

The bacteria less frequently found are :

1. *Proteus vulgaris* Hauseri.
1. *Staphylococcus pyogenes*.
3. *Streptococci pyogenes*.
4. *Diplococcus pyogenes*.

It is generally agreed that the gonococcus and bacillus tuberculosis are prone to attack the healthy bladder and that they require little if any predisposing causes. On the other hand a normal bladder is said to offer much resistance to the other bacteria, that is, they do not become active except in conjunction with definite predisposing causes.

The following history from Reymond\* supports the fact that predisposing causes are necessary to the action of certain bacteria. A boy sixteen years old after great bodily exertion was seized with severe abdominal pain followed soon by fever. Below the umbilicus a painful mass was found which by recto-abdominal examination proved to be a collection of fluid between the bladder and rectum. A large abscess was evacuated by coeliotomy. Although from mechanical causes the urine at the height of the trouble could not be completely evacuated, nevertheless no cystitis or other bladder symptoms appeared. There was no history of gonorrhoea or of any other genito-urinary disorder, and the patient had never been catheterized. Twice before and once after the operation urine, aseptically collected, gave a pure culture of *Bacteria Coli Communis* only; ten days later the urine was again sterile. In the evacuated pus *bacteria coli communis*, *staphylococcus albus*, *streptococcus* and other bacteria were found.

This leads to three deductions :

1. Bacteria traversed the bladder wall from the outside to the inside.
2. Of the different forms present in the abscess only the *Bacteria Coli* passed through the bladder wall.
3. The *Bacteria Coli Communis* caused no inflammation by its presence. It was only a Bacteriuria.

The infective agent may reach the bladder in any of the following ways :

1. From the kidney or pelvis of the kidney.
2. From the ureter.
3. From intestine and other adjacent structures or organs, especially if they be adherent.
4. Through the blood.
5. Through the urine.

Ammoniacal urine is known to result from the decomposing action of certain bacteria, notably the *proteus vulgaris*, upon urea; moreover, the frequent association of alkaline ammoniacal urine with cystitis has given rise to the more or less common impression that the disease depends upon

\* Bulletin de la Societe Anatomique de Paris, July 2, 1897, page 583.