to the neck of the bladder. No blood had ever been observed in the urine, which was alkaline and purulent. There was no perceptible enlargement of the prostate, and no stone could be detected on sounding the bladder, which was extremely sensitive, especially at its neck, the introduction of any instrument exciting very severe spasm. As the symptoms were somewhat obscure, it was resolved to explore the bladder from above the pubes, and the patient came into a private home for this purpose.

May 14th, 1891. Suprapubic cystotomy was performed in the ordinary way, and upon exploring the bladder a small phosphatic calculus was found lying loose in its interior. On further examination an opening, just large enough to admit the tip of the finger, was detected at the base of the bladder, a short distance behind the prostate; this led into a distinct sacculus, the size of a pigeon's egg, and contained within it were a number of phosphatic calculi, the largest being almost $\frac{1}{2}$ inch in diameter. The prostate was slightly enlarged, a collar-like projection surrounding the vesical orifice of the urethra. The calculi were all extracted from the sacculus and the collar projection of the prostate was removed as completely as possible with scissors. The patient made a good recovery and returned home at the end of six weeks, the suprapubic wound being completely healed three weeks subsequently. The operation was followed by marked relief to his symptoms, as he could hold the urine, which became clear and acid in reaction, for five or six hours without any discomfort, though he still required a catheter to empty the bladder. The relief continued for about twelve months; at the end of this period, in spite of the fact that he had regularly washed out the bladder since the operation, he began to suffer from the same symptoms as before, the urine again becoming alkaline and containing a large quantity of pus and mucus. The patient was again sent to me by Dr. Anderton in April, 1893, and upon sounding the bladder a small calculus was felt lying loose in its interior.

As the cystitis had recurred and a fresh formation of stone had taken place, although the greatest attention had been paid to the toilet of the bladder, it was resolved to again perform suprapubic cystotomy, explore the sacculus, in which more calculi had probably formed, and, after removing them, establish a permanent opening above the pubes, so as to allow of more thorough irrigation of the bladder than was possible by simply washing it out *per urethram*, in the hope that by this means a recurrence of the cystitis might be prevented, and at the same time an exit provided for any calculi that might afterwards form.

April 21st, 1893. The bladder having again been opened from above the pubes, a small phosphatic stone was removed from its interior, and a number of similar calculi were extracted from the same sacculus as at the previous operation.

The question of excising the sacculus and suturing its communication with the bladder was considered; but as this procedure would have involved opening the peritoneal cavity—for the sacculus was situated well behind the prostate gland, and could only just be reached with the tip of the finger upon deep pressure, when passed into the rectum—it was not thought safe to attempt it, especially as the urine was in a foul and toxic condition. A suprapubic fistula was therefore established, and for two years after the second operation the patient continually wore in the wound a slightly curved vulcanite plug ($\frac{3}{4}$ inches in length and $\frac{1}{2}$ inch in diameter), with a flange at its outer end to prevent it from slipping altogether into the bladder. The plug, which accurately fitted the wound, was retained in position by a canvas belt, and bored, so as to admit a No. 8 Jacques's catheter, one end of which projected into the bladder, while the other was connected with a urinal attached to the patient's leg. In this way the bladder could be kept continually drained, while by the removal of the plug its interior could be washed out much more thoroughly than was possible in the usual way—namely, through the urethra alone.

Since April, 1895, he has worn a solid plug in the opening by day; by this means he is able to dispense with the urinal in the daytime, and he finds that if he draws off the urine *per urethram* every three or four hours he can keep quite dry even when walking about. The perforated plug, catheter, and urinal he still, however, wears when in bed, in order that he

may not be disturbed by having to get up to empty the bladder during the night.

At the beginning of the present year he suffered from another attack of cystitis, brought on, as he believed, by exposure to cold; and last February, on washing out the bladder (as is still his daily custom), the plug having been removed as usual, a small phosphatic calculus came away through the suprapubic opening. The escape of the stone was followed by a subsidence of the cystitis, of which there has since been no recurrence.

As two years and a-half have now elapsed since the second operation, the advantage of the suprapubic fistula as a means, first, of thoroughly irrigating the bladder and keeping in check the cystitis; secondly, of allowing the escape of calculi which may form in the bladder—is therefore well established.

At the present time he is in the enjoyment of very good health, being able to mix in society and walk several miles without any inconvenience; he is quite free from bladder symptoms, and suffers remarkably little discomfort from the presence of the permanent suprapubic opening.

I am indebted to my house-surgeon, Mr. J. P. Hall, for the diagram which accompanies this paper.

THE CHEMICAL AND PHYSIOLOGICAL CHANGES IN MILK CAUSED BY BOILING.

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MILK consists of a multitude of cells suspended in serum. The cells are fat cells which form the cream; the remaining cells are nucleated, and of the nature of white blood corpuscles. The serum consists of water, in which is dissolved milk sugar, and serum albumin, with various salts, and chief of all casein. The cells, with the exception of the fat corpuscles, are all living cells, and they retain their vitality for a considerable time after the milk is drawn from the mammary gland.

Milk kept a few days may be perfectly sweet—that is, unsoured, but it has a different taste and appearance, and shows a tendency to separate into serum and the more solid portions, which tend to sink to the bottom of the vessel. This change in taste and emulsification is due to the death of the white blood corpuscle-like bodies contained in the milk.

There is reason for supposing that when fresh milk is ingested the living cells are at once absorbed without any process of digestion, and enter the blood stream and are utilised in building up the tissues. The casein of the milk is digested in the usual way of other albuminoids by the gastric juice, and absorbed as peptone. There is also absorption of serum albumin by osmosis.

The chemical result of boiling milk is to kill all the living cells, and to coagulate all the albuminoid constituents. Milk after boiling is thicker than it was before.

The physiological results are that all the constituents of the milk must be digested before it can be absorbed into the system; therefore there is a distinct loss of utility in the milk, because the living cells of fresh milk do not enter into the circulation direct as living protoplasm, and build up the tissues direct, as they would do in fresh unboiled milk.

In practice it will have been noticed by most medical practitioners that there is a very distinctly appreciable lowered vitality in infants which are fed on boiled milk. The process of absorption is more delayed, and the quantity of milk required is distinctly larger for the same amount of growth and nourishment of the child than is the case when fresh milk is used.

THE Alvarenga Prize for 1895 of the College of Physicians of Philadelphia has been awarded to Dr. Guy Hinsdale, of Philadelphia, for an essay on Syringomyelia. Essays, which may be upon any subject in medicine, intended to compete for the prize (which is of the value of about 180 dollars) for 1896 must be received by the Secretary of the College on or before May 1st, 1896.