The February number of the same magazine contains a full chemical account of the new substance. Without going into particulars, it is sufficient to say that it is closely allied to phenacetine. It has a powerful local anesthetic action, and is highly poisonous if administered internally, even in minute doses. No local poisonous effect has been noted. It is soluble in boiling water, and should be dissolved in a porcelain vessel, as it causes glass containing an alkali to lose a portion of the latter, which clouds the solution. It has finally been baptized with the name "holocain." The experiments at Hirschberg's clinic were continued, some forty-five cases having been subjected to its action. Anesthesia came on in from fifteen seconds to a minute, and lasted ten minutes. The instillation of holocain was accompanied by a slight burning sensation, no greater than that produced by cocaine. The dryness of the corneal epithelium produced by cocaine was here wanting. No pupillary enlargement and no effect on the accommodation were observed.

It was, moreover, found that holocain could be used in cases where cocaine was either contraindicated or failed to work, as, for instance, where there existed a considerable inflammation of the conjunctiva bulbi, attended by swelling. Its action was here entirely successful.

The solution of holocain needs no sterilization, being in the strength of one per cent. itself bactericidal.

Holocain possesses strongly poisonous properties, acting thus in one-fifth the strength of cocaine. When instilled in the conjunctiva no injurious effects have been observed.

In this new agent, then, we have a remedy that is likely to supplant cocaine in many cases of ophthalmic surgery. Among its advantages may be reckoned the following:

- (1) It does not enlarge the pupil.
- (2) Does not affect the accommodation.
- (3) Does not increase intra-ocular pressure.
- (4) Promotes antiseptics.
- (5) May be used when cocaine is contraindicated.

Per contra, its poisonous nature prevents it from being used subcutaneously. And, as it does not contract the vessels, operations done under its influence are likely to be attended by more hemorrhage than those performed under cocaine.

Dr. Tauber, who was the first to give an account of the chemistry of holocain, says that it belongs to the class of ethenylamidins, its proper cognomen being *p-diäthoxyäthenyldiphenylamidin*. It is manufactured at the color-works of Meister, Lucius & Brüning, at Höchst-on-Main. Through the kindness of Mr. Davidson of the Theodore Metcalf Company, I was enabled to obtain an early specimen, and at once commenced its use myself, begging at the same time some of my colleagues to employ it and give me the results of their experience.

It has, up to the date of this writing, May 26th, been used in six operative cases and in ten others. The operations embraced three extractions of senile cataract, one of a dislocated lens, and one discission. Anesthesia was rapid and satisfactory in all these cases, the main contrast with cocaine being the slight flushing of the eyeball. In one case of trachoma, in which Dr. Standish did expression, anesthesia did not come on for over seven minutes, but was then complete. In the ten remaining cases holocain acted as cocaine would have done, save that there was no effect on the pupil.

Since writing the above, an article by Drs. Heinz and Schlösser has appeared in the *Klinische Monatsblätter* for April. They have been working with holocain for the past four months. The foregoing statements are, in the main, corroborated. In their experiments one to two drops of a one-per-cent. solution generally brought about entire anesthesia in from forty to fifty seconds. When a second application was made, forty seconds after the first, entire loss of sensation invariably followed in thirty seconds more. The duration of the anesthesia is at least ten minutes. After the opening of the anterior chamber a second application was found to affect both iris and ciliary body, an iridectomy in a case of acute iritis causing no pain. This effect on the iris I, too, have observed. I had used holocain in a simple extraction of senile cataract, but finding it impossible to clear the pupil I was obliged to remove a small piece of the iris after the operation was otherwise completed. No holocain had been instilled since before the operation; and yet the patient, a nervous and apprehensive woman of seventy-two, suffered absolutely no pain.

In view of all this, it would seem that, with our present knowledge, holocain is likely to take the place of cocaine in ophthalmic surgery, except in cases where subcutaneous injection is required.

Clinical Department.

A CASE OF HYPOSPADIAS.¹

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THE condition known as hypospadias is a congenital malformation of the urethra, due to arrested development, whereby there is more or less deficiency of the floor of the urethra. During the first few weeks of the life of the embryo, the sexes cannot be differentiated; in the fifth month, however, not only has the sex been determined, but also have the genital and urinary organs become completely developed. All embryos start with certain common fetal structures, the after development of which, according to the sex, will determine the physiology, and, what concerns us in particular, the morphology of the region in question.

The urethra is formed by the fusion in the median line of two parallel ridges, the free edges of which unite so as to make a canal. As would seem natural, the vesical end of the urethra is formed first, followed in succession by the prostatic, penile and glandular portions. The great bulk of the penis is made up of the corpora cavernosa which are practically never entirely wanting, so that from the position of the corpus spongiosum we can say that the roof of the urethra is always present, or at least what would correspond to it, and our malformation or defect concerns the floor of the canal. Embryology teaches that arrest of development taking place before about the eighth week will give a urethra complete only as far as the membranous portion, and that the glandular portion is completed during the fourth month, hence, in any given case we can determine approximately when the formation of the urethral canal ceased to progress.

¹ Read before the Boston Society for Medical Improvement, January 11, 1897.

These degrees of malformation have been classified by the following self-explanatory terms :

- (1) Glandular or balanic.
- (2) Penile.
- (3) Scrotal: peno-scrotal, perineal.

The anatomical peculiarities of the varieties will be considered only in the merest outline. It will be understood that the glandular variety must be the most frequent, and at the same time the source of the least inconvenience, and, on the other hand, that the scrotal variety is attended with the greatest deformity and most annoying consequences. The scrotal variety has repeatedly given rise to doubt as to the sex in so-called hermaphrodites. Of great practical importance in the consideration of the methods of treatment is the position and development of the rest of the penis. In the *glandular* variety, the most apparent change, aside from the absence of the floor of the urethra, is the breadth of the glans penis, and the redundant prepuce on the dorsum. In addition to the above defects, the *penile* variety presents a more or less marked curve of the penis, concave below so that the glans approaches the scrotum according to the degree of malformation. In the *scrotal* type, the penis is most curved, and often so small as to be concealed between the folds of skin covering it above, and extending to the cleft scrotum below and on either side. This penile curvature is due not only to the absence of a portion of the corpus spongiosum, but also to a lack of development of the lower portion of the corpora cavernosa. Consequently, running along the underside of the penis is a firm band or cord of fibrous tissue, which fails to distend when the organ is filled with blood, and thus the deformity is more marked when erection takes place.

Orth² states that one in every three hundred males is subject to hypospadias, and that many of the commoner variety (glandular) never come to our attention, unless for some other complication, not aware that any deformity exists, for they suffer no inconvenience.

Heredity. — The history of the case here reported would lead us to think that heredity was of some importance in etiology.

Symptoms. — The symptoms relate to the deficiencies and inconveniences in carrying out the functions of *micturition*, *copulation* and *fecundation*.

(1) The glandular type interferes with none of these functions.

(2) The penile type is more or less important, according to the amount of defect. The penis must be raised in order to guide the stream of urine, coitus may be possible if the penis is not too much curved, and the power of fecundation will depend on the location of the urethral orifice. These two types are most amenable to treatment.

(3) The scrotal type precludes the idea of coitus or fecundation, and micturition causes great inconvenience. The patient must squat to perform that function in order not to wet the clothes, and even then the stream is broken into a spray which wets the parts so that frequently a troublesome eczema exists.

Incontinence is not a feature of these lesions, because the urethra is usually completed to a point distal to the constrictor urethræ muscle.

Treatment. — The earlier surgical methods attempted for the cure of hypospadias were absolute

failures. They consisted mainly in efforts to form a canal by means of a trocar or hot iron, passed subcutaneously on the under side of the penis from the glans to the point of urethral opening. Since 1861 the ingenuity of surgeons has been directed toward establishing a urethral canal by means of flaps obtained from various sources. In 1869 Thiersch devised a method for the cure of epispadias, which Anger made use of five years later in a case of hypospadias. The method of Duplay, quoted in most text-books, seems to be the favorite, but it is open to many objections, and failures are common. Flaps from the scrotum are unsatisfactory, both on account of their structure and hairy surface. Abdominal flaps are liable to contain hairs and are difficult to manage. Van Hook³ has recently devised a method of canalization and the introduction of an epithelial lining derived from the prepuce, but this method has not had sufficient trial to recommend it.

It is not easy to decide when it is best to operate. It is difficult to succeed in early operations on account of the diminutive size of the parts, and the almost unavoidable sepsis consequent on urine contamination, but, on the other hand, if a canal is once established, it is said that the organ develops more satisfactorily. Operation on the adult is more frequently attended with success, for it is easier to keep the urine from coming in contact with the field of operation. In children, the course of the urine has been deflected by means of perineal section. The patient or his parents should thoroughly understand beforehand the difficulties of the operation, that treatment will extend over several months, that several operations may be necessary, and even then absolute failure may result.

Of 20 cases operated on in the Czerny clinic by different methods, 52 operations were performed, and then the results were only as follows: cured, 7 cases; partially cured (fistulæ remaining), 11 cases; absolute failures, 2 cases.

Cases operated upon at the hospital of the University of Pennsylvania required three or four operations.⁴

In considering these various methods, that devised by Thiersch seems to offer the best chance of success in the penile type. Comparatively extensive raw surfaces are overlapped, and rapid primary union is more apt to follow and remain firm than where smaller surfaces are approximated. It is absolutely essential to maintain asepsis, and to keep the parts dry and at rest. Failures are due to sepsis and swelling of parts, with consequent sloughing of flaps, tearing out of sutures, with consequent fistulæ, or even no improvement whatever.

The following case will serve as an example of the peno-scrotal type, treated successfully by the Thiersch method. The operation was performed by Dr. M. H. Richardson, at which I was allowed to assist and then care for the after-treatment.

J. B., twenty-three years of age, clerk, was a young man in perfect health. Concerning the family history, he states that his father has a glandular hypospadias; his cousin, nineteen years of age, and his brother, twenty years of age, have the peno-scrotal type.

Five years ago, an attempt was made to construct a canal through the glans penis by the usual method, but the attempt failed. Two years ago, an operation was performed for straightening the penis, with con-

³ Van Hook: *Annals of Surgery*, 1896, xxiii, 378.

⁴ *American Text-Book of Surgery*.

² Orth: *Pathologische Anatomie*.

siderable success according to the patient's statement.

At the time of the present operation, the local condition was as follows: On inspection, the penis was somewhat smaller than the average and presented a curvature (convexity upwards) which was a little exaggerated over the normal. This curvature was increased when the organ became erected, but not sufficiently to interfere with coitus. The glans penis was broad and flattened below, and surmounted above and laterally by a redundant prepuce. There was no frænum or prepuce on the under side, but there was a shallow groove, corresponding to the upper wall of the urethra. The skin of the penis was abundantly developed and could be raised in folds. On the under surface, in the median line, was a linear scar about two inches long, across which were several short scars. Corresponding to the dorsal wall of the urethra, the skin was pink in several places, more delicate in struc-

ure, and was probably an altered condition of mucous membrane. The corpora cavernosa were soft and compressible, but in the median line below and between, could be felt a small fibrous cord. The urethral opening was in the median line exactly at the peno-scrotal angle. The scrotum and testicles were normal, as was also the skin about the urethral opening.

The inconveniences suffered by the patient were slight. At each micturition, the penis had to be raised, and the stream was fairly compact; but if he was not very careful the parts would become wet. Coitus was possible, and the ejaculations took place in the normal way; but the mechanical conditions were such that the seminal fluid could never enter the vagina. With the idea of correcting this deficiency, the patient sought operation.

The problem in these cases is (1) to straighten the penis, and then (2) establish a canal, and, in order to

make the description complete, the accepted method of straightening the penis will be described briefly.

(1) To straighten the penis. On the under surface make one, or possibly two, transverse incisions so as to sever the fibrous cord which corresponds to the urethra, and in certain cases this incision must be carried into the substance of the corpora cavernosa. The penis is then forcibly stretched and we thus obtain a diamond-shaped wound (Fig. I),⁶ which is to be closed longitudinally (Fig. II).

It is best at this step to establish a canal through

the glans penis. As in Fig. III, the edges *a*, *a'*, are to be freshened, and incisions *b*, *b'*, or *c* made to increase the circumference, and then *a*, *a'* sutured together over a portion of the catheter or glass tube (Fig. II). An interval of four to eight months must elapse before attempting to establish the rest of the canal.

(2) To establish the canal by the Thiersch method. An incision, 1, 2 (Fig. IV), is made, parallel to and about half of an inch from the median line, extending from the glans penis to a point opposite the urethral opening. Incisions 1, 3, and 2, 4, make a rectangular flap of this (*a*), which is dissected up with the line of the urethra (3, 4) as a base. The second flap *b* is twice as broad as flap *a*, with its free edges at 5, 6, parallel and close to the edge of the urethral groove. Incisions 5, 7, and 6, 8, are carried well

⁶ These figures have been suggested by other diagrams, and by the peculiarities of the case in question.

around to the side of the penis. After flaps *a* and *b* have been dissected up, a gum-elastic catheter is to be inserted into the bladder and flap *a* reflected over it so that the cutaneous surface is in contact with it and the raw surface exposed to view. This flap is held in place by fine silk sutures passed as follows (Figs. V and VI): The ends of the silk are threaded with small round needles, both of which enter the side of the urethral groove at *c* (Fig. VI), passing from the raw to the cutaneous surface, then transfix flap *a* near its free edges, passing from cutaneous to raw surface, and finally both needles pass through flap *b* at *d* (Fig. VI and V). These sutures are placed close together and rather loosely tied. Flap *b* is then drawn over so as to close the wound (Fig. VI and VII).

It is generally recommended to close the urethral opening, and to connect the distal end of the new canal with the previously formed glandular canal at a subsequent operation; but in this case it was decided to make the proximal connection at once. The edge of the urethral opening was denuded and flap *a* sutured to the free edge of the floor of the urethra and the line of suture covered with flap *b*, so that there was no direct communication. Remembering that glandular hypospadias never interferes with the function of the penis, no attempt was made to restore that part of the canal, although this should be carried out when the penis is straightened.

The catheter was maintained by the "jury-mast" contrivance (Fig. VII), the silk threads running from the tip of the catheter to a circular rubber ring about three inches in diameter fastened at the base of the penis, which also served to retain the dressing in place.

Convalescence. — Before the operation, the bowels were thoroughly evacuated, and then the patient kept on a light diet for nine days, when they were moved for the first time by enema. Opium suppositories and bromide solutions were used with perfect success to avoid erections. The syphon worked perfectly, and at no time was there any escape of urine around the catheter. On the fourth day, the deep sutures were removed. On the sixth day, on account of a slight urethral discharge, the bladder was irrigated with a solution of boric acid so as to cleanse the inside of the catheter, which was then withdrawn *just* beyond the constrictor urethrae muscle, and the urethra irrigated with the catheter in this position. This procedure was repeated on the tenth day. On the seventh day all stitches were removed, and the wound was apparently healed. The catheter was removed for the first time on the sixteenth day, without having caused any particular discomfort. There had been neither pain nor tenderness except at the site of the original opening, where it was slightly tender on the third and fourth days. The wound remained perfectly dry at all times. There was no loss of tissue except a small area of the outer layer of skin at the lower corner of flap *b* near *e* (Fig. VII). There was no pain on micturition. During the first day after the removal of the catheter, a small amount of urine escaped from a minute fistula at *e* (Fig. VII). This must have closed at once, for the patient was directed to hold a small piece of dry gauze over the opening at each micturition for a few days, and there has been no further escape of urine. There was a slight urethral discharge for four weeks, the abundance of which was not influenced by the use of salol, but it entirely dis-

appeared in a week after the use of oil of sandalwood. The pus cells contained no diplococci, and the discharge was undoubtedly due to small granulating areas along the new urethra, together with a certain amount of catarrhal inflammation of the whole urethral mucous membrane from catheter irritation. There were no subjective or objective symptoms of a posterior urethritis.

It is now eight months since the operation, and the new urethra is perfectly competent in all respects.

Reports of Societies.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

J. G. MUMFORD, M.D., SECRETARY.

REGULAR Meeting, Monday, January 11, 1897, Dr. C. J. BLAKE in the chair.

ANATOMICAL SPECIMENS.

DR. H. H. A. BEACH: This kidney is that of a man of middle age whose symptoms were anemia, debility and loss of flesh without pain. One examination of the urine showed a very slight trace of blood, and that was microscopic in character. The symptoms existed from June to the present time. The growth first appeared in the lumbar region, extended forward, and had been regarded as splenic in character until Dr. Fitz diagnosticated renal growth and sent the man to the hospital. The abdominal operation was performed, first ascertaining that another kidney existed. The growth was a large-celled sarcoma, and weighed three pounds. Dr. Whitney makes the following report upon the growth:

A rounded mass, the size of a child's head, weighing about three pounds, involving about one-third of the upper part of the kidney. The capsule of the kidney blended with the fibrous covering of the growth, which was rough, and upon which was several small, rounded, secondary nodules.

The kidney was quite sharply defined from the growth, and microscopic examination showed evidence of connective-tissue increase, with atrophy of the kidney substance close to it. Elsewhere the kidney was pale, but otherwise normal. On section the greater part of the growth was seen to be of a uniform, opaque, yellow color, and the microscopic examination of this part showed simply fatty degenerated cells and detritus. At the edge this tissue was more translucent, pale, and of a medullary aspect, and a distinct lobulation could be seen. Microscopic examination of this part showed it to be made up of large round cells, among which were scattered irregularly-shaped protoplasmic masses, with very large nuclei, three or four times as large as the average cells. The cells seemed to have a little granular intercellular material, and there were no well-formed blood-vessels. Close to where it joined the kidney was a line of tissue of an old-gold color, recalling that of the suprarenal capsule.

The diagnosis is a large, round-cell sarcoma, rapidly growing and undergoing anemic necrosis. It probably originates from the suprarenal capsule, possibly from a misplaced fragment in the kidney.¹

DR. A. T. CABOT reported a case of

CYST OF THE BRAIN.²

¹ This patient died in the following March of a recurrence of the growth in the brain.

² See page 533 of the Journal.