

Sutton

HANDBOOK of
DISEASES of the
SKIN

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by

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WITH 1057 ILLUSTRATIONS

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HANDBOOK OF DISEASES OF THE SKIN

To
Lena Igel Sutton
and
Serena Neel Sutton

PREFACE

The brevity and practicality at which I aimed in our *Synopsis of Diseases of the Skin* are also aims of this volume, which is intended to supply a text useful to medical students, practitioners, and specialists in dermatology. The medical student who knows a good deal of what is presented here in larger type will be better instructed in dermatology and syphilology than most medical students are. Practitioners seeking help in the interpretation and management of a case will profit from the illustrations, the prescriptions, and some of the material in smaller type. The scholar will find the volume comprehensive, for I have held to the policy of at least mentioning almost everything, and have included many thousands of bibliographic entries which enable one to find one's way about in the specialistic literature. These may be welcome even to the dermatologist certified as learned, whose memory, however disciplined, is unlikely to bear the burden of retaining everything at all times. This *Handbook* is more complete than our *Synopsis* and is less voluminous than the fourth edition of our *Introduction to Dermatology*.

Reviews of previous books of ours have received earnest deliberation, and the constructive criticisms have been adopted where they have not conflicted with the necessarily limited size of the book, or with each other, or with my desires. That I have colored the pages with personal views will please some readers and annoy others whose tastes or convictions differ from mine.

The order of presentation has been altered, with causation the principal guide to classification in the hope that it will appear logical to nondermatologists, who have tended with justification to think of dermatology as having possessed hitherto, to some extent, a viewpoint and language set apart from those of other sciences. I persist in wishing "to tie descriptions and concepts of disorders of the skin with general medicine and biology," as I wrote in 1938 in the preface of the tenth edition of our *Diseases of the Skin*.

Illustrations, numbering in excess of a thousand, have been carefully selected, trimmed, placed, and titled, their legends in appropriate instances giving the author and journal of their original publication.

References, abbreviated to their minimal consumption of space, have been incorporated within the textual material, where a reader can learn quickly to skip them or an investigator can use them immediately to find sources and elaborations of thoughts which have been trimmed, like the illustrations, to their essentials. Abbreviations of bibliographic references are on pages xi, ff.

The index should be pointed out as a source of a variety of information and guidance, especially under such titles as "Disease," "Prescription," "Syndrome," and "Test."

I would call attention to the technic of the treatment of contact dermatitis by elimination of all possible causes so that the patient is soon relieved, subsequently identifying the actual cause by systematic increment of the patient's chemical environment. This is original and effective. A practical technic is presented of detecting ingested allergens

for the relief of urticaria, for which I am indebted to my associate, Bernard H. Winston, M.D. The section on syphilis is consistent with the literature available through the time of completing the galley proof. The presentation of acne vulgaris as a pustular lipidosis has been modified only in details after twelve years of application have failed to disturb my belief in the veracity of my views on its interpretation and treatment. Psychosomatic aspects of dermatology have received consideration. Disturbances of growth comprise a chapter which pleases me.

Hermann Pinkus, M.D., supplied us with beautiful photomicrographs of normal adult and fetal skin, and largely from his collection is drawn the noteworthy illustrative material of the chapters on Anatomy and Embryology.

Debts to others have been given meticulous acknowledgment throughout the text. I would also acknowledge indebtedness and express gratitude to many individuals who personally have helped me. Charles R. Rein, M.D., contributed expositions of the technic of serologic tests for syphilis. E. V. Allen, M.D., allowed me to reprint material from *Peripheral Vascular Diseases* by himself and collaborators. Oswaldo G. Costa, M.D., L. Halberstaedter, M.D., Harry M. Robinson, M.D., Harry M. Robinson, Jr., M.D., and Edward A. Gall, M.D., are among those whom I wish also to thank for pictures. Stephen Epstein, M.D., reviewed the section on staphylococcal infections in the skin. Bernard H. Winston, M.D., Norman D. Asel, M.D., Herbert Siesener, M.D., Frank Dwyer, M.D., Jeannette Carter, Ph.D., Rosellen Kissinger, R.N., Corinne Gallup, Hazel Hill, and Nadine Houston protected me from avoidable pressure of medical practice, relief from which was essential to the accomplishment of medical writing. Miss Hill indefatigably transformed manuscript from illegible to legible form. Dr. Winston painstakingly sought out with me the typographic errors in the page proof. Miss Opal Woodruff, Librarian, University of Kansas Medical Center, and Mr. Park Crawford, Acting Librarian, Jackson County Medical Society, gave me expert and cheerful assistance.

The advisory capacity of Richard L. Sutton, Sr., has continued since his retirement in 1935 from medical writing and in 1940 from medical practice. His influence on the manner of thinking herein exemplified is more significant than would have been his contribution of a factual trifle here and there. His senior authorship is to be acknowledged, for he caused me to inherit a book, which is a responsibility, and he taught me to try to cure people.

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ABBREVIATIONS OF BIBLIOGRAPHIC REFERENCES

A	Archives (of)
abs	Abstracted in
ActaD-V	Acta dermato-venereologica
ADisChild	Archives of Disease in Childhood
ADS	Archives of Dermatology and Syphilology
AfDuS	Archiv für Dermatologie und Syphilis
AfpathAnat	Archiv für pathologische Anatomie
AIntM	Archives of Internal Medicine
AmHJ	American Heart Journal
AmJAnat	American Journal of Anatomy
AmJCa	American Journal of Cancer
AmJCIPath	American Journal of Clinical Pathology
AmJDigD	American Journal of Digestive Diseases
AmJDisChild	American Journal of Diseases of Children
AmJMSc	American Journal of the Medical Sciences
AmJOG	American Journal of Obstetrics and Gynecology
AmJOphth	American Journal of Ophthalmology
AmJP	American Journal of Pathology
AmJPubH	American Journal of Public Health and the Nation's Health
AmJR	American Journal of Roentgenology and Radium Therapy
AmJS	American Journal of Syphilis, Gonorrhea and Venereal Diseases
AmJSurg	American Journal of Surgery
AmJTropM	American Journal of Tropical Medicine
AmM	The American Journal of Medicine
AmRevTuberc	American Review of Tuberculosis
AnatRec	Anatomical Record
ANeurP	Archives of Neurology and Psychiatry
AnnAllergy	Annals of Allergy
AnndeD	Annales de dermatologie et de syphiligraphie
AnnIntM	Annals of Internal Medicine
AnnSurg	Annals of Surgery
AOphth	Archives of Ophthalmology
AOtol	Archives of Otolaryngology
APath	Archives of Pathology
APed	Archives of Pediatrics
APhysM	Archives of Physical Medicine
APhysTh	Archives of Physical Therapy
ASurg	Archives of Surgery
BeitrzKlinChir	Beiträge zur Klinische Chirurgie
BiolRev	Biological Reviews
BHeartJ	British Heart Journal
BJChildDis	British Journal of Childhood Diseases
BJD	British Journal of Dermatology and Syphilis
BJExpP	British Journal of Experimental Pathology
BJOphth	British Journal of Ophthalmology
BJPhysM	British Journal of Physical Medicine and Industrial Hygiene
BJRadiol	British Journal of Radiology
BJS	British Journal of Surgery
BJVD	British Journal of Venereal Diseases
BMBull	British Medical Bulletin
BMJ	British Medical Journal
BSocfrancD	Bulletin de la société française de dermatologie et de syphiligraphie
BullJHH	Bulletin of the Johns Hopkins Hospital
BullNYAM	Bulletin of the New York Academy of Medicine
BullUSAMD	Bulletin of the United States Army Medical Department
CalifM	California Medicine
CalWM	California and Western Medicine
CanadMAJ	Canadian Medical Association Journal
CanadPHJ	Canadian Journal of Public Health
CaRes	Cancer Research
ChinMJ	Chinese Medical Journal
Clin	Clinics

ClinSe	Clinical Science, Incorporating Heart
CurMDig	Current Medical Digest
DmedWehn	Deutsche medizinische Wochenschrift
DWehn	Dermatologische Wochenschrift
DZtsch	Dermatologische Zeitschrift
E AfrMJ	The East African Medical Journal
EdinMJ	Edinburgh Medical Journal
Edit	Editorial
Endocr	Endocrinology
FlaMAJ	Journal of the Florida Medical Association
Geriat	Geriatrics
IllMJ	Illinois Medical Journal
IndJMRes	Indian Journal of Medical Research
IndMGaz	Indian Medical Gazette
IndustM	Industrial Medicine
InternatClin	International Clinics
InternatJLepr	International Journal of Leprosy
IowaSMSJ	Journal of Iowa State Medical Society
J	Journal of the American Medical Association
JAllergy	Journal of Allergy
JAmDentA	Journal of the American Dental Association
JAnat	Journal of Anatomy
JapJD	Japanese Journal of Dermatology
JB&JSurg	Journal of Bone and Joint Surgery
JBact	Journal of Bacteriology
JBiolChem	Journal of Biological Chemistry
JClEndocr	Journal of Clinical Endocrinology
JClinInv	Journal of Clinical Investigation
JCutD	Journal of Cutaneous Diseases
JExpM	Journal of Experimental Medicine
JHyg	Journal of Hygiene
JImm	Journal of Immunology
JIndianaMA	Journal of the Indiana State Medical Association
JIndustHyg	Journal of Industrial Hygiene and Toxicology
JInfectD	Journal of Infectious Diseases
JInvD	Journal of Investigative Dermatology
JKansMS	Journal of Kansas Medical Society
J-Lancet	Journal-Lancet
JLaryng	Journal of Laryngology and Otology
JLCM	Journal of Laboratory and Clinical Medicine
JMAGa	Journal of Medical Association of Georgia
JMichSMS	Journal of the Michigan State Medical Society
JMoSMA	Journal of the Missouri State Medical Association
JMRes	Journal of Medical Research
JMSocNJ	Journal of the Medical Society of New Jersey
JNatCaInst	Journal of the National Cancer Institute
JNervMentDis	Journal of Nervous and Mental Disease
JObGBE	Journal of Obstetrics and Gynaecology of the British Empire
JOklaMA	Journal of Oklahoma State Medical Association
JPathBaet	Journal of Pathology and Bacteriology
JPed	Journal of Pediatrics
JPhExpT	Journal of Pharmacology and Experimental Therapeutics
JPhys	Journal of Physiology
JRoyAMC	Journal of the Royal Army Medical Corps
JTennMA	Journal of the Tennessee State Medical Association
JTropM	Journal of Tropical Medicine and Hygiene
JUrol	Journal of Urology
KlinWehn	Klinische Wochenschrift
KyMJ	Kentucky Medical Journal
Laryng	Laryngoscope

MannDC	Medical Annals of the District of Columbia
MCNA	Medical Clinics of North America
Med	Medicine, Analytical Reviews of General Medicine, Neurology and Pediatrics
MJ&R	Medical Journal and Record
MJAustral	Medical Journal of Australia
MinnM	Minnesota Medicine
MP&Circ	Medical Press and Circular
MRec	Medical Record
MTimes	Medical Times
NCarolMJ	North Carolina Medical Journal
NebrSMJ	Nebraska State Medical Journal
NEngJM	New England Journal of Medicine
NOrlMSJ	New Orleans Medical and Surgical Journal
NoWM	Northwest Medicine
NYSJM	New York State Journal of Medicine
OhioSMJ	Ohio State Medical Journal
OklasMAJ	Journal of the Oklahoma State Medical Association
PaMJ	Pennsylvania Medical Journal
Parasit	Parasitology
PHRpts	Public Health Reports
PhysRev	Physiological Reviews
PIMChi	Proceedings of the Institute of Medicine of Chicago
Pract	Practitioner
ProcRoySocM	Proceedings of the Royal Society of Medicine
PSExpB	Proceedings of the Society for Experimental Biology and Medicine
PSMMC	Proceedings of the Staff Meetings of the Mayo Clinic
PsychosomM	Psychosomatic Medicine
QJM	Quarterly Journal of Medicine
QMN	Queries and Minor Notes, in the Journal of the American Medical Association
Radiol	Radiology
RevMMex	Revista de medicina y ciencias afines
RhodeIslMJ	Rhode Island Medical Journal
RmtMJ	Rocky Mountain Medical Journal
SCNA	Surgical Clinics of North America
SGO	Surgery, Gynecology and Obstetrics
Sc	Science
SMJ	Southern Medical Journal
SM&S	Southern Medicine and Surgery
SouthSurg	The Southern Surgeon
SouthwestM	Southwestern Medicine
Surg	Surgery
TexasSJM	Texas State Journal of Medicine
UCutRev	Urological and Cutaneous Review
USNMBull	United States Naval Medical Bulletin
VaMMonth	Virginia Medical Monthly
VDI	Journal of Venereal Disease Information
WarM	War Medicine
WDTBM	War Department Technical Bulletin, Medicine, Washington, D. C.
WestJSOG	The Western Journal of Surgery, Obstetrics and Gynecology
WienMWchn	Wiener Medizinische Wochenschrift
WiscMJ	Wisconsin Medical Journal
YaleJBiol	Yale Journal of Biology and Medicine
YBD	Year Book of Dermatology and Syphilology, Year Book Publishers
YBPath	Year Book of Pathology, Year Book Publishers, Chicago
ZfBakt	Zeitschrift für Bakteriologie

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HANDBOOK OF DISEASES OF THE SKIN

ANATOMY

The skin is a soft, flexible, membranous covering which completely invests the body and is continuous at the natural orifices with the mucous membranes. Essentially it consists of (1) a connective tissue frame, incorporating blood vessels, lymph vessels, and nerves, comprising the dermis, and (2) an epithelial covering, the epidermis. Dermis is that which becomes leather when skin is tanned. Epidermis is that which forms the cap of a blister.

The skin ranges considerably in thickness and consistency on various parts of the body. It is the largest organ of the body, weighing three times as much as the liver. It serves principally in protection, heat regulation, sensation, and secretion. It is attached loosely or firmly to underlying structures so as to resemble a closely fitting, elastic garment. Its area averages 16,000 to 18,500 cm.² and its weight 3,000 to 3,500 gm. (Leider: J 134: 1565, 1947).

Superficially the skin is marked by tiny wrinkles and furrows. Underlying glands communicate with the surface through pores. On the palms and soles occur parallel ridges corresponding to rows of underlying dermal papillae. The color of the skin is determined by melanin pigment in the epithelium, by carotene, and by blood in the dermal capillaries.

Subcutaneous tissue is composed mainly of adipose lobules. It unites a regular surface with the deep fascia covering muscle and bone, and forms a resilient base for the overlying skin. Lobules of adipose tissue are latticed by an areolar, fibrous network which supports blood vessels and nerve trunks. Thickness of the adipose layer was investigated by Stuart and Sobel (JPed 28: 637, 1946). Fat is an important but ill understood special tissue and storehouse (Wells: PIMChi 13: 26, 1940).

Lines of cleavage result from the disposition of collagenous bundles under the influence of tension and, in general, parallel the natural creases and the direction of the hair roots (Cox: BJS 29: 234, 1941).

Epidermis.—This ectodermal investment consists of cornifying stratified squamous epithelium. It is apposed to the papillated surface of the underlying specialized mesodermal structure, the corium, or dermis. The basal membrane is the adhesive substance conjoining epidermis and dermis and behaves like a collagen jel, for separation of epidermis from dermis is effected by acids and bases at those hydrogen ion concentrations which cause swelling of gelatin (Felsher: JInvD 8: 35, 1947). Agents which swell these hydrophilic colloids, including NaSCN and NaI, decrease their cohesiveness, a fact which may explain their influence on dermatitis herpetiformis. Shrinking agents include Na₂SO₄ and Na citrate in 2N concentration. Karyokinetic division furnishes the layers from within outward. Mitoses occur twice as frequently in the night as during the day (Broders and Dublin: PSMMC 14: 423, 1939), and epidermis of glabrous skin renews itself continuously from within outward in about 7 days, corneous scales flaking off inconspicuously under normal conditions.

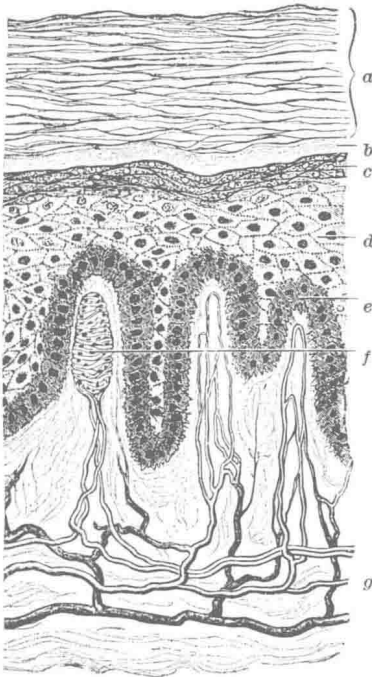


Fig. 1.

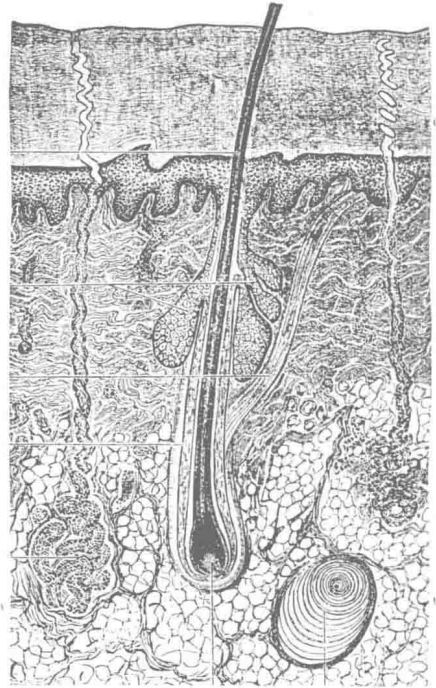


Fig. 2.

Fig. 1.—Section of skin, diagrammatic, showing (a) stratum corneum, (b) stratum lucidum, (c) stratum granulosum, (d) stratum mucosum, (e) stratum germinativum, (f) neural end organ in a dermal papilla, (g) vascular and neural plexuses in the dermis. (Cunningham's *Anatomy*.)

Fig. 2.—Section of skin, diagrammatic, showing two coiled sweat glands, a hair follicle, and a Pacinian corpuscle in their relation to the epidermal, dermal and adipose layers. (Cunningham's *Anatomy*.)

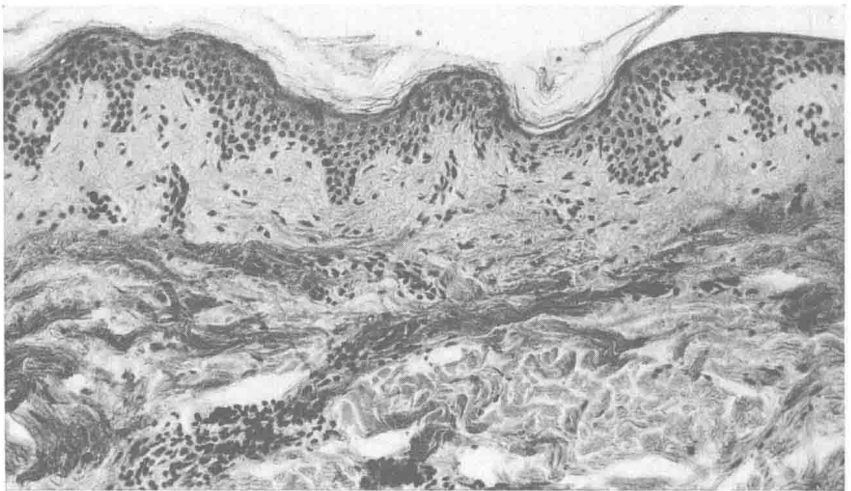


Fig. 3.—Normal skin from trunk. (Dr. H. Pinkus.)

The deep layer consists of palisaded basal cells elongated perpendicularly to the surface. The superficial ones become polygonal and flattened. These comprise the prickle-cell layer, or stratum mucosum. Its cells are soft and mucoid, nucleated, and rich in cytoplasm; their surfaces are covered with short protoplasmic spines, which give individual cells a cockle-bur appearance. Mitoses occur normally both in the prickle and basal layers (Thuringer: *JInvD* 2: 313, 1939; Pillemer et al.: *JExpM* 70: 387, 1939). The outermost cells of the prickle layer are differentiated, forming the stratum granulosum. They lie flattened parallel with the surface and contain, in addition to degenerating nuclei, coarse basophilic granules of keratohyaline, which is a precursor of the horny substance of the corneum.

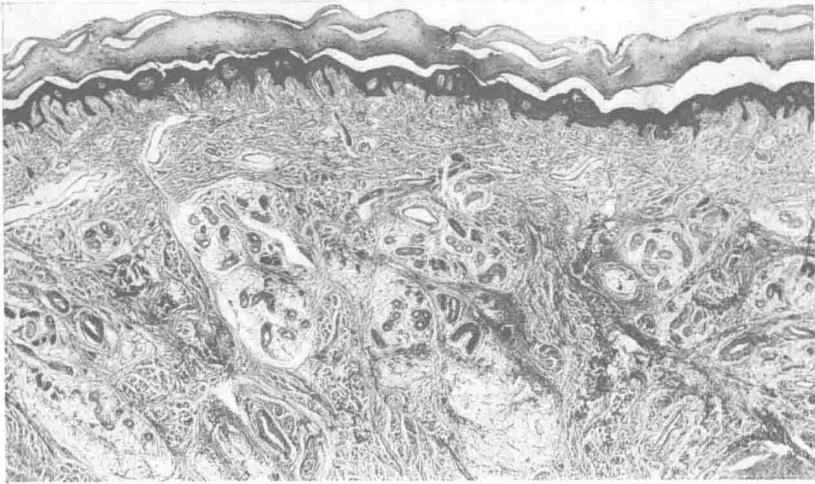


Fig. 4.—Normal skin from digit. (Dr. H. Pinkus.)

There is abrupt transformation from the stratum granulosum to a thin transparent layer of the stratum lucidum. Prominent in volar skin and absent in many regions, this consists of clear, flat cells containing droplets of eleidin, but nuclei and cell membranes are inconspicuous in ordinary preparations. Eleidin probably is intermediate chemically between keratohyaline and keratin. The outermost layer, the stratum corneum, is composed of flat, imbricated, keratinized cells, of which the superficial ones are horny scales (Ludford: *QJMicroscSe* 66: 27, 1924). At follicular orifices the cells are arranged in a circular manner, supplying a lining for the ducts. Ducts of sweat glands are separate from other epidermal cells, though resembling them. Keratin, the main constituent of the corneum, is resistant to acids, but less so to alkalis. Between the deep cells of the epidermis are branched, dendritic, pigment-containing cells. Clear cells, balloonlike and perhaps of neural function, also occur among the cells of the basal layer.

Dermis.—The dermis is the layer of fibrous and elastic tissue which underlies the epidermis. Its thickness, ranging from 0.3 to 3.3 mm., is least on the eyelids and prepuce and greatest on the soles, palms, and back. The superficial, papillary portion supports the epidermal basal layer and is intimately attached to it. The line of attachment, or basal membrane, is

of disputed structure but probably is fibrillar. Nutrient exchange occurs through the medium of tissue juices, for the epidermis is avascular. The deep portion of the dermis, the reticular part, consists of dense interlacing bundles of white fibrous tissue and merges beneath with the subcutaneous tissue. Slender, branching strands of yellow elastic tissue are

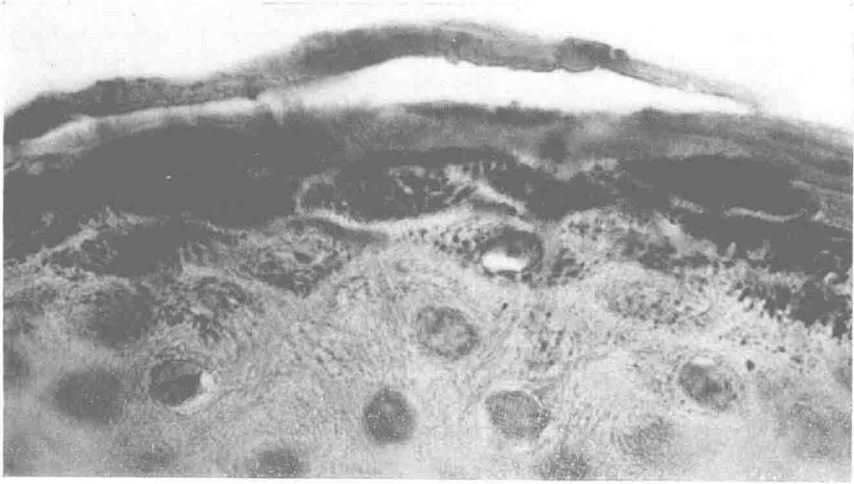


Fig. 5.—Epidermis, showing keratinization, granular layer, and corneum. (Dr. H. Pinkus.)

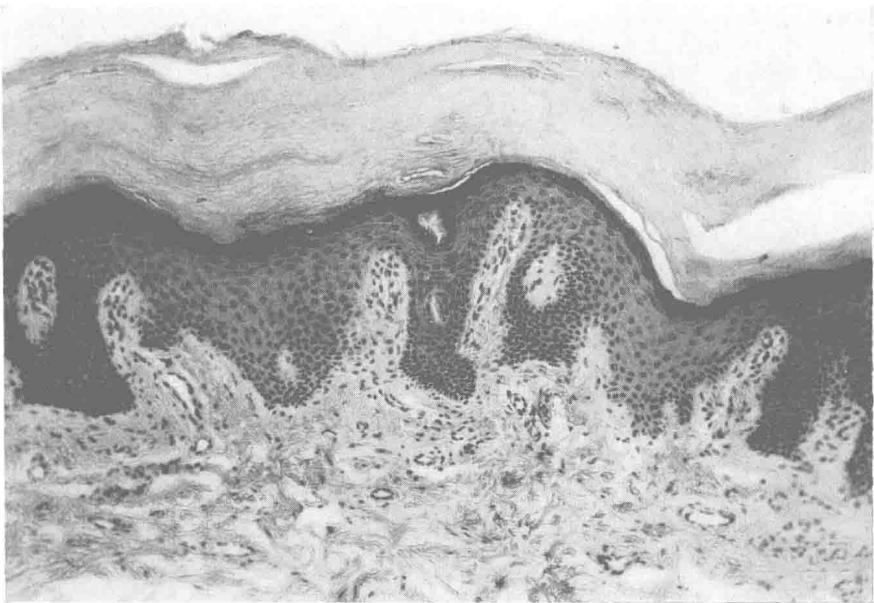


Fig. 6.—Skin of digit, showing normal corneum, epidermis, and papillary portion of dermis. Sweat duct in epidermis is centrally located in the photomicrograph. (Dr. H. Pinkus.)



Fig. 7.

Fig. 7.—Skin of chest, elastic fibers stained black. (Dr. H. Pinkus.)

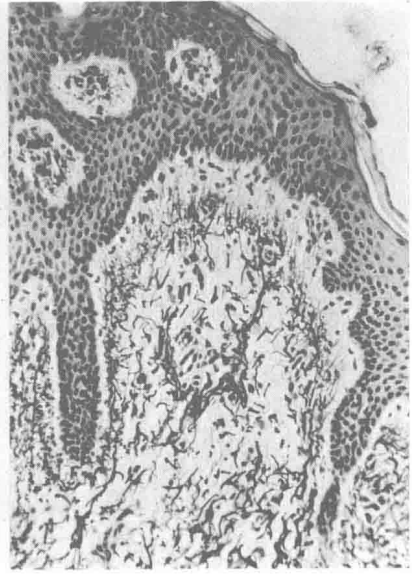


Fig. 8.

Fig. 8.—Elastic tissue of papillary layer of dermis. (Dr. H. Pinkus.)

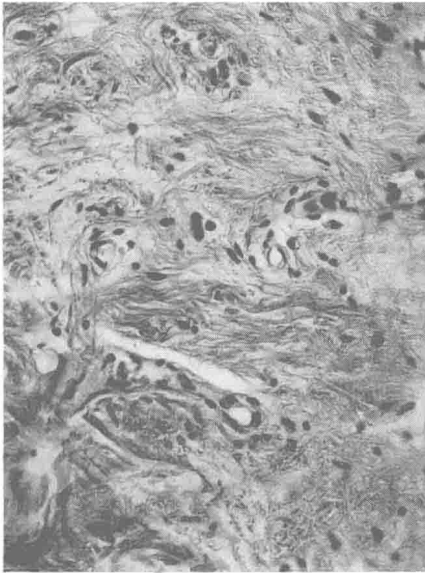


Fig. 9.

Fig. 9.—Connective tissues of normal dermis: collagenous bundles, fibrous tissue cells, and small vessels. (Dr. H. Pinkus.)



Fig. 10.

Fig. 10.—Arteriole, nerve and venule in deep part of normal dermis. (Dr. H. Pinkus.)