



# DERMATOLOGY In general medicine

McGRAW-HILL BOOK COMPANY
A BLAKISTON PUBLICATION

New York
St. Louis
San Francisco
Düsseldorf
Johannesburg
Kuala Lumpur
London
Mexico
Montreal
New Delhi
Panama
Rio de Janeiro
Singapore

### DERMATOLOGY IN GENERAL MEDICINE

Copyright © 1971 by McGraw-Hill, Inc. All rights reserved. Printed in the United States of America. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Library of Congress Catalog Card Number 75-142967 07-021195-7

### 1234567890 RMRM 7987654321

This book was set in Optima by Ruttle, Shaw & Wetherill, Inc., and printed on permanent paper and bound by Rand McNally & Company. The designer was Wladislaw Finne. The editors were Paul K. Schneider and Stuart D. Boynton. John F. Harte supervised production.

### NOTICE

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required. The editors and the publisher of this work have made every effort to ensure that the drug dosage schedules herein are accurate and in accord with the standards accepted at the time of publication. The reader is advised, however, to check the product information sheet included in the package of each drug he plans to administer to be certain that changes have not been made in the recommended dose or in the contraindications for administration. This recommendation is of particular importance in regard to new or infrequently used drugs.

# CONTENTS

	Acknowledgments	xiii
	List of Contributors	xv
PART ONE	Chapter 1	
INTRODUCTION	General considerations	
TO DERMATOLOGY	Dermatology in the Perspective of General Medicine The Editors	3
IN GENERAL	The Impact of Skin Disease on the Person Donald J. Cohen	
MEDICINE	and Theodore Nadelson	5
	Chapter 2	-
	Fundamentals of dermatologic diagnosis	10
	Thomas B. Fitzpatrick and David P. Johnson	
PART TWO	Chapter 3	
BIOLOGY AND	Structure and development of the skin	
PATHOPHYSIOLOGY	Structure of the Skin George F. Odland and John M. Short	39
OF SKIN	Embryology of the Skin Ferdinando Serri and Decio Cerimele	49
	Principles of Skin Development B. Allen Flaxman	54
	Comparative Anatomy and Function of the Skin William Montagna	59
	Dermatoglyphics Harold Cummins	72
	Chapter 4	
	Biochemistry and physiology of the epidermis	
	and its appendages Replacement Kinetics Gerald D. Weinstein and Phillip Frost	78
	Epidermal Proteins Howard P. Baden and Irwin M. Freedberg	87
	Lipogenesis Ruth K. Freinkel	95
	Eccrine and Apocrine Secretory Glands Gary W. Cage	103
	Transport Across Epithelial Membranes Irvin H. Blank	109
	Chapter 5	
	The melanocyte system	
	Biology of the Melanin Pigmentary System Thomas B. Fitzpatrick, Walter C. Quevedo, Jr., George Szabó, and Makoto Seiji	117
	Walter C. Quevedo, Jr., George 32abo, and Makoto Serji	11.7
	Chapter 6	
	Biology of connective tissues	
	Introduction to Connective Tissue Components Arthur Z. Eisen	
	and Jerome Gross	147
	Collagen Arthur Z. Eisen and Jerome Gross	150
	Elastin Carl Franzblau  Mucopolysaccharides of Ground Substance Jeremiah E. Silbert	168 175
	The Healing of Cutaneous Wounds Hermes C. Grillo	183
	The realing of cutaneous rrounds Treffiles C. Offile	103

v

	Chapter 7 Pathophysiologic reactions of the skin Basic Pathologic Reactions of the Skin Richard J. Reed	
	and Wallace H. Clark, Jr.	192
	Neurophysiologic Reactions of the Skin: Pathophysiology of Pruritus Allan L. Lorincz	212
DART TURES	Charles 0	
PART THREE DISORDERS	Chapter 8 Disorders with epidermal proliferation	
PRIMARILY	Psoriasis Eugene J. Van Scott and Eugene M. Farber	219
AFFECTING	Psoriatic Arthritis Roger L. Black	231
THE SKIN AND	Reiter's Syndrome Harold O. Perry	236
MUCOUS	Pustular Eruptions of the Palms and Soles Harold O. Perry	243
MEMBRANE	Ichthyosiform Dermatoses Phillip Frost and Gerald D. Weinstein	249
	Darier-White Disease (Keratosis Follicularis) Phillip Frost	266
	Porokeratosis Marvin E. Chernosky	271
	Corns and Calluses Phillip Frost	276
	Pityriasis Rubra Pilaris Gerald D. Weinstein	277
	Keratosis Pilaris Robert Katz	280
	Parapsoriasis Robert Katz	281
	Kyrle's Disease Robert Katz	283
	Acrokeratosis Verruciformis Robert Katz	285
	Lichen Spinulosus Robert Katz	287
	Keratoderma Climactericum Robert Katz	288
	Mal de Meleda Robert Katz Exfoliative Dermatitis Irwin M. Freedberg and Howard P. Baden	290 292
	Chapter 9	
	Disorders affecting the skin appendages	207
	Disorders of Nails Norda Zaiss and Hayard R. Radan	297
	Disorders of Nails Nardo Zaias and Howard P. Baden Diseases of Sebaceous Glands John S. Strauss	331 353
	Diseases of Eccrine Sweat Glands Gary W. Cage	375
	Diseases of Apocrine Sweat Glands Harry J. Hurley, Jr.	386
	Diseases of Apochine Sweat Glands Trarry J. Truriey, Jr.	300
	Chapter 10 Neoplasms of skin: neoplasms of epithelium	
	Epithelial Neoplasms and Precancerous Lesions Hermann Pinkus	399
	Squamous Cell Carcinoma Howard L. Stoll, Jr.	407
	Keratoacanthoma Feroze N. Ghadially	425
	Xeroderma Pigmentosum William E. Clendenning	436
	Tumors of the Skin Appendages Ken Hashimoto and Walter F. Lever	440
	Basal Cell Carcinoma Eugene J. Van Scott	466
	Therapy of Basal Cell Carcinoma Alfred W. Kopf	472
	Chapter 11	
	Neoplasms of skin: neoplasms of the melanocyte	
	Moles and Malignant Melanoma Wallace H. Clark, Jr.	
	and Martin C. Mihm, Jr.	491
	Chapter 12	
	Neoplasms of skin: neoplasms of the dermis	
	Neoplasms and Tumor-like Conditions of Neural and	
	Supporting Tissue Origin Richard I. Reed and Silas E. O'Ouinn	512

746 750

753

755

Granuloma Annulare Robert W. Goltz

Lipodystrophy Ervin H. Epstein, Jr.

Decubitus Ulcers Donald S. Pierce

Erythema Elevatum Diutinum Robert W. Goltz

	Chapter 16	
	Disorders of the mucocutaneous integument	
	Biology of the Human Oral Integument Howell O. Archard	760
	Common Stomatologic Disorders Howell O. Archard	795
	Stomatologic Manifestations of Internal and Integumental Disorders Howell O. Archard	011
	Miscellaneous Dermatoses Involving the External Genitalia	911
	Arthur B. Hyman and Martin H. Brownstein	950
	Author D. Hyman and Martin H. Drownstein	550
DART FOUR		
PART FOUR DISORDERS DUE	Chapter 17	
TO PHYSICAL AND	Disorders due to physical agents Disorders Associated with Exposure to Heat and Cold Frederick Urbach	
CHEMICAL AGENTS	and Walter P. Unger	961
CHEMICAL AGENTS	Evaluation and Treatment of the Patient with Thermally Injured Skin	301
	John F. Burke	973
	Normal and Abnormal Reactions of Man to Light Madhu A. Pathak	3, 3
	and John H. Epstein	977
	Pathologic Effects of Ionizing Radiation Frederick Urbach	1036
	Chapter 18	
	Disorders due to chemical agents	
	Cutaneous Reactions to Chemicals Donald J. Birmingham	1044
	Occupational Dermatoses Donald J. Birmingham	1061
PART FIVE	Chapter 19	
DERMATOLOGY	Nutritional diseases	
IN INTERNAL	Cutaneous Lesions in Nutritional Deficiencies Donald S. McLaren	1073
MEDICINE		
	Chapter 20	
	Cutaneous lesions in metabolic and heritable disorders	1000
	Genetics in Relation to the Skin Victor A. McKusick and R. S. Wells	1089
	Cutaneous Changes in Errors of Amino Acid Metabolism Mary L. Efron*	1000
	and William F. Gallagher  Cutaneous Changes in Errors of Amino Acid Metabolism: Alkaptonuria	1098
	Stephen E. Goldfinger	1115
	Skin Changes in the Agammaglobulinemias Fred S. Rosen	1113
	and Charles A. Janeway	1119
	Cutaneous Lesions in the Dysproteinemias Jan Waldenström	1124
	Cutaneous Lesions in Amyloidosis Evan Calkins and William J. Breen	1130
	Skin Changes in the Carcinoid Syndrome Seymour J. Gray	1138
	The Porphyrias Donald P. Tschudy, Ian A. Magnus, and James Kalivas	1143
	Skin Lesions in Gout J. Edwin Seegmiller	1167
	Plasma Lipid Abnormalities and Cutaneous Xanthomas	44=0
	Donald S. Fredrickson	1173
	Glycolipid Lipidosis: Fabry's Disease (Angiokeratoma Corporis	1102
	Diffusum Universale) Phillip Frost and George L. Spaeth Lipoid Proteinosis Joseph W. Burnett	1193 1202
	Calcification and Ossification of the Skin and Subcutaneous Tissues	1202
	Lawrence M. Miller and Stephen M. Krane	1204
	Heritable Disorders of Connective Tissue with Skin Changes	5,
	Victor A. McKusick	1211

<sup>\*</sup> Deceased,

	Chapter 21	
	Cutaneous changes in disorders of altered reactivity	
	Immunologic Considerations John H. Vaughan	1230
	Vascular Responses: The Anaphylactic Syndrome K. Frank Austen	1230
		1011
	and Albert L. Sheffer	1244
	Vascular Responses: Urticaria and Angioedema Albert L. Sheffer	74/44/3 3
	and K. Frank Austen	1261
	Serum Sickness William B. Chodirker and John H. Vaughan	1274
	Adverse Cutaneous Reactions to Drugs Rudolf L. Baer and Bernard B. Levine	1281
	Chapter 22	
	Cutaneous manifestations of diseases in other organ systems	
	The Skin and the Hematopoietic System William E. Clendenning	
	and John T. Boyer	1315
	The Histiocytosis Syndromes Allen C. Crocker	1328
		1339
	Cutaneous Manifestations of Hepatobiliary Disease William A. Tisdale	1339
	Cutaneous Manifestations of Disorders of the Alimentary Tract	124
	Richard Masters and Teodoro Herskovic	1347
	Neurocutaneous Diseases Raymond D. Adams and William B. Reed	1379
	Dermatologic Manifestations of Endocrine Disorders Ruth K. Freinkel	
	and Norbert Freinkel	1434
	Hirsutism Anne P. Forbes	1459
	Bonnevie-Ullrich-Turner Syndrome Robert W. Goltz	1466
	Nodules-on-the-Leg Syndromes José M. de Moragas	1471
	Systemic Vasculitis John A. Mills	1481
	Lupus Erythematosus Naomi F. Rothfield and Cyril H. March	1493
	Dermatomyositis John A. Mills	1518
	Scleroderma Arthur Z. Eisen	1525
	Scleredema Arthur Z. Eisen	1532
	Skin Manifestations of Rheumatic Diseases Eric G. L. Bywaters	1534
	Sjögren's Syndrome: Dermatologic Manifestations Kurt J. Bloch	1545
	Sarcoidosis D. Geraint James	1549
	Cutaneous Manifestations Associated with Malignant Internal Diseases Helen O. Curth	1561
	The Emotional Aspect of Cutaneous Disease Robert D. Griesemer	
	and Robert D. Mehlman	1581
	Abnormalities of the Melanin Pigmentary System Thomas B. Fitzpatrick	1301
	and Martin C. Mihm, Jr.	1591
	Skin Changes and Diseases in Pregnancy Robert B. Scoggins	1637
	Acrodermatitis Enteropathica Charles Grupper and Richard Masters	1648
	Cutaneous Changes in Peripheral Vascular Disease Edward A. Edwards	1652
	Cutaneous Changes III i enpheral vasculai Disease Luwards	1032
PART SIX	Chapter 23	
DISORDERS DUE	Bacterial diseases with cutaneous involvement	
TO MICROBIAL	General Considerations Morton N. Swartz and Arnold N. Weinberg	1679
AGENTS	Infections Due to Gram-positive Bacteria Morton N. Swartz	10/5
AGENTS		1603
	and Arnold N. Weinberg	1693
	Gram-negative Coccal and Bacillary Infections Arnold N. Weinberg	1712
	and Morton N. Swartz	1713
	Miscellaneous Bacterial Infections with Cutaneous Manifestations	4 70
	Arnold N. Weinberg and Morton N. Swartz	1727
	Mycobacterial Diseases: Tuberculosis Klaus Wolff	1743
	Mycobacterial Diseases: Leprosy Stanley G. Browne	1768
	Mycobacterial Diseases: Some Immunodynamic Considerations of Leprosy	
	Ward E. Bullock, Jr.	1782

	Chapter 24	
	Fungal diseases with cutaneous involvement	
	Superficial Mycotic Infections W. Kenneth Blaylock, H. Jean Shadomy,	21-12-72
	and Smith Shadomy	1786
	Deep Mycotic Infections John P. Utz and H. Jean Shadomy	1818
	Chapter 25	
	Rickettsial and viral diseases with cutaneous involvement	
	The Rickettsioses David E. Rogers and William Schaffner	1845
	General Considerations of Viral Diseases Joseph W. Burnett	1853
	Electron Microscopy of Viral Diseases of the Skin Marvin A. Lutzner	1858
	Rubella Charles A. Alford, Jr.	1862
	Measles Louis Z. Cooper	1867
	Exanthem Subitum (Roseola Infantum) Philip A. Brunell	1872
	Hand-Foot-and-Mouth Disease Martin C. Mihm, Jr.	1873
	Herpangina Robert H. Parrott	1876
	Herpes Simplex T. F. McNair Scott	1878
	Herpesvirus Varicellae (Herpes Zoster and Varicella) Charles A. Alford, Jr.	1892
	Smallpox and Complications of Smallpox Vaccination Vincent A. Fulginiti	1898
	Orf Ullin W. Leavell, Jr.	1908
	Milker's Nodules Joseph W. Burnett	1911
	Molluscum Contagiosum Joseph W. Burnett	1912
	Verrucae, Including Condyloma Acuminatum Joseph W. Burnett	1913
	vertucae, including condylotha Acuminatum Joseph W. Burnett	1913
	Chapter 26	
	Diseases possibly due to viruses	
	Pityriasis Rosea Joseph W. Burnett	1917
	Erythema Infectiosum Robert W. Goltz	1919
	Epidermodysplasia Verruciformis Joseph W. Burnett	1920
	Chapter 27	
	Chapter 27 Insect bites and infestations with cutaneous involvement	
	Protozoan and Helminth Infections Rodney C. Jung	1922
		1940
	Arthropod Bites and Stings Vincent J. Derbes	1940
	Chapter 28	
	Venereal diseases	
	Syphilis and Other Treponematoses Sidney Olansky and Leslie C. Norins Selected Aspects of the Immunology and Pathogenesis of Syphilis	1955
	Sidney Olansky and Leslie C. Norins	1976
	Chancroid Sidney Olansky and Leslie C. Norins	1978
	Lymphogranuloma Venereum Sidney Olansky and Leslie C. Norins	1980
	Granuloma Inguinale Sidney Olansky and Leslie C. Norins	1982
	Gonorrhea Sidney Olansky and Leslie C. Norins	1984
	Gonormea Statiey Olansky and Leslie C. Norms	1904
ADDENISH	Only and Catanana Bireday Brill D. Davids	1001
APPENDIX A	Ocular and Cutaneous Disorders David D. Donaldson	1991
APPENDIX B	Pediatric Dermatology Andrew E. Lorincz	1999
	Index	2007

# CONTENTS FOR COLOR ATLASES

Rashes occurring in the acutely ill febrile patient Thomas B. Fitzpatrick and Michael Fisher Plates I to VIII

Types of skin lesions Plates IX to XII

Common lesions encountered during the physical examination of the skin Plates XIII to XVI

Disorders primarily affecting the skin and mucous membranes; malignant melanoma; ochronosis Plates XVII to XXIV

Disorders of melanin pigmentation Plates XXV to XXXII

Cutaneous manifestations of diseases in other organ systems
Plates XXXIII to XL

## **ACKNOWLEDGMENTS**

In addition to the 143 contributors, there have been many individuals involved in the preparation of this book. The Editors would like to commend Mrs. Patricia K. Novak of Boston for her invaluable help in the preparation of this text for publication. The complexities of assembling the material from all the contributors were handled by her with ease and efficiency, facilitating the task for the Editors and producing a uniformity of technical style.

Most of the chapters were read by several members of the Staff and several Residents in Dermatology at the Harvard Medical School, particularly Drs. Ervin H. Epstein, Jr., Michael Fisher, B. Allen Flaxman, Gerald C. Goldman, Lowell A. Goldsmith, David P. Johnson, James T. Kalivas, Andrew Simone, and Mary Skinner.

We are indebted to our numerous medical colleagues for constant encouragement and advice regarding specific portions of the book. Dr. Geoffrey B. Dowling, Dr. Hugh Wallace, and Professor Samuel Shuster of London, Dr. George H. Findlay of Pretoria, South Africa, and Dr. Irvin H. Blank of Boston reviewed the section on "Dermatology in the Perspective of General Medicine" in Chapter 1. Drs. Nicholas J. Fiumara, Edward S. Murray, Thomas C. Peebles, David S. Feingold, and Arnold N. Weinberg, all of Boston, gave valuable assistance in the preparation of "An Atlas of Rashes Occurring in the Acutely III Febrile Patient" in Chapter 2. Dr. Marian W. Ropes, Physician at the Massachusetts General Hospital, made many helpful suggestions in the section on "Lupus Erythematosus" in Chapter 22. Dr. Jacob H. Swartz, Physician at Massachusetts General Hospital, critically reviewed the section on "Superficial Mycotic Infections" in Chapter 24. Dr. Walter F. Lever, Professor of Dermatology and Chairman of the Department, Tufts University School of Medicine, reviewed the section on "Pustular Eruptions of the Palms and Soles" in Chapter 8.

We are especially indebted to Pamela Berglund and Sidney J. Rosenthal of Arrco Medical Art & Design, Inc., for the preparation of illustrations, especially the halftones in Chapter 2. All of the unacknowledged color and the black and white photographs were taken by Mr. John Charles, Photographer of the Department of Dermatology, Harvard Medical School. Dr. Masamitsu Miyamoto, of Tokyo, gave expert advice to the Japanese printers in the arrangement and color corrections of the color plates.

The large number of photographs, both the color and the black and white, were made possible through the generosity of the following:

Burroughs Wellcome & Co. (U.S.A.) Inc. CIBA Pharmaceutical Company Dome Laboratories, Division Miles Laboratories, Inc. Duke Laboratories, Inc. Johnson & Johnson

Owen Laboratories Incorporated The Procter & Gamble Company Roche Laboratories, Division of Hoffman-La Roche Inc.

E. R. Squibb & Sons, Inc. Syntex Laboratories, Inc. Texas Pharmacal Company Westwood Pharmaceuticals

The index was compiled by a team of physicians with the guidance and assistance of Miss Maureen Clegg. Drs. Kenneth A. Arndt and John A. Parrish organized and implemented this work and were aided by the following Residents in Dermatology at the Harvard Medical School: Drs. Gary Brauner, Jean-Pierre DesGroseilliers, Michael Greenwald, Terry Hadley, Michael Jarratt, Paul Kechijian, Sheldon Pinnell, and Michael Pugliese.

We wish to express our gratitude to the secretarial staff of the Department of Dermatology, Massachusetts General Hospital, for their assistance in the preparation of the manuscripts.

We wish to acknowledge the cooperation of the McGraw-Hill Book Company staff, especially Messrs. Stuart Boynton, Eugene Capriotti, John Harte, and Paul Schneider, and of Wladislaw Finne, for their numerous helpful suggestions during the preparation of the book.

> Thomas B. Fitzpatrick Kenneth A. Arndt Wallace H. Clark, Jr. Arthur Z. Eisen Eugene J. Van Scott John H. Vaughan

Editor's Note: Each of the authors was permitted to add essential text and recent references and these additions will be found at the end of the individual contributions.

### LIST OF CONTRIBUTORS

RAYMOND D. ADAMS, B.A., M.A., M.D., M.A. (Hon.), D.Sc. (Hon.)

Bullard Professor of Neuropathology, Harvard Medical School; Chief of Neurology Service, Massachusetts General Hospital, Boston.

CHARLES A. ALFORD, JR., B.S., M.D., F.A.A.P.

Meyer Professor of Pediatric Research; Associate Professor of Microbiology and Clinical Pathology, Department of Pediatrics, The Medical Center, University of Alabama in Birmingham and The Children's Hospital, Birmingham.

J. RICHARD ALLISON, JR., A.B., M.D.

Consultant to U. S. Army, U. S. Air Force, U. S. Veterans Hospital, and U. S. Public Health Service, Columbia, South Carolina.

HOWELL O. ARCHARD, B.S., D.D.S.

Chief, Diagnostic Pathology Section, Experimental Pathology Branch, National Institute of Dental Research, Bethesda.

KENNETH A. ARNDT, M.D.

Assistant Professor of Dermatology, Harvard Medical School, Associate Dermatologist, Beth Israel Hospital, Boston.

K. FRANK AUSTEN, A.B., M.D.

Professor of Medicine, Harvard Medical School; Physician-in-Chief, Robert B. Brigham Hospital; Physician, Peter Bent Brigham Hospital, Boston.

HOWARD P. BADEN, A.B., M.D.

Associate Professor of Dermatology, Harvard Medical School; Associate Dermatologist, Massachusetts General Hospital, Boston.

RUDOLF L. BAER, M.D.

Professor and Chairman, Department of Dermatology, New York University Schools of Medicine, New York.

DONALD J. BIRMINGHAM, B.S., M.D., F.A.C.P. Professor, Department of Dermatology and Syphilology, Wayne State University School of Medicine; Chief of Dermatology Service, Detroit General Hospital, Detroit.

ROGER L. BLACK, M.D.

Associate Director, The Clinical Center, National Institutes of Health, Bethesda.

IRVIN H. BLANK, Ch.E., M.Sc., Ph.D.

Assistant Professor of Dermatology, Harvard Medical School (retired); Associate Biochemist, Massachusetts General Hospital, Boston.

W. KENNETH BLAYLOCK, B.A., M.D.

Professor of Medicine and Chairman of Division of Dermatology, Medical College of Virginia, Health Sciences Center, Virginia Commonwealth University, Richmond.

KURT J. BLOCH, M.D.

Associate Professor of Medicine, Harvard Medical School, Boston.

JOHN T. BOYER, M.D.

Associate Professor of Internal Medicine; Chief, Section of Clinical Immunology and Department of Internal Medicine, College of Medicine, University of Arizona, Tucson.

WILLIAM J. BREEN, A.B., M.D.

Assistant Professor of Medicine and Buswell Fellow, Department of Medicine, State University of New York at Buffalo and the Buffalo General and Edward T. Meyer Memorial Hospitals, Buffalo.

STANLEY G. BROWNE, O.B.E., M.D., F.R.C.P., F.R.C.S., D.T.M.

Director, Leprosy Study Centre; Consultant Adviser in Leprosy, Department of Health and Social Security, London, England.

MARTIN H. BROWNSTEIN, M.D.

Clinical Assistant Professor of Dermatology, New York Medical College-Metropolitan Hospital, New York; Visiting Scientist, Armed Forces Institute of Pathology, Washington, D.C.

PHILIP A. BRUNELL, B.S., M.S., M.D., F.A.A.P.

Associate Professor of Pediatrics, New York University Schools of Medicine; Associate Visiting Physician, Bellevue Hospital, New York.

WARD E. BULLOCK, JR., M.D.

Associate Professor of Medicine, University of Kentucky School of Medicine, Lexington.

JOHN F. BURKE, B.S., M.D.

Associate Professor of Surgery, Harvard Medical School; Visiting Surgeon, Massachusetts General Hospital; Chief of Staff, Shriners Burns Institute, Boston.

JOSEPH W. BURNETT, M.D.

Associate Professor of Dermatology in Medicine, University of Maryland School of Medicine, Baltimore.

ERIC G. L. BYWATERS, M.B., F.R.C.P.

Professor of Rheumatology, University of London; Physician, Hammersmith Hospital, London; Director, M.R.C. Rheumatism Unit, Taplow; Physician, Canadian Red Cross Memorial Hospital, Taplow, England.

GARY W. CAGE, M.D.

Assistant Clinical Professor of Medicine (Dermatology), Georgetown University Medical School, Washington, D.C.

EVAN CALKINS, M.D.

Professor and Chairman, Department of Medicine, State University of New York at Buffalo; Director of Medicine, Edward J. Meyer Memorial Hospital, Buffalo; Attending Physician, The Buffalo General Hospital, Buffalo.

DECIO CERIMELE, M.D.

Assistant Professor, Department of Dermatology, University of Pavia, Pavia, Italy.

MARVIN E. CHERNOSKY, B.A., M.D.

Clinical Associate Professor of Dermatology, Baylor University College of Medicine, Houston, Texas.

WILLIAM B. CHODIRKER, M.D., B.Sc. (Med.) F.R.C.P. (C) Assistant Professor of Medicine, University of Western Ontario, London, Ontario, Canada.

WALLACE H. CLARK, JR., B.S., M.D.

Professor of Pathology, Temple University School of Medicine, Philadelphia.

WILLIAM E. CLENDENNING, B.S., M.D.

Chairman, Section of Dermatology, Hitchcock Clinic; Associate Clinical Professor of Medicine, Dartmouth Medical School, Hanover, New Hampshire.

DONALD J. COHEN, B.A., M.D.

Clinical Fellow in Psychiatry, Harvard Medical School; Resident in Child Psychiatry, The Children's Hospital Medical Center and the Judge Baker Guidance Center, Boston.

LOUIS Z. COOPER, B.S., M.D.

Associate Professor of Pediatrics, New York University Schools of Medicine, New York.

ALLEN C. CROCKER, M.D.

Associate Professor of Pediatrics, Harvard Medical School; Senior Associate in Medicine, The Children's Hospital Medical Center, Boston.

HAROLD CUMMINS, Ph.D.

Emeritus Professor of Anatomy, School of Medicine, Tulane University, New Orleans.

HELEN O. CURTH, M.D.

Special Lecturer in Dermatology (Assistant Clinical Professor of Dermatology, Retired), Department of Dermatology, College of Physicians and Surgeons, Columbia University, New York.

JOSÉ M. de MORAGAS, M.D., M.S.

Consultant Dermatologist, Hospital de la Santa Cruz y San Pablo, Universidad Autónoma de Barcelona, Barcelona, Spain.

VINCENT J. DERBES, M.D.

Chief, Section of Allergy-Dermatology, Department of Medicine, Tulane University School of Medicine, New Orleans.

ALAIN L. de WECK, M.D.

Privat-Docent, Chief, Division of Allergy and Clinical Immunology, Department of Dermatology, Inselspital, University of Bern, Bern, Switzerland.

DAVID D. DONALDSON, M.D.

Associate Professor of Ophthalmology, Harvard Medical School; Associate Surgeon, Massachusetts Eye and Ear Infirmary; Ophthalmic Consultant, Massachusetts General Hospital, Boston.

EDWARD A. EDWARDS, M.D.

Surgeon, Peter Bent Brigham Hospital; Clinical Professor of Anatomy, Harvard Medical School, Boston.

MARY L. EFRON, B.A., M.D. (Deceased September 1967) Assistant Professor of Neurology, Harvard Medical School, Boston.

ARTHUR Z. EISEN, B.A., Sc.M., M.D.

Associate Professor of Medicine (Dermatology) and Director, Division of Dermatology, Department of Medicine, Washington University School of Medicine; Dermatologist-in-Chief, Barnes Hospital, St. Louis.

ERVIN H. EPSTEIN, JR., M.D.

Clinical Associate, Dermatology Branch, National Cancer Institute, National Institutes of Health, Bethesda.

JOHN H. EPSTEIN, B.A., M.S., M.D.

Associate Clinical Professor of Dermatology, University of California School of Medicine, San Francisco.

EUGENE M. FARBER, M.D.

Professor and Chairman, Department of Dermatology, Stanford University School of Medicine, Stanford, California.

MICHAEL FISHER, A.B., M.D.

Associate in Medicine (Dermatology), Albert Einstein College of Medicine, Bronx, New York.

THOMAS B. FITZPATRICK, B.A., M.D., PH.D.

Wigglesworth Professor of Dermatology and Head of the Department of Dermatology, Harvard Medical School; Chief, Dermatology Service, Massachusetts General Hospital, Boston.

B. ALLEN FLAXMAN, A.B., M.D.

Assistant Professor of Dermatology, Skin and Cancer Hospital, Temple University Medical School, Philadelphia.

ANNE P. FORBES, M.D.

Assistant Clinical Professor of Medicine, Harvard Medical School; Associate Physician, Massachusetts General Hospital, Boston.

CARL FRANZBLAU, Ph.D.

Associate Professor, Department of Biochemistry, Boston University School of Medicine, Boston.

DONALD S. FREDRICKSON, B.S., M.D.

Chief of Molecular Disease Branch and Director of Intramural Research, National Heart and Lung Institute, Bethesda.

IRWIN M. FREEDBERG, M.D.

Associate Professor of Dermatology, Harvard Medical School; Head of Department of Dermatology, Beth Israel Hospital, Boston.

NORBERT FREINKEL, B.A., M.D.

Kettering Professor of Medicine; Chief, Section of Endocrinology and Metabolism, Northwestern University Medical School, Chicago.

RUTH K. FREINKEL, B.A., M.D.

Associate Professor of Dermatology, Northwestern University Medical School, Chicago.

OSCAR L. FRICK, M.D., Ph.D.

Associate Professor, Department of Pediatrics, University of California, San Francisco.

PHILLIP FROST, B.A., M.D.

Assistant Professor of Dermatology, University of Miami Medical School, Miami.

VINCENT A. FULGINITI, M.D.

Professor and Head, Department of Pediatrics, University of Arizona College of Medicine, Tucson.

WILLIAM F. GALLAGHER, B.A., M.D.

Instructor in Dermatology, Harvard Medical School,

FEROZE N. GHADIALLY, M.D., Ph.D., D.Sc., M.R.C. Path.

Professor of Pathology, University of Saskatchewan, Saskatoon, Canada.

STEPHEN E. GOLDFINGER, M.D.

Assistant Professor in Medicine, Harvard Medical School; Assistant Physician, Massachusetts General Hospital, Boston.

ROBERT W. GOLTZ, B.S., M.B., M.D.

Professor and Head, Division of Dermatology, University of Colorado Medical Center, Denver.

SEYMOUR J. GRAY, M.D., Ph.D.

Associate Clinical Professor of Medicine, Harvard Medical School; Visiting Professor of Nutrition, Massachusetts Institute of Technology, Boston.

ROBERT D. GRIESEMER, M.D.

Assistant Professor of Dermatology, Harvard Medical School; Senior Associate in Medicine (Dermatology), Peter Bent Brigham Hospital; Senior Associate in Medicine (Dermatology), The Children's Hospital Medical Center, Boston.

HERMES C. GRILLO, A.B., M.D.

Associate Clinical Professor of Surgery, Harvard Medical School; Visiting Surgeon, Massachusetts General Hospital, Boston.

JEROME GROSS, M.D.

Professor of Medicine, Harvard Medical School; Biologist, Massachusetts General Hospital, Boston.

CHARLES GRUPPER, M.D.

Chief, Department of Dermatology, Rothschild Foundation, Paris, France.

KEN HASHIMOTO, M.D.

Associate Professor of Dermatology and Anatomy, University of Tennessee College of Medicine; Medical Investigator, Memphis Veterans Administration Hospital, Memphis.

HARLEY A. HAYNES, M.D.

Assistant Professor of Dermatology, Harvard Medical School; Clinical Assistant in Dermatology, Massachusetts General Hospital, Boston.

TEODORO HERSKOVIC, M.D.

Assistant Professor of Medicine, Department of Medicine, and Assistant Director, Clinical Research Center, Yale University School of Medicine, New Haven.

HARRY J. HURLEY, JR., M.D., D.Sc. (Med.)

Professor of Clinical Dermatology, University of Pennsylvania School of Medicine, Philadelphia.

ARTHUR B. HYMAN, M.D.

Professor of Clinical Dermatology, New York Unisity Schools of Medicine, New York.

D. GERAINT JAMES, M.A., M.D., F.R.C.P.

Dean, Royal Northern Hospital; Consultant Physician, Royal Eye Hospital Medical Unit, London, England.

CHARLES A. JANEWAY, A.B., M.D.

Thomas Morgan Rotch Professor of Pediatrics, Harvard Medical School; Physician-in-Chief, The Children's Hospital Medical Center, Boston.

DAVID P. JOHNSON, B.A., M.D.

Chief, Epidemiology Division, and Director, Field Laboratory, U. S. Naval Medical Research Unit No. 4, Great Lakes, Illinois.

RODNEY C. JUNG, B.S., M.D., M.S., Ph.D., F.A.C.P. Director of Health, City of New Orleans; Professor of Tropical Medicine, Tulane University School of Public Health and Tropical Medicine, New Orleans.

JAMES KALIVAS, B.S., M.A., M.D.

Assistant Professor of Medicine and Head, Division of Dermatology, Kansas University Medical Center, Kansas City, Kansas.

ROBERT KATZ, M.D.

Clinical Assistant Professor of Medicine (Dermatology), Georgetown University School of Medicine, Washington, D.C.

ALFRED W. KOPF, A.B., M.D., M.S.

Professor of Dermatology, New York University Schools of Medicine; Head, Oncology Section, Skin and Cancer Unit, University Hospital, New York University Medical Center, New York.

STEPHEN M. KRANE, M.D.

Associate Professor of Medicine, Harvard Medical School; Physician, Medical Services, and Chief, Arthritis Unit, Massachusetts General Hospital, Boston.

ULLIN W. LEAVELL, JR., M.D.

Associate Professor of Medicine (Dermatology), University of Kentucky Medical Center, Lexington.

WALTER F. LEVER, M.D.

Professor of Dermatology and Chairman of the Department, Tufts University School of Medicine; Director of Dermatology, Boston City Hospital, Boston.

BERNARD B. LEVINE, M.D.

Associate Professor of Medicine, New York University Schools of Medicine, New York.

ALLAN L. LORINCZ, M.D.

Professor and Head, Section of Dermatology, Department of Medicine, The University of Chicago, Chicago.

ANDREW E. LORINCZ, Ph.B., M.S., M.D., F.A.A.P. Associate Professor, Department of Pediatrics, University of Florida College of Medicine, Gainesville.

MARVIN A. LUTZNER, M.D.

Chief, Dermatology Branch, National Cancer Institute, National Institutes of Health, Bethesda.

ALAN LYELL, M.D.(Camb.), F.R.C.P.(Ed.), F.R.C.P.(Glas.) Consultant in Charge, Department of Dermatology, Royal Infirmary; Honorary Clinical Lecturer in Dermatology, University of Glasgow, Glasgow, Scotland.

VICTOR A. McKUSICK, M.D.

Professor of Medicine and Chief, Division of Medical Genetics, Johns Hopkins University School of Medicine, Baltimore.

DONALD S. McLAREN, M.B.Ch.B., M.D., Ph.D., D.T.M.&H.

Professor of Clinical Nutrition, School of Medicine, and Director of the Columbia-American University Beirut Nutrition Research Program; Adjunct Professor of Nutrition, Institute of Nutrition Sciences, Columbia University, New York.

IAN A. MAGNUS, M.A., M.D., F.R.C.P.

Reader in Photobiology, Post Graduate Medical Federation, University of London; Head of Photobiology Department, Institute of Dermatology, St. John's Hospital for Diseases of the Skin, London, England.

CYRIL H. MARCH, M.S., M.D.

Associate Clinical Professor of Dermatology, New York University Medical Center; Chief of Dermatology, Hospital for Joint Diseases and Medical Center, New York. RICHARD MASTERS, A.B., M.D., Ph.D.

Assistant Clinical Professor of Dermatology, Harvard Medical School; Assistant Dermatologist, Massachusetts General Hospital, Boston,

ROBERT D. MEHLMAN, B.A., M.D.

Director, Psychiatric Outpatient Department, Faulkner Hospital; Senior Psychiatrist, Massachusetts Mental Health Center; Clinical Instructor in Psychiatry, Harvard Medical School; Assistant in Psychiatry, The Children's Hospital Medical Center, Boston.

MARTIN C. MIHM, JR., A.B., M.D.

Research Fellow in Dermatology, Harvard Medical School; Clinical Fellow in Pathology, Massachusetts General Hospital, Boston.

LAWRENCE M. MILLER, M.D.

Clinical Instructor in Medicine, Harvard Medical School; Assistant Physician, Massachusetts General Hospital, Boston.

JOHN A. MILLS, B.A., M.D., F.R.C.P.

Associate Physician, Massachusetts General Hospital; Assistant Professor of Medicine, Harvard Medical School, Boston.

WILLIAM MONTAGNA, A.B., Ph.D., D.Sc., M.A.(ad eundum), D.B.S.(Hon.)

Director, Oregon Regional Primate Research Center; Chairman, Department of Cutaneous Biology, Oregon Regional Primate Research Center; Professor and Head, Division of Experimental Biology, and Professor, Division of Dermatology, University of Oregon Medical School, Portland.

SAMUEL L. MOSCHELLA, M.D.

Chairman of Department of Allergy and Dermatology of Lahey Clinic Foundation, Boston.

DOWLING D. MUNRO, M.B., B.S., M.R.C.P.

Consultant Dermatologist, St. Bartholomew's Hospital, London, and Edgware General Hospital, Middlesex, England.

THEODORE NADELSON, B.A., M.A., M.D.

Director of Medical Psychology, Beth Israel Hospital; Instructor in Psychiatry, Harvard Medical School; Associate in Psychiatry, Beth Israel Hospital, Boston. THOMAS P. NIGRA, M.D.

Clinical Associate, Dermatology Branch, National Cancer Institute, National Institutes of Health, Bethesda.

LESLIE C. NORINS, A.B., M.D., Ph.D. Chief, Venereal Disease Research Laboratory, National

Communicable Disease Center, U. S. Public Health Service, Atlanta.

GEORGE F. ODLAND, M.D.

Professor of Biological Structure and Medicine; Head, Division of Dermatology, University of Washington School of Medicine, Seattle.

SIDNEY OLANSKY, B.S., M.D.

Professor of Medicine (Dermatology), Emory University School of Medicine, Atlanta.

SILAS E. O'QUINN, M.D.

Professor of Dermatology and Head, Department of Dermatology, Louisiana State University School of Medicine, New Orleans.

CHARLES W. PARKER, M.D.

Associate Professor of Internal Medicine and Head of

Division of Immunology, Washington University School of Medicine, St. Louis.

FRANK PARKER, M.D.

Associate Professor of Medicine, Division of Dermatology, University of Washington School of Medicine,

ROBERT H. PARROTT, M.D.

Professor of Pediatrics, George Washington University School of Medicine; Director, Children's Hospital of the District of Columbia and Research Foundation of Children's Hospital, Washington, D.C.

MADHU A. PATHAK, B.Sc.(Hon.), M.Sc.(Tech.), M.S., Ph.D.

Assistant Professor of Dermatology, Harvard Medical School; Assistant Biochemist, Massachusetts General Hospital, Boston.

ROGER W. PEARSON, M.D.

Associate Professor of Dermatology, Presbyterian-St. Luke's Hospital; Associate Professor of Medicine and Dermatology, University of Illinois, Chicago.

HAROLD O. PERRY, M.D., M.S.

Consultant, Section of Medicine, Mayo Clinic; Associate Professor of Dermatology, Mayo Graduate School of Medicine (University of Minnesota), Rochester.

DONALD S. PIERCE, A.B., M.D.

Chief, Department of Rehabilitation, Massachusetts General Hospital; Clinical Associate, Orthopedic Surgery, Harvard Medical School; Associate Orthopedic Surgeon, Massachusetts General Hospital, Boston.

HERMANN PINKUS, M.D., M.S.

Professor and Chairman, Department of Dermatology, Wayne State University, School of Medicine, De-

WALTER C. QUEVEDO, JR., B.S., M.S., Ph.D.

Lecturer in Dermatology, Harvard Medical School, Boston: Professor of Biology, Division of Biological and Medical Sciences, Brown University, Providence.

RICHARD I. REED, M.D.

Professor, Department of Pathology, Tulane University School of Medicine, New Orleans.

WILLIAM B. REED, M.D., M.S., B.S.

Associate Clinical Professor of Medicine (Dermatology), University of California (Irvine); Consultant in Dermatology, Veterans Administration Hospital (Long Beach), Burbank.

DAVID E. ROGERS, M.D.

Professor of Medicine, Dean of the Medical Faculty, and Vice President (Medicine), The Johns Hopkins University School of Medicine, Baltimore.

FRED S. ROSEN, A.B., M.D.

Assistant Professor of Pediatrics, Harvard Medical School, Boston.

NAOMI ROTHFIELD, M.D.

Associate Professor of Medicine, University of Connecticut School of Medicine, Hartford.

WILLIAM SCHAFFNER, M.D.

Assistant Professor, Department of Medicine, Vanderbilt University School of Medicine, Nashville, Tennessee.