ments later strong vesical tenesmus. Thus it is well for patients to remain rather quiet just after this procedure, and, when possible, to lie still for a little time until the tenesmus passes away.

Solutions of silver nitrate are usually employed, and of exactly the same strength as has already been given for brushing out the urethra with the brush apparatus. A five-per-cent solution is the one usually employed. If we wish to act more energetically, we may choose a ten-per-cent solution of argentic nitrate. In the latter case the cauterization is always followed by a hæmorrhage, sometimes very slight, sometimes considerable, which is not the case with the five-per-cent solution. With the weaker solution we may cauterize every second day, or even every day; while with the stronger solution we should cauterize but once, or at most twice, a week. This procedure is especially adapted for those slight catarrhs of the neck of the bladder, such as are apt to occur in cases of onanism, and after sexual excesses combined with abnormal seminal emissions. This is a most excellent mode of treatment in spermatorrhœa. And yet it is also of the greatest service in gonorrhœal catarrh.

Among the various methods of treating diseases by means of small suppositories, that of Dittels with the *porte-remède* is the best known and the most practical. By means of this *porte-remède*—a catheter-shaped, curved instrument, provided with an obturator—a small suppository is deposited in the prostatic portion. If we wish the suppository to act merely as an astringent on the prostatic portion of the urethra, we choose one of the suppositoria brevia previously described. If we desire to affect this region more actively, we choose a suppository made from cocoa-butter and argentic nitrate as follows:

℞ Argenti nitrat. . . . . 0·10
Ol. theobromæ . . . . q. s.
M. Ft. suppositor. urethral. brevia no. quinque.

If it is thought best to begin carefully, choose at first only half a suppository. The caustic action of this procedure is an extensive one, and not infrequently followed by some bleeding from the urethra, lasting several days. It is well if the patient keep in bed meanwhile, although this is not absolutely necessary.

In catarrhs of the neck of the bladder, such as usually precede tuberculosis of the genito-urinary apparatus, we may use suppositoria brevia made of iodoform and cocoa-butter, introducing them into the pars prostatica. These lessen somewhat the annoying tenesmus of the bladder. They are prescribed in the following manner:

℞ Iodoform. pur.,
Ol. theobrom. . . . . āā q. s.
Ft. suppos. urethral. brev. no. sex.

Finally, we can cauterize the pars prostatica with lapis in substance, either with Lallemand's *porte-caustique*, or, much better, by the use of the endoscope under the control of the eye.

c. *Therapeutics of Suppuration of the Bladder itself; Therapeutics of Cystitis per se.*—Since every bladder-catarrh has its exciting cause, we can treat any given case with success only by seeking out and trying to remove the *causa movens*. There is no such thing as a cystitis caused by "chill" or "catching cold." Therefore we have no right to satisfy ourselves with this as a convenient etiological factor. We ought all the more to seek for the true cause by the most careful kind of instrumental examination of the patient, and not rest until we have found it.

The treatment of cystitis is very different, according as it is *acute* or *chronic*. Acute cystitis is treated according to the symptoms, and entirely by restricted diet and internal medication, while, in the treatment of chronic cystitis, local instrumental interference plays the principal part. *Acute catarrh of the bladder* is usually propagated from some neighboring section of the urinary tract, yet it may originate in the bladder itself. Chronic cystitis, on the contrary, usually has some parenchymatous or other organic change of the bladder itself or of the prostate behind it, or else there is something abnormal about the contents of the bladder. It is not to be overlooked that tuberculosis causes very obstinate forms of cystitis. From this simple remark alone we see that, in searching for the causes of a cystitis, we must often look for other etiological factors than bacteria, which are often wrongly accused of being the primary cause of the trouble, although they certainly are always present where ammoniacal fermentation is going on in urine.

In *acute catarrh of the bladder* (*acute cystitis*) rest in bed is indicated; at least, the patient should remain in his room lying down. If there is high fever, rest in bed is absolutely necessary, since otherwise severe complications may occur, such as pyelitis and pyelo-nephritis, retention of urine, and hæmaturia. For the fever, we prescribe quinine, and if chills lasting some time take place, we order warm aromatic drinks, such as linden-flower tea or weak, ordinary table tea. For the pain over the region of the bladder, we order cataplasms made with decoctions of aromatic herbs, or linseed fomentations. If pain is present in the perinæum or rectum, a few leeches applied to the perinæum, or around the anus, will give a good deal of relief. For the

troublesome, frequent, and painful desire to urinate, we prescribe narcotics, either internally or as suppositories. When given by the mouth, we can recommend morphia combined with lupulin, or sodium bicarbonate. Suppositories of morphia are far preferable to those of extractum belladonnæ. Extract of belladonna is a preparation of very uncertain (and unequal) action. While in one case we get next to no effect, a preparation from another apothecary may cause spastic contraction of the neck of the bladder, and thus only increase the strangury. The extract of hyoscyamus is still less reliable. The best way to prescribe these drugs is:

℞	Lupulin. pur	1·00
	Morphiæ muriat	0·05
	Sacch. alb	3·00
M.	Ft. pulv. in dos. octo. Take 3–5 powders daily.	

℞	Morphiæ muriatic	0·10
	Ol. theobrom	12·00
M.	Ft. suppositor. no. sex. Use 2–3 daily.	

If the suppositories are badly borne, we may use in their place small mucilaginous enemas, with ten to fifteen drops of tinctura opii two to three times daily. Milk, almond emulsion, and water are the best drinks. The decoctions of hemp and flaxseed, so often prescribed in acute cystitis, have no advantage over the above-mentioned drinks, and frequently nauseate. Mineral water or diuretic teas are *not* indicated as long as the urination remains very painful and quite frequent. We may only begin gradually with effervescent waters added to warm milk, when the painful tenesmus begins to lessen, and only when the pain has entirely disappeared use the undiluted mineral water. The same is true of the astringent and diuretic teas, such as folia uva ursæ, marrubium album, and chenopodium ambrosioides.

Warm sitz-baths, two to three times daily, or full baths, make urination considerably easier. If retention of urine set in, so that the bladder may be felt above the symphysis as a sensitive tumor, a soft catheter of vulcanized caoutchouc may be carefully introduced into the bladder, and the latter washed out, either with a one-tenth-per-cent lukewarm solution of carbolic acid, or, if much pain be present, with about three hundred grammes of tepid water, to which thirty drops of tinctura opii have been added. Stiff elastic or metallic catheters are less to be recommended, since they may easily injure the softened tissues of the neck of the bladder. The treatment of chronic cystitis ought to be always local, as distinguished from the acute form. Before we initiate local treatment we ought always to examine into the condition of the prostate as well as of the bladder with a steel sound or catheter. If the catarrh is kept up by a stone or a stricture, of course these must be disposed of first of all. If partial retention of urine, or inability of the bladder to entirely empty itself, be the prime factor in causing catarrh and ammoniacal fermentation, as is apt to be the case in hypertrophy of the prostate or paresis of the bladder, we must, above all else, secure complete and regular evacuation of the bladder by means of catheterism. We can employ medicated injections at the same time that we use this latter treatment. The local treatment of the vesical mucous membrane is always in the form of watery solutions which are injected into the bladder after this latter has been emptied by means of the catheter. The injection, as well as the washing out of the bladder, is best done in the following way: The patient stands; after the bladder has been emptied in the natural way by the patient, an elastic catheter or a

catheter *coudé* is passed into the bladder, and this latter *entirely* emptied. Now an injection is given by means of a syringe holding about one hundred grammes, employing moderate pressure. The first and the second syringeful should be allowed to flow out immediately after injecting, while the third syringeful may be retained a little longer. Or we may do in this way: First wash out the bladder with tepid water, by means of the syringe, until the washings come out clear and transparent; and not until then inject the medicated solution, holding the catheter closed by the fingers for one or two minutes, after which time we allow the contents to flow away. This is the most practical way to treat a bladder locally. If the patient is weak or feverish, and can not stand, the washing is carried out in quite the same way with the patient in the recumbent or half-sitting posture. However, if he can stand, it is always preferable, since the sediment can be best got out of the bladder in this way. In former times washing out the bladder with a metallic catheter *à double courant* found much favor. This method is not good. In the first place, a metallic catheter irritates the bladder and the neck of the bladder much more than one made of soft vulcanized India-rubber; and, in the second place, we always wash out the bladder when it is in a contracted state.

The water flows out of one opening in the catheter, and immediately back through the other opening. In this way but a small part of the surface of the mucous membrane of the bladder is rinsed by the water. The greater part of the catarrhal secretion, however, which sticks in the folds of the mucous membrane, or in the inter-trabecular spaces, can never be entirely washed out in this way. Any one can easily convince himself

that this is true by washing out a bladder affected with purulent cystitis for a quarter of an hour with a double-current catheter, and immediately afterward with the hand-syringe and the soft-rubber catheter; by this latter procedure a considerable amount of catarrhal secretion may be brought out, although, when washing with the double-current catheter, the washings had become quite clear. With each injection by means of the syringe the bladder is distended, the sediment stirred up, and thus more completely evacuated. Washing out the bladder by an irrigator is not a thoroughly good measure. With an irrigator we usually allow the fluid to flow quietly into the bladder until the patient has a feeling of fullness and tension, whereupon the fluid is allowed to flow out again. If the washing out is done in this way in insufficient or paretic bladders they become only more distended, and thus gradually more insufficient.

At the same time, the sediment is never so completely evacuated by this quiet flowing in and out of the fluid as by the hand-syringe. In sensitive bladders all solutions ought to be injected warm. Cold fluids cause a violent tenesmus at once, so that a continuation of the washing out is impossible. On the contrary, in less sensitive bladders (as, for example, in paresis), or in catarrhs complicated with hæmorrhages, the injections ought to be made with cold solutions only. Washing out the bladder is done with water alone, or with water to which ten drops of tinct. opii have been added to each 100 c. c.

Again, a $\frac{1}{8}$—$\frac{1}{4}$ per cent solution of carbolic acid is well adapted for our purpose, or a 0·30 per cent solution of salicylic acid. Since this latter not seldom causes a severe burning sensation, which is especially apt to occur when the solution appears turbid from the difficult solubility of the salicylic acid, we more often employ a 1–2 per cent solution of sodium salicylate instead. Stronger carbolic solutions of 1–1·5 per cent are only borne by less sensitive bladders. Also 3–5 per cent solutions of sodium chloride, or of sodium sulphate, or of borax, are especially to be recommended for washing out the bladder when the catarrhal secretion appears thick and ropy.

In many cases catheterism, in connection with washing out the bladder by one of the above methods, will of itself suffice to dispose of mucous or purulent catarrh of the bladder. However, in obstinate cases we must employ stronger astringents, such as potassium permanganate, 0·1–0·3 per cent solution; of alum, a 1–5 per cent solution; of zinc sulphate, a 0·3–2 per cent solution; of zinc chloride, a 0·2–1 per cent solution; and of silver nitrate, a 0·1 to a 0·5 per cent solution in a gradually increasing strength. If hæmorrhage of the bladder is present at the same time, besides the silver nitrate solution, a 0·5–2 per cent solution of ferrum sesquichloride is well adapted to the case, or a 0·5–2 per cent solution of tannin. In gangrenous, ichorous catarrh, we employ a 3–5 per cent solution of resorcin to obviate the fetor of the urine. The same purpose is served if we add 1–2 drops of amyl nitrite to every 100 grammes of water used for washing out the bladder. In order to bring the sediment present in *phosphaturia* partly into solution, we employ 0·2–0·1 per cent solutions of acid. hydrochloric. conc. In ammoniacal fermentation of the urine these solutions are used, alternating with the above astringent and antiseptic solutions. After severe gonorrhœal inflammations of the bladder, we sometimes find, besides a purulent cystitis, the capacity of the bladder very considerably

lessened—so much so, indeed, that the patients may be obliged to urinate every five minutes, and prefer for convenience to wear a rubber urinal. In older patients the case is usually one of concentric hypertrophy of the bladder; in younger individuals, on the other hand, it is more apt to be a so-called "shrunken" or "cicatricial bladder." In these cases local treatment by means of medicated injections is of no avail if the capacity of the bladder can not be increased at the same time. This can be brought about by a gradual distention of the bladder (which has become so much smaller) with tepid water, by means of a syringe and a catheter. This method is not free from danger in old patients, since in hypertrophic bladders great diverticula are easily formed, and these might rupture. On the other hand, in the shrunken bladder from gonorrhœa, when occurring in individuals still young, its gradual distention is followed by the very best results. If the purulent cystitis is but one of the manifestations of a general or local tuberculosis, or if the etiological factor is a compound one—as is often enough the case—local treatment will not be of much use unless the general condition is taken into consideration at the same time. It is a well-known fact that catarrhs of the bladder which defy all treatment can be made to disappear very soon if the patients spend a summer in the country, take an appropriate "cure"* at a spa, or a milk-cure, and

* A "cure" on the Continent is understood to mean a sojourn at a health resort, where the patients drink the waters of some mineral spring, bathe, and diet. In addition, massage and electricity are often employed. The habits of life can be exactly controlled, the surroundings and occupation of the patient are altered, and by one or all of these influences the best results are often obtained in obstinate cases, when the treatment is judiciously conducted. A "cure," or course of treatment, usually takes six weeks.—W. B. P.

especially if they pass the winter in a southern climate, such as that of Italy. As an "after-cure," after a properly conducted local treatment, a "cure" at Carlsbad, Marienbad, Wildungen, or at one of the indifferent warm spas, as Gastein, Römerbad, Töplitz, and others, is of service. In cases of tuberculous cystitis, a "cure" at Gleichenberg or Roznau can be highly recommended.

d. Therapeutics of Suppuration of the Pelvis of the Kidney; the Treatment of Pyelitis or Pyelo-nephritis.—The treatment of pyelitis is purely one of internal medication, since we can not get at the pelvis of the kidney with instruments for purposes of treatment. In extraordinary cases surgery has, to be sure, interfered repeatedly, yet until now the favorable results are small compared with the danger of the undertaking itself. Thus, kidneys have been repeatedly extirpated which were the seat of tumors, or movable, such as contained calculi, or had been injured, and in some cases the operation was followed by a good result. In the same way, incisions have been made into paranephritic abscesses, and into dilated pelves of the kidneys, in cases of pyonephrosis, sometimes to let out pus, sometimes to remove a calculus there situated.

Simply for the purpose of curing a purulent pyelitis no surgical interference has been attempted thus far. In those forms of pyelitis, such as set in during acute febrile processes, or in such as appear to result from setting back of urine in the bladder and are propagated from purulent catarrh in the latter, we have only to give our attention to the disease at the root of it all. If we can dispose of this, the pyelitis will usually vanish at the same time. *Acute pyelitis* demands for its treatment rest in bed. As long as fever is present, we must give quinine, and, if pain be present at the same time,

morphia besides. For drink give milk, almond-milk, or water. If there is no great tenesmus present we may order a carbonated water, either by itself or given with milk. In *chronic pyelitis*, we order a milk cure and the systematic use of tepid full baths. To lessen suppuration, we prescribe tannin, tannate of quinine, and alum. To obviate any constipation that might be caused by these remedies, it is best to give with these a little ext. aloes aquos. The alum may be given in the form of alum-whey, of which half a litre must be drunk each day. These are good samples of prescriptions:

℞ Tannin. pur.................................. 1·00
Sacchar. alb.................................. 2·00
M. Ft. pulv. div. in dos. no. sex.
Take three powders daily.

℞ Quiniæ tannat.................................1·00
Sacchr. alb.....................................2·00
Pulv. in dos. no. sex.
Give as in last prescription.

℞ Serum lactis clarif.........................500·00
Alum. crud. pulv.............................. 3·00
D. S. Take during the day.

℞ Aq. calcis...................................100·00
D. S. One to two tablespoonfuls to each glass of milk.

Balsam of copaiba and turpentine can sometimes be employed with good effect. They are both best given in gelatine capsules containing 0·20 each, of which six to twelve are to be taken daily. Turpentine is also often used as an inhalation, and can be employed cold or warm. Dittel recommends cold inhalations. For this purpose a teaspoonful of the purest turpentine is well shaken with about three hundred grammes of cold water, and a suitable quantity of this milky fluid inhaled through a kind of inhaler constructed like

a "nargileh." The patient makes deep inspirations through the mouth-piece and tube of the instrument, and so introduces the turpentine into the system through the lungs. These inhalations are usually made several times daily, a few minutes at a time. If headache or dizziness is caused, the inhalations are to be suspended.

In *calculous pyelitis* we prescribe for the diathesis causing the calculus. Since uric acid and calcic oxalate are most frequent sources of renal calculi, the alkalies, and mineral waters containing them, are most appropriate. Thus, the waters of Carlsbad and Vichy have long been celebrated for their curative powers in lithiasis. However, all soda-springs have an excellent influence in this particular. To prevent formation of uric-acid calculi, lithia is especially recommended:

℞ Lithii carbonat..............................3·00
Ft. pulv. div. in dos. no. sex.
S. Three powders a day.

Several alkalies, given together, are also very appropriate for such cases. The following is an uncommonly good combination:

℞ Sodii phosphat.............................30·00
Sodii bicarbonat............................60.00
Lithii carbonat..............................10·00
M. Ft. pulv.
Sig.: An even teaspoonful to be taken twice a day, dissolved in sweetened water.

That a "cure" at Carlsbad or Vichy is indicated in cases of calculous pyelitis, follows as a matter of course from what has been said above. If we suspect *pyelitis* or *pyelo-nephritis tuberculosa*, we ought, on the contrary, to bring into operation all those influences that show themselves efficacious in pulmonary phthisis; thus a

cure at Gleichenberg, at Roznau, Meran, and in northern Italy, a corresponding dietetic treatment, and such medicine as the symptoms require. If in addition we get gastric troubles in chronic pyelo-nephritis, such as loss of appetite, imperfect digestion, eructations, nausea, and vomiting, they are apt to be the symptoms of chronic uræmia; and even if we can not hope for any permanent relief from any kind of treatment, it may be as well to state that the mineral acids taken internally can banish these troublesome symptoms for a time at least. We usually prescribe dilute hydrochloric acid in doses of ten to twenty drops, taken three times a day, after each meal; or phosphoric acid, five grammes during the day in a sirup, and pure carbonated water in a siphon to drink.

THE END.

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