech language. At the same time, however, he demanded that the rights of both Germans and Czechs be respected everywhere. On 13 January 1849, Smetana was again elected mayor of Pilsen's *Slovanská lípa*, but already on February 12, he had to terminate his membership to the order of Teplá Abbot Marian Josef Heinl (Abbot from 1843 up 1867). According to the new association act, in March 1849 *Slovanská Lípa* was forced to transform into a nonpolitical reading association, and on September 4, 1849, it was officially dissolved. However, its members continued to meet informally in Pilsen.

On the night of May 9–10, 1849, the main participants in the planned uprising, which was to break out on May 12, were arrested in Prague. A state of siege was declared over Prague, which lasted until September 1, 1853. Freedom of association was abolished, the press was placed under the supervision of military authorities, house searches, and arrests continued. The times gave many opportunities to people of bad character – sycophants, various buffoons, and whistleblowers.

[11] *Posel ode Mže* 1(1848), No. 2 from 18 October, pp. 1–2.

The hope brought about by the year 1848 quickly disappeared. Smetana was disappointed. He showed his dissatisfaction; he took the liberty to sing the Requiem for Austria at the inn White Rose, where in the chorus there was an allusion to problems with the constitution and the failure to keep the promises of the emperor. For more information (see [3], [4] and [7]).

With the year 1849 there came a change in the organization of secondary education. Throughout Austria, philosophical institutes were attached to gymnasiums, of which they were originally an extension. So Smetana was now teaching at the Gymnasium in Pilsen. He valiantly tried to promote the teaching of the Czech language (see e.g. [1], [3] and [7]).

11. Under Police Surveillance (1850s) In April 1850, the Josephine system of state supervision over the Catholic Church was abolished by imperial decrees, and it was given complete freedom again. On 20 August 1851, it was decided by three cabinet letters that the ministers were responsible only to the Emperor Francis Joseph I. Two days later, the National Guard was disbanded and disarmed. On 31 December 1851, the three *New Year's Patents* repealed the oppressed Constitution of March 1849, abolished civil rights, abolished public trials, and abolished juries; patents marked an open transition to absolutism.

Between 1849 and 1854, the trials of the participants in the revolutionary struggles of 1848 and the organizers of the planned May Uprising of 1849 took place. Penalties of death and long imprisonment were given. Death sentences were later changed to long terms in prison by pardon. In 1857, the convicts were amnestied.

In the 1850s, the political situation in the Habsburg Monarchy was suffocating. Adolf Fischhof (1816–1893), an Austrian doctor, publicist, and politician, representative of the moderate liberal left, who was a member of the Reichstag during the revolutionary period of 1848 to 1849, characterized Austria in the 1850s as follows:

A standing army of soldiers, a sitting army of officials, a kneeling army of priests, and a crawling army of informers. (see: [21, p. 181])

The *concordat* of the Vienna government concluded on August 18, 1855 expanded the area of influence of the Catholic Church on Austrian public life (culture, education, upbringing, marriage). It was unilaterally denounced by Austria-Hungary in 1870.

The desire for freedom that awakened in 1848 remained unfulfilled. Smetana expressed his disappointment and criticized the state apparatus and the church. His numerous political activities and unconcealed

political views, participation in the Slavonic Congress in Prague, and work in *Slovanská lípa* led to his falling out of favor. During Bach's absolutism, he was under police surveillance. After all, he had a certain advantage over other politically persecuted people: he was a member of the Premonstratensian order and was therefore financially secured. Surprisingly, he was not sent into exile like the deposed Abbot Reitenberger and he was not removed from teaching at the grammar school in Pilsen. However, some of his former friends began to avoid him and there were reports of him. Only a few loyal friends remained.

Despite the gloomy atmosphere, Smetana's friends celebrated his fiftieth birthday in Pilsen on March 11, 1851. Hugo Jan Karlík (1807–1894), a member of the Premonstratensian order in Teplá, professor of Czech language at the Gymnasium in Pilsen, writer and poet, and Jan Jindřich Marek also took part in the small celebration. Both composed the poems for the occasion.

The political situation in Pilsen at the time is evidenced by a secret conduit report, which in 1866 accidentally reached a Pilsen sausage maker with old paper, who bought the paper to wrap his products and with the smoked meat to the public. The report stated:

Smetana, Premonstratensian professor, lives in Pilsen. A very radical priest (Pfaffe), who distinguished himself publicly in word and deed in 1848 and 1849. He welcomed Faster with noisy cheers and in his field (Sphäre), since he is entrusted with the teaching of youth, he can have a very harmful effect on young people, all the more so since he is completely devoted to the Czech element (dem Czechenthume) and wishes for a change of government in favor of the Czechs as soon as possible. He is under the supervision of the guard in Pilsen [12].

At the beginning of the 1850s, Smetana began to lose his sight (cataract), his teaching hours were gradually reduced between 1853 and 1854. However, even in these years he contributed to the German-Czech dictionary of scientific nomenclature, wrote short journal articles and several entries in the *Slovník naučný* [Educational Dictionary, the so-called Rieger's Educational Dictionary]. He had to resign from a number of his interests and activities; he spent his time writing poems. He tried to find the meaning of life in his poetry; he tried to get rid of sadness, depression, and disillusionment with their help.

In 1854, the famous Prague doctor Ferdinand Arlt (1812–1887) suc-

[12] See [4, p. 590] and [19, p. 224]. On the police persecution of some citizens of Pilsen, see L. Silovský: *Měšťané pod dohledem* [Townspeople under Surveillance], [8, p. 119].

cessfully operated on Smetana's left eye. However, the subsequent inflammation permanently blinded his eye. He also gradually lost sight in his right eye, had to completely give up teaching and his numerous activities, and in 1854 and 1857 he was completely released from teaching.

Smetana's patriotic activities were gradually taken over by his friend Hugo Jan Karlík, who worked at the Pilsen Gymnasium between 1849 and 1860. As early as 1849, he taught Czech language courses and continued educational and revivalist activities. He took care of Smetana in his worst period of life. In 1855, Karlík dedicated a short poem to him for the holiday. In the 1850s, the death of friends and people whom he respected was a hard blow for Smetana. He also honors their memory with poems that were full of sadness and hopelessness.

On 21 April 1857, Smetana underwent an operation on his right eye, which was successful. He was operated on by eye specialist Josef Hasner von Artha (1819–1892). Smetana could now see again, at least in his right eye, and he could – after a four-year hiatus – partially return to his former activities. Smetana's eye surgery and recovery were watched with excitement by his friends and pupils in Pilsen and Prague. They celebrated his recovery and published joyful poems.

However, Smetana no longer had much energy; his health had deteriorated and the political atmosphere was still very oppressive. In addition, he had severe pneumonia in 1858. After his recovery, he taught, worked, and traveled again. He became more and more sad as his friends died and the political situation did not improve. The sadness grew significantly after his friend Hugo Jan Karlík left Pilsen for a parish in Úherce at the turn of July and August 1860.

In the spring of 1860, Smetana again had pneumonia, which weakened him. He was treated at the monastery in Teplá. At the beginning of 1861, he caught a cold while walking, and on February 18, 1861, in Pilsen, in the building of the Gymnasium, he died at the age of sixty. He was buried two days later at the St. Nicolas Cemetery in Pilsen. His grave is not far from the grave of Josef Vojtěch Sedláček. The funeral was a huge manifestation of the Czech patriots and revolutionaries of 1848.

12. End of Bach's Absolutism, Social Revival After the defeats in the battles of Magenta and Solferino (1859), Alexander Bach was dismissed from the civil service in August 1859, and the officials of his apparatus gradually left. On 20 October 1860, the Imperial Manifesto was issued justifying the establishment of absolutism, and the

Multiplied Imperial Council was established as an advisory body, which was granted decision-making in certain matters. In the *October diploma* issued the same day, the emperor renounced absolutism, promised to reform the internal conditions in the state, and hinted at the possibility of restoring the country's historical rights. On 26 February 1861, the centralist February Constitution was promulgated, establishing a legislative bicameral Reichstag, a move that marked the transition to a constitutional monarchy. The Constitution confirmed the regional constitution and formulated electoral rules for regional assemblies. Its validity was suspended in 1865. In 1867, after the lost Prussian-Austrian war, the so-called Austro-Hungarian settlement took place. The December Constitution of December 21, 1867 defined the position of the emperor, gave legislative authority to the Imperial Council, confirmed basic civil rights, established the Imperial Court (in Vienna), and confirmed the independence of the courts and the equality of citizens before the law.

At the beginning of the 1860s, political conditions quickly relaxed; space was created for various activities, and Czech society began to awaken intensively. The first independent associations and professional societies were established. At the beginning of the 1860s, in addition, the Czech language began to be gradually promoted in university teaching as well.

It was too late for Smetana, who would certainly have been happy to perceive the positive signals brought by the beginning of the 1860s. He died just at a time when hopes began to revive, at a time that was once again favorable for the activities he had been engaged in for many years.

At the time when Sedláček and Smetana were already resting in the St. Nicolas Cemetery, the next generation was engaged in revivalist activities in Pilsen. In particular, Bernard Guldener (1836–1877), a lawyer and poet from a Pilsen patrician family, and František Schwarz (1840–1906), a journalist, publicist, and politician who came to Pilsen in 1864, took over the baton from Smetana. Sedláček and Smetana tried to awaken the emotional relationship of the Czech population to their hometown, to the homeland, to the history of the nation, and to the Czech language. They knew how important enlightenment was, and how necessary education and local patriotism were.

13. Smetana and Natural Sciences – Teaching and Popularization The teaching of mathematics, physics, and astronomy was of an excellent standard in Pilsen, especially in the first half of the 19th century. Professors Josef Vojtěch Sedláček, Michael Antonín Tschamler

(1787–1858) and Josef František Smetana were particularly responsible for this. Thanks to the extraordinary efforts of the aforementioned professors and the support of the Premonstratensian Order, the Gymnasium and the Institute of Philosophy had an excellently equipped classroom, office and library. See [1] about the Premonstratensian influence at the Philosophical Institute in Pilsen and at the Gymnasium in Pilsen.

Smetana tried to explain difficult and not always popular physics to all pupils and arouse their interest in natural sciences. He diversified the teaching with a series of experiments, regular meteorological measurements, and astronomical observations. When teaching, he relied on perfect knowledge of German and Czech, physics, astronomy, and mathematics. He didn't omit humor either. His principle was to explain the essence of phenomena vividly, comprehensibly, thoroughly, and at the same time entertainingly. He wanted his teaching to show the use of physical laws and phenomena in practical life. Students, especially Czechs, adored him, even though he was a strict but fair teacher. In the 1850s, he tried to strengthen the teaching of physics in the Czech language during the period when the Pilsen Gymnasium was Utraquist for a short time.

Interest in general history and the work on writing a three-volume world history textbook did not divert Smetana's attention from natural science, especially astronomy and physics. His wide-ranging interest in nature can be evidenced by several small contributions.

In 1834, short articles titled *Plodnatost rostlin* [Plant Fertility] and *Řjsse tworstwa*[Realm of Creatures] were printed in the journal *Česká Wčela*[13]. Although they are not signed, the authorship of Smetana is beyond doubt. They were reprinted with Smetana's name in 1845 and 1846 in the second and third editions of Jungmann's book *Slowesnost aneb Náuka o wýmluwnosti prosaické, básnické i řečnické se sbírkau příkladů w newázané i wázané řeči* [Verbal or The Science of Prose, Poetic and Rhetorical Fluency with a Collection of Examples in Unbound and Bound Speech]; they were meant to serve as a model of a popular science text.

Smetana was very interested in astronomy. In 1836, he published a note in the journal Krok named *O powětrnosti roku 1834* [On the Weather in 1834][14], in which he fundamentally rejected the opinion that

[13] *Česká Wčela* 1(1834), pp. 14–15, and p. 79

[14] *Krok. Weřegný spis wšenaučný pro wzdělance národu československého* 3(1836), pp. 181–207.

Halley's comet was responsible for the weather fluctuations in 1834[15].

Smetana also paid attention to progress in the natural sciences. In 1837, he participated in the 15th meeting of the Society of German Naturalists in Prague, which had a rich foreign participation. He published information on the program of this event in the *Zpráwa o shromážděnj německých přjrodozpytců w Praze 1837* [Report on the Gathering of German Naturalists in Prague 1837][16]. Smetana did not give a lecture, nor did he speak in the discussion. Let us note that the physics section was visited by Kašpar Maria Count Šternberk (1761–1838), a botanist, geologist and paleontologist, and Karel Count Chotek of Chotkov and Vojnín (1783–1868), the supreme burgrave of the Kingdom of Bohemia. A large space was given to the presentation of devices and experiments, electricity and magnetism and astronomy.

Two years later, Smetana informed in a short report of an extremely rare event. *Agave foetida*, planted twenty-eight years ago, blossomed in the greenhouses of Kašpar Maria Count Šternberk in Březina[17].

13.1. Smetana and Astronomy In 1837, Smetana published the textbook *Základowé Hwězdoslowj, čili Astronomie* [Basic Astronomy] [11]. If we do not count the small book by Norbert Waněk (1782–1835) called *Obraz Gasných nebes s krátkým popsanjm nebeských těles, čili, Krátké poučenj o Hwězdách a gegich běhu* [An Image of Clear Skies with a Brief Description of Celestial Bodies ...][18], which is an almost literal translation of the small booklet *Gemeinfassliche Anleitung zur leichten Kenntniss des gestirnten Himmels* written by Johann Baptist Bartak[19], it is the first book written in Czech devoted to astronomy. It was intended for more serious interested readers, especially young people.

Smetana paid the most attention to the solar system (the Sun, planets, their moons, asteroids, comets, eclipses), but stars, binaries, the Milky Way, nebulae, and star clusters were not left out either. He also provided readers with basic information from the so-called astronomical geography, tried to clarify physical laws (Kepler's laws, the law of gravity) and did not omit mathematical examples. He informed in depth

[15] Halley's Comet orbits the Sun in an elongated ellipse. It returns to the Sun once every 75/76 years. Smetana saw it in 1835, when it was very the very strong and prominent event. It was also well visible in 1910, while in 1986 it was very weak.

[16] *Časopis Českého museum* 11(1837), volume 4, pp. 480–485.

[17] *Kwěty. Národnj zábawnjk pro Čechy, Morawany a Slowáky* 6(1839), No. 46 from 14 November, p. 368.

[18] Printed by Tomáš Tábor, Prague, 1836, 40 pages and 1 map.

[19] Vienna, 1827, xii+52 pages.

and detail about new discoveries and opinions from the first decades of the 19th century and introduced the reader to the so-called Laplace's cosmological hypothesis[20].

When writing his book, Smetana was particularly inspired by Littrow's popular science book *Die Wunder des Himmels*[21]. He was also inspired by Schubert's and Bode's books[22].

Smetana demonstrated a wide knowledge of foreign language literature, and it is known that he was acquainted with new results and discoveries. He faced a difficult task, as he had to create Czech terminology for astronomy and physics. To a certain extent, he followed the old Czech literature of the 16th and 17th centuries, but he introduced many terms himself. He still tried to find Czech terms at all costs, which was usual at that time. It is understandable that some were successful, but others were not.

Excerpts from Smetana's astronomy textbook appeared in 1851 and 1872 in two editions of the book *Malý výbor z veškeré literatury české* [Brief Excerpt from All Czech Literature] by František Ladislav Čelakovský (1799–1852), Czech writer, poet and translator. The ethnographer, writer and historian Josef Jireček (1825–1888) also used several excerpts for writing a professional educational text in the book *Anthologie z novočeské literatury* [Anthology of New-Czech Literature], which

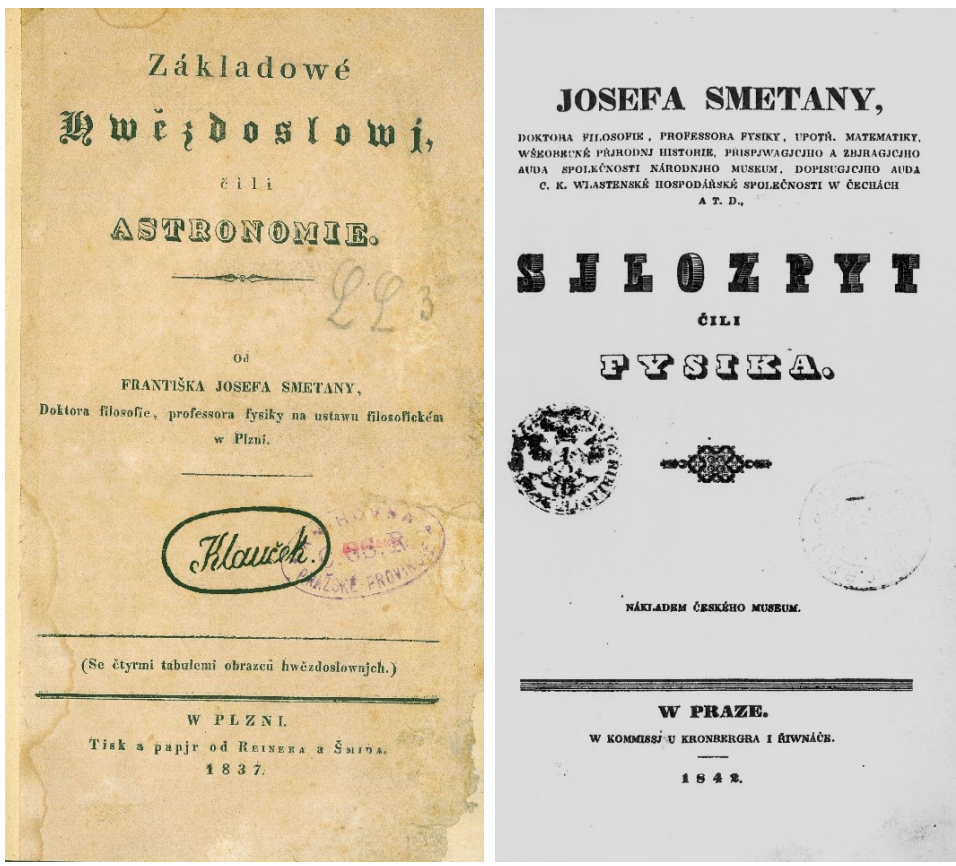
[20]It relates to the formation of the solar system. The author is the French mathematician and astronomer Pierre Simon Laplace (1749–1827). Sometimes we talk about Kant-Laplace theory because the basic idea was published as early as 1755 by the German philosopher Immanuel Kant (1724–1804).

[21]Joseph Johann von Littrow (1781–1840), Austrian astronomer, was a university professor of astronomy in Krakow from 1807, from 1810 in Kazan, from 1819 in Vienna. He wrote a three-volume monograph on theoretical and practical astronomy (Vienna, 1821 to 1827). A well-known and popular work of his is the three-volume book *Die Wunder des Himmels* (C. Hoffmann, Stuttgart, 1834, viii+362 pages, 1835, 394 pages, 1836, 473 pages), which was published in several editions and was edited several times after Littrow's death and revised – 1886, 1897: Edmund Weiss (1837–1917), 1910: Paul Guthnick (1879–1947), 1939: Friedrich Becker (1900–1985).

[22]Friedrich Theodor von Schubert (1758–1825), German astronomer and geographer, member of the Russian Academy of Sciences, director of the St. Petersburg Observatory, published an extensive work on theoretical astronomy in 1798. He is the author of the three-volume book Populäre Astronomie (1808 to 1810). He was an important popularizer of astronomy. Johann Elert Bode (1747–1826), German astronomer working in Berlin, founded the astronomical yearbook *Astronomisches Jahrbuch oder Ephemeriden für das Jahr ...* later, it was published under the name Berliner astronomisches Jahrbuch. He was preparing these astronomical yearbooks until the end of his life. His book *Anleitung zur Kenntnis des gestirnten Himmels* (1768, 10th edition 1844) was highly valued and popular, as well as his large stellar atlas *Uranographia sive astrorum descriptio* from 1801.

was published five times between 1861 and 1881.

In 1843, Smetana published in the journal *Kwěty* the short report *Z Plzně. Swětlo zodiakálnj z gara 1843* [From Pilsen. The Zodiacal Light from Spring 1843]. He explained how the so-called zodiacal light is produced and stated that this phenomenon is more noticeable this year than in other years[23]. In the next issue of the journal, he admitted that he was wrong, because it was not a zodiacal light, but a comet's tail[24].


Základowé
Hwězdoslowj,
čili
ASTRONOMIE.
Od
FRANTIŠKA JOSEFA SMETANY,
Doktora filosofie, professora fysiky na ustawu filosofickém
w Plzni.
Klaučeh.
(Se čtyrmi tabulemi obrazců hwězdoslownjch.)
W PLZNI.
Tisk a papjr od Reinera a Šmida.
1837.
JOSEFA SMETANY,
DOKTORA FILOSOFIE, PROFESSORA FYSIKY, UPOTŘ. MATEMATIKY,
WŠEOBECNÉ PŘÍRODNÍ HISTORIE, PŘISPJWAGJCIHO A ZBJRAGJCIHO
AUDA SPOLEČNOSTI NÁRODNIHO MUSEUM, DOPISUGJCIHO AUDA
C. K. WLASTENSKÉ HOSPODÁŘSKÉ SPOLEČNOSTI W ČECHÁCH
A T. D.,
SJLOZPYT
ČILI
FYSIKA.
NÁKLADEM ČESKÉHO MUSEUM.
W PRAZE.
W KOMMISSI U KRONBERGRA I ŠIWNÁČE.
1842.

(a) Astronomie. (b) Fysika.

Figure 2: The title page of Josef František Smetana books: *Astronomie* and *Fysika*.

[23]Zodiacal (zodiac) light is created by the scattering of sunlight on dust and gas particles. It is usually seen in the spring evening sky and in the autumn morning sky as a faint cone of light along the ecliptic.

[24]Kwěty. Národnj zábawnjk pro Čechy, Morawany, Slowáky a Slezany 10(1843), No. 25 from 29 March, p. 99–100, No. 26 from 1 April, p. 104.

In 1846 and 1848, Smetana published an extensive and highly insightful review titled *Alexandra z Humboldta Kosmos* [Alexander of Humboldt's Kosmos][25]. It concerned the first two volumes of the famous five-volume monograph of the German naturalist Friedrich Heinrich Alexander von Humboldt (1769–1859) entitled *Kosmos – Entwurf einer physical Weltbeschreibung* (1845, 1847, 1850, 1858, 1862), which played an important role in the development of astronomy and the natural sciences. With his review, Smetana proved that he carefully follows the latest high-quality professional literature. He probably couldn't review the other parts due to an ongoing eye disease.

One of the last journal contributions was published by Smetana in 1859 under the title *Z čeho jsou komety?* [What Are the Comets Made of?][26]. He was inspired by Donati's comet, which was an extremely striking phenomenon in the autumn of 1858. It was discovered in June 1858 by the Italian astronomer Giovanni Battista Donati (1826–1873); it is a non-periodic comet.

13.2. Smetana and Physics In 1842, Smetana published the textbook *Sjlozpyt čili fysika* [Physics] [12]. He attributed it to Hanuš Krakowský Count of Kolowrat (Jan Nepomuk Karel, 1794–1872), a Czech patriot and philanthropist who, among other things, supported *Matice česká*, which helps Czech writers. Smetana thus loosely followed Sedláček's unfinished book *Základowé přírodnictví aneb Fyziky a Matematyky potažené neboli smjssené* [Basics of Science or Physics and Applied Mathematics] (1825, 1828). He did not strive too much for the originality of his text, but he wanted the textbook to be successful in terms of formality and language, to be readable and engaging, and he really succeeded. He was inspired by Baumgartner's successful textbooks.

Andreas Baumgartner (1793–1865) worked as a professor of physics in Olomouc from 1817; in 1823 he became a professor at the University of Vienna, and in 1851 the president of the Vienna Academy of Sciences. In 1824, he published the three-volume textbook *Die Naturlehre nach ihrem gegenwärtigen Zustande mit Rücksicht auf mathematische Begründung*[27], which was published in eight editions, and in 1837 the textbook *Anfangsgründe der Naturlehre*[28], which was published for the

[25] Časopis Českého museum 20(1846), pp. 300–312, pp. 433–451, 22(1848), part I., volume 2, pp. 138–149, volume 4, pp. 353–365, volume 5, pp. 469–484.

[26] *Živa.* Časopis přírodnický 7(1859), pp. 192–193.

[27] Heubner, Wien, 1824, xxvii+260 pages, xxii+280 pages, xvi+246 pages, 3+4+3 tables with pictures.

[28] Heubner, Wien, iv+263 pages.

sixth time in 1855. Both textbooks were among the essential teaching texts used in the Austrian monarchy.

Smetana's *Sjlozpyt* [12] clearly explains the classic teaching material that was typical for quality textbooks of the first half of the 19th century (statics, dynamics, mechanics, optics, heat, electricity, magnetism, the basics of meteorology). However, it does not contain anything on astronomy because Smetana treated this subject in the textbook *Hwězdoslowj* [11]. Smetana emphasizes the interpretation of basic physical phenomena with the use of mathematical apparatus and presentation aids and devices. These are drawn in the pictorial appendix (10 tables inserted in the book). Smetana's *Sjlozpyt* [12] has the character of a university teaching text intended for the preparation of future secondary school teachers. In addition, with his textbook, Smetana demonstrated that he carefully followed the development of physics; he was acquainted with new discoveries, physical theories and apparatuses. When compiling his textbook, he faced a difficult task: he had to lay the foundations of Czech physics terminology. To the best of his ability, he coped with this task successfully.

14. Smetana and Contemporary Daguerreotypes When teaching physics and natural sciences, Smetana liked to demonstrate illustrative experiments; he liked practical activities. It is not surprising that in Pilsen he was among the first to experiment with daguerreotype.

The daguerreotype was the first, historically successful photographic process. It was first performed on January 7, 1839 at a meeting of the Paris Academy of Sciences. The process was invented by Louis-Jacques-Mandé Daguerre (1787–1851) and with Joseph Nicéphore Niépce (1765–1833).

No photograph signed by Smetana has been preserved up to now. It is likely that he is the author of two daguerreotypes of his cousin Bedřich. One of them was created in 1843 – it depicts Bedřich as a high school student. Today it is in the collections of the Czech Museum of Music in Prague.

The camera and some of the equipment that Smetana used have been preserved. In 1924, an exhibition of old photographs was held in Pilsen, organized by *Klub amatérských fotografů* [Club of Amateur Photographers]. Smetana's old camera was a valuable exhibit. His photographic apparatus is now part of the collections of the Technical National Museum in Prague. It is not clear whether Smetana bought it or made it. The manufacturer is not known. It was created around 1840, had a quality Petzval's type lens and the image format was 7.2 x 8.1 cm.

It is noteworthy that already in 1842 Smetana clarified a detailed description of the daguerreotype. In [12] in the section *Temnice a svítilna kouzelná* [Dark Chamber and the Magic Lamp], he explained the physical and chemical essence of the principle of photography; it is considered to be the first professional description of daguerreotype written in Czech.

It is not clear what pictures Smetana took and whether they were portraits of his friends and colleagues, snapshots of life in Pilsen or nature. He probably developed the images at school, i.e. in his office or in his apartment. Photography was not an easy matter at that time. On the website www.daguerreobase.org it is possible to find a high-quality photo of Smetana's photographic apparatus (ID 19887c) and four of his wooden holders for daguerreotype plates (ID 19887b).

15. Smetana's Textbooks for Lower Gymnasiums and Real Schools In June 1851, the Ministry of Culture and Education set up a special commission to collect terms from Czech professional and scientific literature and prepare a handy dictionary for the needs of gymnasiums and real schools. The commission began work; its members were František Ladislav Čelakovský, Slavologist and literary historian, professor at the University of Prague, Václav Vladivoj Tomek (1818–1905), historian, professor at the University of Prague, Karel Jaromír Erben (1811–1870), historian and archivist of the city of Prague, Karel Boleslav Štorch (1812–1868), writer and publicist, editor of several journals, official of the state accounting office and actuary. Already in August 1851, Professor Tomek was replaced by ministerial official Josef Jireček, ethnographer, literary historian, publisher of old Bohemian literature and politician.

The commission first defined the disciplines that the dictionary will include and then addressed experts who represented the respective fields. In this way, a certain circle of people was formed who participated in the collection of dates. Josef František Smetana, who had struggled with the problem of Czech astronomical and physical terminology in the previous years when compiling his astronomy and physics textbooks, also actively participated in the work. After Čelakovský's death, Pavel Josef Šafařík, Slavologist, philologist and historian, librarian of the university library, took over the management of the work. The collective work titled *Německo-český slovník vědeckého názvosloví: pro gymnasia a reálné školy* [German-Czech Dictionary of Scientific Nomenclature for Gymnasiums and Real Schools] was completed and published in 1853.

In connection with the new educational policy (and at the request

of the government), some Czech teachers began to compile Czech secondary school textbooks in the early 1850s. Smetana was one of the first. In 1852, he published the textbook *Počátkové silozpytu čili fysiky pro nižší gymnasia a reálky* [Beginnings of Physics for Lower Gymnasiums and Real Schools] [18].

The textbook presents the classic parts of physics (mechanics, optics, acoustics, heat, electricity, magnetism), and also covers the basics of Earth and space science. According to the customs of the time, it explained optics and the science of light (waves of the ether) in detail, paid considerable attention to interference, bending, refraction, birefringence and polarization of light; it thoroughly explained the essence of devices (eye, microscopes, telescopes, photographic aids). In this topic, it went far beyond the scope of today's teaching of physics at secondary schools. In all parts, it emphasized the use of aids; the explanation was complemented by a careful description of the devices, their properties and their use in practice. Illustrative images were attached in appropriate places directly in the text. A number of tools and devices described and illustrated by Smetana in the textbook have been preserved in the Ethnographic Museum in Pilsen. Some are from the collections of the Pilsen Premonstratensian Gymnasium, but it cannot be determined whether Smetana experimented with them.

Smetana's textbook is not original; it is based on the teaching texts of the Viennese physics professor Andreas von Baumgartner. It is modern in its content and concept. It proves that Smetana followed current physical research and did not miss any important discoveries and theories.

Let us emphasize that the planet Neptune discovered in 1846 is already mentioned in Smetana's textbook dating from 1852; Leverrier's calculation, which led to its discovery, is also mentioned. It also mentions the names of eleven other asteroids that were discovered between 1845 and 1851. These newly found celestial bodies could not be listed in the 1837 astronomy textbook.

In 1852, Smetana published a translation of Franz Ritter von Močnik's (Mocznik, 1814–1892) textbook called *Nauka o arithmetice pro nižší gymnasia ...* [Arithmetic for Lower Gymnasiums ...] [5]. It was the first Czech translation of Močnik's high-quality and popular textbooks, which were used throughout the second half of the 19th century not only in Austria, respectively Austro-Hungarian Monarchy. Smetana was aware of the fact that Czech students urgently needed high quality Czech textbooks. There was not enough time to compile them in the

early 1850s, so he used the proven arithmetic of Močnik.

Smetana's physics, astronomy and history textbooks were positively evaluated not only by his contemporaries, teachers and students, but also by the later Czech mathematicians, physicists, astronomers and historians of science and literature. They appreciated the professional qualities of the teaching texts, the accuracy, clarity, brevity and conciseness of the expression, but also the nice and readable design and the excellent Czech language (for more details, see [3]).

16. Smetana's Poetic Work – Political Satire Smetana composed poems throughout his life, writing them down (except for celebratory odes) in notebooks poetically titled *Pomněnky* [Myosotis], which he wrote from the 1840s until his death[29]. Some of them are strongly emotional; they relate in particular to sad events that affected Smetana. He reacted with them to the death of friends, coped with the gradual weakening of his eyesight, and later with blindness. His poems reflect the disappointment of political developments after 1848 and the growing pressure of Bach's absolutism. Most of the poems could not be published due to the political situation at the time.

Many of his poems are sharply critical and anti-clerical, mocking the monarch, the church, the state apparatus, the police, politics and officials. Smetana criticized conditions in the state (Austrian absolutism, Germanization, militarism, bureaucracy) and also criticized conditions in the church (clericalism, concordat, hypocrisy). Irony and even sarcasm gradually increased in his poems; they can be described as harsh political satires. Some are relevant even today, i.e. almost two centuries after their creation. They are timeless because they criticize the enslavement and misery of the people, the greed of the powerful people, the incompetence of politicians and diplomats; they condemn the absurd war rage and disputes between states and individuals; they ridicule the greed for property, power and position as well as some bad human qualities. They show that Smetana had no illusions about contracts, agreements, promises of sovereigns and laws. His poems are a very interesting testimony of the time, as they offer a deep insight into his inner self.

Smetana probably recited his poems to his closest friends on occasions. If we read them today, we are not surprised that he was said to be a rioter and was under police surveillance. The surprising thing

[29]The notebooks are stored in the fund Josef František Smetana which is deposited in the Archive of the City of Pilsen. They contain about one and a half hundred poems.

is that he was still able to teach; he was not sent to the seclusion of a distant monastery like Abbot Reitenberger.

Only a few of his poems were published during his lifetime (1847 and 1857). In 1857 there were plans to publish a collection of poems, but it seems that a successful operation on his right eye allowed Smetana to return to his earlier numerous activities and therefore he postponed the compilation of a collection of poems. Some of his "decent" poems appeared sporadically in the 1960s and 1970s of the 19th century in regional journals and newspapers, thanks to the journalist, politician, and statistician Jaroslav Schiebl (1851–1933).

The first book edition of his poems, titled *Básně Josefa Františka Smetany* [Poems of Josef František Smetana] [19] of 1905, aroused conflicting reactions. Some reviews were positive and enthusiastic, others negative and sharply condemned Smetana's anti-clericalism. It is surprising that even during the Austro-Hungarian period, some sharper political poems were included in this collection, but some parts were deleted according to the press law. A smaller selection of Smetana's poems was published in 1919 in the small book *Pomněnky* [Myosotis] [20]. However, this release did not arouse any reactions as the society was solving the problems of the newly formed Czechoslovak Republic.

17. Smetana's Didactic Poetry. Smetana did not omit humor in his teaching. His principle was to explain the essence of phenomena vividly, comprehensibly, thoroughly and at the same time in an entertaining manner. He wanted his teaching to show the use of physical laws and phenomena in practical life. He had a strong pedagogical talent, which was combined with a love for students and the field he taught. He was able to talk about complex phenomena and laws not only correctly and in an engaging manner, but also with appropriate insight and nice humor. This set him apart from a number of his colleagues, who only strictly paid attention to a thorough discussion of the teaching material, were not willing to diversify the teaching, had no understanding of the problems of young people and did not want to teach in a language other than German.

With his own sense of humor, Smetana combined knowledge of physics with criticism of social problems, human failures and shortcomings, and captured his observations and ideas in interesting "physical" poems. They were never printed, because the editors of his poetry did not understand them; apart from one they did not include them in the collections of the *Básně Josefa Františka Smetany* [19] and *Pomněnky* [20]. Perhaps they did not understand them or found them uninterest-

ing, difficult to understand, too professional, or not very satirical. They were preserved together with other Smetana poems in several notebooks poetically titled *Pomněnky*.

More extensive poems with themes of physics belong to the collection of the so-called *Čtení z fysiky* [Readings from Physics], in which Smetana masterfully used his knowledge of physics (mechanics, electricity, optics, astronomy) to sharply criticize human society, its problems and the moral decline of certain classes or persons (see [3]).

18. Conclusion. Smetana was a versatile Czech scholar of the first half of the 19th century with a broad professional outlook and deep natural and historical knowledge; he was a talented, strict but popular teacher, an excellent popularizer of the natural sciences, an ardent patriot and selfless national revivalist. We will close this article with the words of Arne Novák (1880–1939), Czech art and literary historian and critic, which describe Smetana's personality well:

He is not only a distinctive and idiosyncratic man of letters; no, he is much more: a distinctly defined individuality, which manifests itself equally interestingly in politics and in poetry, in scientific speculation and in actual action, in sharp criticism of current conditions and in the construction of world opinion – and all this with the accompanying harmony of a perfect character.

... This is how member of Premonstratensian order and Pilsen professor, popularizing historian and scientific astronomer and physicist Josef František Smetana walks fearlessly and firmly through his time in the white robe of the Order of Norbert, not shaken by the distrust of the clergy of his board of directors, nor by the persecution of the political gendarmerie. ... his entire person is reminiscent of the mature type of political and religious liberalism of the middle of the century ... ([6, pp. 302–303, 307])

Author Contributions: Both authors equally contributed to the conceptualization, methodology, formal analysis, investigation, and writing–original draft preparation.

Funding: The research for this article was supported by the project *The underestimated role of Pilsen Premonstratensians in mathematics and natural sciences* (GA CR 21-08835S). Polish Mathematical Society remains neutral with respect to jurisdictional claims in published maps and institutional affiliations.

Conflicts of Interest: The authors declare no conflict of interest.

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Josef František Smetana – niezwykły przyrodnik

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Streszczenie. Josef František Smetana (1801–1861), profesor Instytutu Filozoficznego i Gimnazjum w Pilźnie, był przyrodnikiem, historyk i poeta. Należał do kanonicznego zakonu premonstratensów (klasztor w Tepla). Imię Josef było jego imieniem zakonnym. Był wybitną osobistością Pilzna i okolic, patriotą i odrodzeniowcem. Kontynuował w wielu kierunkach działalność Josefa Vojtěcha Sedláčka, jego starszego kolegi i przyjaciela. Uczył fizyki, nauk przyrodniczych i języka czeskiego. Publikował prace z historii, astronomii oraz podręczniki do fizyki. Większość jego poezji nie została opublikowana do początków XX wieku. Niektóre zachowały się w postaci rękopisów.

2010 Klasyfikacja tematyczna AMS (2010): 00A17, 01A60, 01A70.

Słowa kluczowe: Josef Vojtěch Sedláček; kształcenie matematyczne,czeskie podręczniki geometrii; wiek XIX; historia matematyki.

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Communicated by: Stanisław Domoradzki

(Received: 29th of May 2023; revised: 13th of December 2023)