Vývoj teorie pravděpodobnosti v českých zemích do roku 1938

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DEVELOPMENT OF THE THEORY OF PROBABILITY IN THE CZECH LANDS TILL 1938

(Short overview[351])

1. Introduction

This overview deals with the history of the probability theory in the Czech lands, but we hold it to be useful to give at first a short overview of the history of the probability theory in Europe and in the world[352]. In our opinion, this history can be divided into three time periods.

I) The first period corresponds roughly to the second half of the 17th century. As for the start point, the correspondence between two French mathematicians Blaise Pascal (1623–1662) and Pierre de Fermat (1601–1665) in summer and autumn in 1654, is generally considered as the beginnings of the theory of probability[353]. As for the terminology, in our opinion in this period it is more suitable to speak about the probability calculus because at that time no serious mathematical theory had been built; we could meet only solving problems motivated by games of chance (gambling) which were socially acceptable at that time. The first published paper in this field was a short work by Christian Huygens (1629–1695) *" De ratiociniis in ludo aleae"*, which appeared in 1657[354]. At the same time the probabilistic approach to the problems in demography and insurance mathematics began (let us mention here the works of John Graunt (1620–1674), William Petty (1623–1687), Edmund Halley (1656–1742) and Johann de Witte (1625–1672)). This period was concluded by Jacob Bernoulli's "*Ars conjectandi*" which was published in Basel in 1713 although it was written in the 80s of the 17th century. In the last part of this book the first general (theoretical) result in this area was proved, namely the simplest form of the (weak) law of great numbers which is called now the Bernoulli theorem. Since that moment (in our opinion) we have been able to speak about the theory of probability.

[351] This overview was written in Czech by Karel Mačák and translated into English by Marie Steblová; its content is roughly the same as the content of the chapter 1 of this book. Its author thanks Mrs. M. Steblová for her careful translation; all mistakes, which are yet in the overview, have to be attributed to the author.
[352] For a detailed treatment of the history of probability see e.g. [Ha1, Ha2, Maj, Tod, Sch].
[353] There is also a "prehistory" of the probability theory, but we will not deal with it here.
[354] The Latin text of this tract with a parallel Czech translation can be found in [Ma2].

II) The second period covers roughly the 18th century. We can consider here as the main tendency the penetrating of differential and integral calculus into the theory of probability together with the study of continuous random quantities as well as the second tendency which is the application of the theory of probability by treating astronomical, geodetic, demographic and other observations. Let us give here Abraham de Moivre (1667–1754) as the representative of these tendencies; in 1733 he proved as the first mathe-matician the possibility of approximate substitution of the binomial distri-bution by the normal distribution (this result is termed now as the Moivre-Laplace theorem) and wrote an important work about the life insurance, too[355].

Both the mentioned tendencies do not cover the whole development of the theory of probability in the 18th century (let us mention e.g. the names Thomas Bayes (1701 or 1702–1761), Daniel Bernoulli (1700–1782), George Louis Leclerc Buffon (1707–1788), Karl Friedrich Gauss (1777–1855)). However, the most important person in this period was Pierre Simon Laplace (1749–1827), whose book „*Théorie analytique des probabilités"* (first edition appeared in Paris in 1812) rounded off this stage of the development of the theory of probability. Laplace dealt with the theory of probability for many years and he summed all the knowledge in this branch reached by him and his predecessors.

III) As for the third period, it seems that after Laplace's *"Théorie analytique de probabilités*" having been published, the long period of a relative calmness in the development of the theory of probability came. In this long period former results were worked out, elaborated and further developed but new principal results or areas of research did not occurred until the end of the 19 century. In our opinion, the most important new areas were the following:

a) theory of Markov chains – the founder of this theory was a Petersburg mathematician Andrej Andrejevič Markov (1856–1922); in his works the dependent random quantities were for the first time put to the systematic research.

b) mathematical statistics – let us introduce Charles Pearson (1857–1936) as one of the first representatives of this discipline, who, of course, had a great number of predecessors.

[355] In 1906 this work was translated into German by E. Czuber.

c) statistical physics – we can introduce Ludwig Boltzman (1844–1906) as one of the first representatives who, of course, followed James Clerk Maxwell's (1831–1879) work.

Thus the theory of probability came to the upper limit of its possibilities in the sense that it had turned out as utterly necessary to give exact mathematical bases of this discipline. This opinion was expressed in 1900 in the well-known Hilbert 6th problem asking axiomatisation of the theory of probability (which Hilbert put into disciplines of physics). In 1933 this problem was successfully solved by Soviet mathematician Andrej Nikolajevič Kolmogorov (1903–1987). His axiomatisation of the theory of probability can be considered as a landmark in the development of the theory of probability; in our opinion, since that moment we can speak about the contemporary probability theory.

2. The beginnings of the probability theory in the Czech lands

The end of the 18th century in Europe can be marked as a "heroic" period of the theory of probability, but as for the Czech lands, the slightest bit of an attempt to study probability problems at that time had not been known. To a certain extent it is interesting because some combinatorial problems were studied and solved in Jesuit College Klementinum (see e.g. [Ma3]) and there was just one small step from combinatorics to probability problems. Nevertheless it seems that no one had done this small step; perhaps it could be explained by the fact that probabilistic problems solved in that time took their motivation from gambling games predominantly and all this area could appear as inferior and condemnable for Jesuit ideas. The then atmosphere at Prague University did not differ anyhow from the atmosphere at other European universities.

We can ask a question how quickly did the publications about probability problems penetrate into the libraries in the Czech lands. At this point we can give two facts.

As for the mentioned Huygens' book, Jacob Bernoulli was not the first person who took over this book into his work. Even Juan Caramuel from Lobkowitz (1606–1682) acted in a similar way when he took over Huygens book into his book "*Mathesis biceps, vetus et nova*", which was published in

1670 in Campania[356], where Caramuel was a bishop at that time. There is one copy of this book in the National Library of the Czech Republic in Prague with the shelf mark 49 A 42 and according to a manuscript ex libris it comes from a count Ignac Karel Sternberk's library. There is not stated a year when the book appeared in Sternberk's library but as the count died in 1700 we can assume that the book had been in Bohemia before this date.

As for Bernoulli "*Ars conjectandi*" there is one copy of this book with the shelf mark 14 F 43 in the National Library of the Czech Republic and according to a manuscript ex libris it appeared in the Klementinum library in 1721.

According to the contemporary state of research it seems that the first attempt to deal with a problem from the probability calculus was made in our country by Stanislav Vydra (1741–1804) who published it in an appendix to the booklet "*Tentamen ex prelectionibus mathematicis ...*" [357] in Prague in 1779. The Latin text of the problem, which was solved by Vydra, can be translated this way:

"When Titius took Caja in marriage for spouse, their fathers were both alive and well-off. Titius wrote out a prenuptial agreement in this way. If children are born in the marriage but wife dies earlier than husband then the husband obtains from the common property brought to the marriage by both of them or property inherited:

** two thirds if both the fathers of the couple are alive or dead;*
**one half if Caja's father died but the second one was alive;*
**three quarters if Titius' father died but Caja's father was alive;*

the rest of the property will be given to the children.

As Caja's parents did not consider the last article of the treaty equitable, the intended son-in-law suggested that individual cases should not be distinguished and everything should be summed into one article of this treaty

[356] It is weird that Caramuel takes over the whole text of Huygens treatise but he states the Danish astronomer Christian Severin Longomontanus (1526–1647) as the author of this treatise. This Caramuel's error has not been explained but from our point of view it is not important.

[357] *Tentamen* (plural *Tentamina*) was a small booklet in which the topics and questions for public examinations in mathematics appeared. Vydra worked in the years 1772–1804 as a professor of mathematics at the Prague university and published (he himself or with other professors) more than sixty such *Tentamina*; he attached to some of them a short paper with some solved mathematical problems and one of the five problems added to the *Tentamen* published in 1779 belongs to the probability calculus. It seems that as the first M. Fuka [Fu] brought it in attention. More about Stanislav Vydra can be found in the book [SM].

where a widower will get two thirds regardless of the future of the parents. Caja's father agreed.

There is a question if the second version of the prenuptial agreement is more favourable for Caja's children than the first one originally proposed by Titius but refused by Caja's father".

As it is (probably) the first probability problem published and solved in the Czech lands we decided to present its full text. Vydra stated himself that this problem came from Jakob Bernoulli and was published in Basel in 1685. When solving it Vydra cited Jacob Bernoulli *"Ars conjectandi"*, so it is evident that he knew this book but he took over from it only several elementary terms which had come from Huygens' work (published in 1657) which is wholly reprinted in *"Ars conjectandi"*.

Vydra's solution which was completely taken over from Bernoulli is not too clear but in substance we can say that Vydra solved this problem with the help of the classical definition of probability and therefore he considered all possible sequences of Caja's death and both the fathers' deaths as equally possible. Jacob Bernoulli realized that this assumption was not too realistic (in other words there was a little probability that young Caja would die earlier than "old" fathers). That is why Bernoulli came back to this problem in 1686 and he solved it with regard to the then known table of mortality, but Vydra did not reach the level of these considerations; the level of his work belongs to the beginning of the 2nd half of the 17th century.

In case the Vydra's solution really represents the beginning of probability calculus in the Czech lands[358] (and all known facts indicates this) then we can say that the theory of probability began later by 100 years in comparison with western Europe. Moreover it is probable that this Vydra's little treatise fell into oblivion and it did not influence anybody and anything.

3. Bernard Bolzano and the theory of probability

There are many works about Bernard Bolzano (1781–1848)[359]. As for the theory of probability in Bolzano's work the author of this book already dealt with this question in his work [Ma1], and from the point of view of the co-

[358] In this connection it is interesting, that roughly in the same time the first probabilistic considerations were published also in another part of the Austrian monarchy, namely in Hungary; their author was Stephan Hatvani (for detailed information see e.g. [Mo]).
[359] A short overview of his life and work can be found e.g. in [Fol].

herence with formal logic this problem was studied in [Do]. We consider as sufficient reminding of just basic facts here.

Bolzano dealt with the theory of probability on the one hand in his religion textbook *"Lehrbuch der Religionswissenschaft, ein Abdruck der Vorlesungshefte eines ehemaligen Religionslehrers an einer katholischen Universität, von einigen seiner Schüler gesammelt und herausgeben",* which was published in Sulzbach not before 1834, but it contained the texts of Bolzano`s lectures from the period before his deposition (i.e. before 1820). On the other hand the theory of probability is dealt with in his well known philosophical book *"Wissenschaftslehre. Versuch einer ausführlichen und grosstentheils neuen Darstellung der Logik mit steter Rücksicht auf deren bisherige Bearbeiter"* (Sulzbach 1837). It is obvious from this that the theory of probability was not in the center of the individual mathematical research for Bolzano but it was just the instrument for solving some religious and philosophical problems. But we can presume that Bolzano knew (at least in basic features) the actual conditions of the theory of probability of the day in his time (i. e. before 1820) because he had in his library a textbook by S. F. Lacroix *"Lehrbuch der Wahrscheinlichkeitsrechnung"* (Erfurt 1818); it is the translation of the 1st French edition (Paris 1816). In his speculations Bolzano moved in the framework of the so-called classical definition of probability; he used the basic propositions about addition and multiplication of probability for independent random events (but Bolzano did not use this term) and the proposition about the probability of a complementary event. Moreover, two special formulas occurred in his work, which can be hold for special cases of the Bayes formula.

Bolzano's probability speculations might not have influenced the development of the theory of probability in our country. In our opinion we cannot speak about a systematic development of the theory of probability before it had been introduced into the curriculum of some of the schools at least from time to time, and we will deal with these problems now.

4. The theory of probability at universities and secondary schools in the 19th century

Generally, it can be said that in the second half of the 19th century in the Czech lands nobody did research in the theory of probability and no original

research papers were published[360]. Nevertheless, at that time the probability theory begins to appear in the teaching not only at universities, but at secondary schools, too.

The first university professor, who worked in the Czech lands and put the probability theory in his lectures, was probably Christian Doppler (1803–1853), who worked as a professor of mathematics at the Prague polytechnic in the years 1841–1847. He prepared his own texts for his lectures, but they were not preserved ([JL], p. 304). Nevertheless, as for the probability theory, Doppler put it in his textbook *"Arithmetik und Algebra"* (1st edition Prague 1844, 2nd edition Vienna 1851), and so we can have a notion of the level on which Doppler gave his lectures on the probability theory.

As the first professor of the Prague university, who put the probability theory in his lectures, is usually given Wilhelm Matzka (1798–1891), who worked from 1850 as a professor of mathematics at the Prague university ([DE], p. 136 and 140). However, we were not successful in finding the only Matzka's publication dealing with the theory of probability and therefore we are not able to say anything more about the Matzka's lectures in the probability theory.

As for the Czech textbooks for the secondary schools, the probability calculus appeared at first in the textbook *"Algebra pro střední školy"*[361] written by Josef Smolík and published in Prague in 1870. Nine concluding pages of the textbook are devoted to the probability calculus (p. 278–287) and the probability calculus is explained here further to combinatorics (in the same way as in contemporary secondary school textbooks). Reading Smolík's text is not easy because his probability terminology is completely different from nowadays terminology. The explanation does not go above the level needed for solution of simple problems of a combinatory character, but it contents the term *"mathematical expectation"* (p. 285) which is in the modern terminology encompassed as the term "mean value" in university textbooks.

The textbook *"Algebra pro vyšší třídy škol středních"*[362] (1st edition, Prague 1877, 2nd edition Prague 1879) written by F. J. Studnička has a slightly different character. The explanation of the probability calculus is included in

[360] The only exceptions are two books written by Emanuel Czuber (see the 6th part of this overview) in the time of his teaching at the universities in Prague and Brno and published in Leipzig.
[361] *"Algebra for secondary schools"*.
[362] "*Algebra for higher classes of secondary schools"*.

the last chapter of this textbook (p. 162–172)[363] in the same way, as in Smolík's textbook. It links to combinatorics and has almost the same volume as Smolík's book. The material of this chapter is divided into four parts. The first three of them are a standard introduction to the elementary probability calculus but the fourth of them entitled as *"How we can use theory of probability when calculating national economy problems"* (p. 168–172) contains simple problems about life insurance. Today these problems do not occur in secondary-school mathematics textbooks, but at that time they were obviously taken as a part of general secondary-school knowledge because the problems of this kind occurred in the then collections of school leaving exams exercises (see for example [Wal]).

In connection with this textbook the question arises whether in the second half of the 19th century some broader connections could be found between the teaching of the probability theory and the development of the insurance in the Czech lands. On the one hand, from the Studnička's textbook it can be seen, that there were tendencies to connect this two areas[364]. But on the other hand, the teaching of insurance at the technical university of Vienna was started in the school year 1894/95, at the Czech technical university in Prague in the school year 1904/1905 and at the German technical university in Brno only in the year 1908 [365]. It seems therefore, that in the second half of the 19th century no immediate connections between the teaching of the probability theory and the development of the insurance can be found.

As for the teaching of the probability theory in the second half of the 19th century, the most interesting person in this area was (in our opinion) Augustin Pánek. He was born on 3rd December 1843 in Prague and he died there on 10th December 1908. He studied at Prague technical university and then he worked as a secondary school teacher at different Prague schools for most of his life. In 1872 he became a "privatdozent" [366] for higher mathematics at the Prague Czech technical university, but only in 1896 he was named professor assistant and even not before 1904 was named ordinarius.

Pánek not only taught the theory of probability but he also published more than 12 articles in this area[367]. These articles appeared mostly in the "Časopis pro pěstování mathematiky a fysiky" and in our opinion they can be

[363] The pages are given by the second edition of the textbook.
[364] Studnička worked not only as a professor at the Prague university, but he was active in the insurance too (see e.g. [ML]).
[365] For the history of the teaching of the insurance mathematics see e.g. [Šiš], p. 198 ff.
[366] We did not find an equivalent English term.
[367] The list of all Pánek`s papers can be found in [Pe], p. 4–8.

characterized as pedagogical works, not original scientific works (but we cannot exclude the possibility that they contain some new partial knowledge). It seems that professor Pánek might have been the first Czech mathematician who published articles devoted to the theory of probability in a higher degree and who influenced positively through these articles the level of the knowledge of the probability theory in the Czech lands. Nevertheless we cannot say that Pánek dealt with scientific research in the theory of probability; in this direction the leading position belongs to Emanuel Czuber (see the chapter 5 of this book or the paragraph 6 of this overview) who acted at the Prague German technical university at roughly the same time as Pánek at the Prague Czech technical university.

5. Probability and philosophy

In this paragraph we will notice some works which might not have influenced the development of the theory of probability but (in our opinion) they should not be overlooked because they set the development of the theory of probability in our country to a wider context.

The first of them is Václav Šimerka's (1819–1887) work *"Síla přesvědčení. Pokus v duchovní mechanice"*[368], which was first published in 1881 in "Časopis pro pěstování mathematiky a fysiky". In the same year it was published in Prague at the expense of Association of Czech mathematicians as a separate publication in the volume of 39 pages and for the third time it was published by Imperial Academy of Sciences in Vienna in 1883 titled as *"Die Kraft der Uberzeugung. Ein mathematisch-philosophischer Versuch"*.

This Šimerka's work was analyzed in detail by J. Fiala who thinks ([Fia] p. 102) that in this work *"... Šimerka is becoming a forerunner of theories of subjective probability and the first mathematician in our country who deals with applications of mathematics in psychology"*. In our opinion Šimerka's work might be considered a predecessor of today's theory of fuzzy sets. However Šimerka presented his research not once in connection with the theory of probability (on p. 26 in a separate publication even Laplace is cited which is the evidence that Šimerka knew probability literature), and that is why we mention this work in our survey of the development of the theory of probability in our country. Since we have found the only response to the stated work and this response came from philosophical circles we have decided to include it into this paragraph.

[368] *"Power of tenets. An Experiment in Spiritual Mechanics"*

Fiala reveals this response in his work ([Fia], p. 98), where he quotes (according to Z. Nejedlý) a letter from T. G. Masaryk to Václav Šimerka from 2nd February 1884. In this letter Masaryk is interested in mentioned Šimerka's book. At that time T. G. Masaryk (1850–1937) was interested in the theory of probability from the point of view of philosophy whose evidence is his work *"Počet pravděpodobnosti a Humova skepse"*[369] (volume 45 pages and index), which was published in Prague in 1883[370] . This has clearly philosophical content but also Jakob Bernoulli's *"Ars conjectandi"* and Laplace's *" Essai philosophique sur les probabilités"* are quoted here, there is also an allusion to well-known Belgian statistician A. Quetelet (1796–1874) and in notes even Todhunter's book [Tod] about the history of probability calculus is mentioned. Consequently Masaryk was very well informed about the then mathematical literature in the field of theory of probability.

In the above mentioned letter Masaryk wrote to Šimerka ([Fia], p. 98): *" ... I want to write about your book to Atheneum or to German philosophical magazine"*. We do not know if Masaryk really wrote something about Šimerka's book, but we consider his attitude as the evidence that the above mentioned Šimerka's book is more of a philosophical character than mathematical.

At the end of this paragraph two articles written by Antonín Seydler in 1886 about the probabilistic aspects of the so-called controversy on manuscripts ought to be mentioned; it can be characterized as an attempt to use the probability theory when solving a linguistic problem[371].

6. Emanuel Czuber

Emanuel Czuber was born on the 19th January 1851 in Prague where he also studied at German Technical University. After his studies he acted in Prague first as a teacher at a higher "realschule"[372] later as an assistant lecturer and a "privatdozent"[373] . In 1886 he became a mathematics professor at German Technical University in Brno (for one year he was even a rector

[369] *"Probability Calculus and Hume Scepticism"*
[370] About thirty years later the Czech philosopher Karel Vorovka came back to the Masaryk's philosophical and probabilistic considerations.
[371] For details see [Zi].
[372] "Realschule" was a type of the secondary schools.
[373] We did not find an equivalent English term.

here). In 1891 he went to Vienna where he became a mathematics professor at the local university. He died on 22nd August 1925 in Gnigl near Salzburg.

Czuber was the first mathematician acting in the Czech lands and publishing in the field of the theory of probability original scientific works which were appreciated in European mathematical circles[374]. He wrote until 1891 (i.e. during his acting at the universities in the Czech lands) two books about the probability theory and its applications[375]:

I) *Geometrische Wahrscheinlichkeiten und Mittelwerte;* this book appeared in Leipzig in 1884 and has 244 pages. French translation of this book was published in Paris in 1902.

II) *Theorie der Beobachtungsfehler;* this book appeared in Leipzig in 1891 and has 418 pages.

Czuber became a renowned mathematician within Europe only during his stay in Vienna, but his results from the theory of probability were known and appreciated in Europe as early as in the time while he was acting in our country; this fact is proved mainly by the publication of the French translation of his book about geometrical probabilities, and so we can consider him as the first mathematician working in the Czech lands and writing original scientific works in the branch of the probability theory.

7. Textbooks in the period between the 1st and 2nd World War.

From the point of view of the development of the probability theory in the Czech lands it was important that after the arising of the independent Czechoslovak Republic new Czech textbooks for the probability theory and mathematical statistics were published. The names of the publishers show that this branches of mathematics became to be interesting not only for mathematicians but for the scientists in other branches too.

At first two books written by professor of the Czech Prague university Václav Láska ought to be mentioned. They appeared in 1921; one of them, *"Počet pravděpodobnosti"* was published by Česká matice technická [376], the

[374] Czuber dealt not only with the probability theory, but with other parts of mathematics, too.
[375] He published in that time also some probabilistic articles, but they were not so important as the books..
[376] *„Probability calculus"* published by the Czech technical foundation.

other one, *"Vybrané kapitoly z mathematické statistiky"* was published by Státní úřad statistický[377].

In 1928 a translation of the well-known English textbook *"Introduction to the theory of statistics"* written by G. U. Yule appeared; it was published by Státní úřad statistický. under the title "Úvod do teorie statistiky". The first edition of this textbook appeared in1910, the Czech translation was prepared according to the 7th edition which appeared in 1924. The translators were Vladimír Novák, professor of the Czech Technical university in Brno, and Josef Mráz, ministerial councilman of the State statistical office and associate professor of the Czech Technical university in Prague, in collaboration with professor of the Czech Technical university in Prague František Nachtikal.

It is interesting, that only two years after this translation of the well-known English textbook a new Czech textbook was published. It was written by a Russian emigré (Pole by descent) Stanislav Kohn and it was published in 1929 by the Czech statistical office again; its title was *"Základy teorie statistické metody"* [378].

In 1934 the book *"Úvod do počtu pravděpodobnosti a teorie statistiky"* appeared. It was written by Josef Kaucký, associated professor of the Masaryk university in Brno and was published by the Jednota československých matematiků a fysiků with the sponsorship of the Elektrotechnický svaz československý[379] .

8. Bohuslav Hostinský

Bohuslav Hostinský was born on 5th December 1884 in Prague. He was a son of a prominent musical scientist, aesthetician and professor of Prague University Otakar Hostinský. After finishing his studies at Charles University he acted as a secondary school teacher for a short time. After one-year studies in Paris he became first a "privatdozent"[380] at Charles University (1912–1920) and in 1920 he was appointed professor of theoretical physics

[377] *„Selected chapters form the mathematical statistics"* published by the State statistical office.
[378] *„Introduction to the theory of the statistical method"*.
[379] Association of the Czechoslovak mathematicians and physicists with the sponsorship of the Czechoslovak electrical union.
[380] We did not find an equivalent English term.

at the faculty of natural science at Masaryk University in Brno. He died here on 12 April 1951.

The bibliography of his original works about mathematics and physics (see [Br1]) contains 147 titles; about half of them were written in French. His works were known among mathematicians throughout the whole Europe. He had a lot of correspondence with many of them. As for the theory of probability one third of his works deals with it. With regard to the fact that Hostinský was a professor of theoretical physics[381] this is a respectable number. According to [Br2] probability works by B. Hostinský can be thematically divided into three fields: works concerning geometrical probabilities, works concerning the theory of Markov processes and works referring to the use of integral transformations when solving differential equations which occur in the theory of diffusion and Brown movement. Their detailed analysis and classifying them into a wider context in the history of the theory of probability in Europe and in the world would need a special monograph[382]. We do not exaggerate if we declare B. Hostinský an exceptional personality in the history of the theory of probability in the Czech lands; without any exaggeration we can state that he was our first and the only mathematician for a long time who became world known in the theory of probability and related disciplines.

9. The first response to Kolmogorov axiomatics

As it has been said, the described period in the history of the theory of probability was topped by publishing of Kolmogorov axiomatics in 1933, and therefore it is interesting to see how this crucial Kolmogorov work was accepted in our country. In this connection M. Hykšová [Hyk] brought to attention the lecture notes *"Úvod do teorie pravděpodobosti"* [383] published in Prague in 1938 by professor of Czech Technical University Karel Rychlík (1885–1968). These lecture notes contain interpretation of Kolmogorov axiomatics and although this interpretation is not quite consistent, it represents the first reaction in our country to the mentioned Kolmogorov work.

[381] He was known as a persistent opponent of the Einstein's theory of relativity.
[382] Some interesting facts can be found in [Bru, HMŠ].
[383] *"Introduction to the Theory of Probability"*

10. Two concluding notes

10.1. A view from outside

In 1997 a book [JK] containing biographies of the 114 most important (according to the authors of this book) world's statisticians from the 17th century until now was published. It is understandable that each such a survey is to a certain extent always subjective, but as the book was published in a prestigious publishing house, which has been publishing statistical literature systematically, we can consider the choice of biographies in this book as a comparatively good picture of the history of probability and mathematical statistics up to a worldwide standard. From the point of view of our contribution it is interesting that in this book the only Czech mathematician (of all the mathematicians acting in the Czech lands) is stated. It is Jaroslav Hájek (1926–1974) a professor at the faculty of mathematics and physics of Charles University, who we did not mention in this overview, since his acting does not lie within the limited time framework.

A similar book containing biographies of the 103 most important (according to the authors of this book) world's statisticians who were born before the 20th century was published [HS]. No name of any Czech mathematician appeared in this book; the only name in this book which has something to do with the Czech lands is J. G. Mendel, whose experiments in the branch of genetics are (from the today's point of view) of statistical character.

10.2. Final remark

At the end of the part devoted to Stanislav Vydra we stated that the theory of probability in the Czech lands was backward in its beginnings by more than a hundred years (i.e. at the end of 18th century) in comparison with the development in Western Europe. In our opinion we can say that in the 30s of the 20th century this delay was completely compensated. Professor Hostinský was internationally respected as a research worker and lecture notes by professor Rychlík demonstrated that even in teaching process the newest results in this field were followed.