

UROLOGIC ROENTGENOLOGY

BY

MILEY B. WESSON, M.D.

Past President American Urological Association

Third Edition, Thoroughly Revised, with 284 Illustrations

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PREFACE TO THIRD EDITION

THIS volume is primarily concerned with clinical diagnosis confirmed by roentgenologic findings and proved at operation or autopsy. It should be of interest to the physician who wants to interpret his own films as well as to the urologist or roentgenologist preparing for Specialty Board examinations.

The author has rewritten the book, in order to modernize and condense the text and replace old illustrations with new ones, so that now practically all urologic conditions are depicted. A volume so compact must necessarily be dogmatic regarding noncontroversial subjects. It represents the author's belief, based on his long experience and knowledge of the literature. When a difference of opinion exists among the authorities an attempt is made to present the various views.

The references have been brought up to date. Some articles are included merely because they have voluminous bibliographies, and many of the titles that do not appear can be found in the given references.

I wish to express my gratitude to the members of the American Urological Association who have loaned their pictures, to Doctor G. A. Walker, Pathologist at St. Luke's Hospital, San Francisco, for technical assistance, and to the General Electric X-Ray Corporation for revising the section on X-ray apparatus.

M. B. W.

SAN FRANCISCO, CALIFORNIA.

PREFACE TO SECOND EDITION

THERE have been great advances in urologic roentgenology in recent years, and due to changes in mechanical equipment, the quality of the pictures has improved to a remarkable degree. For that reason, many illustrations have been substituted, the text has been practically rewritten, and the references have been brought up to date. Extraneous portions of the films have been trimmed, hence the right and left marks were removed; however, all exposures in which the patient was not in the supine position, are so labeled.

A compact book of this type is necessarily dogmatic regarding non-controversial subjects; but when differences of opinion exist between authorities, an attempt has been made to present all views. The aim is not to supply a treatise but to provide a *vade mecum* which will help the newcomer in urologic roentgenology to interpret his pictures.

I wish to express my gratitude to the members of the American Urological Association who have furnished me with material, and to the General Electric X-Ray Corporation for revising the section on X-ray apparatus, originally prepared by the late Howard E. Ruggles, M.D.

M. B. W.

SAN FRANCISCO, CALIFORNIA.

PREFACE TO FIRST EDITION

IN 1923, Dr. Howard A. Kelly; pioneer urologist and emeritus Professor of Gynecology, Johns Hopkins University, suggested the preparation of this volume. During the years that have elapsed, the members of the American Urological Association have made the book possible by sending us their unusual films that demonstrated diagnostic characteristics, accompanied by case histories. Many of the pictures originally selected have been discarded and replaced by better ones. Diagnoses based upon roentgenologic findings alone and unconfirmed clinical diagnoses have been eliminated, and in almost all of the accepted cases the diagnosis has been proven at operation or autopsy.

This volume was prepared to meet the needs of the physician who wants to learn to interpret urograms, be he urologist, roentgenologist, general practitioner or interne. Excellent treatises have been published for the specialist, but nothing for the general practitioner.

We are particularly indebted to Dr. J. Bentley Squier for use of the collection of pathological films of the J. Bentley Squier Urological Clinic, Presbyterian Hospital, Columbia University, New York City; to Miss Cornelia M. McCoy for technical assistance; and to Dr. George W. Fish for the preparation of the histories of these cases. Dr. W. P. Stowe, pathologist, has been of invaluable assistance to us in the bacteriologic and pathologic studies, and Dr. Charles C. Fulmer, roentgenologist, St. Luke's Hospital, San Francisco, has not only collaborated faithfully but prepared most of the prints.

No attempt has been made to give a complete list of authorities. However, the references are fairly comprehensive; they having been selected not only for their intrinsic value but because in many instances they have good bibliographies, which need not be repeated.

We want to thank Lea & Febiger for their patience and coöperation.

SAN FRANCISCO, CALIFORNIA

M. B. W.

H. E. R.

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Urologic Roentgenology

CHAPTER I

HISTORY OF UROGRAPHY

UROLOGY has become a most attractive specialty because of the accuracy of diagnosis based on routine systematic examination and the numerous checks and counterchecks on the various steps of the investigations. The most valuable single procedure is the delineation of the urinary tract with an opaque medium. Von Zeissl, in 1902, outlined the bladder by means of a shadowgraph fluid. In the same year, Wittek filled a bladder with air to demonstrate a stone, and two years later Koller reported using the same medium to outline a vesical diverticulum. Although this technic is commonly used abroad, it has never had wide use in the United States because of the pain of distention and the fear of air embolism. Perirenal insufflation of oxygen as a means of studying the kidney was developed independently and simultaneously by Carelli and Sordelli and by Rosenstein in 1921. In 1905, Voelcker and von Lichtenberg outlined the ureter and renal pelvis roentgenographically after injection of colloidal silver (2 per cent collargol). Two years later, Albarran and Ertzbischoff confirmed their work in a report before the French Urological Association. In 1909, Keyes advocated the use of 40 to 50 per cent argyrol. However, to Braasch, who employed 10 per cent collargol, is due the credit for popularizing urography in the United States. Sir John Thomson-Walker introduced the procedure in England in 1913.

Believing that the opacity of a substance to the roentgen rays depended on its atomic weight, J. E. Burns, in 1915, utilized a salt of thorium. A neutral solution of 10 per cent thorium nitrate was the preparation he chose. In 1918 the halogen salts were selected because of their lack of toxicity. Weld was responsible for the use of sodium bromide, which quickly lost favor, because it irritated the mucous membranes. Cameron found that 13.5 per cent sodium iodide cast a good shadow and caused the patient no discomfort even when extravasation occurred. This remained the most popular medium for retrograde urography until uroselectan and its successors were introduced.

Unfortunately, whenever a practical new diagnostic or therapeutic procedure is recommended by an authority, it immediately comes into almost universal use by both specialists and general practitioners. In the early days, numerous accidents and fatalities occurred due to over-injection, with tearing and infiltration of the kidney parenchyma and