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PREFACE

The volume contains seventeen sketches in the history of modern mathematical logic worked out by the members of the Department of Logic of the Jagiellonian University in Cracow. They were presented in 1966–1971 at the consecutive national conferences of the Thematic Group for the History of Logic organized in Cracow by the Department of Logic of the Polish Academy of Sciences.

All these sketches are devoted to various aspects of the completeness of logical calculi and other formalized deductive theories described in literature on mathematical logic. According to this all the said volume is divided into three parts.

The first part is concerned with completeness of the propositional calculi. It includes a description of E. Post's doctoral dissertation including, a.i., originating from E. Post, of the completeness theorem for the classical propositional calculus (the first sketch), a description of the most important methods of the proof of this theorem (the second sketch) and a survey of the methods of the proof of completeness for the classical equivalential propositional calculus (the third and fourth sketches). The next two articles are devoted to the intuitionistic propositional calculus and present the results of A. Kolmogorov and V. Glivenko concerned with formalization of the logic included in Brouwer's program (the fifth sketch) and a detailed proof of the well-known Jaśkowski's matrix criterion for the intuitionistic propositional calculus (the sixth sketch). Here belong also two papers concerning the propositional calculi intermediate between the classical propositional calculus and the intuitionistic propositional calculus which contain a method for axiomatization of the purely implicational Gödel's matrices (the seventh sketch) and a survey of the most important results in the investigations into the intermediate calculi (the eighth sketch). The last article of the first part informs us about the investigations into, so called, Ackermann's rigorous implication (the ninth sketch).

The second part of the volume is concerned with the completeness of the classical first order predicate calculus. It is composed of a detailed

description, originating from K. Gödel, of the completeness theorem of the classical first order predicate calculus (the tenth sketch) and a survey of the most important methods of proving this theorem (the eleventh sketch). Here also belongs an article discussing the genesis of the method of Lindenbaum algebra together with the application of this method to the proof of Gödel's completeness theorem (the twelfth sketch), a characterization of the old and new methods of algebraization of quantifiers (the thirteenth sketch) and a review of L. Rieger's achievements in the field of logic (the fourteenth sketch).

The third part of the volume is concerned with the history of Cantor's definition of the set (the fifteenth sketch) and with the set-theoretical reduction of the concept of relation (the sixteenth sketch). This part is closed by an article devoted to the survey of various meanings of the concept of completeness of the formalized deductive theories (the seventeenth sketch).

The said sketches are merely contributions to the discussion. They are an attempt to report in a detailed and synthetic way a broad list of scientific publications. Some of these publications are now difficult to understand, i. a., because of their obsolete symbolism or terminology. The other of the source publications are scattered in the scientific periodicals which are not easily available. In several sketches it was necessary to correct some accepted but false opinions. It has also become necessary to evaluate some facts once again. We think that this necessity has been inspired by the contemporary stage of development of mathematical logic. Taking into consideration the above moments we hope that our sketches will, perhaps, become useful in the preparation of full monographs of particular chapters in the history of mathematical logic.

I wish to give my thanks to Professor Ryszard Wójcicki, the head of the Department of Logic of the Polish Academy of Sciences in Warsaw for the suggestion to publish this volume. I should also like to express my gratitude to Professor Tadeusz Kubiński, Dr Janusz Onyszkiewicz and Dr Kazimierz Wiśniewski for their valuable help in the preparation of this volume. Thanks are also due to Mr Michał Przybyło who read the manuscript making many linguistic remarks.

Stanisław J. Surma

Cracow, August 15th 1971