

## PREFACE

This publication is devoted to unique archival materials – Jarník’s mathematical notebooks, which he wrote during his studies at the University in Göttingen in the academic year 1927/1928 and which contain a record of the lecture course he attended given by Bartel Leendert van der Waerden titled *Allgemeine Idealtheorie* [General Theory of Ideals].

The book *Jarník’s notes of the lecture course Punktmengen und reelle Funktionen* by P.S. Aleksandrov (*Göttingen 1928*) published in 2010<sup>1</sup> and the interests of German and Russian mathematicians and historians of mathematics were the great motivation and inspiration for continuation in our mathematical and archival studies to write this second book.

The first chapter of the present text gives a short description of van der Waerden’s life and scientific results in mathematics and history of mathematics as well as pedagogical activities in Amsterdam, Göttingen, Leipzig and Zurich.

The second chapter briefly deals with the founding of the University in Göttingen and the development of mathematical studies and research there. The productive and inspiring atmosphere in the Göttingen mathematical center in the 1920s and 1930s is brought to life with the help of long passages chosen from the recollections of some outstanding mathematicians who lectured or studied there.

The third chapter is devoted to Jarník’s life and work in Prague and mainly to his studies at the University in Göttingen in the academic years 1923/1924, 1924/1925 and 1927/1928.<sup>2</sup>

The fourth chapter provides a general account of Jarník’s fourteen notebooks and a short description of his sixth and seventh notebooks which contain van der Waerden’s lectures titled *Allgemeine Idealtheorie*.

The fifth chapter analyses the most famous textbooks on algebra which were written in German, French, English and Italian from the end of the 19th century until the beginning of the 1930s, i. e. before the birth of van der Waerden’s *Modern Algebra*. The contents, structure, authors of interpretations as well as their influences on the development of algebra are recalled.

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<sup>1</sup> M. Bečvářová, I. Netuka: *Jarník’s notes of the lecture course Punktmengen und reelle Funktionen* by P.S. Aleksandrov (*Göttingen 1928*), Edition History of Mathematics, volume 43, Matfyzpress, Prague, 2010, 143 pages ([BeNe]).

<sup>2</sup> The second and third chapters are modifications of the chapters in [BeNe] and they are taken with the permission of the coauthor.

The heart of this publication is the sixth chapter and the seventh chapter. Firstly, van der Waerden's lectures are transcribed from Jarník's manuscript and then detailed mathematical, historical and bibliographic comments are connected.

The final appendix summarizes the most important information about the origins of van der Waerden's textbook *Moderne Algebra* and the literature recommended by the author to study. It shows how the content of van der Waerden's textbook has changed over nearly four decades. At the end of the appendix, an overview of all editions of this textbook, available in European and American libraries, is included, with links to reviews published in reference and mathematical journals.

These three chapters allow the reader to compare the content, organization and interpretation of algebra in van der Waerden's lecture delivered in 1927/1928 with the content, organization and interpretation in the first edition of his two-part textbook *Moderne Algebra* (1930/1931), respectively in the second edition (1937/1940) to the seventh/fifth edition (1966/1967).

Illustrations and copies from Jarník's notebook and some archival materials and documents can be found at the end of the book, followed by an index of names.

Our text is based on archival documents deposited in the following institutions: the Archive of the Academy of Sciences of the Czech Republic, the Archive of Charles University in Prague, the Archive of the University in Göttingen. We also used sources from the following libraries: the Library of the Faculty of Mathematics and Physics of Charles University in Prague, the Library of the Academy of Sciences of the Czech Republic, the Library of the Mathematical Institut of the Academy of Sciences of the Czech Republic, the National Library of the Czech Republic, the Library of the Institut für Geschichte der Naturwissenschaften, the Ludwig-Maximilian Universität in Munich. We are grateful to the colleagues from these institutions for their support and assistance in providing archival materials and literature.

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