

Preface

Eric Temple Bell (1883–1960) remarked, “It would be an injustice to pioneers in mathematics to stress modern mathematical ideas with little reference to those who initiated the first and possibly the most difficult steps. Nearly everything useful that was discovered in mathematics before the seventeenth century has either been so greatly simplified that it is now part of every regular school course, or it has long since been absorbed as a detail in some work of greater generality.” Devotees of mathematics scrutinize, memorize, and derive formulas and theorems every day of their lives, but not many of them realize that the current level of mathematical knowledge has resulted from the strenuous labors of countless generations. One cannot underestimate the influence of every culture, personality, philosophy, region, religion, society, and social status on mathematical development throughout the centuries. Hermann Hankel (1839–1873) observed, “In most sciences one generation tears down what another has built, and what one has established, another undoes. In mathematics alone each generation adds a new story to the old structure.” Analogously, anthropologist Ralph Linton (1893–1953) stated hypothetically that “...if Einstein had been born into a primitive tribe which was unable to count beyond three, life-long application to mathematics probably would not have carried him beyond the development of a decimal system based on fingers and toes.” Similar views were expressed later by Isaac Asimov (1920–1992): “Mathematics is a unique aspect of human thought, and its history differs in essence from all other histories. Only in mathematics there is no significant correction—only extensions. Each great mathematician adds to what came previously, but nothing needs to be uprooted.”

We aim to bring the details of this struggle to light. This collection records the essential discoveries of mathematics in chronological order, following the birth of ideas on the basis of prior ideas *ad infinitum*. We examine contemporary events occurring side by side in different countries or cultures, reflecting some of the noblest thoughts of generations. We document the winding path of mathematical scholarship throughout history, and most importantly, the thought process of all individuals that resulted in the mastery of their subject. We have derived information from records from several locations, some of which have been unearthed only in

recent years, throwing light on the very humanity of mathematicians who have very often been reduced to a theorem in a school textbook. Our book implicitly addresses the nature and character of all mathematicians as we try to understand their visible actions. We hope that this will enable the readers to understand their mode of thinking and perhaps even to emulate their virtues in life. In cases of controversy we have taken the most appealing and logical approach. Wherever possible, we have excluded sophisticated mathematical terms so that our book's content may be easily accessible to nonmathematicians. It must be noted that throughout this collection, amusing anecdotes and after-dinner jokes have been taken from the published literature, but it is difficult to vouch for the authenticity of most of them. Still, they are interesting because they reveal the human nature of mathematicians, who are very often believed to be eccentric individuals.

Certainly a book of this type cannot be written without deriving many valuable ideas from several sources. We express our indebtedness to all authors, too numerous to acknowledge individually, from whose specialized knowledge we have been benefitted. We have also immensely benefitted from several Web sites, especially en.wikipedia.org and www-history.mcs.st-andrews.ac.uk. We record our appreciation to our friends and colleagues, especially Bashir Ahmad (Saudi Arabia), Józef Banaś (Poland), Jaromir Bastinec (Czech Republic), Leonid Berezansky (Israel), Gabriele Bonanno (Italy), Alberto Cabada (Spain), Wing-Sum Cheung (Hong Kong), Manuel De la Sen (Spain), Josef Diblík (Czech Republic), Shusen Ding (USA), Alexander Domoshnitsky (Israel), Paul Eloë (USA), Vijay Gupta (India), Johnny Henderson (USA), Nan-jing Huang (China), Gennaro Infante (Italy), Billur Kaymakçalan (Turkey), George L. Karakostas (Greece), Ivan Kiguradze (Georgia Republic), Peter Kloeden (Germany), Yongwimon Lenbury (Thailand), Dumitru Motreanu (France), Juan J. Nieto (Spain), Donal O'Regan (Ireland), Victoria Otero-Espinar (Spain), Adrian Petrusel (Romania), Sandra Pinelas (Portugal), Irena Rachunkova (Czech Republic), Maria A. Ragusa (Italy), Simeon Reich (Israel), Cheon S. Ryoo (Korea), Masilamani Sambandham (USA), Alexander L. Skubachevskii (Russia), Svatoslav Stanek (Czech Republic), Ioannis P. Stavroulakis (Greece), Tomonari Suzuki (Japan), E. Thandapani (India), George Yin (USA), Patricia J.Y. Wong (Singapore), and Agacik Zafer (Turkey), for their encouragement, support, and constructive comments. Our sincere thanks to Lane Christiansen who read the entire manuscript several times and suggested improvements on almost every page. Special thanks to our wives Sadhna Agarwal and Ella Sen, whose continued encouragement and sacrifice deserve special mention. Last but not the least thanks to Mr. Marc Strauss (Springer, New York) for his interest in this project from the beginning till its publication.

Kingsville, TX, USA
Visakhapatnam, AP, India

Ravi P. Agarwal
Syamal K. Sen

Creators of Mathematical and Computational Sciences

Agarwal, R.P.; Sen, S.

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