

CONTENTS

PART ONE

INTRODUCTION TO MODERN MEDICAL PRACTICE

- 1 **Physician-Patient Encounter, 2**
Jack Ende
- 2 **Principles of Diagnostic Testing, 5**
John M. Eisenberg
- 3 **Clinical Bioethics, 9**
Daniel P. Sulmasy
- 4 **Costs and Outcomes, 14**
Kevin Schulman
- 5 **Quality of Care, 16**
Laurence H. Beck
- 6 **Implementing Clinical Practice Guidelines, 23**
Scott Weingarten and Stephen Deutsch
- 7 **Medical Informatics, 26**
Mark E. Frisse
- 8 **Managed Care, 29**
Andrew B. Bindman

PART TWO

DISEASES OF THE HEART AND BLOOD VESSELS

I BASIC PHYSIOLOGY AND MOLECULAR BIOLOGY

- 9 **Cardiovascular Physiology, 36**
Martin M. LeWinter, Louis A. Mulieri, and George Osol
- 10 **Molecular Biology of the Cardiovascular System, 49**
Roger D. Bies and Robert Roberts

II LABORATORY TESTS AND DIAGNOSTIC METHODS

- 11 **Physical Examination of the Cardiovascular System, 63**
James A. Shaver

- 12 **Electrocardiography, 81**
Frederick A. Masoudi and Nora Goldschlager

- 13 **Cardiac Noninvasive Techniques, 91**
George A. Beller and Sanjiv Kaul

- 14 **Cardiac Catheterization and Angiography, 107**
William H. Gaasch and Joseph P. Murgu

- 15 **Interventional Cardiac Catheterization, 116**
Spencer B. King, III, and William D. Anderson

III CLINICAL SYNDROMES

- 16 **Chest Pain, 125**
Louis J. Dell'Italia and Douglas J. Pearce

- 17 **Palpitations, 130**

Sumanth D. Prabhu and Robert A. O'Rourke

- 18 **Cardiac Arrhythmias and Conduction Disturbances, 131**

Simon Chakko, Agustin Castellanos, Kenneth M. Kessler,
and Robert J. Myerburg

- 19 **Congestive Heart Failure, 156**

Gary S. Francis

- 20 **Hypotension and Cardiogenic Shock, 175**

Mrinal Sharma and Richard C. Becker

- 21 **Sudden Cardiac Death, 187**

James L. Gilman and Gerald V. Naccarelli

IV SPECIFIC DISEASE ENTITIES

- 22 **Ischemic Heart Disease, 192**

Kanu Chatterjee

- 23 **Acute Myocardial Infarction, 209**

Guy S. Reeder and Bernard J. Gersh

- 24 **Infective Endocarditis, 225**

Frederick A. Masoudi and Merle A. Sande

- 25 **Valvular Heart Disease, 235**

Shahbudin H. Rahimtoola

- 26 **Cardiomyopathies, 262**

Pravin M. Shah

- 27 **Pericardial Disease and Pericardial Heart Disease, 271**

Brian D. Hoit

- 28 **Congenital Heart Disease, 280**

Robert C. Schlant

- 29 **Pulmonary Hypertensive Heart Disease, 293**

Richard S. Irwin, Joseph S. Alpert, and James E. Dalen

- 30 **Diseases of the Aorta, 299**

Miguel Zabalgaitia and Robert A. O'Rourke

- 31 **Diseases of the Peripheral Arteries and Veins, 304**

Peter C. Spittell and John A. Spittell, Jr

- 32 **Arterial Hypertension, 312**

Norman M. Kaplan

- 33 **Cardiac Tumors; Cardiac Manifestations of Endocrine, Collagen Vascular, and HIV Disease; and Traumatic Injury of the Heart, 329**

John S. MacGregor and Melvin D. Cheitlin

- 34 **Cardiac Transplantation, 335**

Lynne Warner Stevenson

PART THREE

PULMONARY AND CRITICAL CARE MEDICINE

I BASIC PHYSIOLOGY

- 35 **Respiratory Pathophysiology**, 346
Walter J. Daly and Jacob S.O. Loke
- 36 **Abnormalities of the Control of Breathing**, 352
Neil S. Cherniack
- 37 **Respiratory Muscles and Respiratory Muscle Failure**, 357
Dudley E. Rochester
- 38 **Pulmonary Blood Flow**, 360
J.T. Sylvester and Roy G. Brower
- 39 **Host Defense Mechanisms in the Respiratory Tract**, 364
Herbert Y. Reynolds
- 40 **Mechanisms of Lung Injury and Repair**, 370
Jamson S. Lwebuga-Mukasa

II LABORATORY AND DIAGNOSTIC TESTS

- 41 **Pulmonary Function Testing**, 375
Jacob S.O. Loke
- 42 **Invasive Diagnostic Techniques**, 380
John A. Rankin
- 43 **Pulmonary Diagnostic Imaging**, 386
Robert D. Tarver, Lynn S. Broderick, and Dewey J. Conces, Jr.
- 44 **Intensive Care Monitoring and Mechanical Ventilation**, 390
Herbert P. Wiedemann

III CLINICAL SYNDROMES AND THERAPEUTIC MODALITIES

- 45 **Approach to the Patient with Respiratory System Disease**, 400
John L. Stauffer and Herbert Y. Reynolds
- 46 **Acute Respiratory Failure**, 412
Leonard D. Hudson
- 47 **Multiple Organ Dysfunction in the Context of ARDS**, 421
Jean E. Rinaldo and Melissa Clark
- 48 **Pulmonary Edema**, 423
Arthur P. Wheeler, Gordon R. Bernard, and Kenneth L. Brigham
- 49 **Respiratory Therapy and Monitoring**, 428
David H. Ingbar and Linda Nici
- 50 **Pulmonary Rehabilitation**, 432
Barry J. Make

IV SPECIFIC DISEASE ENTITIES

- 51 **Chronic Obstructive Pulmonary Disease**, 437
Gordon L. Snider
- 52 **Interstitial Lung Disease**, 448
Jack D. Fulmer† and K. Randall Young, Jr.

- 53 **Sarcoidosis**, 456
Geoffrey McLennan and Gary W. Hunninghake
- 54 **Hypersensitivity Pneumonitis**, 460
Herbert Y. Reynolds and Timothy J. Craig
- 55 **Langerhans' Cell Granulomatosis (Histiocytosis X, Eosinophilic Granuloma)**, 463
Allan J. Hance, Abdellatif Tazi, and Françoise Basset
- 56 **Primary Granulomatous Pulmonary Vasculitis**, 465
Stephen B. Sulavik and Nav T. Singh
- 57 **Occupational Lung Diseases**, 471
Akshay Sood, J. Bernard Gee, and William S. Beckett
- 58 **Adverse Pulmonary Reactions to Drugs and Other Therapeutic Modalities**, 476
J. Allen Cooper, Jr.
- 59 **Cystic Fibrosis and Bronchiectasis**, 479
Pamela B. Davis and Michael D. Infeld
- 60 **Neoplasms of the Lung**, 486
Michael C. Iannuzzi and Galen B. Toews
- 61 **Solitary Pulmonary Tumor**, 493
Thomas Y. Sullivan
- 62 **Pulmonary Hypertension: Primary and Secondary Causes**, 497
Lewis J. Rubin and Barbara J. Kircher
- 63 **Pulmonary Thromboembolism**, 499
Charles K. Chan and Richard A. Matthey
- 64 **Pleural Diseases**, 505
Ian R.G. Dowdeswell
- 65 **Diseases of the Mediastinum**, 510
Ian R.G. Dowdeswell
- 66 **Pulmonary Transplantation**, 514
James H. Dauber, Penny A. Williams, and David R. Nunley
- 67 **Sleep-Related Respiratory Disorders**, 524
Laurel Wiegand

PART FOUR

HEMATOLOGY AND ONCOLOGY

I BASIC PRINCIPLES

- 68 **Molecular and Cellular Biology of Hematopoiesis**, 530
David A. Williams
- 69 **Hemostasis and Fibrinolysis**, 534
James N. George
- 70 **The Genetics of Cancer**, 540
Joanna Groden
- 71 **Principles of Cancer Treatment**, 550
Beverly S. Mitchell

II LABORATORY TESTS

- 72 **Evaluation of Peripheral Blood and Bone Marrow Cells**, 555

John C. Winkelmann

- 73 **Molecular Diagnostics**, 559

Harold R. Schumacher

- 74 **Evaluation of Monoclonal Proteins in Serum and Urine**, 564

Robert A. Kyle

- 75 **Evaluation of Hemostasis and Thrombosis**, 568

James N. George

III SPECIAL TOPICS

- 76 **Blood Transfusion**, 572

Jay E. Menitove

- 77 **Hematopoietic Stem Cell Transplantation**, 576

Frederick R. Appelbaum

- 78 **Complications of Cancer and Cancer Therapy**, 579

Sara L. Zaknoen

IV CLINICAL SYNDROMES

- 79 **Abnormal Hematocrit**, 586

Emmanuel N. Dessypris

- 80 **Abnormal Nucleated Blood Cell Counts**, 590

David H. Boldt

- 81 **Lymphadenopathy and Splenomegaly**, 596

David H. Boldt

- 82 **Excessive Bleeding and Clotting**, 602

James N. George

V SPECIFIC DISEASES

- 83 **Thrombocytopenia and Disorders of Platelet Function**, 610

Andrew I. Schafer

- 84 **Disorders of Blood Coagulation**, 617

Gilbert C. White II

- 85 **Thrombosis and Anticoagulation**, 630

Russell D. Hull, Graham F. Pineo, and Gary E. Raskob

- 86 **Iron Deficiency Anemia, Anemia of Chronic Disease, Sideroblastic Anemia, and Iron Overload**, 641

Robert T. Means, Jr.

- 87 **Megaloblastic Anemia**, 646

Robert T. Means, Jr.

- 88 **Hemoglobinopathies and Thalassemias**, 650

Martin H. Steinberg

- 89 **Hemolytic Anemia**, 661

John C. Winkelmann

- 90 **Bone Marrow Failure and Myelodysplasia**, 671

Frederick R. Appelbaum

- 91 **Abnormalities of Phagocytes, Eosinophils, and Basophils**, 678

David H. Boldt

- 92 **The Leukemias and Polycythemia Vera**, 682

John J. Hutton

- 93 **Hodgkin's Disease and Non-Hodgkin's Lymphoma**, 691

Thomas P. Miller and Thomas M. Grogan

- 94 **Multiple Myeloma and the Dysproteinemias**, 700

Robert A. Kyle

- 95 **Breast Cancer**, 706

C. Kent Osborne

- 96 **Gynecologic Cancers**, 713

Vicki V. Baker

- 97 **Cancer of the Prostate and Testis**, 717

Geoffrey R. Weiss

- 98 **Head and Neck Cancer**, 722

Jack L. Gluckman and Michael Farrell

- 99 **Lung Cancer**, 724

Manuel Valdivieso

- 100 **Cancer of Unknown Primary Site**, 729

Stephen C. Schwartz, Jared Klein, and William P. Peters

PART FIVE**RENAL AND ELECTROLYTE DISORDERS****I BASIC PHYSIOLOGY**

- 101 **Principles of Renal Physiology**, 736

Jay H. Stein and George L. Bakris

II LABORATORY TESTS AND DIAGNOSTIC METHODS

- 102 **Urinalysis and Renal Function Tests**, 742

Charles R. Nolan, T. Dwight McKinney, and Marvin Forland

- 103 **Imaging of Renal Disorders**, 748

Abraham A. Ghiatas

III BASIC CLINICAL SYNDROMES

- 104 **Hematuria**, 756

B.S. Kasinath

- 105 **Proteinuria**, 758

B.S. Kasinath and Manjeri A. Venkatachalam

- 106 **Dysuria**, 762

Marvin Forland

- 107 **Acute Nephritic Syndrome**, 763

B.S. Kasinath

- 108 **Nephrotic Syndrome**, 765

B.S. Kasinath

- 109 **Acute Renal Failure**, 768

Satish Kumar and Jay H. Stein

- 110 **Chronic Renal Failure**, 776

Robert G. Luke, Charles E. Sanders, Jr., and John J. Curtis

111 Nephrolithiasis, 796
Stanley Goldfarb

IV DISORDERS OF ELECTROLYTE AND ACID-BASE BALANCE

112 Disorders of Water Balance, 805
Robert G. Narins, Mark D. Faber, and G. Gopal Krishna

113 Disorders of Sodium Balance, 816
Murray Epstein

114 Disorders of Potassium Balance, 825
Richard H. Sterns and Robert G. Narins

115 Disorders of Acid-Base Balance, 834
Susan R. DiGiovanni and George M. Feldman

116 Glomerular Diseases, 841
William G. Couser

117 Diabetic Nephropathy, 859
Fuad N. Ziyadeh and Stanley Goldfarb

118 Renal Manifestations of Dysproteinemias, 862
Paul W. Sanders

119 Drug- and Chemical-Induced Nephropathy, 866
William M. Bennett and William F. Finn

120 Cystic Diseases of the Kidney, 871
Jared J. Grantham

121 Glomerular and Interstitial Hereditary Nephropathies, 876
Gerald F. DiBona

122 Disorders of Renal Transport, 878
Sidney Kobrin and Stanley Goldfarb

123 Obstructive Uropathy, 884
Saulo Klahr

124 Tubulointerstitial Renal Diseases, 888
Shreeram Aradhya, Shelley Albert, and Eric G. Neilson

125 Renovascular Diseases, 893
George L. Bakris and S. Luke Kusmirek

126 Renal Cell Carcinoma, 898
T. Dwight McKinney

PART SIX
NEUROLOGIC DISORDERS

I CLINICAL AND LABORATORY EVALUATION OF THE NERVOUS SYSTEM

127 Neurologic History and Examination, 902
Jock Murray

128 Psychological Testing, 903
William E.M. Pryse-Phillips

129 Spinal Fluid Examination, 904
Martin A. Samuels

130 Electroencephalography and Evoked Responses, 905
Rodney D. Bell and R. Mañon-Españat

131 Electromyography, 914
Allen B. Gruber and Richard J. Barohn

132 Neuroradiologic Studies, 917
Ashwani Kapila

133 Autonomic Nervous System, 930
Roy Freeman

II CLINICAL SYNDROMES

134 Sleep and Sleep Disorders, 939
Jean K. Matheson

135 Coma and Related Disorders, 947
Martin A. Samuels

136 Faintness and Syncope, 952
Sumanth D. Prabhu, Robert A. O'Rourke, and J. Donald Easton

137 Headache and Facial Pain, 957
John Edmeads

138 Neck and Back Pain, 963
Kenneth K. Nakano

139 Otoneurology, 971
Stephen W. Parker

140 Disorders of Speech and Language, 975
Daniel B. Hier

III NEUROLOGIC DISEASES

141 Epilepsy, 978
John Davenport

142 Cognitive Failure Dementia, 985
Thomas M. Walshe III

143 Parkinsonism and Movement Disorders, 989
Lewis Sudarsky

144 Cerebrovascular Disease (Stroke), 997
Louis R. Caplan

145 Demyelinating Diseases, 1007
David M. Dawson

146 Myelopathies, 1011
Frisso A. Potts

147 Diseases of Peripheral Nerve and Motor Neurons, 1020
Eric L. Logigian

148 Diseases of the Neuromuscular Junction, 1020
Marjorie E. Seybold

149 Muscle Disease, 1024
Robert H. Brown, Jr.

IV NEUROLOGY OF BEHAVIOR

150 Behavioral Neurology, 1030
Roy Freeman

151 Anxiety, 1034
Barry S. Fogel

- 152 **Mood Disorders, 1035**
Barry S. Fogel
- 153 **Personality Disorders, Maladaptive Illness Behavior, and Somatization, 1038**
Barry S. Fogel
- 154 **Thought Disorders, 1041**
Barry S. Fogel
- V NEUROLOGY IN GENERAL MEDICINE AND SURGERY**
- 155 **Head Trauma, 1043**
Peter M. Black
- 156 **Spinal Cord Injury, 1045**
Paul A. Gutierrez and Robert R. Young
- 157 **Principles of Neurorehabilitation, 1053**
Bhagwan T. Shahani
- 158 **Ocular Manifestations of Neurologic Disorders, 1056**
John E. Carter
- 159 **Neurology of the Lower Urinary Tract, 1065**
Frances M. Dyro
- 160 **Neurooncology, 1067**
Amy A. Pruitt
- 161 **Neuroendocrinology, 1075**
David Borsook and Steven E. Hyman
- 162 **Metabolic and Toxic Disorders, 1078**
Stephen M. Sagar
- 163 **Principles of Coma and Neurologic Emergencies, 1081**
Allan H. Ropper
- 164 **Neurocardiology, 1086**
Martin A. Samuels
- 165 **Neurorheumatology, 1091**
Kenneth K. Nakano
- 166 **Neuropulmonology, 1095**
Frank W. Drislane and Martin A. Samuels
- 167 **Neurogastroenterology, 1100**
Martin A. Samuels
- 168 **Neurohepatology, 1102**
Martin A. Samuels
- 169 **Neurohematology, 1103**
Martin A. Samuels
- 170 **Neuronephrology, 1105**
Martin A. Samuels
- PART SEVEN**
CLINICAL IMMUNOLOGY, RHEUMATOLOGY, AND DERMATOLOGY
- I PRINCIPLES OF IMMUNOLOGY**
- 171 **Human Immune Response, 1108**
Robert R. Rich
- 172 **Human Leukocyte Antigen Complex, 1115**
Benjamin D. Schwartz
- 173 **Antibodies: Structure and Genetics, 1121**
Roger M. Perlmutter
- 174 **Cellular Immunity, Cytokines, and Immunoregulation, 1126**
John J. O'Shea and Thomas B. Nutman
- 175 **Complement System and Immune Complex Diseases, 1132**
Robert H. Carter
- 176 **Immediate Hypersensitivity, 1139**
Stephen I. Wasserman
- 177 **Tolerance and Autoimmunity, 1142**
Alfred D. Steinberg
- II LABORATORY AND DIAGNOSTIC TESTS**
- 178 **Complement Measurements, 1147**
Robert H. Carter, M. Kathryn Liszewski, and John P. Atkinson
- 179 **Evaluation of Cellular Immune Function, 1150**
John J. O'Shea
- 180 **Laboratory Methods in Immediate Hypersensitivity, 1153**
Stephen I. Wasserman
- 181 **Autoantibodies, 1155**
Liam Martin and Marvin J. Fritzler
- 182 **Rheumatoid Factors, 1160**
Dennis A. Carson
- 183 **Synovial Fluid Analysis, 1161**
Nathan J. Zvaifler
- 184 **Imaging Evaluation of Patients with Arthritis, 1164**
Donald Resnick, David R. Marcantonio, and David J. Sartoris
- III CLINICAL IMMUNOLOGY**
- 185 **The Primary Immunodeficiency Disorders, 1174**
David L. Nelson
- 186 **Inherited Complement Deficiencies, 1178**
Robert H. Carter, M. Kathryn Liszewski, and John P. Atkinson
- 187 **Rhinitis, 1180**
Robert S. Zeiger and Michael Schatz
- 188 **Asthma, 1185**
Timothy D. Bigby and Stephen I. Wasserman
- 189 **Anaphylaxis, 1193**
Diana L. Marquardt
- 190 **Periarticular Rheumatic Complaints, 1195**
Harry G. Bluestein
- 191 **Evaluation of Joint Complaints, 1198**
Nathan J. Zvaifler
- 192 **Rheumatoid Arthritis, 1200**
Nathan J. Zvaifler

- 193 **Sjögren's Syndrome**, 1209
Robert I. Fox
- 194 **Systemic Lupus Erythematosus**, 1212
John H. Klippel
- 195 **Vasculitic Syndromes**, 1218
Leonard H. Calabrese and George E. Duna
- 196 **Raynaud's Phenomenon**, 1226
Richard M. Silver
- 197 **Systemic Sclerosis**, 1228
Thomas A. Medsger, Jr.
- 198 **Diffuse Fasciitis With Eosinophilia**, 1233
Richard M. Silver
- 199 **Inflammatory Myopathies**, 1234
Paul H. Plotz
- 200 **Spondyloarthropathies**, 1237
Robert Inman
- 201 **Uncommon Arthropathies**, 1242
John H. Klippel and Nathan J. Zvaifler
- 202 **Cryoglobulinemia**, 1248
Peter D. Gorevic
- 203 **Infections of the Joints**, 1250
James S. Louie, Adolf W. Karchmer, and Michael H. Weisman
- 204 **Rheumatic Fever**, 1256
Angelo Taranta
- 205 **Antirheumatic Drugs**, 1258
Joseph M. Cash
- IV JOINT DISEASES**
- 206 **Osteoarthritis**, 1264
Kenneth D. Brandt
- 207 **Gout and Hyperuricemia**, 1268
Robert A. Terkeltaub
- 208 **Arthritis Associated With Calcium-Containing Crystals**, 1276
Lawrence M. Ryan and Daniel J. McCarty
- 209 **Ochronosis and Alkaptonuria**, 1280
J. Edwin Seegmiller
- 210 **Amyloidoses**, 1282
Merrill D. Benson
- 211 **Heritable and Developmental Disorders of Connective Tissue**, 1286
Stephen M. Krane
- V DERMATOLOGY**
- 212 **Cutaneous Manifestations of Connective Tissue Diseases**, 1290
Thomas T. Provost, Wendy Lynch, and Eva Simmons-O'Brien
- 213 **Bullous Diseases**, 1293
Hossein C. Nousari and Grant J. Anhalt
- 214 **Cutaneous Malignancies: Basal Cell Carcinoma and Squamous Cell Carcinoma**, 1297
Margaret O'Neill and Stanley Miller
- 215 **Melanoma**, 1298
Susan E. Koch
- 216 **Psoriasis**, 1300
Frederick G. Wenzel and Warwick L. Morison
- 217 **Dermatitis**, 1302
S. Elizabeth Whitmore
- 218 **Acne Vulgaris**, 1304
Charlotte E. Modly
- 219 **Photodermatoses**, 1306
Frederick G. Wenzel and Warwick L. Morison
- 220 **Superficial Fungal Infections**, 1307
Constantino Costarangos and Bernard Cohen
- 221 **Cutaneous Manifestations of Drug Reactions**, 1312
Antoinette E. Hood
- 222 **Cutaneous Manifestations of Internal Malignancy**, 1316
Terri Dunn and Susan D. Laman
- 223 **Cutaneous Manifestations of Gastrointestinal Disease**, 1320
Van Ha and Susan D. Laman
- 224 **Cutaneous Manifestations of Endocrine Disorders**, 1322
Diane Orlinky and Susan E. Koch
- 225 **Cutaneous Manifestations of Sarcoidosis**, 1324
Steven R. Feldman
- 226 **Cutaneous Manifestations of Human Immunodeficiency Virus Infection**, 1325
Thomas D. Horn and Ciro R. Martins
- 227 **Kaposi's Sarcoma**, 1330
Kathryn A. O'Connell
- 228 **Mycosis Fungoides and Sézary's Syndrome**, 1331
Stanford I. Lamberg
- PART EIGHT
INFECTIOUS DISEASES**
- I BASIC PRINCIPLES**
- 229 **Basic Principles of Infectious Disease**, 1334
Peter Densen and Merle A. Sande
- 230 **Host Defense Against Infection: The Roles of Antibody, Complement, and Phagocytic Cells**, 1336
Peter Densen, David L. Weinbaum, and Gerald L. Mandell
- 231 **Principles of Antiinfective Therapy**, 1343
Robert C. Moellering, Jr. and George M. Eliopoulos
- 232 **Hospital Infection Control**, 1361
R. Michael Massanari and Richard P. Wenzel

II LABORATORY TESTS

233 Use of Laboratory Tests in Infectious Diseases, 1366

Thomas A. Drake

III CLINICAL SYNDROMES

234 Fever of Unknown Origin, 1375

Martin G. Täuber

235 Fever and Rash, 1380

Peter K. Lindenauer and Merle A. Sande

236 Fever in the Compromised Host, 1386

Lowell S. Young

237 Respiratory Tract Infections, 1390

Birgit Winther and Jack M. Gwaltney, Jr.

238 Intraabdominal Infections, 1396

Matthew E. Levinson

239 Acute Meningitis, 1402

Allan R. Tunkel and W. Michael Scheld

240 Brain Abscess and Perimeningeal Infections, 1413

Michael R. Chicoine and Ralph G. Dacey, Jr.

241 Skin and Subcutaneous Infections, 1419

Richard E. Bryant

242 Gastrointestinal Tract Infections, 1425

Herbert L. DuPont

243 Osteomyelitis, 1433

Jon T. Mader

244 Sexually Transmitted Diseases (Urethritis, Vaginitis, Cervicitis, Proctitis, Genital Lesions), 1437

Michael F. Rein

245 Gram-Negative Bacteremia and the Sepsis Syndrome, 1445

Lisa Istorico Sanders and C. Glenn Cobbs

246 Urinary Tract Infections, 1455

Donald Kaye, Allan R. Tunkel, and George R. Fournier, Jr.

247 Infections in Travelers, 1464

Philip J. Rosenthal

248 Acquired Immunodeficiency Syndrome, 1470

Julie Louise Gerberding and Merle A. Sande

249 Fever in the Hospitalized Patient, 1479

Rafael Jurado and John E. McGowan, Jr.

IV ORGANISMS INFECTIVE TO HUMANS

Viral Diseases

250 Common Viral Infections, Picornavirus, and Orthomyxovirus Infections (Rhinovirus, Enterovirus, and Influenza), 1483

R. Gordon Douglas, Jr.

251 Paramyxovirus (Parainfluenza, Mumps, Measles, and Respiratory Syncytial Virus), Rubella Virus, Coronavirus, and Adenovirus Infections, 1494

Eurico Arruda and Frederick G. Hayden

252 Rabies, 1505

Steven L. Chuck

253 Unusual Viral Infections: Arenavirus, Colorado Tick Fever Virus, Parvovirus, Bunyavirus, and Togavirus (Ebola), 1508

Charles J. Schleupner

254 Rotavirus and Norwalk-Like Virus Infections, 1519

Suzanne M. Matsui

255 Herpesvirus Infections (Herpes Simplex Virus, Varicella-Zoster Virus, Cytomegalovirus, and Epstein-Barr Virus), 1522

David A. Katzenstein and M. Colin Jordan

256 Human Retrovirus Infections, 1531

Jay A. Levy

CHLAMYDIAL AND MYCOPLASMAL DISEASES

Chlamydial Diseases

257 Chlamydial Infections, 1534

Julius Schachter

258 Mycoplasmal Infections, 1538

John Mills

Rickettsial Diseases

259 Rickettsial Infections, 1541

David T. Durack and David H. Walker

Bacterial Diseases

260 Staphylococcal Infections, 1546

John N. Sheagren

261 *Streptococcus pyogenes* Infections 1553

Dennis L. Stevens

Enterococci

262 Enterococcal and Other Non-Group A Streptococcal Infections, 1560

Larry J. Strausbaugh

263 Gram-Positive Bacillary Infections and Clostridial Infections, 1565

Ronald Dworkin and James Leggett

264 *Neisseria meningitidis* Infections, 1578

James A. Reinartz

265 *Neisseria gonorrhoeae* Infections, 1581

Edward W. Hook III

266 Infections Caused by *Haemophilus* Species, 1585

David T. Durack and John R. Perfect

267 Infections Caused by *Campylobacter* and *Helicobacter* Species, 1590

Jean-Paul Butzler

- 268 **Infections Caused by *Vibrio* Species, 1593**
Mary E. Wilson, Aldo A.M. Lima, and Richard L. Guerrant
- 269 **Infections Caused by *Salmonella* and *Shigella* Species, 1598**
David Bangsberg and Merle A. Sande
- 270 **Infections Caused by *Brucella*, *Francisella tularensis*, *Pasteurella*, *Yersinia* Species, and *Bordetella pertussis* (Whooping Cough), 1604**
Nancy K. Henry, Walter R. Wilson, and J. Owen Hendley
- 271 **Infections Caused by *Bacteroides* and Other Mixed Nonsporulating Anaerobes, 1613**
Anthony W. Chow
- 272 **Infections Caused by Legionellae, 1621**
Washington C. Winn, Jr. and Christopher J. Grace
- 273 **Tuberculosis and Nontuberculous Mycobacterial Infections, 1625**
Julie R. Brahmer and Merle A. Sande
- 274 **Infections Caused by Spirochetes, 1640**
David Bangsberg and Michael F. Rein
- 275 **Infections With *Mycobacterium leprae* (Leprosy), 1648**
Reuben Granich and Jonathan H. Mermin

Fungal Diseases

- 276 **Infections Caused by Common Fungi, 1651**
Thomas F. Patterson and John R. Graybill
- 277 **Infections Caused by *Candida*, *Actinomyces*, and *Nocardia* Species, 1660**
John E. Edwards, Jr.
- 278 ***Cryptococcus neoformans* Infections, 1667**
Thomas F. Patterson

Protozoal Diseases

- 279 **Infections Caused by Protozoa, 1671**
Carolyn Petersen
- 280 ***Pneumocystis carinii* Infections, 1692**
Sharon Safrin

Helminthic Diseases

- 281 **Infections Caused by Helminths, 1696**
G. Richard Olds

PART NINE

ENDOCRINOLOGY, METABOLISM, AND GENETICS

I BASIC PHYSIOLOGY

- 282 **Principles of Endocrine Physiology, 1708**
Richard M. Jordan and Peter O. Kohler
- 283 **Physiology of Bone and Mineral Homeostasis, 1714**
Gregory R. Mundy and Charles A. Reasner II
- 284 **Principles of Genetic Disorders, 1721**
Robb E. Moses and R. Ellen Magenis

II LABORATORY TESTS

- 285 **Laboratory Diagnosis in Endocrinology, 1732**
Richard M. Jordan and Peter O. Kohler
- 286 **Diagnostic Approach to Bone and Mineral Disorders, 1744**
Gregory R. Mundy and Charles A. Reasner II

III CLINICAL SYNDROMES

- 287 **Weight Loss, 1748**
Richard M. Jordan and Peter O. Kohler
- 288 **Obesity, 1750**
Edward S. Horton
- 289 **Weakness, 1753**
David L. Vesely
- 290 **Hirsutism, 1755**
D. Lynn Loriaux
- 291 **Amenorrhea, 1757**
William F. Crowley, Jr.
- 292 **Impotence and Altered Libido, 1760**
John C. Marshall
- 293 **Gynecomastia, 1764**
John C. Marshall
- 294 **Disorders of Adolescent Growth and Development, 1766**
H. Verdain Barnes

IV DISORDERS OF THE ENDOCRINE GLANDS

SPECIFIC ENDOCRINE, METABOLIC, AND GENETIC DISORDERS

- 295 **Disorders of the Hypothalamus and Anterior Pituitary, 1773**
Shlomo Melmed and Glenn D. Braunstein
- 296 **Disorders of the Posterior Pituitary, 1788**
Gary L. Robertson
- 297 **Disorders of the Thyroid, 1797**
Gerald S. Levey and Irwin Klein
- 298 **Disorders of the Adrenal Cortex, 1817**
John Kendall and D. Lynn Loriaux
- 299 **Disorders of the Adrenal Medulla, 1826**
Alan Goldfien
- 300 **Disorders of the Ovary, 1832**
William F. Crowley, Jr.
- 301 **Disorders of the Testis, 1838**
Richard J. Santen
- 302 **Benign Breast Disease, 1846**
Richard J. Santen and Joann Pinkerton
- 303 **Diabetes Mellitus, 1850**
Alan J. Garber

- 304 **Hypoglycemia, 1874**
William E. Clutter and Phillip E. Cryer
- 305 **Heritable Disorders of Carbohydrate Metabolism, 1879**
Alan J. Garber
- 306 **Disorders of Lipids and Lipoproteins, 1883**
Scott M. Grundy
- 307 **Lipodystrophies, 1899**
M. Joycelyn Elders
- V METABOLIC DISORDERS IN ADULTS**
- 308 **Disorders of Amino Acid Metabolism, 1903**
Jess G. Thoene
- 309 **Lysosomal Storage Diseases, 1911**
Alan J. Garber
- 310 **Phakomatoses, 1920**
Thomas D. Gelehrter
- 311 **Disorders of Porphyrin Metabolism, 1923**
Joseph R. Bloomer
- 312 **Hypercalcemia, 1927**
John P. Bilezikian
- 313 **Hypocalcemia, 1930**
John P. Bilezikian
- 314 **Disorders of Phosphate Homeostasis, 1934**
Fuad N. Ziyadeh and Stanley Goldfarb
- 315 **Disorders of Magnesium Homeostasis, 1939**
Sidney Kobrin and Stanley Goldfarb
- 316 **Osteoporosis, 1944**
Lawrence G. Raisz
- 317 **Osteomalacia and Disorders of Vitamin D Metabolism, 1949**
L. Lyndon Key, Jr. and Norman H. Bell
- 318 **Paget's Disease of Bone, 1955**
Frederick R. Singer
- 319 **Osteopetrosis, 1958**
Gregory R. Mundy and Charles A. Reasner II
- 320 **Fibrous Dysplasia, 1960**
Gregory R. Mundy
- 321 **Renal Bone Disease, 1961**
Hartmut H. Malluche and Marie-Claude Monier-Faugere
- 322 **Primary Hyperparathyroidism, 1965**
John P. Bilezikian
- 323 **Malignant Disease and the Skeleton, 1971**
Gregory R. Mundy and Charles A. Reasner II

PART TEN

ALIMENTARY TRACT, LIVER, BILIARY TREE, AND PANCREAS**I PHYSIOLOGIC, BIOCHEMICAL, AND IMMUNOLOGIC PRINCIPLES**

ALIMENTARY TRACT

324 Alimentary Tract Motor Function, 1976

Raj K. Goyal

325 Gastric Secretion, 1980

Jean-Pierre Raufman

326 Intestinal Absorption, 1985

Jerry S. Trier

327 Intestinal Immunity, 1989

Martin F. Kagnoff

II DIAGNOSTIC PROCEDURES AND TESTS**328 Gastrointestinal Endoscopy, 1993**

Bret T. Petersen

329 Evaluation of Esophageal Disease, 1998

Konrad S. Schulze-Delrieu and Robert W. Summers

330 Evaluation of Gastroduodenal Diseases, 2002

Walter L. Peterson

331 Evaluation of Intestinal Disease, 2004

Nicholas O. Davidson

III CLINICAL SYNDROMES AND SPECIFIC DISEASE ENTITIES**332 Gastrointestinal Bleeding, 2008**

Gregory L. Eastwood

333 Esophageal Diseases, 2014

Robert W. Summers and Konrad S. Schulze-Delrieu

334 Nausea, Vomiting, and Anorexia, 2025

Irfan Soykan and Richard W. McCallum

335 Abdominal Pain, 2030

T. Edward Bynum

336 Peptic Ulcer Disease, 2035

Juan-R. Malagelada

337 Gastritis and Other Gastric Diseases, 2041

Gregory L. Eastwood

338 Tumors of the Stomach, 2045

Robert C. Kurtz

339 Diarrhea, Constipation, and Irritable Bowel Syndrome, 2050

Robin D. Rothstein

340 Diseases of Small Bowel Absorption, 2056

Michael R. Charlton and Edward V. Loftus, Jr.

341 Idiopathic Inflammatory Bowel Disease, 2068

Stephen B. Hanauer

- 342 Intestinal Obstruction and Peritonitis, 2077**
T. Edward Bynum
- 343 Tumors of the Small and Large Intestines, 2080**
Charles J. Lightdale
- 344 Vascular Diseases of the Intestine, 2086**
T. Edward Bynum
- 345 Diverticular and Other Intestinal Diseases, 2089**
Michael D. Apstein
- 346 Gastrointestinal Manifestations of HIV Infection and AIDS, 2094**
Donald P. Kotler
- 347 Nutrition and Internal Medicine, 2099**
Elliot Weser and Eleanor A. Young
- LIVER, BILIARY TREE, AND PANCREAS**
- I PHYSIOLOGIC, BIOCHEMICAL, AND IMMUNOLOGIC PRINCIPLES**
- 348 Hepatic Metabolism, 2118**
Seymour M. Sabesin
- 349 Bile Production and Secretion, 2123**
James M. Crawford and Martin C. Carey
- 350 Pancreatic Secretion, 2129**
Laurence J. Miller
- II DIAGNOSTIC PROCEDURES AND TESTS**
- 351 Evaluation of Hepatobiliary Diseases, 2134**
Albert J. Czaja
- 352 Evaluation of Pancreatic Diseases, 2144**
C.S. Pitchumoni
- III CLINICAL SYNDROMES AND SPECIFIC DISEASE ENTITIES**
- 353 Jaundice and Disorders of Bilirubin Metabolism, 2147**
J. Donald Ostrow, Ronald P.J. Oude Elferink, and Piter J. Bosma
- 354 Principal Complications of Liver Failure, 2159**
Steven Schenker and Anastacio M. Hoyumpa
- 355 Acute and Chronic Viral Hepatitis, 2172**
Rakesh Vinayek and Jorge Rakela
- 356 Drug- and Toxin-Induced Liver Disease, 2184**
Hyman J. Zimmerman
- 357 Alcoholic Liver Diseases and Nonalcoholic Steatohepatitis, 2194**
David W. Crabb and Mats Estonius
- 358 Primary Biliary Cirrhosis, Primary Sclerosing Cholangitis, and Other Cholangiopathies, 2199**
Adil E. Bharucha and Keith D. Lindor
- 359 Hemochromatosis, Wilson's Disease, and Other Genetic Liver Diseases Affecting the Adult, 2203**
Kris V. Kowdley and Anthony S. Tavill

- 360 Hepatic Veno-Occlusive Diseases, 2207**
Stephen C. Hauser
- 361 Liver Abscesses and Cysts, 2209**
David R. Lichtenstein
- 362 Hepatic Tumors, 2212**
Gregory J. Gores
- 363 Liver Transplantation, 2217**
Michael F. Sorrell and Jeremiah P. Donovan
- 364 Biliary Tract Stones and Associated Diseases, 2220**
Michael D. Apstein
- 365 Other Diseases of the Gallbladder and Biliary Tree, 2231**
Stephen C. Hauser
- 366 Pancreatic Diseases, 2233**
C.S. Pitchumoni
- 367 Diseases of the Peritoneum, Mesentery, and Omentum, 2247**
James M. McGill

PART ELEVEN

SPECIAL TOPICS IN INTERNAL MEDICINE

- 368 Periodic Health Examination, 2254**
Suzanne W. Fletcher
- 369 Preoperative Evaluation, 2256**
Jane Appleby, C. Jeffrey Griffin, and Valerie A. Lawrence
- 370 Prevention and Control of Injuries, 2264**
Arthur L. Kellerman
- 371 Women's Health, 2267**
Jeane Ann Grisso, Michelle Berlin, Margo J. Krasnoff, and Anne W. Moulton
- 372 Medical Disorders During Pregnancy, 2272**
Andrea J. Singer
- 373 Gerontology and Geriatric Medicine, 2282**
Michael S. Katz and Meghan B. Gerety
- 374 Substance Abuse, 2293**
Booker T. Bush
- 375 Chronic Fatigue Syndrome, 2298**
Daniel J. Clauw
- 376 Common Eye Problems, 2300**
William G. Tsiaras and Ananth V. Mudgill
- 377 Common Ear, Nose, and Throat Problems, 2306**
Earl H. Harley
- 378 Drug Interactions and Adverse Effects, 2310**
David A. Flockhart

APPENDIX

- Immunization Schedule for Adults, 2315**

COLOR PLATES**PART II****DISEASES OF THE HEART AND BLOOD VESSELS**

- Plate II-1 Color flow velocities in diastole.
 Plate II-2 Color flow velocities in systole.
 Plate II-3 Color Doppler image—aortic regurgitation.
 Plate II-4 Color Doppler image—mitral regurgitation.

PART IV**HEMATOLOGY AND ONCOLOGY**

- Plate IV-1 Normal bone marrow.
 Plate IV-2 Colony-forming unit grown from human bone marrow.
 Plate IV-3 Maturing erythroid precursors in bone marrow.
 Plate IV-4 Erythrocyte morphology in peripheral blood.
 Plate IV-5 Lymphocyte morphology in peripheral blood.
 Plate IV-6 Granulocyte morphology in peripheral blood.
 Plate IV-7 Bone marrow of a patient with B₁₂ deficiency.
 Plate IV-8 Plasma cells in myeloma.
 Plate IV-9 Iron in normal bone marrow.
 Plate IV-10 Petechiae and hemorrhagic bullae in acute idiopathic thrombocytopenic purpura.
 Plate IV-11 Ringed sideroblasts in sideroblastic anemia.
 Plate IV-12 Leukoplakia of the lateral tongue.
 Plate IV-13 Erythroplakia of the soft palate.
 Plate IV-14 Deep infiltrating squamous cell carcinoma of the tongue.

PART VII**CLINICAL IMMUNOLOGY, RHEUMATOLOGY, AND DERMATOLOGY**

- Plate VII-1 Gram-stained expectorated sputum or transtracheal aspirate in aspiration anaerobic pneumonia.
 Plate VII-2 Lupus erythematosus.
 Plate VII-3 Dermatomyositis (Gottron's papules).
 Plate VII-4 Dermatitis herpetiformis.
 Plate VII-5 Basal cell carcinoma.
 Plate VII-6 Squamous cell carcinoma.
 Plate VII-7 A 45-year-old man with atypical mole syndrome and a history of two primary melanomas.
 Plate VII-8 Superficial spreading malignant melanoma.
 Plate VII-9 Psoriasis.
 Plate VII-10 Porphyria cutanea tarda.
 Plate VII-11 Stevens-Johnson syndrome.
 Plate VII-12 Erythema nodosum.
 Plate VII-13 Exanthematous eruption after administration of trimethoprim-sulfamethoxazole.

- Plate VII-14 Addison's disease.
 Plate VII-15 Toxic epidermal necrolysis.
 Plate VII-16 Necrobiosis lipoidica diabetorum.
 Plate VII-17 Acanthosis nigricans.
 Plate VII-18 Eruptive xanthomas.
 Plate VII-19 Xanthelasma.
 Plate VII-20 Papular lesions of sarcoidosis.
 Plate VII-21 The lesions of lupus pernio at the nasal orifice.
 Plate VII-22 Kaposi's sarcoma.

PART VIII**INFECTIOUS DISEASES**

- Plate VIII-1 Mature oocyst of *Isospora belli* in unstained fecal smear.
 Plate VIII-2 *Treponema pallidum* by dark-field microscopy.
 Plate VIII-3 Quellung reaction with pneumococcal omni serum.
 Plate VIII-4 Staphylococci.
 Plate VIII-5 *Haemophilus influenzae*.
 Plate VIII-6 Gram-negative rods in *Klebsiella pneumoniae* or others caused by Enterobacteriaceae or *Pseudomonas*.
 Plate VIII-7 Gram-stained expectorated sputum or transtracheal aspirate in aspiration anaerobic pneumonia.
 Plate VIII-8 Gram stain of spun cerebrospinal fluid in *Haemophilus influenzae* type B meningitis.
 Plate VIII-9 Gram stain of centrifuged cerebrospinal fluid in meningococcal meningitis.
 Plate VIII-10 Giemsa stain of bronchial washings demonstrating *Pneumocystis carinii* cysts.
 Plate VIII-11 Giemsa stain of conjunctiva scraping showing typical cytoplasmic inclusion of *Chlamydia trachomatis*.
 Plate VIII-12 *Leishmania* amastigotes in cutaneous leishmaniasis.
 Plate VIII-13 Photomicrographic scraping from base of a herpes blister demonstrating multinuclear giant cells.
 Plate VIII-14 Giemsa-stained blood smear in *Plasmodium falciparum* malaria.
 Plate VIII-15 Giemsa-stained blood smear in *Plasmodium vivax* malaria.
 Plate VIII-16 Trypomastigotes of *Trypanosoma brucei rhodesiense* in a Giemsa-stained thick blood smear.
 Plate VIII-17 Trypomastigote of *Trypanosoma cruzi* in a Giemsa-stained blood smear.
 Plate VIII-18 Petechial and purpuric skin lesions in a severe case of Rocky Mountain spotted fever.
 Plate VIII-19 Rocky Mountain spotted fever.
 Plate VIII-20 Desquamation following toxic shock syndrome.
 Plate VIII-21 Cutaneous lesions in meningococemia.

- Plate VIII-22 Cutaneous lesion in disseminated gonococcal infection.
- Plate VIII-23 Cutaneous lesion in a leukemic patient with overwhelming *Pseudomonas aeruginosa* septicemia.
- Plate VIII-24 Cutaneous sporotrichosis.
- Plate VIII-25 Erysipelas.
- Plate VIII-26 Periorbital *Haemophilus influenzae* cellulitis.
- Plate VIII-27 Elephantiasis nostras.
- Plate VIII-28 Hot tub folliculitis.
- Plate VIII-29 Staphylococcal scalded skin syndrome.
- Plate VIII-30 Acute gangrene of arm.
- Plate VIII-31 *Mycobacterium marinum*.
- Plate VIII-32 Modified Kinyoun stain of stool specimen demonstrating cryptosporidia.
- Plate VIII-33 Oocysts of *Cryptosporidium*.
- Plate VIII-34 Chancre of the penis.
- Plate VIII-35 Hematoxylin and eosin preparation from peripheral lymph node.
- Plate VIII-36 Lymph node biopsy with red-staining *Mycobacterium avium-intracellulare* organisms.
- Plate VIII-37 Transbronchial biopsy specimen in cytomegalovirus pneumonitis.
- Plate VIII-38 Cutaneous Kaposi's sarcoma lesions.
- Plate VIII-39 Kaposi's sarcoma lesion in colonic mucosa.
- Plate VIII-40 Typical lesion of bacillary angiomatosis.
- Plate VIII-41 Retinochoroiditis caused by cytomegalovirus infection.
- Plate VIII-42 Oral hairy cell leukoplakia.
- Plate VIII-43 Negri bodies in human patient with rabies.
- Plate VIII-44 Typical focus of rickettsial vasculitis in an arteriole.
- Plate VIII-45 Small intradermal hemorrhage at a focus of vasculitis.
- Plate VIII-46 Secondary syphilis.
- Plate VIII-47 Palmar lesions of secondary syphilis.
- Plate VIII-48 Ulcerative skin lesions of blastomycosis.
- Plate VIII-49 Lymphangitic spread of sporotrichosis.
- Plate VIII-50 Cerebrospinal fluid shows *Cryptococcus neoformans*.
- Plate VIII-51 Severe papilledema in cryptococcal meningitis.
- Plate VIII-52 *Entamoeba histolytica* in fecal specimen.
- Plate VIII-53 *Giardia lamblia* trophozoite and cyst.

**PART IX
ENDOCRINOLOGY, METABOLISM, AND GENETICS**

- Plate IX-1 Interstitial microdeletion of chromosome band 22q11.

- Plate IX-2 Background diabetic retinopathy.
- Plate IX-3 Exudative diabetic retinopathy.
- Plate IX-4 Proliferative diabetic retinopathy.
- Plate IX-5 Biopsies of iliac crest showing tetracycline labeling at the mineralization front in a normal subject and a patient with osteomalacia.

**PART X
ALIMENTARY TRACT, LIVER, BILIARY TREE,
AND PANCREAS**

- Plate X-1 Reflux esophagitis.
- Plate X-2 Lower esophageal ring.
- Plate X-3 Carcinoma of the stomach.
- Plate X-4 Crohn's disease.
- Plate X-5 Perianal manifestations of Crohn's disease.
- Plate X-6 Endoscopic photographs of Crohn's disease.
- Plate X-7 Histologic features of ulcerative colitis.
- Plate X-8 Endoscopic features of ulcerative colitis.
- Plate X-9 Pyoderma gangrenosum.
- Plate X-10 Oral aphthous ulcer in a patient with Crohn's disease.
- Plate X-11 Mulberry-shaped solitary cholesterol gallstone.
- Plate X-12 Close-packed faceted cholesterol gallstones.
- Plate X-13 Round solitary cholesterol gallstone.
- Plate X-14 Black polymer pigment gallstones.
- Plate X-15 Polarized light microscopy of bile-rich duodenal fluid.

**PART XI
SPECIAL TOPICS IN INTERNAL MEDICINE**

- Plate XI-1 Drusen in age-related macular degeneration.
- Plate XI-2 Optic nerve disc edema with peripapillary flame-shaped hemorrhages in malignant hypertension.
- Plate XI-3 Arteriovenous nicking in hypertension.
- Plate XI-4 Multiple areas of cotton-wool spots. Also visible are copper wiring and arteriovenous nicking.
- Plate XI-5 Macular star: deposition of hard exudate in the center of the macula.
- Plate XI-6 Silver wiring.
- Plate XI-7 Intraretinal microvascular abnormalities and venous beading in diabetic retinopathy.
- Plate XI-8 Neovascularization of the optic nerve and vitreous hemorrhage in diabetic retinopathy.
- Plate XI-9 Branch retinal vein occlusion.
- Plate XI-10 Central retinal vein occlusion.
- Plate XI-11 Cytomegalovirus retinitis.