List of Illustrations vii Acknowledgments xi **Explanations and Definitions** xiii Abbreviations xvii xix 1 Origins 1 Musical Sound 2 Voices 3 Lithophones 6 9 Percussion Bars 14 Bells and Gongs Rattles 18 Interlude A: Instruments of Protection 24 Drums 27 Trouble with Tension 27 Drums 28 Tubular Drums 29 Interlude B: Musicians 41 **3** Flutes and Recorders 44 44 Monotone Whistling in the Wind 45 50 Vessel Flutes Penny Whistles and Recorders 52 **Transverse** Flutes 59 Harmonic Flutes 65 Interlude C: The Medieval Renaissance and the First Industrial Revolution 70 73 Reeds Straws in the Wind 73 **Oboes and Bassoons** 80 Clarinets and Other Single Reeds 85 Free Reeds 94 Interlude D: The Ideal Accompaniment 100

Contents

Maps

2

4

vi \sim Contents	
5 "Brass" Instruments: Trumpets and Horns Interlude E: The Second Industrial Revolution	103 116
6 String Instruments From Bows to Lyres, Harps, and Lutes Lyres Harps Zithers Stringed Keyboards Plucked Lutes Bowed Lutes aka Fiddles Interlude F: Messengers	125 125 128 132 140 145 152 161 180
7 Pipe Organs Interlude G: Symbiosis	188 194
8 Electrophones Interlude H: Newly Created, Recognized, or Discovered Instruments	202 205 205 205
Afterword: Archaeology and Other -ologies Classification of Instruments Scales and Music The Sounds of Science Bibliography Index of Instruments and Accessories Index of Places and Peoples General Index About the Author	209 210 214 217 225 235 245 249 257

.