116 Frequency Analysis and Pitch Perception
    Brian C. J. Moore

117 Functions of the Binaural System
    Ervin R. Hafer and Constantine Trahiotis

118 Loudness
    Bertram Scharf

119 Effects of High-Intensity Sound
    W. Dixon Ward

120 Clinical Audiology: An Overview
    Larry E. Humes

121 Perception of Complex Waveforms
    Charles S. Watson and Gary R. Kidd

122 Adaptation in the Auditory System
    Paul J. Abbas

123 Hearing Thresholds
    William A. Yost and Mead C. Killion

Volume Four

PART XIII SPEECH COMMUNICATION

124 Introduction
    J. L. Flanagan

125 Models of Speech Production
    Kenneth N. Stevens

126 Speech Perception
    Joanne L. Miller

127 Acoustical Analysis of Speech
    Gunnar Fant

128 Techniques of Speech Coding
    Bishnu S. Atal

129 Machine Recognition of Speech
    Lawrence R. Rabiner

PART XIV MUSIC AND MUSICAL ACOUSTICS

130 Introduction
    Thomas D. Rossing

131 Stringed Instruments: Bowed
    J. Woodhouse

132 Stringed Instruments: Plucked
    Bernard E. Richardson
133 Woodwind Instruments  
Neville H. Fletcher  

134 Brass Instruments  
J. M. Bowsher  

135 Percussion Instruments  
Thomas D. Rossing  

136 Pianos and Other Stringed Keyboard Instruments  
Gabriel Weinreich  

137 Pipe and Reed Organs  
Jürgen Meyer  

138 Electronic and Computer Music  
William Morris Hartmann  

139 Human Singing Voice  
Johan Sundberg  

PART XV BIOACoustics  

140 Introduction  
Floyd Dunn  

141 Acoustical Characteristics of Biological Media  
Jeffrey C. Bomber  

142 Biological Effects of Ultrasound  
Edwin L. Carstensen  

143 Medical Diagnosis with Acoustics  
K. Kirk Shung and Guy Cloutier  

144 Acoustical Medical Imaging Instrumentation  
James F. Greenleaf  

145 Effects of Vibration and Shock on People  
Henning E. von Gierke  

PART XVI ANIMAL BIOACoustics  

146 Introduction  
Arthur N. Popper  

147 Hearing and Sound Perception among Vertebrate Animals  
Richard R. Fay  

148 Insect Bioacoustics  
T. G. Forrest  

149 Amphibians  
Randy Zelick and R. R. Capranica  

150 Bird Acoustics  
Stephen Nowicki
xiv  CONTENTS

151  Bats and Echolocation
    James A. Simmons  1819

152  Nonhuman Primate Vocal Communication
    Marc D. Hauser  1823

153  Bioacoustics of Marine Vertebrates
    Arthur N. Popper and Peggy L. Edds-Walton  1831

PART XVII  ACOUSTICAL MEASUREMENTS AND INSTRUMENTATION  1837

154  Introduction
    P. V. Brüel, J. Pope, and H. K. Zaveri  1839

155  Sound Level Meters
    Robert W. Krug  1845

156  SoundIntensity
    Malcolm J. Crocker and Finn Jacobsen  1855

157  Calibration of Pressure and Gradient Microphones
    Victor Nedzelnitsky  1869

PART XVIII  TRANSDUCERS  1881

158  Introduction
    Harry B. Miller  1883

159  Transducer Principles
    Elmer L. Hixson and Ilene J. Busch-Vishniac  1889

160  Loudspeaker Design
    Bradley M. Starobin  1903

161  Horns
    Vincent Salmon  1925

162  Types of Microphones
    Ilene J. Busch-Vishniac and Elmer L. Hixson  1933

163  Public Address and Sound Reinforcement Systems
    David Lloyd Klepper and Larry S. King  1945

164  Magnetic Recording Reproducing Systems
    Marvin Camras  1963

165  Digital Audio
    James W. Beauchamp and Robert C. Maher  1967

166  Hearing Aid Transducers
    Mead C. Killion  1979

REVIEWSERS  1991

INDEX  1993