

Table of Contents

Preface iii

Acknowledgments vi

INTRODUCTION

Phillip S. Jones and Arthur F. Coxford, Jr.

- | | | |
|---|---|---|
| 1 | The Goals of History: Issues and Forces | 1 |
| | Our Goals | 1 |
| | Our Themes: Forces and Issues | 2 |
| | Progress by Periods | 4 |
| | Summary and Preview | 7 |

PART ONE

Mathematics in the Evolving Schools

Phillip S. Jones and Arthur F. Coxford, Jr.

- | | | |
|---|--|----|
| 2 | From Discovery to an Awakened Concern for Pedagogy:
1492–1821 | 11 |
| | The Earliest American Mathematics | 11 |
| | The Content and Processes of Colonial Instruction | 13 |
| | The Latin Grammar School and the Academy | 18 |

	The Colleges and the Mathematical Community	18
	Self-Instruction	20
	The Teachers and Pedagogy	21
	Summary	22
3	From Colburn to the Rise of the Universities: 1821-94	24
	Forces at Work	24
	The Elementary Schools	25
	The Secondary Schools	27
	The Colleges and the Mathematical Community	28
	Teacher Training and Pedagogy	30
	The Climate of Reform	33
	Summary	34
4	First Steps toward Revision: 1894-1920	36
	Forces at Work	36
	The Elementary Schools	37
	The Secondary Schools	39
	The Colleges and the Mathematical Community	41
	Pedagogy and Teacher Training	42
	Summary	43
5	Abortive Reform—Depression and War: 1920-45	46
	A Period of Unrest	46
	The Elementary School	48
	The Junior High School	51
	The Senior High School	53
	The War and Its Effects	58
	The Junior College	60
	The Colleges, Teacher Training, and the Mathematical Community	61
	Psychological and Educational Theories	63
	Summary	63
6	Reform, "Revolution," Reaction: 1945-Present	67
	A Buildup of Pressures for Reform: Old Forces	67
	New Forces	68
	The Prelude to Reform	72
	The Elementary School	76
	The Secondary School	78
	Teacher Training, Certification, and the Conversion to New Programs	79
	Collegiate Mathematics	81
	Reaction	81
	Psychological and Educational Theories	83
	Summary	86

PART TWO

Forces and Issues Related to Curriculum and Instruction, K-6

M. Vere DeVault and J. Fred Weaver

7	Elementary Mathematics Education: An Overview	93
	The Major Periods	93
	The Continuing Issues	94
	The Continuing Forces	95
8	From Settlement to the End of the Nineteenth Century: 1607-1894	98
	Introduction	98
	Why Teach Mathematics?	98
	What Mathematics Should Be Taught?	99
	How Should We Organize the Mathematics We Teach?	103
	How Should Instruction in Arithmetic Be Organized and Implemented?	104
	Summary of the Period 1607-1894	105
9	Scientism and Changing Conceptions of Elementary Schooling: 1894-1923	107
	Evidences of Change	107
	Why Teach Mathematics?	109
	What Mathematics Should We Teach?	110
	How Should We Organize and Implement Instruction?	114
	Summary	116
10	Mathematics Education during the Rise and Fall of Progressive Education: 1923-52	118
	Forces at Work	118
	Why Teach Mathematics?	120
	What Mathematics Should We Teach?	122
	How Should We Organize the Mathematics We Teach?	125
	How Should We Organize and Implement Instruction?	127
	Summary	131
11	Designing a Contemporary Elementary School Mathematics Program: 1952-Present	133
	Introduction	133
	Why Teach Mathematics?	134
	What Mathematics Should We Teach?	135

How Should We Organize the Mathematics We Teach?	140
How Should We Organize and Implement Instruction?	142
Summary	144

PART THREE

Forces and Issues Related to Curriculum and Instruction, 7-12

Alan R. Osborne and F. Joe Crosswhite

12	Emerging Issues: 1890-1920	155
	Introduction	155
	Mathematics Education in 1890	155
	Arithmetic	157
	Algebra	158
	Geometry	161
	Other Forces	162
	The Committee of Ten	163
	Impact of the Report of the Committee of Ten	167
	College Entrance Requirements	168
	The Unified Mathematics Movement	173
	Reactions to the Unification Movement	177
	Geometrical Developments	179
	The International Commission	182
	Practical Utility in Mathematics Education	183
	The Changing School Population and Vocational Education	184
	Psychologizing Secondary School Mathematics	185
	The Cult of Efficiency and Secondary School Mathematics	188
	The Educational Generalists' View of the Curriculum	192
	The Founding of the NCTM	194
	Overview: 1890 to 1920	196
13	Mathematics Education on the Defensive: 1920-45	197
	"The 1923 Report"	197
	Aims and "The 1923 Report"	202
	Psychology and the Report	204
	The Function Concept	205
	Model Curricula of the Report	206
	Immediate Reactions and Responses to the Report	208
	The Dominant Forces—1920 through 1940	209
	Individual Differences Become an Issue	212
	Objectives, Psychological Theories, and Progressive Education Become Issues	213

	The Curriculum in Grades 7 and 8	218
	Algebra and General Mathematics	220
	Geometry	222
	The Reports of the Progressive Education Association Committee and of the Joint Commission—1940	225
	Gearing Up for War	231
	Summary	233
14	Reform, Revolution, and Reaction	235
	Introduction: Forces and Issues	235
	The Educational Policies Commission	239
	The Harvard Report	241
	Commission on Post-War Plans	243
	“General Education in School and College”	246
	Technological Needs and Education of the Gifted	248
	The University of Illinois Committee on School Mathematics	251
	The Coalescence of National Support	256
	The Commission on Mathematics of the CEEB	259
	The NCTM’s Support of the Reform Movement	266
	Early Curriculum Development Projects	268
	The School Mathematics Project	269
	A Summary of the Curriculum Reform Projects	281
	Criticisms of Reforms	284
	Similarities among Reform Movements	287
	The Cambridge Conference	291
	Reactions to the Cambridge Report	295
	New Directions	296

PART FOUR

The Education of Teachers of Mathematics

*E. Glenadine Gibb, Houston T. Karnes,
and F. Lynwood Wren*

15	Teacher Education in the United States through 1945	301
	Introduction	301
	The First Normal School	302
	The Normal School Program	304
	The First Two Decades of the Twentieth Century	308
	In-service Teacher Education	314
	“The 1923 Report” and Its Consequences	316
	Further Developments: 1923–45	320

16	The Modern Era: 1945–Present	327
	Introduction	327
	Status Surveys	328
	In-service Education	329
	Recommendations for Improvement in Teacher Education	334
	The Implementation of Recommendations	341
	What of the Future?	345

PART FIVE

School Mathematics in Canada

17	Mathematics Education in French-speaking Canada	353
	<i>Douglas J. Potvin</i>	
	Two Cultures	353
	The Historical Development	354
	The Classical Colleges	358
	Mathematics in New France	359
	Mathematics in the English Schools	364
	New Trends in Mathematics Education	365
	Uniformity in the Curriculum	367
	Forces and Issues	370
18	School Mathematics in Ontario, 1763–1894: From Settlement to System	371
	<i>Douglas H. Crawford</i>	
	Introduction	371
	The Pioneer Period: 1790–1841	372
	The Ryerson Regime: 1841–76	374
	McLellan and Subsequent Reaction: 1876–94	380
	Summary	384
19	School Mathematics in Ontario, 1894–1959: Expansion and Moderate Reform	385
	<i>Douglas H. Crawford</i>	
	Introduction	385
	The Period of Reform Movements: 1894–1920	387
	Adapting Curricula to Life: 1920–45	392
	Postwar Reform and the “Rebirth” of School Mathematics: 1945–59	399

20	Mathematics Education in Western Canada <i>Solberg E. Sigurdson</i>	412
	A Survey 412	
	Elementary School Arithmetic 415	
	Intermediate School Mathematics 419	
	Unifying Mathematics 421	
	The Decline of High School Arithmetic 424	
21	Rethinking School Mathematics: 1959–Present <i>Douglas H. Crawford</i>	426
	The Socioeconomic Status of Canada in 1960 426	
	The Commissions on Education 427	
	The 1960 Ottawa Seminar 428	
	The Canadian Association of Mathematics Teachers 430	
	Alberta 431	
	Ontario 434	
	Nova Scotia 440	
	An Overview 444	

PART SIX

Epilogue: Summary and Forecast

22	Present-Day Issues and Forces <i>Phillip S. Jones</i>	453
	Persons and Personalities 453	
	Research in Mathematics Education 454	
	Recurring Issues and Continuing Themes 455	
	Forces 460	
	Teacher Education 463	
	Similarities and Differences 463	
	“L’Envoi” 464	

Appendix A—Members of Committees Cited and National Council of Teachers of Mathematics Officers, Directors, and Editors	467
Cited Committees 468	
National Council of Teachers of Mathematics 480	
Index of Names 487	

20	Mathematics Education in Western Canada <i>Solberg E. Sigurdson</i>	412
	A Survey 412	
	Elementary School Arithmetic 415	
	Intermediate School Mathematics 419	
	Unifying Mathematics 421	
	The Decline of High School Arithmetic 424	
21	Rethinking School Mathematics: 1959–Present <i>Douglas H. Crawford</i>	426
	The Socioeconomic Status of Canada in 1960 426	
	The Commissions on Education 427	
	The 1960 Ottawa Seminar 428	
	The Canadian Association of Mathematics Teachers 430	
	Alberta 431	
	Ontario 434	
	Nova Scotia 440	
	An Overview 444	

PART SIX

Epilogue: Summary and Forecast

22	Present-Day Issues and Forces <i>Phillip S. Jones</i>	453
	Persons and Personalities 453	
	Research in Mathematics Education 454	
	Recurring Issues and Continuing Themes 455	
	Forces 460	
	Teacher Education 463	
	Similarities and Differences 463	
	“L’Envoi” 464	

Appendix A—Members of Committees Cited and National Council of Teachers of Mathematics Officers, Directors, and Editors

Cited Committees 468	
National Council of Teachers of Mathematics 480	
Index of Names 487	

Appendix B—A Survey of Research in Mathematics Education	493
 Bibliography A—The United States of America	 501
Committee Reports and Status Studies	501
Books and Pamphlets	506
Journal and Yearbook Articles	518
Dissertations	526
 Bibliography B—Canada	 528
Reports, Status Studies, Programmes	528
Books and Pamphlets	530
Journal and Yearbook Articles	533
Theses and Dissertations	535
 Index	 537