

SCHEME FOR THE EXAMINATION OF THE URINE.

- I. Observe the color of the urine, its appearance, if clear, smoky, turbid, &c.
- II. Ascertain the specific gravity.
- III. Examine the reaction, whether acid, neutral, or alkaline, by means of litmus or turmeric paper.
- IV. Test the urine for albumen. If albuminous, examine microscopically for—Renal Casts; Pus Corpuscles; Red blood Corpuscles.
- V. Test the urine for sugar.
- VI. If there be no albumen or sugar present, and no deposit, the urine need not be further examined, unless some special indication exist.
- VII. But if any sediment be observed, the urine must be examined microscopically; the following enumeration of the more common deposits will assist the student:
 - Pink or reddish deposit, dissolved on heating test-tube—urate of soda.
 - White crystalline deposit, soluble in acetic acid—phosphates.
 - White amorphous flocculent deposit, renderedropy by alkalies—pus.
 - Brownish-red crystalline deposit—uric acid.
 - Red amorphous deposit—blood.

PHYSICAL EXAMINATION

The physical examination of the urine is the application of the senses to its investigation without the employment of chemical or microscopical aids. The colour, translucency, odour, and consistence are the only characters which can be ascertained by this simple method of observation.

Colour. Urine is ordinarily of a reddish yellow colour; but it may be as colourless as water, or dark brown black like porter; a smoky tint is absolutely diagnostic of the presence of blood; a brownish green suggests the presence of the colouring matter of the bile. Many drugs, as rhubarb and saffron, give a peculiar colour to the urine.

Translucency. In health, the urine deposits, after remaining at rest for a short time, a slight cloud of mucus, derived from the bladder and urinary passages; but, in all other respects, healthy urine is perfectly clear. On cooling, however, it may sometimes become turbid from the presence of urates, which are distinguished from other deposits by their appearing after the cooling of urine which was perfectly clear when passed. In disease the urine is often turbid when first voided; and pus is the most frequent cause of this condition.

Odour. It is not yet ascertained to what substance the peculiar odour of the urine is due, nor is it of much importance to the clinical student. When the urine loses its natural odour and becomes foetid and ammoniacal, the change is due to the decomposition of urea into carbonate of ammonia, and the formation of sulphur compounds; in cases of cystitis and paraplegia the alteration begins very rapidly after emission. Various drugs, as cubebs, and articles of diet, as asparagus, give a characteristic odour to the urine; turpentine gives the odour of

violets to the secretion; it is stated that in organic disease of the kidney, and in gout, these substances cannot be recognised in the urine by their smell, after they have been given by the mouth; observations, contradictory to this statement, have, however, been recorded.

Consistence. The urine is a limpid fluid, flowing freely from one vessel to another. But in catarrh of the bladder, and in retention of urino, the ammoniacal products of the decomposition of the urea render the pus present thick and viscid, thus causing the secretion to be ropy, and poured with difficulty from one vessel to another.

The froth on normal urine readily disappears; but if the froth be permanent, the presence of albumen, or one of the constituents of the bile, may be suspected.

Before passing to the mechanical and chemical examination of the urine, it may be well to state the apparatus and reagents which are necessary for bedside investigation by the student. They are
Cylindrical Urine Glasses, containing about 6 fluid-ounces.

A Urinometer, the stem of which is graduated from 1000 to 1060.

Blue and Red Litmus, and Turmeric, Paper.

Test Tubes.

A Spirit Lamp, or Bunsen's Gas-burner.

Nitric Acid.

Acetic Acid.

Liquor Potassæ or Liquor Sodæ.

Solution of Sulphate of Copper, 10 grains to the fluid-ounce.

Fehling's Test Solution for Sugar.

Glass Funnel and Filtering Paper.

With this apparatus, the student will be able to perform all the most important reactions described below.

SPECIFIC GRAVITY.

The specific gravity of the urine varies in health between 1015 and 1020; the simplest way of estimating it is by means of the urinometer.

In order to use this instrument, a quantity of the urine to be examined is poured into a cylindrical glass, and care is taken to remove all the froth which may form, either by blotting paper, or by overfilling the vessel. The urinometer must then be introduced, and allowed to float freely in the urine, without touching either the sides or bottom of the vessel. Since the fluid accumulates around the stem of the urinometer from the physical force of attraction, the specific gravity appears to be higher than it really is, when it is read off while the eye is above the surface of the fluid; to obtain a correct reading, therefore, the eye must be lowered to the level of the surface of the fluid, and the number on the stem read off by looking at it through the urine; having noted this, the urinometer should be depressed in the urine, and again allowed to come to rest, when the number may be again read off; this second estimation is made to correct any mistake that may have occurred in the first reading. The specific gravity thus ascertained should be noted down at once.