Preface

I am often asked about the reason why mathematical research exploded in Hungary at the beginning of the twentieth century. My usual answer is, only half in jest: the two reasons are the personality of Lipót (Leopold) Fejér and the High School Mathematics Journal (Középiskolai Matematikai Lapok, abbreviated KöMaL).

This book will not answer the question because it would take a team of historians and sociologists to establish the causes of the scientific revolution that took place in Hungary during the first half of the twentieth century. Neither is this book a history of Hungarian mathematics in the twentieth century; that would be a work of several volumes written by professional historians of mathematics. Our goal is to present to the readers a sampling of beautiful mathematics created by Hungarians.

Hungary is a small country which became even smaller after the first World War. It could not support all the mathematical talent which suddenly appeared, which therefore had to find employment in other countries. The question therefore arises: whom do we consider to be a Hungarian mathematician? In this book the term "Hungarian mathematician" is applied to those who received their first impulse and started their research career in Hungary. This means most often that they obtained their Ph.D. degree from a Hungarian university, but this condition is not necessary: Alfréd Haar, who beyond the slightest doubt was a Hungarian mathematician, was a doctoral student of David Hilbert in Göttingen. In this book we use the Hungarian form of the first names of Hungarian mathematicians. We do this not only to emphasize their Hungarianness but also because most of them translated their names when publishing in a foreign language. For instance Frigyes Riesz published under the names Friedrich, Frédéric, Frederic, Federigo.

To keep the size of the work within reasonable bounds it was decided to deal with those researchers "whose activity can be considered essentially closed". This principle is not followed very rigorously: several older mathematicians had much younger collaborators (think Pál Erdős!) who can not go unmentioned. Also results, found by someone who satisfies the criterion, have often been sharpened and generalized by members of the younger generation; it would give a distorted picture if they were not mentioned. However, in the Biographies at the end of the volume we adhered to our principle – with a grain of salt.

From the Biographies the reader will detect a tragic side of twentieth century Hungarian mathematical life. Not only did two World Wars and the events related to them claim many victims, but several of our most outstanding mathematicians died from "natural causes" before their fiftieth birthday in possession of their full creative power.

The Bibliography lists only books. They are collected works of Hungarian mathematicians (and of some often-quoted non-Hungarians), a sampling of monographs authored or co-authored by Hungarians, and books referred to in the various chapters. References to the Bibliography are by numbers in square brackets: [ ]. Most authors of the chapters refer to journal articles within their text. However, some have their own reference list, to which they refer by some other means than numbers between square brackets (e.g., by numbers between { }, or letters, etc.).

I know from personal experience how risky it is to announce that a second volume will follow. Nevertheless, let me say that the János Bolyai Mathematical Society plans to publish another book in which the fields not covered in the present one but in which Hungarian mathematician had a very active role: logic, set theory, combinatorics, graph theory, number theory, algebra, will be discussed.

We have tried to use a uniform terminology in the various articles. Thus a map $f : A \to B$ such that $f(x) = f(y)$ implies $x = y$ is said to be *injective.* If for all $y \in B$ there is an $x \in A$ such that $f(x) = y$, then f is *surjective.* A real number α such that $\alpha \geq 0$ is said to be *positive*; if $\alpha > 0$, then it is *strictly positive.* If for $f : \mathbb{R} \to \mathbb{R}$ the relation $x < y$ implies $f(x) \leq f(y)$, then f is *increasing;* if $x < y$ implies $f(x) < f(y)$, then f is *strictly increasing.* Similarly for decreasing and strictly decreasing.

Finally, let me say that it gave me great pleasure to be connected during four years to the mathematics described in this volume, and to collaborate with the authors of the chapters. I want to express my sincere thanks to all authors, in particular to those who are not even Hungarian but are friends of Hungary and of Hungarian mathematics, and to all those who helped me during the years in my task as an editor. Last, but not least, I want to thank László Márki for his help in editing this volume and Gábor Sági for technical assistance.

College Park, Maryland — János Horváth

July, 2005