

Development of Mathematics 1900–1950, edited by Jean-Paul Pier, Basel-Boston-Berlin, Birkhäuser Verlag, 1994, xviii + 729 pp.

Reviewed by

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In June 1992 at Château Bourglinster (Luxembourg) a Symposium devoted to the development of mathematics in the period 1900–1950 was held. 108 persons from thirteen countries (Austria, Belgium, Canada, Denmark, France, Germany, Italy, Luxembourg, Spain, Sweden, Switzerland, the Netherlands and USA) took part in it, eleven talks were given. The book under review is the volume of the proceedings of this symposium.

The book begins with "Guidelines 1900–1950" (written by Pierre Dugac, Beno Eckmann, Jean Mawhin and Jean-Paul Pier) presenting the main events in the mathematical sciences in the years of the indicated period. Texts of the lectures follow. Of the eleven talks presented at the Symposium, nine are included in this volume. The book also contains three additional papers not presented at the meeting.

The extensive paper "Une brève histoire de la topologie" by Jean Dieudonné (119 pages) is devoted to the presentation of the development of topology. The author starts from the contribution of Riemann, then the development of the idea of metric and topological spaces is considered. The main part of the paper is devoted to the development of algebraic topology. The paper is augmented by a subject index.

Next are two rather short papers: "The Development of Rigor in Mathematical Probability, (1900–1950)" by Joseph L. Doob (13 pages) and "Vito Volterra and the Birth of Functional Analysis" by Gaetano Fichera (14 pages). The paper by Doob is a brief informal outline of the history of the introduction of rigour into mathematical probability in the first half of this century. Just at that period mathematical probability became a normal part of mathematics. The paper by Fichera discusses the birth of functional analysis. He admits that it is difficult, sometimes even impossible, to pinpoint the birth of a new science or a new branch of a science, as in the case of functional analysis. One of its important aspects, the calculus of variations, had already appeared in the work of I. Newton in the second half of the seventeenth century and successively in the works of Jacques and Jean Bernoulli, L. Euler and G. L. Lagrange. But, according to Fichera, Vito Volterra was the first mathematician who fully understood the main ideas of functional analysis and therefore he must be considered its initiator.