

the *bas-fond* is much involved, there may be some tenesmus, which, in one case, I saw extreme. The pain and uneasiness are alleviated after urination and commence again as soon as urine accumulates, the interval of rest being shortened according to violence of the attack, and the closeness of the inflammatory process to the neck of the bladder.

Should resolution set in, these symptoms gradually subside and nothing is left but a condition of occasional irritability, which, as already stated, ends when there has been time for the formation of a new set of mucous elements. But should the inflammation continue, ordinarily, in two or three days, the urine is changed much in character; it is ammoniacal, and contains large quantities of mucus, also pus corpuscles and occasionally blood globules. Ammonio-magnesian phosphate is found plentifully and is recognized by the microscope; carbonate of ammonia and amorphous phosphate are present, as also occasionally sulphuretted hydrogen in small quantities. The sediment forms quickly with the pus in an opaque yellowish layer on top, and the clear supernatant fluid having often a yellowish tinge. Later on, if the disease pursues a severe course, the urine assumes a darker color, caused by the disintegration of the blood corpuscles by the carbonate of ammonia, and has a highly ammoniacal and fetid odor.

How the urea becomes converted into carbonate of ammonia does not appear to be decided. There exist two or three theories in the matter. Dr. Rees thinks that secretion being abnormal, on account of diseased and hyperæmic mucous membrane, this degenerated mucus acts as a ferment. Others suppose that some hitherto undiscovered ferment enters from the blood, while it is imagined by the majority of observers that bacteria play an important part in the process. I heard of an incident that occurred before much deference was paid to the pranks of these little bodies, that bears somewhat on this matter. In the good old days, when the rite of initiation, with all its mysteries, was a *sine qua non* in a certain medical school, one of the impressive ceremonies in the chamber of horrors was the passing of the catheter, ostensibly to investigate the physical competency of the aspiring but timorous candidate. This delicate operation was, I suppose, relegated to the most experienced of the inquisitors, and I believe the instrument used was the gum elastic;

therefore it is likely that no undue violence was used towards the victim. The inference was that he had been continent, at least there was no stricture, and the catheter entered the bladder easily; but a magnificent sample of cystitis was the result. Of course it is barely within the limits of the possible that some member of that august tribunal may have had an attack of gonorrhœa, and hence the consequence. But at any rate, Niemeyer records cases where the introduction of a dirty catheter has resulted in inflammation. The presence of pus or blood is easily recognized by the microscope and by the tests for albumen.

Coulson says that it is almost impossible to distinguish the corpuscles of mucus from those of pus; that it is probable that epithelial cells become transformed into pus corpuscles, and that the latter are spherical, granular on the surface, and have divided nuclei. Occasionally shreds of false membrane are voided with the urine, and cases are recorded where obstinate retention, caused by large sheets of detached membrane, has rendered cutting operations necessary. Should the case progress unfavorably, the condition of active sensibility to pain passes eventually into a *quasi* typhoid state, manifested by hebetude, subsultus, obstinate vomiting and purging, and ends fatally by way of coma.

There may be contraction of the bladder; but, as a rule, towards the end, if unrelieved by the catheter, sensibility being lessened, the bladder is allowed to dilate to enormous proportions. In the majority of these cases the disease has affected the ureters and pelves of the kidneys; and, as a consequence, the secreting structure of the kidney itself; so that the tubules are often dilated, the cellular elements atrophied, cysts may be present and the capsule adherent.

As a rule an uncomplicated case of cystitis is easy of diagnosis, but it is comparatively easy to overlook some of the diseases that bear a causative relation to it. The limits of this paper will not allow a full discussion of the distinguishing features of these different maladies; but a mere enumeration and brief reference to the salient points of contrast will suffice.

Diseases of the urinary tract, all the way from a diseased meatus up to nephritis, may be accompanied by pain; and, with few exceptions, more or less of this takes the form of irritability of the