

**DEMONSTRATIONS IN
PHYSIOLOGICAL AND
PATHOLOGICAL CHEMISTRY,
WITH A CONCISE ACCOUNT OF THE
CLINICAL EXAMINATION OF URINE**

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Demonstrations in Physiological and Pathological Chemistry, with a Concise Account of the
Clinical Examination of Urine by Charles Henry Ralfe

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CHARLES HENRY RALFE

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CLINICAL EXAMINATION OF URINE.

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PREFACE.

EXAMINATIONS in Physiology of late years have assumed a practical character. It is not sufficient now for a student to exhibit a general knowledge of the subject, acquired solely from a course of routine lectures and the perusal of a text-book, but he must prove that he has made observations for himself. He is expected to be able to prepare for microscopic examination the tissues and organs of the body, to test and separate the proximate principles and the chief products of decomposition; and to demonstrate the chemical composition and action of the secretions and the chief constituents of the tissues and nutritive fluids. In addition, he is expected to make himself practically acquainted with the chief physiological instruments and the methods of employing them.

In order to meet the increased requirements of the student in this respect, the ordinary course of lectures on Physiology has been supplemented by practical Demonstrations in most of the medical schools, and as far as Histology is concerned, the ordinary student has a sufficient choice of hand-books to direct him in his practical study. With Physiological Chemistry, however, the case is different ; for no text-book suitable to the requirements of the ordinary student has yet appeared, and demonstrators as a rule have made for themselves a synopsis of the characteristic reactions of the chief constituents of the tissues and secretions from the exhaustive and admirable treatise arranged by Klein, Foster, Burdon-Sanderson and Brunton, for the Physiological Laboratory and from German text-books.

The present volume took its origin in this way: On taking charge of the class in Physiological Chemistry at St. George's Hospital, six years ago, I wrote out a series of elementary papers giving the important chemical and physical characters and reactions of the proximate principles ; products of decomposition such as urea and uric acid ; the composition *and action of the digestive fluids* ; together with

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the characteristic reactions of blood, milk, &c. At each Demonstration the student had one of these papers given to him, and he worked through the reactions set down in it. In addition, however, to these elementary papers, I have added some of the more elaborate processes and reactions, in order to meet the requirements of more advanced students and those preparing for the examinations at the Universities of Oxford, Cambridge, and London, or for the Fellowship of the Royal College of Surgeons of London. These processes and reactions are distinguished by an asterisk.

LONDON, *August*, 1880.

"Chymia egregia ancilla medicinae, non alia peior domina."

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