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PEDAGOGICAL ACTIVITIES OF VOJTĚCH JARNÍK

JIŘÍ VESELÝ

Vojtěch Jarník was an outstanding teacher. As a scientist he frequently achieved brilliant and very often definitive results but above all he was a pedagogue par excellence. He was able to transmit his enthusiasm for mathematics to all his students. Hence it is not so surprising that not only his doctorands but many more of his students consider him a teacher who had the decisive impact on their future work and career.

To find the roots of Jarník's pedagogical mastery let us first mention his family background. From his early days he was familiar with all aspects of the career of a university teacher. Both his father JAN URBAN JARNÍK (1848–1923) and his older brother HERTVÍK JARNÍK (1877–1938) were university teachers; both were linguists.¹

The pre-university education chosen by Vojtěch Jarník was not quite ideal for studies at a university. He had no Latin at the 'Real Gymnasium' and so he had no chance to continue at university as a regular, i.e. full-time, student. We do not know whether Jarník's choice of school was connected with the wish to master modern languages or whether the choice was influenced just by the site of the school, which was located quite close to the place where the Jarníks were living at that time. So when Jarník completed his GCE on July 7, 1915,² he entered the Faculty of Humanities, Charles University, as a so called extraordinary student. After three semesters he became a regular student on the basis of an additional examination in Latin.³ On January 17, 1917 he was exempted from the military service.

Let us briefly describe the study of mathematics in Bohemia and later in Czechoslovakia at those days. It was studied at the Faculty of Humanities (the Czech

¹ Jan Urban Jarník was a professor of Charles University, Prague from 1888 and Hertvík Jarník was a professor of Masaryk University, Brno from 1923.

² At the "1. C.K. české vyšší reálné gymnasium", Ječná, Praha II.

³ At the "Academic Gymnasium", Štěpánská, Praha I on March 21, 1917.

name being “Philosophical Faculty”), quite often in combination with physics, and after taking a degree and other special exams the students were entitled to teach at all types of secondary schools. At the turn of the century the teaching of mathematics at Charles-Ferdinand University⁴ changed. For about 20 years all lectures in mathematics were delivered by FRANTIŠEK JOSEF STUDNIČKA (1836–1903) and EDUARD WEYR (1852–1903). As both died in the same year, the situation in teaching mathematics at Charles University became critical. From the summer term of the academic year 1902/03 lectures were delivered by KAREL PETR (1868–1950), who was called from Brno to Prague by the Dean of the Faculty of Humanities. A year later, in 1904, also another man from Brno, JAN SOBOTKA (1862–1931), joined Petr. They both, but especially Petr, raised the level of teaching mathematics and laid the foundation for the future rapid development of mathematics in Czechoslovakia.

Petr was Jarník’s favourite teacher. It is highly probable that Jarník was aware of his reputation before entering University. Petr was Editor in Chief of *Časopis pro pěstování matematiky* (CMJ),⁵ which was popular among mathematically orientated students. He was also a colleague of Jarník’s father and the leading personality in mathematics in Bohemia and later in Czechoslovakia in the first half of the twentieth century⁶. He was also the first Dean of the Faculty of Sciences, Charles University (1921/22), and later Rector of Charles University (1925/26).

Vojtěch Jarník entered Charles University in the academic year 1915/16. In the first semester he enrolled for 23 hours, including 7 with Petr out of 8 in mathematics. It is interesting to compare the number of lectures/seminars taken by the average student with those taken by Jarník. Two things are striking: the number of hours in their case towards the end of their studies usually significantly decreased, but not so with Jarník. On the list of lectures he attended during his four year studies, mathematics slightly dominates over physics; the majority of lectures/seminars in mathematics chosen by Jarník during his eight semester studies were delivered by Petr⁷. Besides Petr he was taught mathematics by BOHUSLAV HOSTINSKÝ (1884–1951), KAREL RYCHLÍK (1885–1968), JAN SOBOTKA (1862–

⁴ Since the name of the university varied, in what follows we use the present name of the University, i.e. Charles University.

⁵ A mathematical journal founded 1872; from 1892 it contained a section on elementary mathematics for secondary school students. Both *Czechoslovak Mathematical Journal* and *Mathematica Bohemica* are its successors. The reason I prefer to use the abbreviation CMJ is that the Czech name of the Journal changed several times.

⁶ His post-doctoral university teacher qualification (“habilitace”) took place in 1903; in that year he was appointed Associate Professor (“Docent” in Czech) and in 1908 University Professor.

⁷ During 4 years of his studies Jarník had 98 hours of Physics and 113 hours of Mathematics, more than half of them with Petr.

1931), BOHUMIL BYDŽOVSKÝ (1880–1969) and VÁCLAV LÁSKA (1862–1943). Lectures on physics which he attended were delivered by BOHUMIL KUČERA (1874–1921), VÁCLAV POSEJPAL (1874–1935), VLADIMÍR VÁCLAV HEINRICH (1884–1965) and FRANTIŠEK ZÁVIŠKA (1879–1945) but he also attended lectures on philosophy, psychology, chemistry, on Czech and on German literature.

It is not surprising that Jarník's dissertation *On the roots of Bessel functions* was written under the supervision of Petr. It was defended in the academic year 1920/21. Unfortunately, there is no copy left in the university archives; see also [A1]. He completed his university studies in 1919 and immediately started to work as an assistant to JAN VOJTĚCH (1879–1953), professor of Technical University, Brno. He spent there two years. In Brno he also met MATYÁŠ LERCH (1860–1922).

In 1921/22 he was back in Prague as assistant to Petr. He also passed his final examinations at the Faculty of Sciences which in the meantime had separated from the Faculty of Humanities. At that time there were three directors of Mathematical Seminars (Petr, Sobotka, Láška) and each had an assistant. Mostly due to the influence of Petr, Jarník's further studies concerned mathematical analysis and number theory. At that time Petr was finishing his *Differential Calculus* [10] and Jarník helped him with proof-reading; he improved some parts (see the Preface of [10], p. VII).

Petr recognized the great talent of his student and gave him full support. Hence Jarník already in 1923 leaves Prague for Göttingen, one of the most famous mathematical centres of Europe in those days and a Mecca for mathematicians. He studied there with EDMUND LANDAU (1877–1938) until February, 1925. It should be remarked that before his visit to Landau Jarník had studied analytic number theory and Landau's works; cf. [5]. Later he visited Göttingen again in the academic year of 1927/28. Landau was besides Petr the second teacher who substantially influenced Jarník's professional career. Let us mention here that Jarník was well informed about Landau's position in the Third Reich. In February 1938 he was deeply moved when he learned of Landau's death; see [13]⁸.

For a long time Petr was an active member of the Bolzano Commission.⁹ Also his inaugural Rector's speech [12] was devoted especially to Bolzano. Jarník shared his interest in Bolzano's works. When MARTIN JAŠEK (1879–1945), who discovered unpublished manuscripts of Bolzano, lectured in Prague on Bolzano's

⁸ Landau had to stop his lectures in Göttingen already in November 1933 because of well-organized boycott led by gifted young student Oswald Teichmüller, member of SA and fanatic Nazi. Landau resigned from his chair and moved to Berlin where he died on February 19, 1938.

⁹ It was a commission taking care of the publication of Bolzano's works discovered in Vienna in the twenties.

example of a continuous nowhere differentiable function, Jarník was fascinated. As a result, in the very volume of CMJ where Jašek informed the mathematical community of the discovery, Jarník presented in [A2] the complete investigation of differentiability properties of the function.¹⁰ It might have been also a stimulus for Jarník's other deep interest: real functions theory. But there was more: probably the best qualified evaluation of Bolzano's results in analysis was that of Jarník; later all those works appeared again in English translation in a special booklet devoted to Bolzano; see [3].

I am not going to present the other roots of the work of Jarník. All the time he was eagerly seeking for new problems to be solved; for example cf. [A29] or [A61]. He became Associate Professor (Docent) on December 19, 1925. He felt it was his duty to incorporate modern mathematical tools in his lectures: his first lecture after his appointment as Associate Professor was devoted to the Lebesgue integral (1925/26); it was also his first regular lecture at Charles University. A year later, together with several colleagues, he offered students *Discussions on newer directions in mathematics*.¹¹ Note that later in 1929 he became Extraordinary Professor and from 1935 he held the Chair of Mathematics at Charles University. The ten year period before World War II started was probably the best time for his scientific and pedagogical work. It might be interesting to compare the list of his works with the list of dissertations he supervised (see the Appendix to this article). It is easily seen how Jarník's research was every time closely connected with teaching.

When Petr was preparing the second edition of his *Integral Calculus* [11], which appeared in 1931, Jarník again not only carefully read the manuscript but also wrote an Appendix of 71 pages: *Introduction into set theory*; see [B1]. This is the first text in Czech on the set theory. Later, in 1936, he wrote another Appendix to Čech's *Point sets*. It is a 21 pages long work called *Derivatives of functions of one real variable*; see [B2]. Among his other works we are also able to detect several which are closely related to his deep interest in pedagogical problems.

When Czech universities were closed by the Nazis in 1939, Jarník published in CMJ an article containing suggestions as to how to study mathematical analysis; see [1]. Similar articles on the study of algebra and geometry were written by his colleagues VLADIMÍR KOŘÍNEK (1899–1981) and Bohumil Bydžovský. Also in

¹⁰ Other articles on the subject were published by K. Rychlík and G. Kowalewski, all in the same year. In 1930 the Royal Czech Society of Sciences published Bolzano's *Funktionenlehre*, in which the example appeared. Remarks were written by K. Rychlík and K. Petr wrote the Preface.

¹¹ Other participating pedagogues were B. Bydžovský, V. Hlavatý, M. Kössler and B. Machytka.

wartime Jarník prepared textbooks for students. Needless to say that for a long time there were no textbooks on calculus (or analysis) in Czech. Weyer's first volume on *Differential Calculus* [14], which appeared in 1902, was not followed by the second one planned and hence Petr started with the *Integral Calculus* [11] to fill the gap. The book appeared in 1915. Later in 1923 he wrote "his own" *Differential Calculus* [10]. Jarník felt the need of having new better and more modern textbooks. He started to work on them already before World War II; in 1938 he wrote *Introduction to integral calculus* [B3] as a "second volume" of a booklet [6] published by his colleague MILOŠ KÖSSLER (1884–1961). During the war he worked on books which appeared later as a four-volume course on mathematical analysis. While the first two volumes [B4] and [B5] have an introductory character, the second volumes [B6], [B7] are in their style quite close to monographs. These books were published in several editions and were used by generations of Czech mathematicians. In certain parts they are unique; for example [B7], the integral calculus in \mathbb{R}^n , contains a very nice and instructive Chapter VII on computational aspects of the theory, which has no parallel in any book on the subject published so far. He also liked the Baire category method and included it even in the standard courses. It brought fruits later: many Czech mathematicians used it to obtain interesting results. In such a way he laid the foundations for strong Czech representation in fields connected with the theory of real functions. Note that Jarník hesitated to cover every topic: he did not include in [B7] any surface integral. He only remarked in the preface that there were more competent Czech mathematicians to write it (certainly he had in mind JAN MAŘÍK (1920–1994)).

There is another textbook written by Jarník [B10]. The manuscript was published posthumously. I think that all his books are so well known to Czech readers that I am not going to describe them in detail. They exist only in Czech and so they cannot be used by foreign students. Hence it is not so important to include more detailed information in this text. On the other hand, I feel it a duty to write more about Jarník's style of giving lectures. Before proceeding to this I should like to mention that among many other things Jarník was Editor in Chief of CMJ for 15 years (1935–1950); it was also mainly due to his effort that as early as in the fifties the Journal had a good standard in comparison with other foreign mathematical journals. On the other hand that tremendous work helped him to keep contact with the development of mathematics.

All Jarník's lectures were prepared with great care. He even planned what and when to erase from the blackboard. He also understood quite well that a good lecture should contain some dramatic moments and he was really able to present things the way they should be done in mathematics. His proofs were first briefly described and then done in detail. He never omitted difficult or too technical

things and I believe that he was proud of making difficult things easily accessible (if possible, of course). It was a challenge for him to find and present such proofs in such a way to seem natural; when he used a trick, he carefully commented it. His technique of calculating was excellent and so it would have been a shame for students not to learn it fairly well. Even later after the war when he was Dean and Vice-Dean (1948–1949, 1957–1959, 1959–60) and Vice-Rector (1950–1953), he never missed any of his lectures and was well prepared every time. When he had some important duties he was able to find somebody to swap lectures with. At a meeting with students in those days (1952) he said: *I am terribly fond of lecturing. Especially formerly, when I did not have so many offices and duties, I was a big nuisance for the students. When my lecture was cancelled, let it be for a holiday or for any other reason, I always tried hard to compensate it at some other time.*

He was a demanding teacher but he knew that the best way to teach students to work hard is by personal example. He was good also during examinations: every time he made the impression that he was really able to recognize what a student knew and evaluate it properly; during examinations he also quite often liked to explain to a student something quite new beyond the scope of the lecture. To show his clear ideas about lecturing let us give a chance to Jarník to describe his preparation:¹²

A mathematical lecture possesses one characteristic property: A correctly and purposefully performed chain of inferences leads with absolute reliability from the assumptions of a theorem to its assertion. But conversely, if we make a single mistake or if we do not find reasonable continuation of the chain of thoughts at any moment, the whole proof of a theorem or the solution of a problem collapses. Writing these lines I try to remember whether such a moment in Jarník's lecture ever occurred. I remember that he occasionally revised something in his notes but he himself did not make mistakes.

With some other lecturers I remember that a substantial part of a lecture was “cancelled”, the blackboard erased and it was necessary to start again. Many of those I am speaking about were excellent mathematicians but they overestimated their ability to improvise. Jarník used some notes (sometimes they remained on the desk untouched during the lecture). Here are his comments on the question. *To lecture from a paper or without: for an introductory lecture I write down at most some points not to forget anything, and the data for the examples. For advanced lectures I have the text always with me, of course I “extemporize” but I check myself from time to time whether I did not forget something I would need later.*

¹² It is a part of an unfinished text which was published posthumously.

I also sometimes check the formulation of theorems—for example, I formulate an auxiliary result including a complicated auxiliary formula which I will prove only later on. It is of course quite unnecessary to learn the formula by heart—apart from the possibility of a lapse of memory. Moreover, it would be incorrect also from the pedagogical point of view—I recommend the students not to memorize such things but first of all to realize the connections so as to find out which result or argument are to be used in a particular case, to be able to find it in literature or, as the case may be, to be able to derive it independently by themselves. Trivial but lengthy transformations of complex expressions occur frequently, too. Such a routine procedure should be run through in the lecture as fast as possible, and it is also important to check the result by comparing it with the prepared text in order not to be forced some moments later to look for an accidental mistake which had happened.

Jarník had always very good contacts with his audience in the lecture hall; it was not formal, he had special sensors for grasping the level of understanding. Let us note that for one of his colleagues (and a good friend of his) it was sufficient to see one or two students in the first rows nodding their heads. He wrote about the problem: *I cannot help speaking when writing on the blackboard. Naturally, the sketches are rather primitive—I sketch a line and say ten words, I plot a point and say other ten or twenty words. I cannot imagine explaining e.g. the continuity of a function first and then to sketch a figure, or to sketch a figure first and then discuss it. Here it is important that the figure develops in accordance with my developing the thoughts related to it. Mathematics has the advantage that a figure only illustrates certain mathematical relations which could be explained without it—in this respect it is different from many other subjects. The advantage as compared with a book is precisely in the fact that the student sees the genesis of the figure (simultaneously with the genesis of notions or proofs) while the figure in a book is static and the reader must analyze it by himself to find the procedure by which it has arisen. Jarník understood that only during the lecture one has the chance to present how mathematics is actually done. When one has a text or a picture completed beforehand, something is lost.*

Not a long time ago a Czech Minister of Education criticized teachers of mathematics that even those with rather high qualifications were willing to practise with students seemingly trivial things. Jarník never hesitated to do that. Here are some of his comments to exercises: *The introductory lectures from analysis have been long since accompanied by practical exercises. Formerly I led them myself when I had the lecture. Now this is no more possible because there have to be several parallel groups. I am rather sorry for it. Exercises seemed more interesting and challenging for the lecturer than an elementary lecture. If a student suggests*

another way of solution of the given example than I had in mind, I must not “forbid him” to try it. On the contrary, I have to estimate whether his way leads to the goal, I must let him proceed along this way and I must be able to help him since sooner or later he will very probably not know how to go on. Even if his method evidently cannot reach the aim, it is often better to let him try it in order to let him (as well as the others) find out where and why it fails. Of course, this requires considerable promptness of the teacher who meets here new problems directly in the teaching process. On the other hand the student penetrates from the very beginning of his studies into the spiritual workshop of his teacher: the latter must consider the problem, sometimes he has to make several attempts before he finds the right way. And sometimes he may fail together with his student, and some other time another student gets a lucky idea which the teacher had not found. There is no damage done (just the opposite), provided, of course, the students had recognized high professional level of their teacher and the teacher does not try to look like an infallible oracle. The teacher can make a blunder even in the lecture (then it is of course completely his own fault). In such a case it is necessary to admit the mistake and not try to hush it or to comfort the students by a plausible halftruth.¹³

To complete the picture let us quote from [8] a passage showing that Jarník really was able to carry his ideas on teaching into effect: *One of the rare features of Professor Jarník: he was first of all a university teacher. He was equally excellent at lecturing both an introductory course of mathematical analysis as an advanced special course, and the latter not only from his own field. His lectures had an indescribable atmosphere of an intimate discourse between Mathematics, the reader and the students. Lot of papers and notes have been written about the way Jarník lectured. One essential feature should be emphasized once more. Although each lecture of his was prepared in every detail, it was never tedious or boring, it never reduced to a mere sequence of definitions, theorems and proofs, to the mere $\{\varepsilon - \delta\}$ symbolism. The truth is that his lecture always possessed all the mathematical rigor, delivered with extraordinary clarity, but the rigor in all details corresponded to the level of the students and the subject. Jarník’s art of lecturing consisted not so much in the accuracy of the exposition as in distinguishing the essential from the inessential, in emphasizing important and wider connections, in developing an informal idea of the topic considered. This ability of his manifested itself especially in explaining complicated proofs which many teachers rather choose to omit. Jarník always first sketched roughly how the proof will proceed, explained in detail all possible problems, indicated the obstacles and frequently even substantiated the structure of the proof.*

¹³ Czech readers can enjoy the whole text [2], from which the above quotations were cut out.

A few other Jarník's articles have strong pedagogical motivation. Here are examples: Articles [A11], [A13] and [A14] contain a study of non-absolutely convergent series, [A15] deals with integration of series of functions. In [A25] Jarník investigated the dependence of a function f on its Riemannian (lower) sums while article [A79] was an attempt to replace the non-existing textbooks after the war; note that it was written in 1941. Also [A85] brought a solution of linear dependence of sufficiently smooth functions. There is even a note in [B6] about a planned article on elementary functions. This was neither published nor found among Jarník's unpublished manuscripts.

Let us try to analyze what were the reasons of Jarník's pedagogical mastery. He was a demanding teacher but he understood that one must start with one's own lectures. He was always precise, clearly understandable and did not hesitate to invest a considerable amount of work in the preparation of his lectures. His lectures had perfect logical structure and he never used vague formulations. Jarník never hesitated to consult his notes to check a formula since his authority was not based on acting as a "genius in action" but rather as a hard-working man carefully climbing up to the target; in his presentation even very demanding proofs were broken into small easy steps to perfection.

In other parts of this publication there is a space to introduce Jarník to the reader through his scientific achievements. They remained as they were done. On the other hand his last lectures took place 30 years ago and students who remember him can only report on his extraordinary qualities. Is there a numerical way of measuring the tremendous work accomplished by Jarník as a teacher? During his career of a university teacher he presented his students with more than 300 hours of semester lectures on analysis, about 55 on number theory and c. 100 hours of seminars and exercises; the first lecture was delivered in 1926 and the last in 1968.¹⁴ At that time he was already ill. From the great number of students who owe him so much let us mention his doctorands: Jarník conducted at least 16 dissertations, the first in 1930/31 (Knichal) and the last in 1968; the latter is slightly irregular since it was defended in Heidelberg in 1969 (Diviš), but Jarník at that time even supplied the necessary comments as one of the referees.¹⁵

Jarník's teaching cannot be separated from his personal qualities: he was always correct, a certain paragon of an English gentleman. A kind man, concert-goer, lover of classical music (he was also an active musician), good in tennis and skiing. By no means an absent-minded man concentrated only on his research. He was very tolerant, always ready to help. There exist many stories and sometimes even jokes about his colleagues; not about Jarník. Allow me to present one story

¹⁴ A rather complete list of these lectures is available from the author.

¹⁵ See the list of dissertations at the end of this article.

from a few I know. I was told it by a friend: Once he examined an older extra-mural woman student who studied while employed and was not able to reach the required standard for passing; in fact, her results were very poor. As was his habit Jarník tried to demonstrate her how badly off she was; he always showed where students were mistaken. Then he kindly led her to the door trying to make her failure less painful. He asked her about her profession and with her tears he received the answer: I am a math teacher. He gently saw her off, slowly closed the door and then he exploded: he trampled down his glasses. This was a rare example of a situation where he was not able to keep calm.

Jarník was ready to speak about mathematics any time: during breaks, before or after a lecture, probably even during the breaks at concerts or just on the way back from lunch in the hall. Now it is not so exceptional but in his time it was and in the eyes of any student it formed a deep contrast with the usual atmosphere in grammar schools. Many of his students tried to copy him in various aspects. For my generation, to say that somebody has mastered “Jarník’s style” of lecturing still means high appreciation. Unfortunately, now it becomes rare to cultivate a style of giving lectures. Nevertheless, still there are people trying to follow his advice and example. However, it is difficult to resemble “our Master”, even partially. Jarník was unique as a lecturer as well as a man.

APPENDIX: LIST OF DISSERTATIONS REFEREED OR SUPERVISED
BY VOJTĚCH JARNÍK

Some comments are needed: the listed works are of different type since after the World War II structure of titles in Czechoslovakia changed. Names of doctorands having their works supervised by Vojtěch Jarník are printed in boldface. The academic year of the defence of the dissertations and the following number can be used to find it in university archives.

- František Hyhlík (* 20.10. 1905, Loukonosy): *Filosofie fikcionalismu a konstrukce matematických pojmů* (E. Rádl, V. Jarník; 1930/31, 506)
- Vladimír Knichal** (* 20.3. 1908, Troubky): *Dyadické rozvoje a Hausdorffova míra* (K. Petr, V. Jarník; 1930/31, 532)
- Ladislav Špaček (* 30.5. 1909, Praha): *O koeficientech funkcí prostých* (M. Kössler, V. Jarník; 1931/32, 591)
- Václav Veselý** (* 2.5. 1906, Kutná Hora): *O problému Waringově* (K. Petr, V. Jarník; 1931/32, 605)
- Bohumil Jurek (* 3.1. 1909, Vsetín): *O derivovaných číslech* (V. Jarník, M. Kössler; 1932/33, 647)
- Oldřich Dvořák (* 25.5. 1910, Nová Paka): *O funkcích prostých* (M. Kössler, V. Jarník; 1933/34, 736)
- Rudolf Baloun (* 26.10. 1905, Duchcov): *Rozšíření věty Tatouovy a věty bratří Rieszů na některé obecnější třídy funkcí* (M. Kössler, V. Jarník; 1936/37, 900)

- Zdeněk Krejčí (* 22.9. 1912, Hlinsko): *Třídění spojitých komplexních funkcí v souvislosti s otázkou existence derivace* (V. Jarník, M. Kössler; 1936/37, 907)
- Josef Veselka** (* 29.4. 1909, Olomouc): *O přerovnávaní řad* (V. Jarník, M. Kössler; 1938/39, 1051)
- Karel Rakovič (* 19.8. 1909, Dobřichovice): *Nerovnosti pro prostou hodnotu a pro koeficienty některých regulárních funkcí* (M. Kössler, V. Jarník; 1938/39, 1057)
- Miroslav Katětov (* 17.3. 1918, Čembar, SSSR): *O absolutně uzavřených a bikompaktních prostorech* (V. Jarník, M. Kössler, V. Kořínek; 1939/40, 1087)
- Josef Roudný (* 5.9. 1909, Třtěnice): *Problém úmrtnosti a jeho měření* (M. Kössler, V. Jarník; 1945/46, 1091)
- Antonín Špaček** (* 11.10. 1911, Bratislava, Slovakia): *O úplném rozšíření a obalech metrických prostorů vzhledem k dané množině metrik* (V. Jarník, M. Kössler; 1945/46, 1125)
- Václav Vodička** (* 1.8. 1918, Dolánky): *Symetrické funkce a jejich využití v matematické statistice* (M. Kössler, V. Jarník; 1945/46, 1126)
- Ladislav Rieger (* 25.6. 1916, Malmö, Sweden): *O uspořádaných grupách* (V. Kořínek, V. Jarník; 1945/46, 1137)
- Ladislav Mišík (* 10.5. 1921, Žilina): *O S-vlastnostech definovaných dla J. Nováka v priestoroch spojitých funkcí* (E. Čech, V. Jarník; 1947/48, 1276)
- Jakub Intrátor** (* 27.2. 1921, Rzesów, Poland): *Iloma sposobami liczba naturalna rozklada sie na naturalnych skladnikov* (V. Jarník, V. Kořínek; 1948/49, 1335)
- Libuše Votavová (* 27.2. 1921, Praha): *Podmínky kompaktnosti prostoru αP* (E. Čech, V. Jarník; 1948/49, 1336)
- Ludvík Prouza (* 4.2. 1923, Úpice): *Distribuční funkce $\exp(-\exp(-y))$ a její aplikace na rozložení maximálních hodnot* (V. Jarník, L. Truksa; 1948/49, 1402)
- Jaroslav Růžička** (* 28.7. 1913, Praha): *O přerovnávaní nekonečných řad s hyperkomplexními členy* (V. Jarník, E. Čech; 1949/50, 1437)
- Karel Černý** (* 6.7. 1909, Zbyslav u Čáslavi): *Příspěvek k teorii simultánních diofantických aproximací* (V. Jarník, V. Kořínek; 1949/50, 1480)
- Otto Vejvoda (* 4.6. 1922, Záboří): *Několik aplikací teorie soustavy Pfaffových rovnic v involuci* (E. Čech, V. Jarník; 1949/50, 1509)
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¹⁶ Supervised by Jarník in 1968; B. Diviš left Czechoslovakia soon after August 21, 1968 when Warsaw Pact troops invaded Czechoslovakia. The dissertation was defended in Heidelberg, Germany.