

# Contents

## Part I The Life of Henri Poincaré

<b>1</b>	<b>The Early Years</b> .....	3
1.1	Childhood, 1854–1860 .....	3
1.2	Schoolboy: 1860–1870 .....	9
1.3	Between School and the Academy: 1871–1873 .....	13
<b>2</b>	<b>Academic Education: 1873–1879</b> .....	19
2.1	A Difficult Year .....	19
2.2	Second Year at the École Polytechnique .....	22
2.3	L'École des Mines .....	23
2.4	Dissertation in Mathematics .....	27
<b>3</b>	<b>Impressive Results in Vesoul and Caen</b> .....	31
3.1	Mining Engineer in Vesoul .....	31
3.2	Lecturer in Caen .....	32
3.3	Automorphic Functions: Contacts with Fuchs and Klein .....	34
<b>4</b>	<b>Career in Paris</b> .....	45
4.1	Sketch of a Scientific Career .....	46
4.2	Contacts and Travels .....	48
4.3	Paul Appell .....	52
4.4	Contacts with Mittag-Leffler .....	54
4.5	Lecture Notes and Students .....	57
4.6	A French–English Controversy of Styles .....	62
4.7	Relativity: The New Mechanics .....	62
4.8	Social Involvement .....	64
<b>5</b>	<b>The Prize Competition of Oscar II</b> .....	69
5.1	Comments by Kronecker and Start of the Competition .....	70
5.2	Activity and Conclusions of the Committee .....	71
5.3	A Blessing in Disguise .....	72
5.4	The Prize Memoir .....	74

<b>6</b>	<b>Philosophy and Essays</b> .....	77
6.1	The Last Collection: Scientific Opportunism .....	79
6.2	The Foundations of Geometry and Mathematical Thinking .....	81
6.3	Around Mathematics and Mathematicians .....	85
6.4	The Principles of Natural Science .....	87
6.5	Notes on Mathematical Physics .....	90
<b>7</b>	<b>At the End, What Kind of a Man?</b> .....	95
 <b>Part II Scientific Details and Documents</b>		
<b>8</b>	<b>Automorphic Functions</b> .....	103
8.1	From Differential Equations to Automorphic Functions .....	104
8.2	The Lectures on Differential Equations by Felix Klein .....	106
<b>9</b>	<b>Differential Equations and Dynamical Systems</b> .....	109
9.1	Poincaré's Thesis of 1879 .....	109
9.2	A Revolutionary Memoir on Differential Equations, 1881–1882 .....	113
9.3	Les Méthodes Nouvelles de la Mécanique Céleste .....	118
9.4	Hopf Bifurcation and Self-Excitation .....	173
9.5	The Poincaré–Birkhoff Theorem .....	175
<b>10</b>	<b>Analysis Situs</b> .....	179
10.1	Early Topology .....	180
10.2	The Analysis Situs Papers .....	181
10.3	The Poincaré Conjecture .....	183
<b>11</b>	<b>Mathematical Physics</b> .....	185
11.1	Partial Differential Equations .....	185
11.2	Rotating Fluid Masses .....	197
11.3	Dynamics of the Electron: Poincaré Group and Relativity .....	201
11.4	The Six Lectures at Göttingen: 1909 (Relativity) .....	207
11.5	Cosmogony .....	213
<b>12</b>	<b>Poincaré's Address to the Society for Moral Education</b> .....	229
<b>13</b>	<b>Historical Data and Biographical Details</b> .....	233
<b>References</b> .....		249
<b>Index</b> .....		255



<http://www.springer.com/978-1-4614-2406-2>

Henri Poincaré

Impatient Genius

Verhulst, F.

2012, XII, 260 p., Hardcover

ISBN: 978-1-4614-2406-2