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THE STUDY OF HISTORY OF MATHEMATICS IN THE CZECH REPUBLIC

STUDIA NAD HISTORIĄ MATEMATYKI W CZECHACH

A b s t r a c t

In the Czech lands, there is a long and fruitful tradition of research and study of the history of mathematics which began in the second half of the 19th century. The most important papers and books were written by J. Smolík, F.J. Studnička, J. Úlehla, K. Rychlík and Q. Vetter. But from the 1950s to the 1980s only a few professionals from the Institute of History of the Academy of Sciences of the Czech Republic, along with a few university professors, devoted their attention to the history of mathematics. For example, we can mention two historians of mathematics, Jaroslav Folta and Luboš Nový, whose papers and activities became well-known in Europe. However, on account of various professional and political circumstances, no new generation of historians of mathematics was raised. The first step to the new development of research in the history of mathematics was made in the 1980s, when the special commission on history of mathematics was created at the Faculty of Mathematics and Physics of Charles University in Prague, thanks to activities of Jindřich Bečvář, Ivan Netuka and Jiří Veselý.

Keywords: *history of Mathematics in the Czech Republic*

S t r e s z c z e n i e

Już od II połowy XIX w. na ziemiach czeskich obserwujemy długą tradycję badań i studiów nad historią matematyki. Ważne znaczenie w tej dziedzinie mają m.in. prace przygotowane przez następujących autorów: J. Smolík, F.J. Studnička, J. Úlehla, K. Rychlík i Q. Vetter. Po II wojnie światowej, w latach 1950–1980, kilku specjalistów z Instytutu Historii Akademii Nauk Republiki Czeskiej wraz z profesorami uniwersyteckimi zwróciło swoją uwagę na rozwój historii matematyki. Wśród nich byli: Jaroslav Folta i Luboš Nový, których dokonania znane są Europie. We wspomnianym okresie z różnych powodów nie powstała nowa generacja historyków matematyki. W kolejnym okresie krystalizowania się dyscypliny naukowej – historii matematyki – w Czechach utworzono w 1980 r. na Wydziale Matematyki i Fizyki Uniwersytetu Karola w Pradze komisję ds. badań z historii matematyki. Jindřich Bečvář, Ivan Netuka i Jiří Veselý należeli do osób wydatnie i owocnie wspierajacych działność wspomnianej komisji

Słowa kluczowe: historia matematyki w Republice Czeskiej

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The situation changed only after 1990, when the new discipline of postgraduate studies, **History and Didactics of Mathematics and Computer Science**, was accredited at the Faculty of Mathematics and Physics of Charles University in Prague and at the Faculty of Science of Masaryk University in Brno. In Prague, the PhD studies were opened in the academic year 1992/1993. An individual study plan is prepared for each student. It contains a large background and deeper parts in the chosen area as well as a section directly connected with the proposed thesis topic. At present, there are 19 PhD students and 43 already defended dissertations, most of them specialised in the history of mathematics[1].

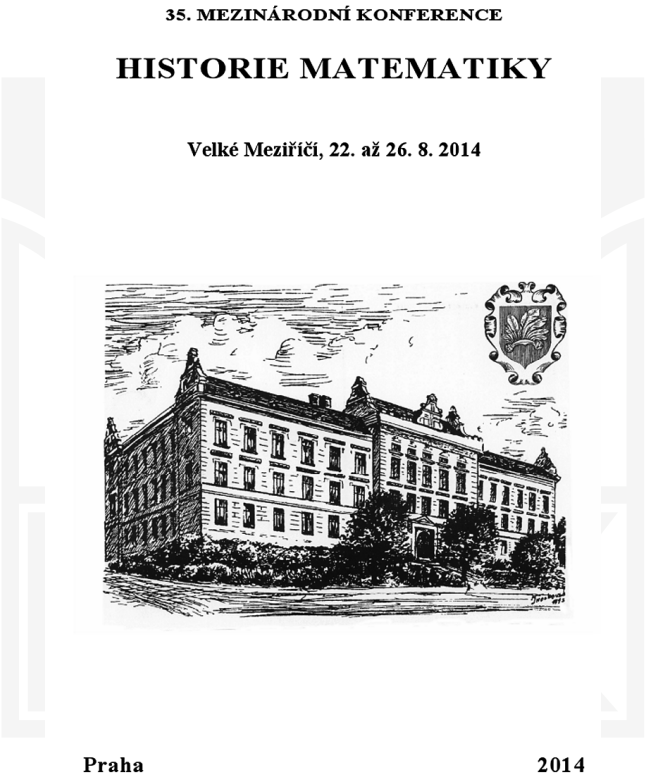

Fig. 1. The title page of the proceedings from the conference in 2014

A further important stimulation is the possibility of reporting on one's work and presenting one's results at special events, such as the regular **International Conference on the History of Mathematics** (this year it was held for the 35th consecutive time), and at the **Seminar in the History of Mathematics**, which takes place in Prague or at the special methodological seminars focused on the specific problems which appear in the course

[1] For more information see: http://www.karlin.mff.cuni.cz/~becvar/pgs/pgs.htm.

of work on the history of mathematics[2]. The conference was established in 1980 by the School on the History of Mathematics and it was predo-minantly meant for the professors at universities preparing future teachers of mathematics for secondary schools and high schools. Its main aim was to supplement and increase their knowledge and to give them enough material so that they would be able to teach the newly created course *Philosophical Problems of Mathematics* (later on titled History of Mathematics), which became a compulsory part of the curricula for the innovative education of future teachers.

In the 1990s the conference noticeably changed its character because of completely new participants (undergraduate students, PhD students, teachers at universities as well as professional historians of mathematics) who participated at the conference to present their works and results. Since 2003, the conference is titled *International Conference on the History of Mathematics* and every year more than 60 participants from the Czech Republic, Slovakia and Poland, sometimes also from Germany, Russia, Ukraine and Italy attend the conference and present their research or give invited plenary lectures on the development of some disciplines of mathematics or some mathematical problems from the historical perspective. The conferences take places in Velké Meziříčí (a nice historical town in Moravia) or Poděbrady (a famous Czech spa not far from Prague) and they are organized by Jindřich Bečvář, Martina Bečvářová, Magdalena Hykšová, Martin Melcer and Irena Sýkorová. In order to document the contents of the conference, the proceedings containing extended versions of the individual contributions are published every year (since 2006, the contributions are in Czech, English, Slovak or Polish languages) thanks to the financial support of the Faculty of Mathematics and Physics of Charles University in Prague[3].

Teachers of mathematics in Czech secondary schools, student-teachers or PhD students in history of mathematics can take part in the bi-annual seminar on the history of mathematics titled *History of mathematics for teachers in secondary schools*. Its main aim is to give them new information, sources, materials and examples to increase their knowledge so that they could improve and enhance their lessons and lectures with the historical aspects, be able

Fig. 2. Velké Meziříčí

Fig. 3. Poděbrady

[2] For more information see: http://www.karlin.mff.cuni.cz/~becvar

[3] For more information see: http://www.fd.cvut.cz/personal/becvamar/konference/hlavnindex.html; Also [1, 2, 5, 6, 8].

to show the role of mathematics in the development of modern science and technology and be able to make mathematics nice and attractive for students, among other things. The 12th seminar was held in August 2015 in Poděbrady. Its program is prepared by Jindřich Bečvář, Martina Bečvářová, Zdeněk Halas and Martin Melcer. Euclid of Alexandria and his Elements are planned as its main topic[4].

A great encouragement for a young incipient researcher is the possibility of having their results published. In the case of more extensive work in the history of mathematics, this is often a problem. Thanks to Jindřich Bečvář from the Faculty of Mathematics and Physics of Charles University in Prague and to Eduard Fuchs from the Faculty of Science of Masaryk University in Brno, a publication series entitled *History of Mathematics* was established in 1994; this series makes it possible to publish both shorter and longer works, as well as entire monographs and textbooks on the history of mathematics in the Czech, English and Slovak languages.

The editorial board is composed of Czech mathematicians and historians of mathematics: Jindřich Bečvář, Antonín Slavík and Ivan Netuka (all from the Faculty of Mathematics and Physics of Charles University in Prague), Martina Bečvářová, Magdalena Hykšová and Miroslav Vlček (all from the Faculty of Transportation Sciences of the Czech Technical University in Prague), Vlastimil Dlab (the School of Mathematics and Statistics, Carleton University, Ottawa, Canada), Eduard Fuchs (the Faculty of Science of the Masaryk University in Brno), Jiří Hudeček (the Faculty of Arts of Charles University in Prague).

At present, the series has 58 volumes (50 in Czech or Slovak and 8 in English), which can be loosely divided into seven groups. The first one consists of 14 monographs devoted to the evaluation of scientific and pedagogical work of leading Czech mathematicians of the second half of the 19th century and the first half of the 20th century (František Josef Studnička, Emil Weyr, Eduard Weyr, Jan Vilém Pexider, Karel Rychlík, Vladimír Kořínek, Ladislav Svante Rieger, Jan Sobotka, Karel Zahradník, Wilhelm Matzka and Heinrich Löwig, the monographs on Jan Vilém Pexider and Heinrich Löwig are also available in the English version).

The second group presents several interesting topics from the history of mathematics (mathematics in Egypt, Mesopotamia and old China, Greek mathematics, mathematics in Middle Ages and Renaissance in Europe, European mathematics in the 16th and 17th century).

The volumes in the third group analyze the development of certain mathematical disciplines and issues (integral calculus, graph theory, probability theory, number theory, product integration, geometry of curves, discrete optimization, lattice theory, linear algebra, linguistics, geometric transformations, etc.).

The fourth group describes the development of mathematical research, schools and mathematical education, teaching methods and textbooks, the establishment and evolution of some communities and associations in the past in the Czech, Austrian and Polish lands (mathematics at the Jesuit Clementinum in the years 1600–1740, the birth and the first decade of the Union of Czech Mathematicians, the development of the German Technical University in Brno, the Czech mathematical community from 1848 to 1918, the role of some Czech mathematicians in the development of mathematics in the Balkans, the history of

[4] For more information see: http://www.fd.cvut.cz/personal/ becvamar/seminar_ss.

financial mathematics in Czech textbooks, some Czech teachers of geometry, philosophical conception of probability in the works of Czech thinkers, the growth of mathematical culture in the Lvov area).

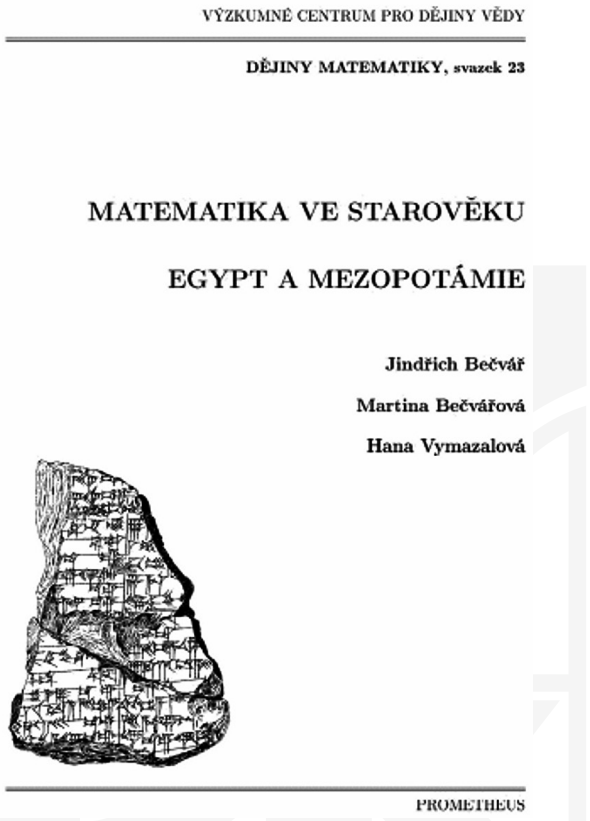

Fig. 4. The title page of the volume 23

The fifth group contains the commented transcriptions of unknown or forgotten mathematical manuscripts (Czech versions of Euclid's Elements from the 1880s and the first decade of the 20th century, Jarník's notebook with Göttingen mathematical lecture course given by P.S. Aleksandrov in the academic year 1927/1928).

The sixth group presents the Czech translations of classic mathematical works (the old Egyptian hieratic mathematical texts, the Mathematics in Nine Chapters, the letters of Gerbert of Reims) or some unique personal memories (Em. Weyr's diary describing his study visit in Italy, his mathematical work done there and his contacts with Italian mathematicians around 1870).

The seventh group offers proceedings of some national conferences on the history of mathematics showing various relations and connections between mathematics and arts, architecture, geography, techniques etc.

CHARLES UNIVERSITY IN PRAGUE
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HISTORY OF MATHEMATICS, volume 52

THE FORGOTTEN MATHEMATICIAN

HENRY LOWIG

(1904 – 1995)

Martina Bečvářová et al.

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Fig. 5. The title page of the volume 52

It should be mentioned that some volumes are extended versions of PhD or habilitation theses, others contain results of many research projects accomplished in the last twenty years. Most are unique contributions to our understanding of the development of mathematics and would be of interest not only to mathematicians, but also to historians, linguists and anyone who wants to learn about mathematics and mathematical thinking in the past[5].

The series has a non-commercial character. It was and it is supported in part by projects financed by the Czech Ministry of Education, the Czech Science Foundation, the Grant Agency of the Czech Academy of Science, the Grant Agency for the Development of Czech Universities, the Research Center for the History of Sciences and Humanities, the Faculty of Mathematics and Physics of Charles University, the Faculty of Transportation Sciences of the Czech Technical University in Prague and the Czech Mathematical Society[6].

[5] All volumes are available on: http://www.dml.cz

[6] For more information on the series *History of Mathematics* (for example the contents and the front pages of volumes); See: http://www.fd.cvut.cz/personal/becvamar/Edice/Edice.htm; Also [3, 4, 7].

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