

ÉTIENNE GHYS

A SINGULAR
MATHEMATICAL
PROMENADE

Contents

<i>Preface</i>	1
<i>Road map</i>	5
<i>Intersecting polynomials: Maxim Kontsevich</i>	11
<i>Patterns and permutations: Donald Knuth</i>	17
<i>Separable permutations</i>	27
<i>Hipparchus and Schroeder</i>	35
<i>De methodis serierum et fluxionum: Newton's method</i>	43
<i>De methodis serierum et fluxionum: Newton's series</i>	51
<i>Some formal algebra</i>	59
<i>Gauss on algebraic curves</i>	69
<i>Proof of Gauss's claim on singularities</i>	79
<i>De seriebus divergentibus: Euler, Cauchy and Poincaré</i>	87
<i>Convergence: Cauchy</i>	95
<i>Moebius and his band</i>	111

<i>Moebius necklaces</i>	121
<i>Resolution of singularities</i>	133
<i>The 3-sphere and the Hopf fibration</i>	143
<i>The cusp and the trefoil</i>	157
<i>Victor Puiseux, at last!</i>	169
<i>Jack Milnor and his fibration</i>	177
<i>The Hipparchus-Schroeder-Tamari-Stasheff associahedron</i>	191
<i>Jim Stasheff and loop spaces</i>	199
<i>Operads</i>	211
<i>Singular operads</i>	221
<i>Gauss is back: curves in the plane</i>	229
<i>Analytic chord diagrams: an algorithm</i>	243
<i>Analytic chord diagrams: interlace graphs</i>	257
<i>Gauss and linking</i>	275
<i>Kontsevich is back: universal invariant</i>	285
<i>Postface</i>	293
<i>Acknowledgments</i>	295
<i>Image Credits</i>	297