

with great care. They were slightly congested, and on pressure a thickish, turbid urine escaped from the calices, but beyond this no disease was found.

Similar cases were mentioned by Reybard, Velpeau, and others, but in most instances death has not been so sudden as in the foregoing cases of Mr. Banks; twelve to twenty-four hours, or even more, elapsing between the catheterism and the fatal issue. In cases of urinary obstruction with renal complication, unless the precautions to be hereafter indicated be taken, urethral fever is almost certain, at one time or another, to follow the introduction of the catheter. The instrument may have been passed at regular intervals for weeks or months without any very great amount of pain and without giving rise to any discomfort, or it may have been followed on one or two occasions by a mild attack of fever, but finally the same careful catheterism is practised—but on the *wrong day*, perhaps, when the patient's functions are temporarily disordered—and in a few hours he is suddenly and unexpectedly seized with a severe rigor from the effects of which he may never rally. Sir Henry Thompson reports a case in point at page 94 of his treatise on Stricture of the Urethra, third edition, London. He says, "I have seen one case of old standing and narrow stricture, in which death was thus caused within fifty-four hours of the passing of an instrument, the same that had been habitually employed on at least a hundred occasions before; no damage whatever having been inflicted by it upon the urethra, as verified by several careful observers on close post-mortem examination of the parts. Rigors and vomiting commenced about an hour after the catheterism, and not another ounce of urine was secreted from that time until death. The kidneys were congested to an extraordinary degree, and their substance was so soft and friable as to give way under gentle pressure. Very rapid changes had evidently taken place in these organs, but no signs whatever of inflammation existed in any other part of the urinary apparatus."

The grave type of urinary fever is a much dreaded, but now happily comparatively rare, accident of the operations of lithotripsy, lithotomy, internal and external urethrotomy and divulsion, as these operations are not resorted to, in our day, when advanced disease of the kidneys and of the bladder is suspected. In thirty-one operations of external perineal urethrotomy, there occurred but three cases of urethral fever, the attacks being mild in two, but fulminating in one which ended fatally in fifty-six hours.

Between these two extreme types—the very mild and the very severe—there is a form of urethral fever preceded by headache, malaise, pain in the back, and, in fact, all the premonitory symptoms of an attack of ague, in which the chill may be deferred four, eight, twelve, twenty-four or even forty-eight hours after catheterism or other operation upon the urinary organs. This is, however, amenable to treatment, and recovery may be expected in the great majority of cases. It has long been supposed that the chill is ushered in by the passage of urine upon a denuded surface, but such is not the case, as the

rigor often occurs before the first act of micturition, or when—the patient having been repeatedly relieved by the catheter—not a drop of urine has come in contact with the urethral canal. If the contact of the urine with the raw surfaces were the sole, or even the principal cause of this trouble, urinary fever would almost always ensue from lithotomy, internal and external urethrotomy, and divulsion; but facts are against this theory.

Suppression of Urine is a common complication of urethral fever, but, though frequently fatal, is not necessarily always so. Mr. Banks, in speaking of the rapidly fatal forms of urethral fever with suppression of urine, says:—"In many cases no urine is secreted from the moment the instrument has been passed to the time of death, and this non-secretion has too often been reported as the primarily fatal cause, without consideration of the fact that it is simply a secondary effect upon the renal organs of the great general shock, and, although without doubt greatly tending to precipitate the fatal event, should by no means be regarded as a primary cause, but only as a complication. This is shown, 1st, by the fact that persons have been known to die soon after catheterism that the mere non-secretion of urine could have had nothing to do with the fatal issue 2nd, Even when no urine has been secreted, and time has been given for the non-eliminated urea to act noxiously, the symptoms have not been those of uræmic poisoning."

Among the severe cases that I have observed, several showed symptoms of uræmic poisoning: some have recovered, the majority have died, and the pathological lesions of the kidneys were, intense congestion in some, in others infraction, while in others still—that lingered several days—there was interstitial nephritis in its various stages, to suppuration.

Suppression of urine may be partial or complete; the former is of frequent occurrence, while the latter is rare. The symptoms are, dull pains in the regions of the kidneys; no desire to void urine, some febrile reaction, thirst, sometimes vomiting of green bilious matter having a disagreeable urinous smell. The alvine dejections have the same urinous fetor, and the breath and the cutaneous perspiration are also offensively urinous.

Purulent infection occasionally follows urethral fever, although it usually occurs independently of this ailment; and the irregular chills which are caused by urethral pyæmia should not be confounded with those of urethral fever.

Treatment of Urethral Fever.—As the existence of renal disease is a strong predisposing cause of urethral fever, it is necessary, in case such disease is even suspected, to institute a preparatory course of treatment for several days before the intended catheterism be attempted; but I go further than this and prepare all patients—with the exception, of course, emergent cases—for five or six days before they are placed under mechanical treatment, and consequently now have, in my own practice, but very few cases of urethral fever to treat. The preparatory treatment which I usually resort to is as follows:—After free catharsis, rest should be