

by the constant secretion of a protective mucous coating normal in quantity and character ; it should not be distended beyond what its muscular fibres can bear without weariness ; and, when expulsion occurs, exit should be so unobstructed as to necessitate only such a subdued contraction as is necessary for dilation of the outer portions of the urethra ; unless it be shown that the longitudinal fibres assist also in opening the sphincter. Any wide divergence from health in the condition of the urine, especially if from retention ; an abnormal quality or quantity of mucus, or want of correlation between the sets of muscles concerned in urination may, separately or conjointly, bring about a state of irritation which, sooner or later, is followed by hyperæmia ; and Rindfleisch says that disordered and hypersecretion are the concomitants of hyperæmia, and that this hyperæmia is a proximate cause of the mal-secretion ; also the more or less remote cause of other disturbances, viz., tumefaction, hæmorrhage, pigmentation, hypertrophy, etc., which, taken together, constitute the anatomico-pathological picture of catarrh of mucous membranes.

It may be asked, why should undue contraction of the muscular wall of the bladder induce congestion of the lining ? The returning venules, as they pass through the muscular coat, are surrounded by a much thinner coat of connective tissue than the arterioles, and are, therefore, in more immediate contact with the muscular fibres ; in consequence of this anatomical arrangement, inordinate contraction compresses the veins more than the arteries ; hence the passive hyperæmia of the mucous coat, induced by such violent efforts as the bladder *per force* must make to overcome all sorts of obstructions to the urinary flow. The same result naturally follows these spasmodic contractions that are excited by the presence of calculus and tumors.

As in other mucous membranes the acute attack may be catarrhal or croupous in character, this latter being the form usually excited by cantharides and other irritants introduced into the system ; and may end in resolution, ulceration, suppuration or gangrene, or may degenerate into the chronic form. After the inflammatory process is once set up, not simply the superficial layers of cells, but all the elements of the mucous membrane appear to be involved ; and, indeed, one pathologist maintains that the trouble lies not in the mucous tissue alone, but in the underlying layer of connective tissue, so uni-

versal is the invasion. At any rate every cell is changed, if not in form, at least in character and ability to withstand undue irritation ; therefore, even after the urine is restored to a healthy condition, the mucous secretion normal, and all symptoms have disappeared ; for a considerable period of time, they must still remain *a locus minoris resistentie* and danger on slight provocation, of re-excitement of the disease ; this interval lasting until a new generation of cells is formed throughout. Hence, also in part, the tendency towards chronicity.

On examination, the mucous membrane is found discolored and softened—seldom universally, but usually in patches, which occur most frequently in the vicinity of the neck. Here and there may be erosions ; or, if the disease has run very high, or lasted long, there may be ragged ulcers laying bare the muscular fibres, or even gangrenous spots ; although these last seldom are seen, excepting in the aged and debilitated, or as the result of severe traumatic causes. The spots of discoloration and erosions are mostly to be found on the rugæ, and may be covered with ropy mucus, sanious offensive fluid, or may be invaded in part by croupous membrane—this often is coated with phosphates. Rindfleisch says, that this croupous membrane, although it has the gross appearance of being fibrous in structure, really consists of corpuscles which have assumed a change of outline ; the protoplasm having arranged itself in an irregularly radiating form by the corrugation of the cell, so that an agglomeration of the cells gives to the neoplasm the appearance of being made up of fibres. Occasionally it happens that the ulcers spoken of extend and cause perforation, which fortunately does not in every instance prove fatal, as the surrounding zone of inflammatory action may bring about adhesions to neighboring viscera.

The disease in the acute form is usually ushered in by malaise and chills, with frequent desires to urinate, followed by high temperature and the general symptoms of fever. The pain at first is not severe unless the peritoneum is involved, but considerable uneasiness is complained of in the hypogastrium and the perineum, perhaps in the glans penis and shooting down the thigh. If the anterior wall is the part chiefly involved, which is rarely the case, tenderness on pressure is felt a good deal in the hypogastric region ; but, as the inflammatory