In April, 1900, it was noticed that she walked on her heels when in a hurry, and was unable to raise herself on her toes. For this reason a diagnosis of nonunion of the tendo achillis was made and she was again referred to the hospital. She was entered July 25, 1901. Dorsal flexion of the foot was present to an abnormal degree, and the child was unable to plantar flex the feet beyond the right ankle with any degree of force. She could walk fairly well if she walked slowly, but if she hurried, the gait was clumsy and largely on the heels. An incision was made and the right tendo achillis was dissected out and found to be very lax. Just above the os calcis it was found to be made up of fibrous bands of varying size. About one-fourth inch of each tendon was excised and the divided ends brought together and sutured with medium catgut. A similar operation was done on the left foot. The wounds were closed with catgut and the feet put up in a position of plantar flexion, leaving the tendon relaxed. At the end of ten days, the plasters were removed and the wounds were found clean. They were reapplied and the child was discharged to the parents on Aug. 9. On Sept. 7 the plasters were removed, and on Sept. 14 she could plantar flex with considerable force. She was given crutches and allowed to walk. On Sept. 28 she could plantar flex her feet with considerable force, but could not yet raise herself on her toes. The same treatment was continued. On Oct. 19 she could raise herself on her toes without any assistance whatever. She was directed to continue the exercise of raising herself on her toes three times daily.

At her second entrance to the hospital, the muscles were examined as to the presence of paralysis by a neurologist and were reported to be normal. The appearance of the tendons suggested that some tearing had taken place at the time of the tenotomy and the appearance was that of a tendon frayed out rather than cleanly divided.

The case is of interest in showing that unpleasant results may follow even tenotomy of the tendo achillis performed under ordinary conditions with proper after-care. The case is also important as showing favorable progress after an operation for the repair of such a condition.

R. W. L.

III. A CASE OF PROBABLE DISLOCATION OF THE CERVICAL VERTEBRA WITH SPONTANEOUS REPLACEMENT AND RECOVERY.

F. P., seven years of age, was brought to the Children's Hospital Oct. 3, 1900, with the history that while turning somersaults something had suddenly happened, so that since that time the head had been held peculiarly. At that time the head was displaced slightly to one side, and very little motion was possible, either of passive manipulation or active exercise. The muscles were tense, but no one group was contracted more than the others, and the limitation of motion was apparently due to some obstruction other than muscular. There was no paralysis.

The diagnosis at that time was made of a partial dislocation of the cervical vertebra. The child was admitted to the hospital for the purpose of having a radiograph taken and for such manipulation afterwards as seemed indicated. The second day after admission, just previous to the time for taking the x-ray, in some movement of the head with a distinct slip, the normal condition was restored. After that the head could be moved almost normally in every direction with but little discomfort. Two days later the child was allowed up, and three days after that was discharged from the hospital with nothing to show for the condition which had been present at the time of his admission.

It seemed probable to all those who saw the child that there had been partial dislocation, and the result seemed to justify this supposition. Simple muscular strain or any other condition would hardly have been relieved with the suddenness that occurred in this case.

J. E. G.

Medical Progress.

REPORT ON PROGRESS IN GENITO-URINARY SURGERY.

BY F. S. WATSON, M.D., AND PAUL THORNDIKE, M.D., BOSTON.

ON THE FINAL RESULTS OF CASTRATION IN CASES OF TUBERCULOSIS OF THE TESTES.

HAAS,¹ Bruns Tubinger Clinic, holds that in many cases the disease is primary in the testis, existing independently of its existence elsewhere in the genito-urinary tract or other parts of the organism. This view he supports by interesting data.

The conclusions are derived from the examination or personal communication with 111 patients, on whom castration had been performed for tuberculosis of the testis or testes, and these observations as to the end results were made on individuals at times, subsequent to operation, extending from 3 to 30 years. Of these, 78 underwent single and 33 double castration. In all, the vas was divided high up, but neither the prostate nor the seminal vesicles were included in the operations. The epididymis was involved within 6 months after the first evidence of the disease was noted by the patient in 40% of the cases. The longer the time after the beginning of the trouble, the larger the number of cases in which the epididymis was involved and the more extensive was the involvement.

In only 26% of the cases submitted to castration of one side, did the disease subsequently appear in the other testicle.

In the cases involving one-sided castration, only 9.2% died subsequently from tuberculosis of other parts of the genito-urinary tract, and most of these showed already involvement of the urinary tract at the time of the operation.

Of the cases of single-sided castration 44.6% remained cured.

¹ Beitr. f. klin. Chir., 1901, vol. xxx, part ii, p. 345.

In cases of double-sided tuberculosis subjected to complete castration 56.7% remained cured. With few exceptions the single-sided castrations became neither sterile nor impotent. In none of the complete castrations did any nervous or mental disturbances follow.

In the cases in which single-sided castration was done,—one testicle only being affected,—20.7% died within the first 3 years after operation, 9.2% of these being from genito-urinary tuberculosis. Of these 75.7% were well and free from any evidence of the disease, after 3 years following the operation.

Of the cases of double testicular tuberculosis 40.6% (15.6% of them from genito-urinary tuberculosis) died within the first 3 years following complete castration. But 88.2% of cases of double-sided tuberculosis, who survived more than 3 years after the operation, were well, and to be regarded as permanently cured.

The mortality following complete castration is seen to be within the first 3 years subsequent to operation nearly twice as great as that of one-sided castration, but the reverse is true of the patients surviving the 3 years' limit.

The conclusion reached by the author speaks strongly in favor of operative—and early operative—treatment of tuberculous disease of the testis, as compared with the expectant. The text of the article contains further testimony in support of this view.

PRACTICAL EXPERIENCE WITH REGARD TO THE DIAGNOSIS AND THERAPEUTICS OF KIDNEY DISEASES.

Kummell² refers to the formerly published experiences of the value of the determination of the freezing point of the blood and the urine of individuals for the purpose of deciding—before operations upon the kidneys—the functional capacity of each, in which cases it was found, for surgical purposes, to be useful. Since the publication of the writer's previous communication on the subject he has confirmed the results of the work therein set forth, by 100 additional observations made with respect to the freezing point of the blood and the urine in individuals in health and disease, the urine being drawn separately from each kidney by ureteral catheters. He now considers himself justified in asserting that this proceeding is of the greatest importance and value for the purpose above noted, and one to be relied upon prior to operation—when made in connection with the urea and phloridzin tests. This should not be understood as rendering unnecessary the careful determination of the character of the urinary secretion by the usual methods.

With regard to the freezing point of blood and urine, Kummell calls attention to the following factors: After referring to the phenomena of osmosis between the blood and the urine, he speaks of it in relation to the freezing point of both, saying that of 2 chemically similar fluids—such as these—that one which contains the larger molecular quan-

tity in solution freezes at a lower temperature, as compared with distilled water, than the one having fewer molecules in solution. In health he states that the freezing point of blood is almost constant, being at, or very near to, .56° C. In cases of renal insufficiency it varies between .58° C. to .60° C. There are other conditions—such as abdominal tumors, noncompensated cardiac disease—which alter the relations and which must therefore be taken into account.

With regard to the freezing point of the urine, the physiological variations are much greater than in the case of the blood. Kummell, however, asserts that as a practical matter a freezing point of the urine of .9° C. or less, that is to say, nearly to that of distilled water, may be taken as suggestive of insufficient functional renal capacity as a rule. The greatest service rendered is when the functional capacity of each kidney can be determined separately by the application of the test to the urines drawn from each kidney, this being the essential point with reference to nephrectomy, of course.

With regard to the technique Kummell speaks as follows: It is carried out by means of Beckmann's apparatus, which consists of a glass vessel in which is put a mixture of ice and cooking salt capable of producing a temperature of cold of 4° C. The fluid to be examined is placed in a test tube, in which is immersed the quicksilver bulb of a delicate thermometer divided into hundredths. The glass cylinder is kept in continuous movement by means of a platinum ring on which it rests, and carefully cooled. The freezing point is reckoned at the moment of the beginning of the solidification of the fluid. In case of blood 20 G. is employed, being drawn from one of the veins of the forearm.

In 24 nephrectomies in which the freezing test of the blood and urine indicated that sufficient functional activity of the kidney was present at time of operation, the remaining kidney in all, maintained its full functional sufficiency. Two, in which the test was doubtful, died.

The value of the phloridzin sugar test in determining also the functional capacity of the kidneys—of each one separately if the urine be drawn by ureteral catheters—is further noted by Kummell in this article. Further data are furnished by Küster³ and Casper⁴ upon the freezing and phloridzin tests.

Syms,⁵ in the course of an article on the subject of

THE TREATMENT OF PROSTATIC HYPERTROPHY, when referring to the operation of prostatectomy, suggests a novel method of facilitating the removal of the obstructing gland, and at the same time avoiding doing a suprapubic cystotomy as one of the steps usually employed as an aid to the operation. His proposal is to pass through a perineal urethrotomy wound, into the bladder, a rubber balloon attached to a stem which protrudes

² Arch. f. klin. Chir., 1901, vol. lxxiv, part iii, p. 559.

³ Idem, part ii, p. 470.

⁴ Journal Cutaneous and Genito-Urinary Diseases, 1901, p. 255.

⁵ Arch. f. klin. Chir., Berlin, 1901, vol. lxxiv, part iii.

externally, the balloon being then distended with water, is drawn downward and the prostate is thus forced toward the perineal surface and thus rendered accessible to approach from that point.

EXPERIMENTAL RESEARCH WITH REGARD TO INFECTION OF BLADDER FROM THE RECTUM.

Faltn,⁶ in the course of the above communications, describes the manner in which he conducted numerous experiments upon rabbits with a view to testing the accuracy of the work of previous experimenters and of adding further knowledge to the subject of the invasion of the bladder by rectal bacteria — more especially the *communis coli*.

The main features of the experiments were the observation of the invasion of the bladder, by rectal bacteria, after wounds of varying severity inflicted upon the rectal mucous membrane, and the artificial infection of the same, under the following conditions: (1) A complete closure of the anus by ligature; (2) by complete closure of the urethra by ligature of the penis; (3) without either of the above.

The conclusions arrived at were as follows:

(1) Closure of the rectum by anal ligature, if not continued beyond 36 or 48 hours, is not, as a rule, capable of causing a general invasion of the organism by rectal bacteria.

(2) If the obstipation so caused be continued sufficiently long, however, the rectal bacteria do make their way into the general circulation, either directly or through the peritoneum. An excretion of the bacteria by the kidneys under these conditions is possible, but only occurs as a step preceding death in the cases ending fatally.

(3) After sufficient duration of the artificially produced obstipation direct passage of the rectal bacteria into the bladder from the rectum may occur. When this is the case, however, the whole organism is usually in such a condition that death ensues subsequent to the bladder invasion owing to the further propagation of the bacterial poison from the rectum or the already infected bladder.

(4) In a certain number of cases the bacteria may find an entrance through the urethra; in others, more directly through the lymph channels into the bladder.

(5) If urinary retention caused by ligature of the urethra is present at the time of infection, the rectal bacteria will more readily penetrate to the bladder, and will produce cystitis.

The conclusions stated at the end of the first article are these: After a rectal lesion at the level of the prostate, whether it be severe or moderate, neither a cystitis nor invasion of the bladder by rectal bacteria takes place, unless at the same time there occurs a fatal general infection, or peritonitis, as a result of the original infection from the rectal lesion. When this happens an excretion of rectal bacteria by the kidneys, and the setting up of a cystitis thereby, is also seen to take place. If the bladder has been previously

injured it much more frequently happens that there is an invasion of it by the rectal bacteria and that cystitis results.

ANATOMY AND PHYSIOLOGY OF THE PROSTATE.

Walker,⁷ in an elaborate and carefully prepared paper, based upon experimental studies of the prostate in man and in various animals, chiefly dogs, makes various anatomical and physiological conclusions which are here appended:

Anatomy.—(1) The prostatic muscle is derived from the longitudinal coat of the urethra and the circular layer of the bladder.

(2) Every lobule is surrounded by a circular and a longitudinal coat, so arranged as to expel quickly and forcibly the secretion.

(3) The prostatic muscle of the full-grown animal is independent of both urethra and bladder, and is only indirectly in connection with either.

(4) The muscle is not so disposed as to compress the urethra, or to act as a sphincter to the bladder.

(5) The connective tissue is found in nearly the same amount as in other secreting organs; and is amply sufficient to give all the needed support to the gland, independent of the muscular elements.

(6) A membrana propria is present in all cases, and consists of very fine connective-tissue fibres. There is a sheath of longitudinal elastic fibres around the prostatic urethra, from which the outer fibres diverge around the prostatic ducts in a figure-of-eight manner, and thence onward into the glandular substance.

(7) In the gland substance a rich elastic meshwork is seen lying under the cells, with a few extremely fine fibres in the membrana propria.

(8) The glandular substance forms about five-sixths of the organ.

(9) The cells are disposed in one layer; tall, columnar shaped; have a large amount of protoplasm, and a well-defined nucleus. In the same lobule areas are present where the cells are entirely inactive.

(10) Adenoid tissue is scattered at irregular intervals throughout the gland.

Regarding the so-called third lobe, the writer apparently agrees with previous observers in declaring that it is only occasionally present, and does not deserve the name of a third lobe.

Anatomical deductions.—(1) The verumontanum does not prevent the entrance of semen into the bladder.

(2) The semen is prevented from passing backward into the bladder by the contraction of the so-called sphincter of Heule.

(3) The prostatic ducts are so arranged that they eject their fluid directly into the outpouring testicular secretion, thus producing a homogeneous mixture.

(4) The longitudinal fibres of the sphincter membranaceæ urethræ dilate the outer half of the membranous and a portion of the bulbous, urethra,

⁶ Centrbl. f. die Krank. der Harn u. Sexual Organe, 1901, Bd. xii, H. 8 and 9.

⁷ Johns Hopkins Hospital Bulletin, October, 1900.

and by this means draw the semen from the prostatic portion.

(5) During the last act of ejaculation the orifices of the prostatic and ejaculatory ducts are closed, and their respective fluids put on much tension, so that at the moment of relaxation, a sufficient quantity of semen is poured in for the next emission.

(6) The sphincter membranaceæ urethræ aids, not only in carrying the semen along the urethra, but helps very materially in expelling it.

(1) *Physiology*.—The immediate production of the motility of the organisms (spermatozoa) is induced by a thinning of the testicular secretion with the prostatic juice.

(2) The continued movement is most probably kept up by substances in the prostatic fluid, that either act as stimulants or as food for the organisms.

(3) Unless a homogeneous mixture is made, thick portions remain, where there is no movement.

(4) It therefore follows that as the dog has no seminal vesicles, and the gland of Cowper is very insignificant, the function of furnishing a fluid, in which the spermatozoa can freely move, belongs entirely to the prostate gland. It then becomes apparent that the organ is almost as important as the organisms themselves.

GNORRHEAL ULCERATIVE ENDOCARDITIS.

Lartigan,⁸ the author, adds one more to the very small number of cases of this rare complication of gonorrhea. The case with autopsy is carefully reported, the bacterial findings being as follows: Gonococcus present in the heart's blood and valvular vegetations; colon bacillus in the liver and gall bladder and urinary bladder. Other organs were sterile.

The author concludes:

(1) Gonorrheal urethritis may be the starting point for a fatal septicemia induced by a pure infection with the gonococcus.

(2) Endocarditis and arthritis are occasionally complications of such an infectious disease.

(3) The endocardial processes may be incited by the gonococcus without the association of other organisms.

RELATION OF THE PROSTATE GLAND TO THE IMPREGNATING POWER OF THE SPERMATIC FLUID.

George Walker⁹ reports a series of experiments in which the prostate gland was removed from a number of white rats, and the effects of this procedure noted. His conclusions are as follows:

(1) That a removal of the anterior lobes of the prostate gland in rats has no effect on breeding; but in a certain number it diminishes the fecundating power; and in a small number it is destroyed entirely.

(2) Complete excision has a very marked effect on fecundity, reducing it to almost nil when the gland is entirely removed.

⁸ American Journal of the Medical Sciences, January, 1901, p. 52.
⁹ Johns Hopkins Hospital Bulletin, March, 1901, p. 77.

(3) Partial or complete removal of the prostate has no effect upon the sexual desire and capacity.

(4) Complete removal of the gland in the adult animal has no effect on the histological structure of the testicles. Complete removal of the prostate in the young animal has no effect on the histological structure of the testicles. Complete removal of the prostate in the young animal has no effect upon the subsequent development of the testes.

CONDITION OF THE KIDNEYS IN PHTHISICAL PATIENTS.

D'Arrigo,¹⁰ after collecting the kidneys of a large number of patients who had died of pulmonary tuberculosis, was able to make a careful study in 12 cases. He says that:

(1) In the kidneys of tuberculous persons, in the mild as well as severe forms, there are invariably present alterations in the vessels in the interstitial substance and in the renal epithelium.

(2) In the early stages of pulmonary tuberculosis the lesions in the kidney are not severe, and seem to be due to the passage of the toxin through them. This tuberculous toxin attacks the vessels first, then the interstitial connective tissue and the epithelium.

(3) If the tuberculous process in the lungs increases, in addition to the toxins, the tubercle bacilli are carried to the kidneys and there form colonies.

(4) The circulatory and functional disturbances of the kidney which are caused in the beginning by the toxin, facilitate the later colonization of the bacilli in the kidneys. In this manner the kidneys became a *locus minoris resistentiæ*.

(5) How the bacilli reach the kidney it is difficult to state, though it must be through the circulation. The bacilli were found in most cases in the glomeruli and in the interstitial connective tissue, but never in the blood vessels or in their walls. These cases must not be confounded with acute miliary tuberculosis.

RELATION OF PROSTATE TO TESTES.

Walker¹¹ reports a series of experiments in which he removed the testicles from a number of dogs and then injected half of the number with a testicular fluid, the preparation of which he describes with careful detail, keeping the remaining animals as controls for the companion. At the end of about six months the animals were all killed and their prostates removed and studied with this result: The prostate gland in the injected animals presented both macroscopically and microscopically the same changes that had occurred in the uninjected ones. It may therefore be said that the injections of the testicular fluid had apparently no effect whatever, and one is probably justified in concluding that the atrophy of the gland is in no way connected with the absence of any substance in the testicular secretion.

¹⁰ Centrbl. f. Bakteriologie u. Infekt. Krank. Sept. 4, 1901.

¹¹ Johns Hopkins Hospital Bulletin, December, 1900.

NEW OPERATION. A METHOD OF PERFORMING EXTERNAL URETHROTOMY WITHOUT A GUIDE.

P. R. Bolton's¹² description of his operation and his idea of its applicability follow:

The patient may be placed in the lithotomy or knee chest position.

A curvilinear transverse incision is made across the perineum, the convexity looking forward or backward and the tendinous centre of the perineum exposed. The attachment of the sphincter ani to this point is divided and reflected, and the triangular ligament thus exposed incised transversely. The anterior fibres of the levator ani passing beneath the prostate to the rectum now come into view. These, together with the rectum, are next pushed backward and the prostate exposed. The exposed surface of the prostate is now cleaned and its apex identified.

No harm can accrue from incision into the floor of the prostatic urethra anterior to the verumontanum, and incision made into this part of the prostate is sure to enter the urethra behind its point of stricture.

The anterior quarter inch of the apex of the prostate is accordingly incised longitudinally in the median line, the urethra opened and the incision then prolonged forward as far as desired, guided, if necessary, by a probe or director suitably bent and introduced into the urethra from behind forward.

This method, while a little more elaborate than the original Cock operation, appeals to me as rational and not necessarily difficult. It will be found most useful, I believe, in recent ruptures of the urethra and in strictures uncomplicated by extravasation of urine, or perineal abscesses. I should hesitate to make use of it in the presence of infectious inflammations or necrosis of the perineal tissues, because of the larger wound surface unavoidably exposed to infection and the risk of carrying infection to the cellular tissue between the rectum and bladder above the triangular ligaments.

RARE AND INTERESTING CASES.

(1) Two cases, in each of which an old extra-uterine pregnancy had ruptured into the bladder and gave rise to symptoms which led to a suprapubic cystotomy.¹³

(2) A rare case of cancer of the prostate when the autopsy revealed metastases in the joints, inguinal glands, abdomen, mediastinum and neck.¹⁴

(3) A case of colloid cancer in an exstrophied bladder.¹⁵

(4) Herczel¹⁶ describes 2 cases of spontaneous discharge of vesical calculi. The first being that of a woman in whom a very large vesical calculus made its way into the vagina by ulceration, from which it was removed and the lesion was re-

paired by a plastic operation. The second case was that of a man from whose bladder a calculus 8 cm. long worked its way into the rectum by ulceration.

SUMMARIES OF CASES.

(1) *Renal tuberculosis*.—Simon¹⁷ affirms that of 35 cases of renal tuberculosis operated in the Heidelberg clinic, 25 were women and 10 were men. Nearly all were between the ages of 20 and 40 years, there being only 3 patients under 20 years, and only 4 patients over 40 years of age. There were perinephritic involvements in 9 cases, ureteral involvements in 13 cases, and bladder involvements in 8 cases. In only 3 cases was the kidney on the opposite side diseased. The tubercle bacillus was found in 27% of the cases.

(2) *Two hundred and six operations for stone*.—Adams¹⁸ says that most of the cases (over 75%) were operated upon by lithotripsy. The author's summary is as follows:

Lithotomy was performed only when the crushing operation was considered impossible or inadvisable. The contra-indications to lithotripsy in boys are:

(1) When there is marked cystitis, lithotomy drains the bladder and cures both diseases.

(2) When there is much difficulty in passing instruments.

(3) When the stone is too large or too hard for the necessarily small instrument.

(4) When there are indications of advanced kidney disease or great debility, the shock of the cutting operation seems less severe probably because it is shorter. In men the contra-indications are: (a) When the instruments cannot be passed. (b) When the stone is too large and cannot be grasped.

He has never found a stone too hard for the lithotrite. In tight strictures perineal section serves both for the stricture and the introduction of the crushing instrument.

Recent Literature.

The Mental State of Hystericals. A Study of Mental Stigmata and Mental Accidents. By PIERRE JANET, Litt.D., M.D. Translated by CAROLINE ROLLIN CORSON. Pp. xviii-535, 8vo, with 12 illustrations. New York: G. P. Putnam's Sons. 1901.

In 1894 Janet published, in two charming little volumes, the work which has now appeared in an English translation. In this work the author elaborated and re-enforced the theories which he had advanced in his earlier work, "L'Automatisme Psychologique," in regard to the nature of the morbid phenomena of hysteria, that "hysteria is a form of mental disintegration characterized by a tendency toward the permanent and complete un-

¹² Journal Cutaneous and Genito-Urinary Diseases, June, 1901.

¹³ S. Ilue: Bull et Mém. de la Soc. de Chir. de Paris, T. xxv, p. 720.

¹⁴ S. Atanasijevic and E. Mikel: Centrbl. f. die Krank. der Harn u. Sexual Organe, 1901, Bd. xii, H. 6, p. 335.

¹⁵ E. Ehrlich: Beitr. zur klin. Chir. 1901, Bd. xxx, p. 58.

¹⁶ Centrbl. f. Krank. der Harn und Sexual Organe, June 15, 1901.

¹⁷ Beitr. zur klin. Chir., 1901, Bd. xxx, S. 1.

¹⁸ British Medical Journal, 1901, p. 1259.