

CONTENTS

PART I

THE EMERGENCE OF TECHNOLOGY

1 The Importance of Tecnology in Human Affairs	3
2 the Beginnings of Technology and Man	11
3 Mesopotamian and Egyptian Technology	26
4 The Classical Civilizations	47
5 Technology in the Middle Ages	66
6 Early Modern Technology to 1600	79

PART II

BACKGROUND OF THE INDUSTRIAL REVOLUTION 1600-1750

7 Cultural, Intellectual and Social Foundations, 1600-1750	107
8 Economic and political Developments, 1600-1750	118
9 The Agricultural Revolution, 1600-1850	128
10 Metallurgy in the Seventeenth and Eighteenth Centuries	142
11 Instrumentation	168
12 Transportation and Construction 1300-1800: The Rise of Modern Civil Engineering	187

PART III

THE INDUSTRIAL REVOLUTION 1750-1830

13 Prerequisites for Industrialization	217
14 The Textile Industry 1750-1830	230
15 The Steam Engine Before 1830	245
16 Metallurgical and Machine-Tool Developments	264
17 Steam Transportation	284
18 The Social Impact of the Industrial Revolution	302

PART IV

THE AGE OF STEAM AND IRON, 1830-1880

19 The Invention of invention	325
20 Energy Conversion	336
21 Mining and Metallurgical Production, 1800-1880	392
22 Buildings and construction	367
23 Macines and Machine Tools 1830-1880	392
24 Food and Agriculture in the Nineteenth Century	408
25 Locomotives Railways and Steamships	425
26 The Beginning of Electricity	437
27 Communications	452
28 Industrial Chemistry in the Nineteenth Century	468

29 Military Technology	489
30 The Spread of the Industrial Revolution	503
31 the Economic Consequences of Technological Change 1830-1880	515
32 Population Movements and Urbanization	532
33 Effects of Technology on Domestic Life 1830-1880	546
PART V	
THE PROMISE OF TECHNOLOGICAL FULFILLMENT, 1880-1900	
34 Applications of Electricity	563
35 electrical Generation and Transmission	578
36 Metallurgy: Science and practice Before 1900	592
37 Buildings and Construction 1880-1900	602
38 Machines and Tools	620
39 Late Nineteenth-Century Communications: Techniques and Machines	636
40 The Beginnings of the Internal-Combustion Engine	648
41 Expansion of the Petroleum and Chemical Industries 1880-1900	664
42 Mass Production for Mass Consumption	678
43 Imperialism and Technology	692
44 Expositions of Technology 1851-1900	706
45 Technology and Culture at the End of the Nineteenth Century : The will to Power	726
Epilogue	739
Readies and References	745
Contributors	775
Subject Index	781
Name Index	797