

MARTINA BEČVÁŘOVÁ\*

## THE ROLE OF CZECH MATHEMATICIANS IN THE BALKANS (1850–1900)<sup>1</sup>

## ZNACZENIE CZESKICH MATEMATYKÓW NA BAŁKANACH (1850–1900)

### Abstract

From 1860s, the number of mathematicians, teachers and authors of monographs, textbooks and papers in Bohemia increased noticeably. This was due to the improvement of education and the emergence of societies. During 1870s and 1880s many candidates for teaching mathematics and physics were without regular position and income. Some of them went abroad (especially to the Balkans) where they obtained better posts and started to play important roles in the development of “national” mathematics and mathematical education. The article describes this remarkable phenomenon from the history of the Czech mathematical community and analyzes its influence on other national communities.

*Keywords: mathematics and mathematical education in Bohemia and Balkans, history of mathematical societies, history of mathematics, the 19<sup>th</sup> century*

### Streszczenie

Od lat 60. XIX w. w Czechach wyraźnie wzrosła liczba matematyków, nauczycieli matematyki, autorów monografii, podręczników i artykułów. Było to spowodowane rozwojem matematycznej edukacji i powstaniem towarzystw. W latach 70. i 80. XIX w. wielu czeskich kandydatów na nauczycieli matematyki i fizyki w szkołach średnich nie miało stałej posady i dochodów. Część z nich udawała się za granicę (szczególnie na Bałkany), gdzie zajmowali lepsze stanowiska i znacząco przyczynili się do rozwoju „narodowej” matematyki i edukacji matematycznej. Artykuł prezentuje ten niezwykle fenomen w historii czeskiego środowiska matematycznego i poddaje analizie jego wpływ na inne społeczności narodowe.

*Słowa kluczowe: matematyka i edukacja matematyczna w Czechach i na Bałkanach, historia towarzystw matematycznych, historia matematyki, wiek XIX*

\* Martina Bečvářová, Department of Applied Mathematics, Faculty of Transportation Sciences, Czech Technical University in Prague and Department of Mathematics Education, Faculty of Mathematics and Physics, Charles University in Prague, becvamar@fd.cvut.cz.

<sup>1</sup> The text summarizes the long time author’s research, complements and broads her monographs and studies [2–5, 7–11].

## 1. Introduction

### 1.1. The development of Czech secondary schools and universities in the 19<sup>th</sup> century

In the first half of the 19<sup>th</sup> century, Bohemia became the industrial backbone of Austria. The growing tendencies to centralize and improve an industrial production required a rapid development of technical schools where an important role was played by teaching of mathematics and in particular geometry which became an integral part of education. The expansion of the technical universities required a development of secondary education in view of increasing demands on the professional preparedness of the teachers and students. This pressure led naturally to creation of a new type of secondary schools (technical secondary schools, the upper forms of grammar schools, schools of commerce) and a reform of classical grammar schools. At the same time, it led to an increasing number of vacancies for teachers and tightening up the demands on their preparation. Therefore teaching methods at “classical” universities were reformed and focused on the education of future teachers, doctors and lawyers. In the second half of the 19<sup>th</sup> century in Bohemia, due to the rise of nationalistic movements, the Czech and German communities (living together for a long time) separated. This separation was also reflected in science and education. An important feature of that period was the process in which Czech science was “becoming independent”. It was accompanied, on the one hand, by protracted national conflicts and, on the other hand, by expensive constructions of new schools, the establishment of new associations and the development of the Czech scientific terminology, journals and monographs. As a consequence, finances were drained and the development of the Czech science delayed<sup>2</sup>.

Up to the end of the 1850s, the education system of secondary schools and universities was solely in German. Only since 1861, the first Czech secondary schools were built. In the period between 1861 and 1865 some subjects at the state secondary schools were taught in Czech, while the teaching of others remained in German. In the second half of the 1860s, the German and Czech secondary schools were coexisting with same standard. Thus, the graduates of the Czech stream of education who entered universities started to require lectures in their mother tongue. In the 1860s, the efforts of Czech political representatives and intellectuals as well as the movement of university students to have their studies in Czech language required an establishment of Czech mathematical lectures at the Prague Technical University (1864). At first, they existed in parallel with German ones that had better teachers and more funding. The arrival of better qualified Czech teachers and students who have been educated at Czech secondary schools led to the strengthening of positions of Czech mathematical “departments” at the Prague Technical University (later the Czech Technical University in Prague) and the establishment of the similar lectures at the Prague University (1871). The professional standard of the Czech mathematical lectures were comparable to the German ones and even began to surpass them in student enrolment. At the end of the 19<sup>th</sup> century, the importance of the Czech mathematical departments was increasing, because of the growth in the number of their teachers and students. On the other hand, the number

---

<sup>2</sup> For more about the reasons leading to the establishment of the independent Czech educational system see [5].

of German students was decreasing, because most of the German professors considered Prague to be merely a temporary place on the way to Vienna or Germany.

## 1.2. Czech mathematical textbooks and translation of “classical” and modern books

The tendencies to write Czech textbooks for elementary subjects of the higher classes of middle schools and the lower ones of the secondary schools were very popular between 1850s and 1860s. At first, the textbooks had a character of temporary texts. The first high-quality mathematical textbooks for secondary schools were written in the beginning of the 1860s by J. Fleischer, V. Janděčka, D. Ryšavý, J. Smolík, F. Šanda and V. Šimerka. In the 1870s, the efforts for improving teaching and the replacement of old textbooks by new ones that would comply with the new curricula grew stronger. These textbooks were written together by the above professors of secondary schools and by some university professors (for example F.J. Studnička and K. Zahradník). The first textbooks of mathematics for the students of the Prague Technical University were published in the mid 1860s thanks to G. Skřivan, F.J. Studnička, Em. Weyr, Ed. Weyr. Most of them (but for the university students) were written after the year 1871, i.e. after introducing Czech mathematical lectures at the Prague University, and especially after 1882, i.e. after establishing the Czech University in Prague.

Firstly, Czech authors wrote textbooks according to foreign models and in respect to their professional interests; they published them either at their own expense in various publishing houses or at the expense of richer booksellers. They faced not only a lot of professional problems (the absence of domestic models, imperfect terminology and methodology) but also financial ones – there were few readers. The activities in the 1860s and 1870s cannot be considered a systematic creation of textbooks, because in most cases they were mere revisions or “free copies” of older ones. It should be noted that this trend did not manifest itself only in mathematics but also in other disciplines. The situation improved in the 1880s when textbooks were published by *Jednota českých matematiků* (The Union of Czech Mathematicians). It was the first systematic and profitable effort of publishing Czech textbooks for secondary schools as well as for universities. At the end of the 19<sup>th</sup> century, Czech textbooks for secondary schools complied with European standards.

The first attempts to translate classical works of mathematicians and some modern monographs to Czech<sup>3</sup> occurred in the 1860s. The first translations of mathematical works were published in the 1870s<sup>4</sup>. Their authors were active members of *Jednota českých matematiků*

<sup>3</sup> It should be noted that in those times the Czech scientists tried to translate one of Aristotle’s work on logic. A.J. Vrtátko translated in 1860 his book *Categories* and issued it under the title *Aristotle’s Categories*. More details on Czech translations of mathematical works of classics and modern monographs see [5].

<sup>4</sup> At the beginning of 1870s, Emil Weyr translated two monographs written by the Italian geometer Luigi Cremona *Sulle trasformazioni geometriche delle figure piane* and *Introduzione ad una teoria geometrica delle curve piane*, Martin Pokorný then translated the famous textbook written by the German mathematician Richard Baltzer *Die Elemente der Mathematik* and Karel Zahradník added the translation of the important work of the Italian mathematician Giusto Bellavitis *Saggio di applicazioni di un nuovo metodo di geometria analitica (Calcolo delle equipollenze)*.

(The Union of Czech Mathematicians) who graduated at universities and started to work with youthful enthusiasm. Further translations were made in the 1880s<sup>5</sup>. However, most of the mathematicians focused on the compilation of original works, monographs and Czech textbooks. Further translations appeared only at the beginning of the 20<sup>th</sup> century<sup>6</sup>. Czech mathematicians paid particular attention to the translation of one of the most outstanding mathematical work of all time – *The Euclid's Elements* – i.e. the book that influenced development and teaching of mathematics since the third century before Christ<sup>7</sup>. In addition, sections of the work by René Descartes (1596–1650), Blaise Pascal (1623–1662) and Bernard Bolzano (1781–1848) were translated<sup>8</sup>.

Translation activities were moulded by the professional interests of individual translators and therefore could not be systematic. The translations of modern mathematical works were inspired above all by an attempt to make the newest results of world mathematical research accessible to readers and enrich the domestic professional literature. On the other hand, the translations of classical works were motivated by an attempt to gain some personal prestige and prove that Czech mathematical terminology could compete with that of Greek and Latin.

### 1.3. Czech professional associations and their activities

An interesting feature of the 19<sup>th</sup> century was a gradual formation of scientific institutions which – in spite of the initial lack of finances and a small number of experts – organised lectures and scientific discussions, published professional publications (journals, monographs and textbooks) and issued reports on various activities. Scientific associations that originated at the end of the 18<sup>th</sup> and in the first half of the 19<sup>th</sup> centuries combined Czech and German speaking specialists of various branches and were usually bilingual. Their activities were not considerably influenced by nationalistic conflicts. After the fall of Bach absolutism (1859), the Czech society formed enough space for various activities and for the formation of various

<sup>5</sup> At the beginning of 1880s, F.J. Studnička translated the famous article written by Bernard Bolzano *Rein analytischer Beweis des Lehrsatzes, dass zwischen je zwey Werthen, die ein entgegengesetztes Resultat gewähren, wenigstens eine reelle Wurzel der Gleichunge liege*.

<sup>6</sup> It was the translation of three Archimedes' works (M. Valouch, *Archimedovo měření kruhu* (On the Measurement of a Circle), Výroční zpráva c. k. státního vyššího gymnasia v Litomyšli, 1903, 25 pages; M. Valouch, *Archimeda Syrakuského Počet pískový* (The Sand Reckoner), Výroční zpráva c. k. státního vyššího gymnasia v Litomyšli, 1905–1906, 13 pages (reprint 1993); F. Vrána, *Archimédův výklad Eratostenovi o mechanických způsobech zkoumání* (Z řečtiny přeložil Fr. Vrána) (The Method of Mechanical Theorems), 3. výroční zpráva c. k. státního gymnasia v Prostějově za školní rok 1908/09, Prostějov, 1909, p. 2-18). For more details on the Czech translations of Archimedes' works see [6].

<sup>7</sup> There was an unsuccessful attempt of the Union of Czech Mathematicians in 1870–1871; the attempt of Josef Smolik (1832–1915), who translated the whole *Elements* at the end of 1880s and whose translation remained in the form of a manuscript; the translation made by František Fabinger (1863–1938), who translated and published the first book of *Elements* in 1903, and the successful complete translation made by František Servit (1848–1923), which was published by the Union of Czech Mathematicians in 1907. For more information see [12].

<sup>8</sup> For more details on the Czech translations see [5].

associations. In the mid of the 1860s, they started to show their professional and language particularities.

The development of Czech mathematics was influenced considerably by the foundation of *Spolek pro volné přednášky z matematiky a fyziky* (The Association for Free Lectures of Mathematics and Physics). At the beginning, it brought together Czech and German university students of mathematics and physics and later, students of the Technical University became its members. In 1869, this association changed into *Jednota českých matematiků* (The Union of Czech Mathematicians) and influenced Czech mathematics and physics for decades to come<sup>9</sup>. The association became a convenient centre of mathematical activities that were connected closely with those of the universities and professors, and bounded together the university with the high school teachers and students, the teachers of the elementary schools and recruited new people who were interested in mathematics and physics.

It should be noted that mathematics in Bohemia was also pursued in the mathematics and natural sciences section of the *Královská česká společnost nauk* (The Royal Czech Scientific Society, founded in 1770) and in the similar section of the *Česká akademie císaře Františka Josefa pro vědy, slovesnost a umění* (The Czech Academy of František Josef for Science, Literature and Arts, founded in 1890)<sup>10</sup>.

The work of associations included also publication, educational and popularisation activities. The newly created journals on mathematics influenced the development of Czech mathematical terminology and teaching for many years. They described the main trends in mathematics and opened the room for publications, reviews and educational activities of members of the Union, amateur mathematicians, teachers and students.

In 1871 and 1872, the Union published its summaries under the title *Zpráva o činnosti Jednoty českých matematiků v Praze ...* (The Report on the Activity of the Union of Czech Mathematicians in Prague ...) <sup>11</sup>, in which it informed about its professional and cultural activities. In the period between 1873 and 1875, the Union published its bulletin *Věstník Jednoty českých matematiků* (The Bulletin of the Union of Czech Mathematicians) that provided information about all its activities and contained summaries of the most important recent Czech and foreign scientific literature. In 1878, the bulletin was replaced by *Annual Reports*<sup>12</sup>. In 1870 and 1871, the Union published three reports that included professional articles<sup>13</sup>. They received a wide acceptance among the Czech

<sup>9</sup> For more about the foundation of the *Association for Free Lectures of Mathematics and Physics* see [13].

<sup>10</sup> For more about the Czech scientific associations see [5].

<sup>11</sup> *Zpráva o činnosti Jednoty českých matematiků v Praze za první a druhý ročník, totiž od 14. října 1869 do 15. října 1871* (The Report on the Activity of the Union of Czech Mathematicians in Prague during the First and Second Year ...), nákladem Jednoty českých matematiků, Praha, 1871, 23 pages, *Zpráva o činnosti Jednoty českých matematiků v Praze za třetí ročník, totiž od 15. října 1871 do 7. července 1872* (The Report on the Activity of the Union of Czech Mathematicians in Prague during the Third Year ...), nákladem Jednoty českých matematiků, Praha, 1872, 38 pages.

<sup>12</sup> They have been published every year in the extent of 10-15 pages.

<sup>13</sup> *První zpráva Jednoty českých matematiků* (The First Report of the Union of Czech Mathematicians), *Jednota českých matematiků*, Praha, 1870, 86 pages. It was edited by Mírúmil Neumann and Karel

professors of mathematics and physics at the secondary schools, as well as among the students at the universities and secondary schools, and became a model for future Czech mathematical journals. It must be noted that the authors of individual articles were Czech beginners in physics and mathematics who were engaged significantly in the development of the Czech science. In 1872, the Union decided to publish its own journal titled *Časopis pro pěstování matematiky a fysiky* (The Journal for Cultivation of Mathematics and Physics) which faced a lot of problems for several years, especially financial ones resulting from the lack of regular subscribers. Nevertheless, it has always been a wide field for the activity of Czech authors, students and teachers of the secondary schools because of its policy to address a broad audience of readers. In addition, the contributions of the best mathematicians were published there.

In 1875, the role of the “professional” journal was taken over by a new international journal called *Archiv matematiky a fysiky* (The Archive of Mathematics and Physics). However, it became clear very soon that the editors of the new journal overestimated both their possibilities and the interest of the Czech society in mathematics and physics. This is why the journal ceased to exist in 1878 after the publication of only two volumes. After that, the journal *Časopis ...* returned to its original objective, i.e. publishing professional, educational, didactic and informative articles. It kept this function up to the end of the 19<sup>th</sup> century<sup>14</sup>. In addition, the journal was a link between the Czech intellectuals scattered all over Austria and Hungary and the Prague centre of the Union.

#### 1.4. Czech professional mathematical works

For more than three decades in the second half of the 19<sup>th</sup> century, Czech mathematicians tried to show that they could compete with the German mathematicians and even surpass them in many respects. These efforts required a lot of time and energy. Not until the last quarter of the 19<sup>th</sup> century the works of Czech professional mathematicians reached a standard where they were able to keep up with the individual trends of science and also understand them and contribute to the global scientific research. Since the 1880s Czech mathematical works have specialised in individual branches and approached more critically the subjects of research. Our mathematicians paid attention to the newest results in descriptive and projective geometry, the theory of matrices and determinants, quadratic forms and analysis and from the beginning of the 20<sup>th</sup> century they started to contribute to the development of individual mathematical disciplines (for example M. Lerch, K. Pelz, J. Sobotka, F.J. Studnička, Em. Weyr, Ed. Weyr, K. Zahradník). Some of them published also their important results in foreign languages (German, French and even Italian) to make

---

Zahradník. *Druhá zpráva Jednoty českých matematiků* (The Second Report of the Union of Czech Mathematicians), Jednota českých matematiků, Praha, 1870, 96 pages + 1 tablet; M. Neumann and A. Pánek were its editors. *Třetí zpráva Jednoty českých matematiků* (The Third Report of the Union of Czech Mathematicians), Jednota českých matematiků, Praha, 1871, 96 pages + 1 tablet which was edited by M. Neumann and A. Pánek.

<sup>14</sup> It must be noted that this journal is still published. In 1991, it changed its name to *Mathematica Bohemica* with the subtitle *The Journal for Cultivation of Mathematics*. It is published in English and has exclusively professional character.



them accessible to the European mathematical community. On the other hand, they published Czech versions of their works that appeared in a foreign language, as well as informative, popularising or methodological articles in the local journals<sup>15</sup>.

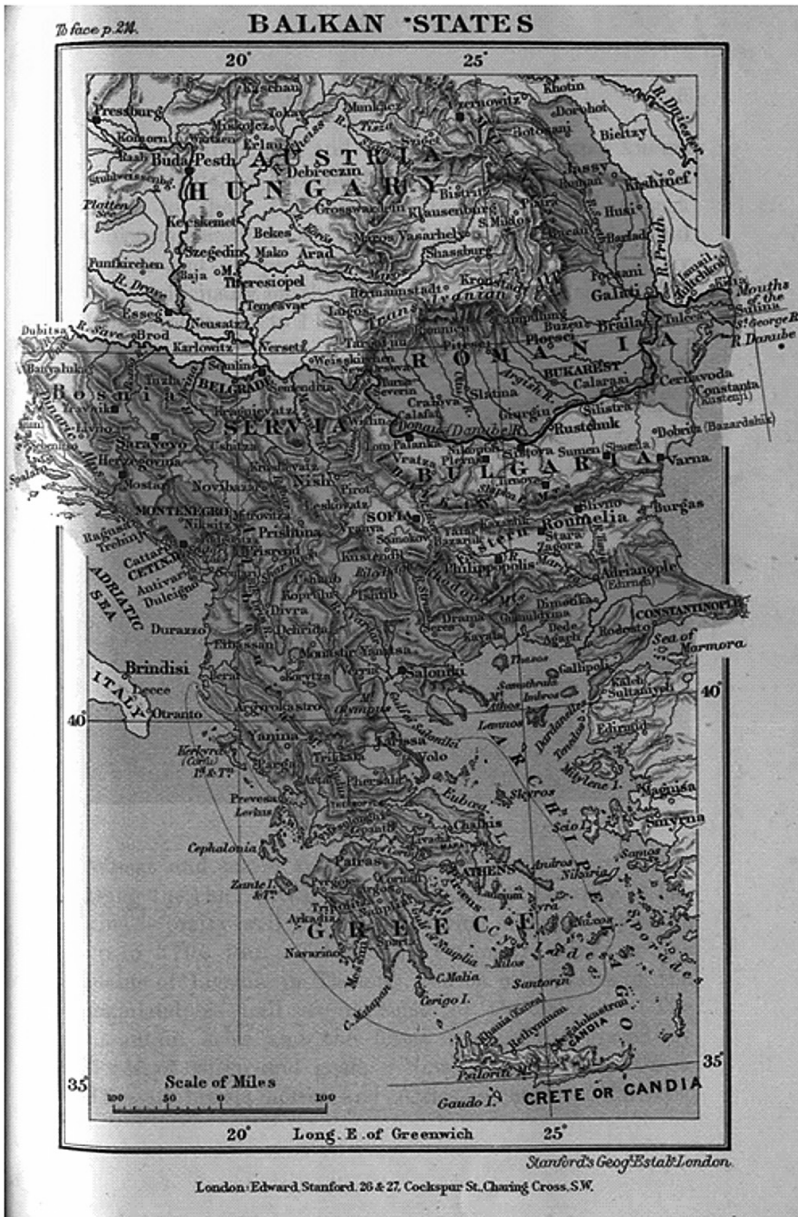
## 2. Czech mathematicians abroad

One of the main aims of teaching mathematics at the Prague University was the preparation of future teachers of secondary schools. The rigid state control of their education and the well worked-out and thought-out educational system enabling their professional development and career contributed in two first decades of the second half of the 19<sup>th</sup> century to the improvement of the teaching of mathematics and natural sciences as well as to the development of the secondary schools and the education of our population. Nevertheless, the rules that satisfied the needs of the third quarter of the 19<sup>th</sup> century when there was a shortage of teachers lost their validity at its end and in fact brought the development in this field to a standstill. Since the end of the 1870s the number of members of the Czech mathematical community increased in contrast with the shortage of jobs at the Czech universities and secondary schools. In that period many good teachers could not find work as professors at the secondary school level and they often worked as supply-teachers for five to ten years. As a result, many teachers changed jobs or went abroad<sup>16</sup>. Many first-class Czech teachers went to South-East Europe to other countries that were part of the Austrian-Hungarian Empire – such as modern day Croatia and Slovenia – and other Balkan countries – later Serbia, Bosnia, Herzegovina, Bulgaria etc. – where they contributed to the development of national science and education that – in comparison with that in Bohemia – were lagging.

After their arrival, they learned the respective foreign language and began to create curricula for the teaching of mathematics and descriptive geometry at the secondary schools and universities. For their colleagues-teachers, they wrote the first methodological manuals

<sup>15</sup> For more information see [5].

<sup>16</sup> Some Czech mathematicians and physicists went also to other Western Europe and countries of the Austrian-Hungarian Empire. They were searching for better career, broadening the horizon of their knowledge and contacts with the best mathematical centres of Western Europe, as well as possibility to publish their scientific and popular works there. They usually came back after some time and worked as professors at prestigious secondary schools or universities. Czech mathematicians, who were employed at German schools in Germany, Switzerland or other countries of the Austrian-Hungarian Empire, taught, researched and published their professional works, because they were in a much more developed and cultural environment than their colleagues who stayed in the Balkans. Nevertheless, they kept contacts with the Czech mathematical community, monitored vacancies and in many cases returned to Bohemia and tried to find good jobs there, relying on their contacts abroad and their wide experience. For example, Čeněk Hausmann (1826–1896) and Václav Láška (1862–1943) lectured at the Technical University in Lvov (Galicia), Johann Josef Partl (1802–1869) taught at the real school in Budapest (Hungary) and Čeněk Hausmann lectured at the Technical University in Budapest, Emanuel Czuber (1851–1925), Josef Finger (1841–1911) and Jan Sobotka (1860–1931) spent many time at the Technical University in Vienna (Austria), Emil Weyr (1848–1894) lectured at the University in Vienna and Karel Pelz (1845–1908) at the Technical University in Graz (Austria), Matyáš Lerch (1860–1922) lectured at the University in Freiburg (Switzerland). For more information see [3].

Balkan States (1899)<sup>17</sup>

<sup>17</sup> Map from *Stanford's Compendium of Geography and Travel: Europe* (volume 1, 1899, p. 214). Places where mathematicians and teachers from Bohemia worked for a longer time are marked with square.



about the teaching of mathematical subjects in their mother tongues. For their pupils they created the first brief teaching manuals and collections of mathematical exercises (at first published in the lithographical form or within the annual reports of the secondary schools – see for example J. Pexider, A.V. Šourek, K. Zahradník). During the few first years, they translated Czech textbooks of mathematics and descriptive geometry to other languages (for example A.V. Šourek and V. Šak). They set a form for the first generations of students educated in their mother tongues. In the second phase of their “mission” – usually at the end of the first decade of their stay – they were inspired by Czech models and wrote new textbooks for the secondary schools and universities (for example V. Láska, F.V. Splítek, V. Šak, A.V. Šourek, K. Zahradník). These textbooks were widespread and used until the end of the World War I. Thanks to their quality education, high professional standard and all around activities they contributed to the creation of the mathematical terminology that has been used – except for a few modifications – until today (for example A. Studnička, A.V. Šourek, K. Zahradník). On the basis of their good experience from Bohemia they led local mathematical communities to the unification of professional associations (for example J. Finger, A.V. Šourek, K. Zahradník) and initiated publishing professional, educational and popularisation periodicals (for example F.V. Splítek, A.V. Šourek, K. Zahradník). In addition, they participated in the international promotion of the results of professional and pedagogical research (A.V. Šourek, K. Zahradník). All their activities were inspired by those developed in our country in the 1860s and 1870s. On one hand, the Czech society lost some quality experts, but on the other hand, the Czech teachers at the secondary schools and universities contributed to the birth of the “national” mathematics in the Slavonic countries in Southern Europe.

During their active life they kept in contact with their Czech colleagues. They were founders or correspondents of *Jednota českých matematiků* (The Union of Czech Mathematicians, for example J. Finger, J. Laun, T. Monin, J. Pexider, C. Plch, A.V. Šourek, J.S. Vaněček, K. Zahradník), followed an eye about the development in Bohemia and in professional periodicals of their new homeland informed regularly about the activities of the Union, Czech textbooks, monographs and journals. In addition, they wrote reviews and contributed to the *Časopis pro pěstování matematiky a fysiky* (The Journal for Cultivation of Mathematics and Physics, for example C. Plch, T. Monin, K. Zahradník), *Zprávy Královské české společnosti nauk* (The Reports of the Royal Czech Scientific Society, for example K. Zahradník) or *Rozpravy České akademie věd* (The Transactions of the Czech Academy of Sciences, for example K. Zahradník).

### 3. The most prominent Czech personalities in the Balkans

In what follows we shall mention only the Czech mathematicians who translated Czech or German textbooks to other languages or, being influenced by the Czech literature, wrote textbooks in them, created mathematical terminology and gained recognition for the development of the regional secondary schools and universities<sup>18</sup>.

---

<sup>18</sup> For more about the development of the Czech mathematical community in the second half of the 19<sup>th</sup> century see [5].

**Croatia**

Teacher	Place	School	Period
Jan Pexider <sup>19</sup> (1831–1873)	Zagreb	Secondary school (gymnasium)	1864–1873
Josef Laun <sup>20</sup> (1837–1915)	Rijeka	Secondary school (gymnasium)	1864–1865
	Zagreb	Secondary school (gymnasium)	1865–1868
Karel Seeberg (1835–?)	Vinkovci, Sinj	Secondary school (gymnasium)	1865–1867
Josef Silvestr Vaněček <sup>21</sup> (1848–1922)	Osijek	Real school	1873–1875
<b>Karel Zahradník</b> (1848–1916)	Zagreb	University	1875–1899

**Slovenia**

Teacher	Place	School	Period
Rudolf Schnedar (1828–1862)	Ljubljana	Real school	1860–1862
Josef Baudiš (1825–1898)	Gorizia (Italy, today)	Secondary school (gymnasium)	1860–1864
Josef Finger <sup>22</sup> (1841–1925)	Ljubljana	Real school	1870–1874

<sup>19</sup> Jan Pexider devoted his life to work in Croatia. As one of the first Czechs he began to translate from German to Croatian language the textbooks of mathematics and physics for secondary schools. Because of his premature death he did not influence the development of the teaching of these subjects in Croatian language in a significant way. For more information see *Věstník Jednoty českých matematiků* (The Bulletin of the Union of Czech Mathematicians), 1, 1873, no. 1, p. 5, no. 4, p. 35, 41, 50, 51, and 2(1874), no. 1, p. 13-14; *Program gimnazije u Zagrebu 1864–1873* (The Report of Gymnasium in Zagreb during years 1864–1873), Zagreb, 1873, and [1].

<sup>20</sup> In 1864, Josef Laun became a teacher at the grammar school in Rijeka. From 1865 till 1868, he taught at the grammar school in Zagreb, and then he left the teaching profession. He studied at the Faculty of Law at Prague University and afterwards started to run a farm in Kněževés. For more information see [13].

<sup>21</sup> In 1873, Josef Silvestr Vaněček obtained a professorship at the grammar school in Osijek. In 1875, he was named a teacher at the secondary school in Jičín (Bohemia). From 1878 to 1879, he studied mathematics and descriptive geometry in France. After his return to Bohemia, he taught again in Jičín (until 1906). In 1884, he unsuccessfully tried to become an associate professor of mathematics at the Czech University in Prague. In 1895, he unsuccessfully ran for the post of professor of descriptive geometry at the Czech Technical University in Prague. From 1880 to 1890, alone or jointly with his brother M.N. Vaněček prepared more than thirty works related to geometric problems. For more information see M. Bečvářová, *J.S. Vaněček a L. Cremona (nově objevená korespondence)*, [in] J. Bečvář, M. Bečvářová (eds.), *34. mezinárodní konference Historie matematiky*, Poděbrady, 23. až 27. 8. 2013, Matfyzpress, Praha, 2013, p. 63-80.

<sup>22</sup> In 1870, Josef Finger became a professor of mathematics and physics at the technical secondary school in Ljubljana. After 4 years he left Slovenia and went to the grammar school in Hernals in Vienna, where he started to teach in 1874. In 1876–1878, he taught at the secondary school

**Bosnia and Herzegovina**

Teacher	Place	School	Period
Cornelius Plch (1838–1889)	Travnik (today Tornik in Serbia)	Secondary school (gymnasium)	from 1870s up 1889
<b>Alois Studnička</b> (1842–1927)	Sarajevo	Technical school	1893–1907

**Bulgaria**

Teacher	Place	School	Period
<b>Antonín Václav Šourek</b> (1858–1926)	Sliven Plovdiv Sofia	Secondary school Secondary school University	1880–1881 1881–1890 1890–1926
<b>František Vítězslav Splítek</b> (1855–1943)	Svistov Salonica (today Thessalonica in Greece) Sofia Gabrovo Plovdiv	Secondary school Secondary school  Secondary school Secondary school Secondary school	1880–1883 1883–1888  1888–1889 1889–1891 1891–1915
<b>Theodor Monin</b> (1858–1893)	Sliven Sofia	Secondary school University	1881–1886 1889–1891
<b>Vladislav Šak</b> (1860–1941)	Sliven Sofia	Secondary school Secondary school University	1882–1886 1886–1907 1891–1894 1907–1908

## 3.1. Croatia

In 1875, the Czech mathematician **Karel Zahradník**<sup>23</sup> went to Zagreb to the newly created University of František Josef. Until 1890, he was the only professor of mathematics there. He taught algebra, calculus, higher analysis, geometry, numbers theory and probability<sup>24</sup>.

---

in Leopoldstadt near Vienna. In 1876, he became a private docent at the University in Vienna where he gave lectures until 1890. In 1878, he was promoted to an extraordinary and in the year 1884 an ordinary professorship of mechanics and graphic static at the Technical University in Vienna, where he has taught until his retirement in 1911. In 1905, he became a protector of the first mathematical associations of students founded at the Technical University in Vienna. Its aim was to support students' publications and lectures in mathematics and natural sciences. It is probable that J. Finger influenced significantly the activities of this association. And it should be noted that Czech mathematician Gabriel Blažek, one of the founders of the *Association for Free Lectures on Mathematics and Physics*, tried to establish a similar association in the school-year 1863–1864 at the University in Vienna. More about Finger's life see [5, 13].

<sup>23</sup> As for his life, see [2, 3, 5, 9, 10].

<sup>24</sup> Not until 1890 was the teaching of mathematics conducted by another mathematician. That year D. Segen (Zahradník's first student about to take a doctor's degree) began to give lectures on geometry. V. Varičák, a student of Zahradník, started to give lectures on mathematical analysis four years later.

Since 1886 he was the head of a “mathematical seminar” for talented students. It was here that the first professional works of Croatian mathematicians originated. In 1896–1899, he worked as a director of the mathematical institute at the university in Zagreb. After his arrival to Zagreb he formulated the first mathematical curricula and rules for individual examinations including the final one. He supervised examinations of teachers of all mathematical subjects at Croatian schools where the Croatian language was used. During his more than twenty-year stay in Zagreb he educated the first Croatian teachers and mathematicians of the secondary schools and prepared some to take a doctor’s degree. In the course of all these activities he was inspired by the work of his teacher and friend František Josef Studnička (1836–1903), whom he considered to be his mentor. He tried to follow Studnička’s Prague activities.

In the 1870s, he translated his papers (written in German or Czech languages) and published them in the Croatian language; later he also published in this language his original results and wrote textbooks for the secondary schools and universities. In 1878, he published in Zagreb his book *O determinantih drugoga i trećega stupnja. Za porabu viših srednjih učilišta* (On Determinants of Second and Third Order. For Higher Classes of the Secondary Schools)<sup>25</sup> which he translated to Czech the next year and published in Prague under the new title *Prvé počátky nauky o determinantech. Pro vyšší střední školy* (The First Start of the Theory of Determinants. For Higher Classes of the Secondary Schools)<sup>26</sup>. The booklet was based on his lectures in 1876/1877 for the Croatian university freshmen. At the end of the 19<sup>th</sup> century, his lectures *O determinantima. Predavanja u zimskom semestru godine 1897/8* (On Determinants. Winter Semester 1897/8)<sup>27</sup> and *O plohama i o krivuljama u prostoru. Predavanja u ljetnom semestru godine 1898* (On Planes and Curves in the Space. Summer Semester 1898)<sup>28</sup> were published in the Croatian language. These were the first Croatian textbooks of mathematics. Thanks to him *Kapesní logaritmické tabulky F.J. Studničky* (Studnička’s Pocket Logarithmic Tables) were published in Croatian. At the end of the 1870s, he started to translate Studnička’s textbook *Algebra pro vyšší třídy středních škol* (Algebra for Higher Classes of the Secondary Schools)<sup>29</sup> for the secondary schools, but the Croatian government did not allowed its publication<sup>30</sup>.

Zahradník laid the foundations of Croatian mathematics and contributed significantly to the development of the Croatian mathematical community. He participated in the mathematics and natural sciences section of the Croatian Academy of Sciences, where he gave professional and popularisation lectures and published his works. He influenced also the development of the mathematical section of the journal *Rad Jugoslavenske akademije znanosti i umjetnosti u Zagrebu* (The Transactions of the Yugoslavian Academy

<sup>25</sup> Zagreb, 1878, 39 pages.

<sup>26</sup> Praha, 1879, 48 pages.

<sup>27</sup> Zagreb, 1898, 112 pages.

<sup>28</sup> Zagreb, 1898, 152 pages.

<sup>29</sup> Studnička’s textbook was firstly published in 1877, secondary in 1879. In 1878 and 1879, F.J. Studnička published German version of his textbook.

<sup>30</sup> For more about this affair can be found in Zahradník’s letters deposited in the F.J. Studnička’s estate in Literary Archives of the Treasure of National Literature in Prague. For more information see [14].



*Dr. Karel Zahradník*

# O PLOHAMA

I

## KRIVULJAMA U PROSTORU.

PREDAVANJA

u ljetnom semestru godine 1898.

od

Dr. K. ZAHRADNIKA.



Zagreb.

Title page of Zahradník's lectures *On Planes and Curves in the Space. Summer Semester 1898*

of Science and Arts in Zagreb). While his work is still recognized and his name still well-known in Croatia<sup>31</sup>, he is almost forgotten in Bohemia, though he cooperated with the Union of Czech Mathematicians until the end of his life.

### 3.2. Bosnia and Herzegovina

In 1893, **Alois Studnička**, a secondary school teacher of drawing and geometry and the brother of university professor of mathematics F.J. Studnička, went to Sarajevo. He was invited by the government of Bosnia and Herzegovina to help create an educational system for cabinet-makers, kettle-smiths, locksmiths and other trades. He became the director of the Crafts School which he headed until his retirement in 1908. In Sarajevo, where he worked until the end of his life, he elaborated the curricula for similar schools in Sarajevo, Mostar, Celovac (Klagenfurt) and Linz. He influenced significantly the development of the Serbian educational system and helped the birth of technical terminology in cabinet-maker trade, draughtsmanship and black-smith trade. His activity in this field contributed to the creation of the large collection of technical teaching aids for various crafts. This collection was deposited in the Vienna Technical Museum<sup>32</sup>.

<sup>31</sup> His portrait was on diplomas granted by the Croatian Ministry of Culture and Sports to the best participants of the Mathematical Olympiad in 2000.

<sup>32</sup> As for his life see [14].



### 3.3. Bulgaria

In 1880s, Bulgaria got rid of Turkish hegemony and began to build its own educational system. Czech mathematician **Theodor Monin** spent a few years of his life there; he taught at the grammar school in Sliven in 1881–1886. He came back to the Czech Technical University in 1886 and became the assistant of František Tilšer (1825–1913), professor of descriptive geometry. However, in the next year the Bulgarian government called him to the new university in Sofia and he became the first Bulgarian university professor of mathematics. He started to develop “Bulgarian” mathematics with a great fervour, but unfortunately he fell seriously ill in 1891 and had to return to Bohemia. That is why he could not accomplish his plans to write several Bulgarian mathematical textbooks<sup>33</sup>.



Professors of the grammar school in Sliven (1882) (T. Monin is in the second row, second from the left)

After completing his studies at the secondary technical school in Písek and at the Technical Universities in Vienna and Prague **Antonín Václav Šourek**, another Czech mathematician, became a professor of mathematics at the grammar school in Sliven in 1880. He spent only one school year there. Then he went over to the grammar school in Plovdiv, where he remained for 9 years. In 1890, he was promoted to the professorship of mathematics at the grammar school in Sofia and at the same time to the external professorship of mathematics at the Sofia University. In 1893, after the death of Theodor Monin, he was relieved from his duties at the above-mentioned secondary school and devoted all his time to the university, where he

<sup>33</sup> As for his life see [3–5, 7, 11, 16].

was appointed to the ordinary professorship in 1898 and where he stayed until 1914. In this period, namely in 1893, he also became a professor of descriptive geometry at the Military Academy in Sofia (he taught there for 9 years). In 1895, he started to give lectures on the same subject in the courses for the headquarters. In the years between 1895 and 1912, he lectured on perspective at the Academy of Painting in Sofia. His bad health forced him to leave Sofia and to move to Rome in 1914. There he became an unsalaried secretary of the military attaché. At the beginning of 1916, he went to Bern where he took care of Bulgarian war prisoners. He returned to the Sofia University in 1921 and continued to teach there until his death<sup>34</sup>. Since his arrival to Bulgaria he had contributed to the development of Bulgarian mathematics and its teaching at secondary schools and universities. He remained in close contact with Czech mathematicians and their Union and during his whole life tried to apply the Czech experience and connections to the development of Bulgarian mathematics and to the educational process at secondary schools as well as at universities.

Šourek's literary activity was very extensive. He published his first Bulgarian textbooks in 1880 and covered several branches of mathematics, namely plane trigonometry (1883)<sup>35</sup> and solid geometry (1883)<sup>36</sup>, analytic geometry (1885)<sup>37</sup>, spherical trigonometry (1889)<sup>38</sup> and descriptive geometry (1888, 1889)<sup>39</sup>. The textbooks were complemented by methodological annuals, collections of algebra exercises (1885, 1886)<sup>40</sup> and some smaller works. In the course of their writing, he was inspired by Czech textbooks written by F.J. Studnička, J. Smolík, E. Taftl, A. Strnad, F. Hromádka etc. Šourek also translated Studnička's logarithmic tables from Czech to Bulgarian and furnished them with a detailed explanation of the rudiments of algebra; they were published in 1882<sup>41</sup>. At the end of the 1890s, he also translated to Bulgarian Strnad's textbook *Geometrie pro vyšší třídy reálných gymnázií* (Geometry for Upper Classes of Grammar Schools) and Taftl's textbook *Algebra pro vyšší třídy středních škol* (Algebra for Upper Classes of Secondary Schools)<sup>42</sup>.

<sup>34</sup> For more information see [3–5, 11, 15–17].

<sup>35</sup> Ch.G. Danov, Plovdiv, 1883, 128 pages, 54 pictures.

<sup>36</sup> Ch.G. Danov, Plovdiv, 1883, 123 pages, 116 pictures.

<sup>37</sup> Litographie, Plovdiv, 1885, IV + 154 pages, 250 pictures.

<sup>38</sup> Plovdiv, 1889, 97 pages, 49 pictures.

<sup>39</sup> First part, Plovdiv, 1888, IV + 237 pages, 367 pictures, 6 tablets; second part, Plovdiv, 1889, IV + 197 pages, 342 pictures, 11 tablets.

<sup>40</sup> Plovdiv, 1885, IV + 120 pages; Plovdiv, 1886, IV + 86 pages.

<sup>41</sup> The second edition of these tables is from 1888 and the third one from 1895. Studnička's tables (either in Czech or Bulgarian version) were used at Bulgarian secondary schools even in the first half of the 20<sup>th</sup> century.

<sup>42</sup> Alois Strnad (1852–1911) was a brilliant Czech secondary school teacher, an active member of the *Union of Czech Mathematicians* and an author of successful Czech textbooks for secondary schools. See A.V. Стърнад: *Геометрия за висшите класове на реалните гимназии* (A.V. Strnad: *Geometry for Upper Classes of Grammar Schools*), I–IV. volume, Ch.G. Danov, Plovdiv, 1896, 161 pages, 122 pictures, 74 pages, 22 pictures, 96 pages, 32 pages.

Emanuel Taftl (1842–1920) was a secondary school professor of mathematics and physics. He taught at secondary schools in Hradec Králové and Klatovy. He became famous by the above textbook that had six editions. See E. Тафтл: *Алгебра за горните класове на гимназиалните училища* (E. Taftl: *Algebra for Upper Classes of Secondary Schools*), Ch.G. Danov, Plovdiv, 1899, 412 pages.

His teaching texts for his university students were written and published in the 1890s; they covered the field of analysis (1890/1891), analytic geometry (1891, 1892, and 1894), algebra (1891/1892), synthetic geometry (1891/1892) and descriptive geometry (1893/1894)<sup>43</sup>. Czech textbooks written by F.J. Studnička, Eduard and Emil Weyr certainly served as his inspiration. The Military Academy in Sofia published in 1895 Šourek's work about projection methods in geometry named *Учебник по начертателна геометрия. Част I. Ортогонална и котирана проекция* (Textbook on Descriptive Geometry. The First Part. Orthogonal and Orthogonal One-Plane Projection)<sup>44</sup>. At the beginning of the 20th century, Šourek decided to revise and extend his Bulgarian lectures and they were subsequently published in the lithographic form (projective geometry (1909), differential geometry (1911) and analytical geometry (1912, 1914))<sup>45</sup>. He also published the monograph *Учебник по дескриптивна геометрия* (Textbook on Descriptive Geometry)<sup>46</sup> (1914) that was an extended and complementary version of his university lectures. Unfortunately, he did not live sufficiently long to see his last monograph *Основи на проективната геометрия. Част първа: Проективност, колинеарност и реципроцитет на геометр. форми от трите разреда* (Elements of Projective Geometry. First Part. Projection, Colinearity and Reciprocity of Geometrical Figures of the Third Orders)<sup>47</sup> published in 1926 which summarised and extended his university lectures.

Šourek was one of the most renowned "Bulgarian" mathematicians between 1850 and 1930. He contributed significantly to the establishment of the *Физико-Математическото Дружество в София* (Physical and Mathematical Society in Sofia, founded 1898) and together with a few colleagues played an important role in its birth and in the development of its activities. He also helped in the foundation of the *Списание на Физико-Математическото Дружество в София* (The Journal of Physical and Mathematical Society in Sofia) in 1904. This journal stimulated the scientific activity of the younger Bulgarian generation and allowed its members to present their professional works. Šourek is also considered to be the founder of the Bulgarian terminology in descriptive

<sup>43</sup> *Лекции по алгебраичен анализ* (Lectures on Analysis), Plovdiv, 1891, IV + 288 pages, 21 pictures; *Аналитична геометрия на равнината заедно с криви линии ...* (Analytical Geometry in the Plane ...), Sofia, 1891, IV + 321 pages; *Аналитична геометрия на пространството ...* (Analytical Geometry in the Space ...), Sofia, 1892, 187 pages (second print, Sofia, 1894, VI + 334 pages); *Лекции по висша алгебра ...* (Lectures on Higher Algebra ...), Sofia, 1892, IV + 180 pages; *Лекции по синтетична геометрия ...* (Lectures on Synthetic Geometry ...), Sofia, 1892, IV + 238 pages; *Лекции по дескриптивна геометрия ...* (Lectures on Descriptive Geometry ...), Sofia, 1894, IV + 334 pages.

<sup>44</sup> Sofia, 1895, IX + 271 pages, 349 pictures and 69 pictures on the 12 tablets.

<sup>45</sup> *Проективна геометрия ...* (Projective Geometry ...), Sofia, 1909, 512 pages, 581 pictures; *Лекции по диференциална геометрия ...* (Lectures on Differential Geometry ...), Sofia, 1911, 317 pages; *Аналитична геометрия ...* (Analytic Geometry ...), Printed House I. Georgiev and K. Minkov, Sofia, 1912, IV + 93 pages, 49 pictures; *Лекции по диференциална геометрия ...* (Lectures on Differential Geometry ...), Sofia, 1914, 320 pages.

<sup>46</sup> Edition Univerzitní biblioteka, vol. 3, Printed House Sofia University, lexikographie, Sofia, 1914, XXIV + 616 pages, 846 pictures.

<sup>47</sup> Edition Univerzitní biblioteka, vol. 56, Printed House I.K. Božinov, Sofia, 1926, XVIII + 313 pages, 338 pictures.

geometry. Thanks to his good knowledge of Bulgarian and other languages (Czech, German, French, and Italian), his deep sense of syntax, close cooperation with philologists and above all to his perfect knowledge of descriptive geometry itself, he developed a very successful system of the essential terms with wide possibilities of a more detailed evolution. Thanks to his method and prestige among the members of the Bulgarian mathematical community, most of his terms are still used without any change or at most with only small modifications.



Antonín Václav Šourek



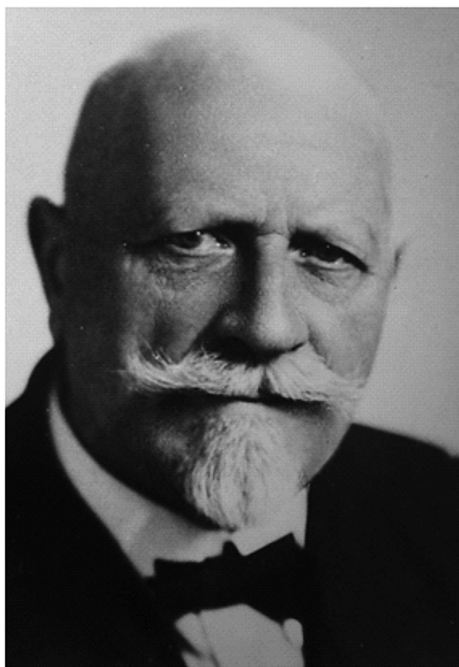
Title page of Šourek's *Textbook on Descriptive Geometry* (1895)

Bulgaria was a place of work also for Czech mathematician **František Vítězslav Splítek**. After his graduation at the Czech Technical University in Prague in 1880, he accepted an offer from the Bulgarian Ministry of Education to help in the development of Bulgarian secondary schools. Firstly, he taught in Svistov. In 1883, he became a teacher in Salonica (today Thessalonica in Greece), but he had to leave his position for political reasons. For Bulgarian students in Greece, he wrote two mathematical textbooks named *Аритметика* (Arithmetic) (Plovdiv, 1885) and *Геометрия с чртание в четире степени ...* (Geometry with Drawing at Four Levels. The First Level. Geometric Figures in the Plane and Their Ornamental Drawing) (Plovdiv, 1886)<sup>48</sup>. In 1888, he returned to Bulgaria and became a professor at the grammar school in Sofia. He also taught at the grammar school in Gabrovo (between 1888 and 1889) and at the state secondary school in Plovdiv (between 1891 and 1915). He rejected the proposed professorship at the Sofia University because he thought that he was not sufficiently qualified for it.

<sup>48</sup> E. Dionne, Plovdiv, 1885, 1 tablet; E. Dionne, Plovdiv, 1886, 106 pages + 163 pictures.

Splítek wrote very successful and popular textbooks on technical drawing for the students of the lower classes of Bulgarian secondary schools (*Руководство по геометрическо чертание* (Instruction for Geometric Drawing) (Plovdiv, 1895), *Геометрия с геометрическо чертание за основните училища* (Geometry with Drawing for Primary Schools) (Plovdiv, 1895), *Учебник по геометрия и геометрическо чертание. I. степен* (Textbook on Geometry and Drawing. The First Level) (Plovdiv, 1896) and *Учебник по геометрия и геометрическо чертание. II. степен* (Textbook on Geometry and Geometric Drawing. The Second Level) (Plovdiv, 1897)).

Splítek's pedagogical and cultural activities outside the school in Svistov and Plovdiv were known and popular. He founded two special associations, which joined teachers from primary and secondary schools as well as people from different cultural and political spheres. Thanks to his activities, a new Bulgarian journal for pedagogy, education and school problems and laws was founded<sup>49</sup>.



František Vítězslav Splítek

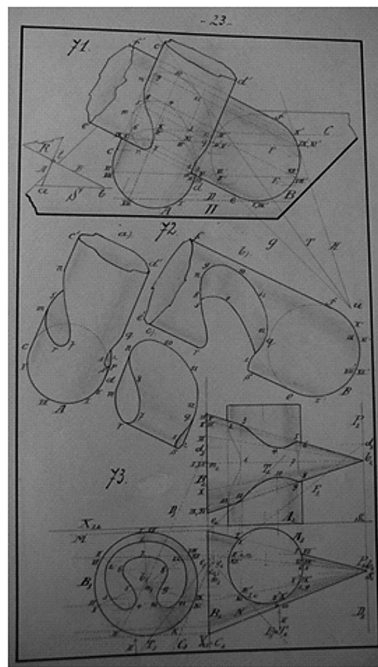


Table 23 from Splítek's manuscript *Descriptive Geometry* (The private family archive of the Splítek – Lukáš, Sofia)

The educational system at Bulgarian secondary schools was influenced significantly also by **Vladislav Šak**, Czech mathematician and geometer. He obtained an ordinary professorship at the grammar school in Sliven in 1882. In 1886, he moved to the grammar

<sup>49</sup> For more information see [3–5, 8, 11, 18].



school in Sofia and taught there until 1907. He was also a private docent at the Sofia University between 1891 and 1894. He lectured on spherical and analytic geometry, analysis and algebra. Finally, he was professor of mathematics at the Sofia University for the 1907/1908 school year. Then he came back to Prague and started to teach mathematics and Bulgarian language at the Czechoslovak School of Commerce. During the first Balkan War, he was a war reporter in Bulgaria. The Austrian police held him in prison between 1916 and 1917 because of his cooperation with Tomáš Garrigue Masaryk (1850–1937) and Edvard Beneš (1884–1948), later Czech presidents. After the war he held important functions in Bulgarian diplomacy. He was an honorary consul (between 1920 and 1922) and a general consul of the Bulgarian Kingdom (between 1922 and 1932)<sup>50</sup>.

## БЪЛГАРСКО-ЧЕХСКА КОНВЕРЗАЦИЯ

СЪСТАВИТЕЛЪ

**ВЛАДИСЛАВЪ ШАКЪ,**

бившъ професоръ при университета въ София,  
учителъ по български езикъ при чехко-  
славянската търговска академия  
въ Прага.



ПРАГА

ИЗДАТЕЛЪ ЙОС. Р. ВИЛИМЕКЪ

Клоузъ: Виена, Шотенрингъ I.

Title page of Šak's *Bulgarian-Czech  
Conversation* (1914)



V. Šak (second row, third from the left) and the first  
graduates of the grammar school in Sliven (1884)

Šak translated two Czech textbooks to the Bulgarian – *Algebra pro I., II. a III. třídu reálných gymnázií a trojtřídní měšťanské školy* (Algebra. Textbook for 1st, 2nd and 3rd Classes of Grammar Schools) (Plovdiv, 1886)<sup>51</sup> written by Václav Starý and *Deskriptivní geometrie pro vyšší třídy reálných gymnázií* (Descriptive Geometry for Upper Classes of Secondary Schools) (Plovdiv, 1895)<sup>52</sup> written by Čeněk Jarolímek. They were used at Bulgarian secondary schools until the World War I. In addition, he wrote one of the first Bulgarian articles named *Няколко думи върху изучаването по дескриптивната геометрия* (Some Thoughts of Teaching Descriptive Geometry) (1897/1898) dealing with

<sup>50</sup> For more information see [3–5, 11, 16].

<sup>51</sup> Translators: V. Šak and T.P. Šiškov.

<sup>52</sup> Translators: V. Šak and T.P. Šiškov.

the methodology of teaching descriptive geometry<sup>53</sup>. He had a wide range of interests – he wrote poems, libretti, short stories, feuilletons and critical articles about the state of Bulgarian politics and economy. He also issued Bulgarian-Czech and Czech-Bulgarian Dictionaries and Bulgarian Grammar in Czech language for Czech students<sup>54</sup>. For Czech readers, he translated the works of Bulgarian writers and poets<sup>55</sup>.

It should be noted that at the end of the 1870s and the beginning of the 1880s a lot of Czech engineers, doctors, teachers, natural scientists, lawyers and even artists went to Bulgaria. They participated there in the building of the new Bulgaria that did its best to free itself from Turkish influence and approached European traditions<sup>56</sup>.

#### 4. Conclusion

The Czech mathematical community that was formed and kept developing since the middle of the 19th century was able to export its successful and versatile activities out of the Czech territory, particularly to the Balkans where the nationalistic movements began with a delay of about twenty years. As we have described, the Czech mathematicians played an important role in the development of the “national” mathematical communities, scientific societies, and educational systems.

#### References

- [1] J. Bečvář (ed.), *Jan Vilém Pexider*, edition Dějiny matematiky, volume 5, Prometheus, Praha 1997.  
 [2] M. Bečvářová, J. Čížmár, *Karel Zahradník (1848–1916)*. Praha – Záhřeb – Brno, edition Dějiny matematiky, volume 46, Matfyzpress, Praha 2011.

<sup>53</sup> Отчет на Софийската държавна мъжка гимназия за учебната 1897–1898 година. Втора година (Second Report on the Sofia State Grammar School for Boys in the School Year 1897/1898), Sofia, 1898, pp. 40–56.

<sup>54</sup> *Българско-чехски речник* (Bulgarian-Czech Dictionary), J. Otto, Praha, 1911–1914, 647 pages; *Чехско-български речник* (Czech-Bulgarian Dictionary), J. Otto, Praha, 1911–1914, 1071 pages; *Kniha bulharsko-české konverzace – Българско-чехска конверзация* (Bulgarian-Czech Conversation), J.R. Vilimek, Praha, 1914, 325 pages.

<sup>55</sup> For more information see [4].

<sup>56</sup> For more information on the Czech-Bulgarian relations see for example *Česko-bulharské kulturní vztahy v době obrození*, *Práce z dějin slavistiky*, volume 14, Praha, 1990; D. Grigorov, M. Černý (eds.), *Úloha české inteligence ve společenském životě Bulharska po jeho osvobození*, Velvyslanectví Bulharské republiky v České republice, Praha, 2008; D. Hronková, *Kapitoly z minulosti česko-bulharských vztahů I., II.*, Praha, 2005, 2007; J. Rychlík, *Dějiny Bulharska*, Lidové noviny, Praha, 2000; V. Todorov, *Úvod do bulharistiky. Průvodce po dějinách česko-bulharských vztahů*, Praha, 1991; J. Tomeš, *Co daly naše země Evropě a lidstvu*, volume 2, second edition, Evropský literární klub, Praha, 1999. For those interested in a deeper study of the development of Czech-Bulgarian relations, Bulgarian literature can be recommended, especially that which originated in the last twenty years and which analyzed the share of Czech intelligence to restore the Bulgarian country after its liberation from Turkish rule.

- [3] M. Bečvářová, *Czech Mathematicians and Their Role in the Development of National Mathematics in the Balkans*, [in:] M. Bečvářová, Ch. Binder (eds.), *Mathematics in the Austrian-Hungarian Empire. Proceedings of a Symposium held in Budapest on August 1, 2009 during the XXIII ICHST*, edition History of Mathematics, volume 41, Matfyzpress, Prague 2010 (second edition, Matfyzpress, Prague 2011), pp. 9-31.
- [4] M. Bečvářová, *České kořeny bulharské matematiky*, edition Dějiny matematiky, volume 40, Matfyzpress, Praha 2009.
- [5] M. Bečvářová, *Česká matematická komunita v letech 1848–1918*, edition Dějiny matematiky, volume 34, Matfyzpress, Praha 2008.
- [6] M. Bečvářová, *Archimédovy práce česky*, [in:] J. Bečvář, M. Bečvářová (eds.), *29. mezinárodní konference Historie matematiky*, Velké Meziříčí 22.08–26.08.2008, Matfyzpress, Praha 2008, pp. 92-102.
- [7] M. Bečvářová, *Teodor Monin (1855–1893) – první vysokoškolský profesor matematiky v Bulharsku*, Homo Bohemicus, Izdanie na Bochemija klub, volume 1, 2008, pp. 5-14.
- [8] M. Bečvářová, *František Vitězslav Splítek (1855–1943) – zapomenutý učitel, matematik, etnograf a spisovatel*, [in:] D. Grigorov, M. Černý (eds.), *Úloha české inteligence ve společenském životě Bulharska po jeho osvobození*, Velvyslanectví Bulharské republiky v České republice, Praha 2008, pp. 185-201.
- [9] M. Bečvářová, *Život i djelo Karela Zahradníka*, [in:] S. Mardešić (ed.), *Karel Zahradník 1848–1916*, Hrvatska akademija znanosti i umjetnosti. Spomenica preminulim academicima, svezak 134, Zagreb 2007, pp. 9-36.
- [10] M. Bečvářová, *Life and Work of Karel Zahradník (1848–1916)*, [in:] T. Motlíček, Rechcigl M. (eds.), *Moravia from World Perspective*, 22th World Congress of Czechoslovak Society of Arts and Sciences, volume 2, Ostrava, Repronis, 2006, pp. 276-283.
- [11] M. Bečvářová, *Kořeny bulharské matematiky*, [in:] M. Bečvářová (ed.), *27. mezinárodní konference Historie matematiky*, Velké Meziříčí, 25.08.–29.08.2006, sborník sylabů, Praha 2006, pp. 14-16.
- [12] M. Bečvářová, *Eukleidovy Základy, jejich vydání a překlady*, edition Dějiny matematiky, volume 20, Prometheus, Praha 2002.
- [13] M. Bečvářová, *Z historie Jednoty (1862–1869)*, edition Dějiny matematiky, volume 13, Prometheus, Praha 1999.
- [14] M. Bečvářová-Němcová, *František Josef Studnička (1836–1903)*, edition Dějiny matematiky, volume 10, Prometheus, Praha 1998.
- [15] B. Dolapčiev, *A.V. Šourek (1857–1926)*, Pokroky matematiky, fyziky a astronomie, volume 8, 1963, pp. 168-170.
- [16] S. Hineva, I. Tzenova, *Čeští geometři na sofijské univerzitě*, Pokroky matematiky, fyziky a astronomie, volume 36, 1991, pp. 237-242.
- [17] J. Sobotka, *Vzpomínka na Antonína V. Šourka*, Časopis pro pěstování matematiky a fyziky, volume 56, 1927, pp. 1-6.
- [18] J. Šedivý, *Učitel F.V. Splítek*, Matematika a fyzika ve škole, volume 13, 1982/1983, pp. 69-70.