Edited by Helge Holden and Ragni Piene.
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Niels Henrik Abel, the great Norwegian mathematician, was born in 1802 and lived only for 27 years. In 2002 the Norwegian Parliament established the Abel fund of about 2000 million NOK. The main purpose of the fund is to finance an annual prize of 6 million NOK (a little less than one million USD) to one or more mathematicians for an outstanding scientific work. The first Abel Prize was awarded in 2003.

The book presents the Abel Prize and the laureates of this prize in the first five years. The book is intended as the first volume of a series, each volume covering five years.

Except for some other short chapters, the book may be naturally divided into five parts, each one devoted to the laureate in a particular year. In each part, an autobiographical article written by the recipient of the prize himself is included, as well as text that describes precisely the laureate’s mathematical work, a list of publications (recent publications, published after receiving the prize, are also included) and a curriculum vitae for the laureate (presented as a list of degrees, positions, awards, honorary degrees, etc.).

In 2003 the Abel Prize was awarded to Jean-Pierre Serre (Collège de France, Paris) “for playing a key role in shaping the modern form of many parts of mathematics, including topology, algebraic geometry and number theory”. The overview of Serre’s work was written by Pilar Bayer (Barcelona). The article mainly presents Serre’s achievements in different areas of mathematics, but also briefly discusses their innovative character. In Serre’s case, instead of an autobiographical article, an interview with Serre by Marc Kirsch (Paris) “My first fifty years at the Collège de France”, is included.

The prize in 2004 was given to Sir Michael Atiyah (University of Edinburgh) and Isadore Manuel Singer (Massachusetts Institute of Technology) “for their discovery and proof of the index theorem, bringing together topology, geometry and analysis, and their outstanding role in building new bridges between mathematics and theoretical physics”. These results, together with other mathematical achievements connected to the topic, are presented in the article “The Atiyah-Singer index theorem” by Nigel Hitchin (Oxford). The article describes the theorem, shows where the theorem came from and presents its different manifestations and several applications.

In 2005 the laureate was Peter D. Lax (Courant Institute of Mathematical Sciences and New York University) “for his groundbreaking contributions to the theory and application of partial differential equations and to the computation of their solutions”. A survey of Lax’s contribution to mathematics was written by an editor of the book, Helge Holden (Oslo), together with Peter Sarnak (Princeton). Lax’s results, which have been very influential in many areas of mathematics, are organized in this article similarly as in Lax’s Selected papers [Vol. I, Springer, New York, 2005;
Lennart Carleson (Royal Institute of Technology, Stockholm) obtained the reward in 2006 “for his profound and seminal contributions to harmonic analysis and the theory of smooth dynamical systems”. Instead of a “classical” autobiography, his article “Reflections on my life as a mathematician” is reproduced. His work is presented in the article “Carleson for beginners” by Tom Körner (Cambridge, UK). The article is written in such a way as to explain the importance of the results at the level “of a well-informed and able first year mathematics student”, but non-mathematicians may also read it with interest.

Finally, Srinivasa S. R. Varadhan (Courant Institute of Mathematical Sciences) was awarded the Prize in 2007 “for his fundamental contributions to probability theory and in particular for creating a unified theory of large deviations”. The article “A personal perspective on Raghu Varadhan’s role in the development of stochastic analysis” by Terry Lyons (Oxford and Swansea) is included. On one hand, several aspects of the theory are presented, and on the other hand, a flavour of some of Varadhan’s work is given.

In the book, some other short articles or pieces of information are included. At the beginning, the reader will find an interesting and important article about the history of the Abel Prize by Arild Stubhaug (Oslo). In 2002, an honorary Abel Prize was given to an outstanding Norwegian mathematician, Atle Selberg (1917–2007), in recognition of his status as one of the world’s leading mathematicians. The article about Selberg was written by Nils A. Baas (Trondheim). Lists of the members of the Abel Committee and the Board for the Niels Henrik Abel Memorial Fund from 2003 to 2007 are also provided.

Interesting photographs are included. The articles presenting the results of the recipients of the prizes are written perfectly.


Reviewed by Krzysztof Ciesielski

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