

**LECTURES ON THE URINE
AND ON THE PATHOLOGY,
DIAGNOSIS, AND TREATMENT
OF URINARY DISEASES**

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Lectures on the urine and on the pathology, diagnosis, and treatment of urinary diseases by
John Aldridge

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OF

URINARY DISEASES.

BY JOHN ALDRIDGE, M.D.,

LECTURER OF CHEMISTRY AT THE MEDICAL SCHOOL, PARK STREET; MEMBER
OF THE ROYAL DUBLIN SOCIETY; AND OF THE PATHOLOGICAL AND
NATURAL HISTORY SOCIETIES OF DUBLIN.

DUBLIN :

SAMUEL J. MACHEN, 28, WESTMORLAND STREET

1846.

564.

TO
THE MEMBERS
OF THE
PATHOLOGICAL SOCIETY OF DUBLIN,

~~This Little Work~~

IS

RESPECTFULLY DEDICATED.

LECTURES ON THE URINE,

&c. &c.

INTRODUCTORY REMARKS.

By the advice of friends, on whose opinions I place reliance, I am induced to present these lectures to the profession in a collected form. They originally appeared in a periodical publication,* but under such circumstances, the reader could with difficulty follow the connection of the several parts, which necessarily were published at distinct and remote intervals. In their present form, I believe they will be found useful to practitioners, as supplying a want which is generally experienced.

It has not been my object, in the following pages, to inform the chemist, or to argue peculiar doctrines. For the more abstract and scientific knowledge of urinary analysis, I willingly refer to the works of Bird, Rees, and Simon. And, if the reader meet with, in these lectures, unusual views in pathology or diagnosis, he will find them fully discussed in my "Notes on Urinary Diseases," inserted at various times in the Dublin Medical Journal. These views have been fully sanctioned by many of the most eminent physicians and surgeons of the day. If, in these lectures, I introduce chemical details, they are confined to those which are necessary for explaining certain processes of morbid changes; or, for describing such methods of analysis as are best cal-

* Dublin Hospital Gazette.

culated for diagnosis; in either case, being equally indispensable to enlightened practice. And, if in the enunciation of opinions on points of pathology, diagnosis, or treatment, I may seem to speak dogmatically, it is because I believe them to be true, and to have been elsewhere argued successfully, and that I have been most anxious to avoid any unnecessary book-making.

It remains to point out in what manner the reader may render this little work most useful to himself. The principles which I wish to inculcate can be alone understood by studying the following lectures, continuously, throughout; but, for the purposes of reference, in aid of those who may wish to examine the diagnosis, pathology, or treatment of any particular disease, there is an index added, sufficiently copious and intelligible, it is hoped, for every useful object.

LECTURE I.

COMPOSITION OF THE URINE, PHYSICAL PROPERTIES.

HEALTHY urine is, when freshly passed, a clear liquid of an amber yellow colour; it possesses a peculiar aromatic odour, which nearly disappears by cooling, but again becomes sensible when we re-heat it. Its taste is disagreeable, saline, and bitter. On cooling it becomes slightly turbid, and deposits a light cloud, which has generally been called mucus. Its specific gravity varies by a great many circumstances, and cannot be considered abnormal between the limits 1.012, and 1.026. Its temperature varies, when passed, from 96° to 98° Fahrenheit. The quantity secreted by an adult during the day is usually between a pint and a half and three pints.

The physical characters of healthy urine are found to differ slightly in different individuals, and at different times in the same individual. It results from the observations of M. M. Rayer and Guibourt that the urine of infants is transparent and nearly colourless; inodorous, nearly neutral in its reaction, giving off, during evaporation, a smell similar to veal broth, of a low specific gravity. The same observers have found but little difference between the urine of the aged and adult. The quantity of drink, the amount of perspiration, &c., have the greatest influence on the physical characters of the urine; thus the *urina potus* is more abundant than the *urina cibi*; the former being that which is secreted after the taking of light vegetable food and emollient drinks; the latter, after the process of digestion has been concluded. In a similar manner, the use of the bath has been found to increase the quantity and diminish the specific gravity of the urine; this liquid is found to be more abundant and watery in winter than in summer: and the warmth of bed diminishes the necessity for passing water, by encouraging perspiration. Fear, terror, and other passions of the mind, are observed to possess an influence in modifying the quantity of urine, sometimes causing its suppression, but more frequently rendering it extremely copious. Moreover, M. Le Canu has ascertained that the solid and essential constituents of the urine are secreted in equal quantities, in equal times, by the same individual: but in unequal quantities, in equal times, by different individuals: so that the quantity and specific weight of urine which would be natural in one person, may be an evidence of disease in another; and we cannot be justified in regarding as morbid, varieties in the amount of this secretion, in different individuals, unless they are extreme.

CHEMICAL COMPOSITION.

The following is the analysis of the urine, made by Berzelius in 1809, which I select, partly on account of the high character of this chemist for extreme accuracy, and partly because it will enable me to point out the changes of opinion which have since taken place.

Water,	-	-	-	933,00
Urea,	-	-	-	30,10
Free lactic acid,	}	-	-	17,14
Lactate of ammonia,				
Extractive matters,				
Uric acid,	-	-	-	1,00
Mucous of the bladder,	-	-	-	0,32
Sulphate of potash,	-	-	-	3,71
Sulphate of soda,	-	-	-	3,16
Phosphate of soda,	-	-	-	2,94
Biphosphate of ammonia,	-	-	-	1,65
Chloride of sodium,	-	-	-	4,45
Chloride of ammonium,	-	-	-	1,50
Phosphate of lime, and	}	-	-	1,00
Phosphate of magnesia,				
Silica,	-	-	-	0,09
				<hr/> 1000,00

According to this analysis, the specimen of urine examined by Berzelius contained 67 grains of solid matter, dissolved in 933 grains of water. Now, this is the quantity of solid matter contained in urine of the specific gravity of 1,029, a density beyond the limits of health, so that in urine of the specific gravity of 1,015, (which is about the average) there would be contained little more than one-half the quantity of the different constituents which you see mentioned above. The 67 grains of extract contained in this urine of sp. gr. 1,029, may be perceived to consist of 30,10 of urea, 17,14 of lactic acid and extractive matters, and 19,76 of uric acid and inorganic salts: but it is not to be supposed that the entire quantity of salts in

proportion to the animal matters, (19,76 : 47,24) or even the mutual proportion of the salts to each other, is constantly the same as what is stated above: for the inorganic salts are exceedingly liable to vary in their nature and quantities: for example, the entire quantity of salts in this urine might have happened to be 15 grains, instead of 19 $\frac{3}{4}$, and then the density of the urine would be 1,027; and thus in one specimen, with a density of 1,029, the amount of urea would be equal to 30 grains, and another specimen of 1,027, would contain precisely the same quantity of this organic substance. You may deduce from this example, that neither the specific gravity of the urine, nor the quantity of extract yielded by evaporation, even in connection with an analysis such as the above, will be sufficient to enable you to learn by calculation with any approach to accuracy, the particular proportions of the several constituents of this secretion.

With respect to the individual elements of the urinary secretion, as noted by Berzelius, you perceive lactic acid, and lactate of ammonia, among the number. Now, Liebig has lately shown that perfectly fresh urine does not contain any free acid, nor does it even contain lactic acid at all. What led Berzelius into the error of supposing that it contained lactic acid, was the necessity for employing a very large quantity of this secretion, which consequently required a long time for its evaporation, during which spontaneous changes in composition took place, and certain acids became generated. You are then to recollect that perfectly normal urine contains no free acid; but it is not the less true, that it always has an acid reaction with blue litmus paper; this acid reaction is due, however, to the presence of acid salts, and not to free acid.

Now, having shewn you that healthy urine does not