This table will show you, at a glance the relation of contractures of the ankle to one another :—

Contractures of the Ankle.

<i>Simple Forms.</i>		<i>Compound Forms.</i>
1. Talipes Equinus.	↗ ↘	5. Talipes Equino-valgus.
2. Talipes Valgus.	↖ ↗	6. Talipes Equino-varus.
3. Talipes Varus.	↖ ↘	7. Talipes Calcaneo-valgus.
4. Talipes Calcaneus.	↗ ↘	

Each may be either spastic or paralytic.

ON THE
**ERRORS AND MISCHIEFS OF THE
 SOUND AND CATHETER,**
 AND THE NATURE AND TREATMENT OF
URINARY STRICTURE.
 By T. WILKINSON KING.

Spasm is injection of the part, and thickening is the result, most cases being mixed and variable. Authors on the subject; comments and facts. The treatment, constitutional; cases. Summary of these views.

It must be a task of no small difficulty to establish that the treatment of strictures of the urethra, by means of instruments or caustics, is in the main wrong, needless, and pernicious; but as my opinion has long appeared to me founded on broad and incontrovertible principles, I shall not hesitate to set it forth, trusting that a somewhat careful demonstration of my views in this and correlative matters will ultimately find the favour which truth deserves.

To whom should we appeal as the judges of such opinions? It is not just to rely on those who rely on instruments and nothing else, and I would not trust the decision to mere learned reviewers and nameless critics. I shall rely on the future to show continually, more and more, that local interference in stricture is useless and hurtful. If exceptions are to be established the rule must be first understood.

The smaller the share of credit which an innovator happens to possess the more it becomes him to adopt a cautious tone, while one of more settled reputation should still fear least an overweening confidence lead him only into shameful error.

Should it appear that I am in error, it will, I hope, be a consolation to have contested the subject with decorum,* and even to

have left the decision patiently in the hands of those who cannot but be just. If, however, hasty judges declare beforehand that *spasm* is as it is taught, and that mechanical irritation does not generally tend to hypertrophy, then I reply I wait for different judges.

In the end, if it must be so, I would openly and quietly take my place with the silent opposition,* to await a better understanding of the matter for myself, or an altered mind amid the present majority. If I am accused of too much self-confidence I may be allowed to say, though I have studied the practice of a great hospital, both medically and surgically, for near twenty years, that I feel still and truly too much of a student not to know how greatly I am indebted to eminent men of the present day for the facts and philosophy of my professional attainments.

The weight of authority against me might appear, at first sight, overwhelming; but I have a hope that some very influential authorities are already induced to take a candid view of what may be done by general treatment alone for the cure of stricture. My opinion is, that to reduce a stricture to easy limits by constitutional remedies alone, is at all times much more practicable, expeditious and safe, than when instruments are employed. As far as the latter are concerned, the best that can be done (supposing *post hoc* inferences not fallacious) has, I presume, been done already by the most careful of our best surgeons. I would hope the worst of catheterism is past also.

I do not wish to conceal that these views are intended to corroborate, as they seem to me also supported by, others, to which I have devoted some labour. There is much more affinity between stricture and toothach, or asthma, or variable disease anywhere than it is usual to teach. The following references will of themselves show in what kind of relation I place stricture.

* To confess a hasty style is, I hope, sufficient apology. A lame man is not expected to excuse his gait. There are certain points of this matter on which it must be evident that I could not do more than touch lightly. By cautious degrees much remains to be said.

* My first and valued instructor in morbid anatomy, Dr. Hodgkin, was deeply impressed with the evils of *catheterism*, a term which has been substituted by more than one of his pupils for aggravated stricture.

"Toothach, as illustrative of General Principles* in Pathology and Therapeutics," Med. Gaz., Jan. 1842; "Asthmas shown to be Catarrhal"; seven papers on Angina, *ibid.* 1841; and one on Hay Fever, *ibid.*, Aug. 1843.

The consequences of catheterism are the aggravation of stricture, bleeding, laceration, inflammation, ulceration, thickening, contraction, induration, false passages, abscesses, and death. These statements do not require illustration, they are admitted on all sides.

It is certainly the case that surgeons venture, in a particular degree, to condemn the catheterism of the majority of their neighbours, while the best account they can give of their own is that especial gentleness, or steadiness, or tact, is the *peculiar* means of success.

Catheterism is not essential to the treatment of stricture, for it may be said to happen daily that patients, through neglect or fear, or even well-founded despair, leave a stricture to its own course, with sufficiently happy results. It is true that excesses or exposure may reproduce or increase the obstruction, whether cured by the surgeon or by nature, but it is equally true that the impediments may spontaneously subside, or decline to such a degree as to be altogether harmless. A moderate hypertrophy of the bladder, like that of the heart, is at once the simplest effect of, and salutary compensation for, commensurate obstruction. There is no limit to the harmless duration of even a severe settled or quiescent stricture.

The case of protracted retention of urine, in spite of remedies, I do not now propose to enter on the consideration of. The catheter unavoidable, and at the same time successful, is the catheter's triumph; and if, moreover, there is no great *error loci* (but only one more scar) surgery has little to be more proud of.

Spasmodic stricture, I would submit, to be nothing more than a form of active, capillary injection obstructing the urethra. It may be remembered that as yet not only is the fact of spasm problematical, but even the existence of muscle in the exact site of common stricture is extremely uncertain if not improbable. In the second place it is certainly true that the tangible facts of vascular tumefaction afford innumerable analogies, while it must be admitted on all hands that what is absolutely known of spasm, except as to the great voluntary muscles, is almost nothing.

In the third place, the permanent tumefaction which follows the spasmodic or transitory, has no evident relation to muscular contraction, while thickening and contraction of the

lining of the urethra are well-established consequences of injection, softening, and erosions.

Fourthly, the known causes of stricture are much more evidently compatible with the state of injection than necessarily connected with spasm. Urethral catarrhs are essentially capillary disturbances, stricture following exposure to cold, and attended even with increased discharges, looks not less like simple inflammation. Excesses, or mere errors in diet, inducing an attack of stricture, act, I think, more probably as capillary than muscular irritants. Diarrhoea is more frequent than colic, which yet need not be spasmodic. The common statement that spasmodic stricture generally comes on about four hours after dinner seems peculiarly to corroborate the conclusion that capillary repletion and distention are the actual causes of obstruction. The specific influence of cantharides, causing stricture if not confined to the mucous surface, is positively connected with inflammatory acts, and it does not appear that the muscular contraction of the bladder in the attendant dysuria is excited by any other means.

The stilllicidium of the young I cannot disconnect from simple want of vascular fulness (in a wide passage, perhaps); so that of terror; so also that of emaciation. The remedies of the first, vascular repletion and general tone affect the capillaries, which are seen as much, at least, as unknown muscles. Lytta seems to act most directly on the secreting surface and tissue.

Hunter makes a just, though, I think, a somewhat neglected remark,—“Few take notice of the first symptoms of a stricture till they have either become violent, or have been the cause of other inconveniences.” This looks very little like spasm. I side much with those who make almost all strictures the chronic result of gonorrhoea.

The existence of inflammatory stricture, as a variety of spasmodic stricture, is generally admitted; I do not know if spasm is ever thought to be indispensable in this case also. Of course, if the obstruction in this case be imputed to capillary injection, it is one argument in favour of the vascular or non-muscular origin of other sudden strictures.

The means which obviate the supposed spasms admit, I think, of a very favourable interpretation by reference to the capillaries. Venesection, purgatives, diaphoretics, and the warm bath, are surely better understood, as controlling the vascular system, than as subduing spasm. Cauterising or lacerating the strictured part would hardly seem even transitorily available, as we are told it is, if spasm were the cause.

The successful application of belladonna might seem to indicate spasm if, indeed, the success be a genuine consequence and not a casual sequent. The use of opium, how-

* See also an essay, “First General Laws or Fundamental Doctrines in Medicine and Surgery.” By T. W. King. London: Churchill, 1840.

ever, may admit of explanation by means of the blood and capillaries alone. Tickling the perineum to seduce a stricture to yield to the sound, is, to say the least, an odd conceit.

Those who cannot admit the conclusion that tumefaction is the common cause of stricture, will perhaps grant it to be an occasional cause; and it cannot be denied that all permanent stricture is evidence of much preceding capillary disturbance in the lining of the part.

Here I beg to offer the first great resting point of the inquiry. I ask, is it not highly desirable to avoid, if possible, all those measures which may induce permanent contraction of the urethra, as catheterism alone, or with bleeding (which is laceration), the cutting stilette, and the caustic point? And does not the urethral membrane contract after inflammation and cauterisation, as all other tissues do? As a morbid anatomist I do not know the differences between urethral cicatrix and permanent contraction. What is the dense cicatrix of a burnt neck? Contraction has followed inflammation; but what is the thickening and induration but the effect of incessant efforts to extend the skin just as tensions convert the new cellular membrane of fractured patella into tendon.

The fact that sudden stricture is often preceded by more or less of permanent obstruction, is, I think, in my favour; for the long-settled difficulty or delay with gleet is palpably not referrible to muscle, but rather to the state of the lining, so that in the first known period of such a case the stricture is a membranous change, and the final permanent state is the same.* May we not imagine spasm to be absent throughout?

I would recommend to my reader's attention a short paper on the treatment of stricture, by Mr. Bransby B. Cooper, in No. 10, of "Guy's Hospital Reports," and also some remarks in two following numbers. Mr. Cooper rejects spasm, and does not cling exclusively to the idea of irritability. He is a humoralist, and urges constitutional remedies.

Mr. E. Cock, in No. 12 of the same work, offers some very forcible remarks. Each of my friends, however, *more suo*, is ready with his catheter.

The following quotations of authorities and comments will, I hope, add something to the plausibility of my view:—

"Spasmodic strictures are considered by Mr. Stafford† as being often the result of faulty digestion. He has known a spasmodic stricture follow the eating of high-seasoned and indigestible food, or the drink-

ing of acidulous liquors." I am very unwilling to receive this train of reasoning—it may be altogether wrong, and if right it is no argument against simple injections being the cause of obstruction.

The following is, I think, fully explanatory of humoral and capillary agency in the course of stricture:—

"A man, who is otherwise healthy(?), voids his urine one day in a full stream. On the following day, perhaps, he is exposed to cold and damp, or he dines out, and forgets, amid the company of his friends, the quantity of champagne or punch, or other liquor containing a combination of alcohol with a vegetable acid, which he drinks. On the next morning he finds himself unable to void his urine. If you send him to bed, apply warmth, and give him Dover's powder, it is not improbable that in the course of a few hours the urine will begin to flow. After the lapse of a few more hours you give him a draught of infusion of senna and sulphate of magnesia, and when this has acted on the bowels he makes water in a full stream."* Let us endeavour to forget spasm in the following:—"You† are called to another patient under the same circumstances, except that he is suffering more severely. You feel the distended bladder occupying the lower part of the abdomen, and forming a distinct tumour, extending nearly to the navel. The case is urgent, requiring active treatment and immediate relief. On the introduction of a bougie you discover an obstruction in what is termed the membranous part of the urethra. Having no small bougie at hand you press one of a middle or full size against the obstruction for a few minutes, and then withdraw it at the moment when there is a sudden and violent impulse to make water. Although the bougie has not penetrated into the contracted part of the urethra, so as to dilate it mechanically, on its being withdrawn it often happens that the patient begins to make water in a considerable stream. In other instances the same effect is produced by touching the obstruction with the nitrate of silver. Now, in these cases the difficulty of micturition comes on suddenly, and subsides suddenly, and we must presume that the cause of it is a temporary, and not a permanent, change in the condition of the urethra."

"Under such circumstances we find that the obstruction is always at one part, that is, at what is called (not very properly) the membranous portion of the urethra. And here be it remembered that the canal is surrounded by a muscle of no inconsiderable size, connected by a small double tendon to the arch of the pubes. A particular description of

* I do not mean that stricture may not be, in part, variable for twenty years, as asthma is.

† Cooper's Surgical Dictionary, 1838, p. 1320.

* Sir B. Brodie on Diseases of Urinary Organs, p. 3.

† Ibid.

this muscle has been given by the late Mr. Wilson in the first volume of the 'Medico-Chirurgical Transactions,' and it seems to afford a reasonable explanation of the phenomena which I have just described."

We shall not find agreement among authorities to justify the precise location of strictures. It is very true that stricture usually takes place in certain parts of the urethra, but I contend that no one part enjoys complete immunity from transitory or permanent stricture. No part is invariably free from catarrh, tumefaction, induration, and contraction.

"Cold, externally applied to the body, has so great an effect upon a spasmodic stricture, that a patient who can make water without the smallest difficulty in a warm room is often quite unable to void a drop on making the attempt in the open air. However, on returning to a warm room, and sitting down a little while, he becomes able again to expel his urine."*

Can anything indicate capillary determination much more distinctly, unless it be the following?—

"In the early stage of stricture there is frequently a discharge of mucus, or of muco-purulent fluid, from the urethra, attended with a sensation of itching, or even with a slight degree of heat and pain in making water."†

Mr. Palmer,‡ the able commentator on Hunter's Surgery, writes, "There are few cases of gonorrhoea in which the stream of urine is not diminished in size from the existence of some degree of spasmodic contraction in the membranous portion of the canal. If the gonorrhoea lasts long, this spasm may become habitual, and terminate in stricture, and the likelihood of such a result is much increased if the inflammation is not confined to the extremity of the urethra, but extends to the bulb and neck of the bladder." Surely an unprejudiced reader will draw humoral-capillary inferences from such remarks as these, and not bow quite monomaniacally to spasm.

"Strictures in the urethra thus being frequently attended with a discharge and pain in making water, especially after any excess, are occasionally mistaken and treated as a gonorrhoea or a gleet. These symptoms often come on in a few hours after connection with a female; the degree of inflammation is very slight; the discharge is the first symptom, and is more violent at the commencement than at any other period. The inflammation subsides in a few days, leaving only the discharge, which also frequently disappears

in five or six days, whether any means be employed or not for its removal. (Home.)"*

"In consequence of the natural sympathy between the urethra and testicles, the latter organs are apt to swell in cases of stricture, and, as there is also a discharge, the disease may be mistaken for a common hernia humoralis, and a treatment on very wrong principles instituted."†

I quote the above only to object to it. The limits of the old science of sympathy are almost contracting to nothing; the new one must have a different set of foundations. Testitis, with stricture indicates the diathesis; it may be transitory or severe. The spread of inflammation, its severity, &c., indicate the measure of active treatment required.

It might almost appear that the urine, with a powerful hypertrophic bladder, is the best dilator of stricture,—witness the expansion of the urethra behind the disease. The urine exercises some pressure to dilate the ureters, but, *consequently*, various strictures form in them at the same time, or a little later, and it is only death that prevents the expansion from ending in obliteration of the tube, as one every now and then sees.‡ It is, moreover, a different thing to expand a healthy tube and commence operations on a growing contraction.

Hunter§ says of permanent stricture, "The same stricture is not at all times equally bad, for we find that in warm weather it is not nearly so troublesome as in cold. These changes are often very quick. A cold day, even an hour of cold weather, shall produce a change in them; and the same stricture is almost always worse in winter than in summer. However, this observation is not free from exception; I knew one case that was always worse in the summer. There are other circumstances besides cold that make a stricture worse. A gentleman who had an ague always found the stricture increased during the fit. It is also increased by drinking, violent exercise, (?) and by the retention of urine after an inclination to void it has been felt. This last cause is often so great as to produce a total stoppage for a time." What have we here besides humoral catarrh? His concluding statement does not seem to me to point to any exciting cause of stricture.

An old gentleman has winter cough; dyspnoea and expectoration every evening, according to the exposures of the morning and the copiousness of his dinner; warmth and excretions conclude the paroxysm; prudence and moderation, or summer and exercise, put off all spasm for a season. (A

* Cooper's Surgical Dictionary, p. 1321.

† Sir B. Brodie, p. 11.

‡ In his edition of Hunter, vol. ii., p. 233, note.

* Cooper's Surgical Dictionary, p. 1322.

† Ibid.

‡ The obliteration is sometimes found to be accomplished on one side.

§ Palmer's Edition, vol. ii., page 231.

lady may have the like train of obstructions confined to her nose.*) The same applies to any old gentleman's prostatic difficulties, if there is truth in humoralism, as I think, and as I shall endeavour to show more at length.

Bedford-square, Nov., 1843.

ON THE EVIDENCES OF
TWO ELECTRIC FLUIDS
PRODUCIBLE BY
FOUR ELECTROSCOPES,
THROUGH THEIR MANIFESTING THE INTENSITY
AND NATURE OF EITHER FLUID WHICH MAY
BE CONTAINED IN A BODY.
WITH DEMONSTRATIONS OF
PRIMITIVE MUSCULAR NERVOUS
FIBRILS,
AND
REMARKS ON LIGHT.

By JOHN B. SERNY, M.D., London.

IF No. 1 of four electroscopes be excited by a piece of sealing-wax and a piece of silk, the gold leaves of the electroscope will diverge from one another. Let an electroscope No. 2 be excited in the same manner as the first, and the result will be the same.

Let the electroscopes No. 3 and 4 be excited by means of a glass tube and a piece of silk, the gold leaves will diverge from one another in both of them.

Now, by taking a discharging-rod, fully opened, so that one end shall touch the first, and the other end the second electroscope, the gold leaves of both will remain diverged; and if the same be done to the third and fourth electroscopes, the result will be the same.

But, if the discharging-rod be made to touch with one end the first and third, and then the second and fourth electroscopes, the whole of the gold leaves of the four electroscopes instantaneously collapse, thereby showing that the two electric fluids have neutralised each other in all the four electroscopes by their perfect union.

The Evidences of the Two Electric Fluids by another Experiment.—A very large electrical jar being highly charged, the contents were passed through the centre of an octavo volume of about one hundred leaves. Upon close examination of each side of the volume and of the centre leaves, it was found that several of the first outside leaves were completely bored through, but the holes diminished gradually as the approach towards the centre took place, at which point the leaves were perfect. But, upon examining again the outside leaves of the volume, they

had the appearance as if two opposite powers had rushed with great violence to meet each other, and that that violence had gradually diminished in strength as the force came nearer the centre to neutralise themselves by their immediate contact. In the year 1810 I made this discovery, and in 1841 the Professor at the Royal Polytechnic Institution did me the honour to repeat this experiment twice, and each time before company, and it was then acknowledged to be astounding.

On the Continent the existence of two electric fluids has, for a long time, been admitted. For, according to the theory of Messrs. Canton and Dufay, made perfect by M. Symmer, the two electric fluids have been proved to exist, for they can be separated from each other by chemical action, friction, compression, distillation, and change of temperature; indeed, they are made the moving powers in several manufactories on the Continent.

Nature of each Electric Fluid.—When the cylinder of an electrifying machine is made to turn, there is a decomposition of the several parts in immediate contact with the glass plate or disc,—first the atmospheric air, then the water which is in it, and the latent heat. The turning of the cylinder promotes the decomposition of the atmosphere accompanied with light and caloric; one of the electric fluids sinks into the earth, and the other is collected in the electrical jar.

I believe the composition of each electric fluid to be latent heat and light, and when they both unite together caloric and light are evolved by their perfect union.

The velocity of the electric fluid, according to the opinion of Professor M. E. Wheatstone, is estimated at 288,000 miles per second; and if this number were raised to the third power for a cube, that body would represent a mass equal to 23,887,872,000,000,000 of English cubic miles, either of positive or negative electric fluid; and if these two bodies were brought together, a perfect union and neutralisation would take place in one second of time, destroying every interposing body between them, proving their mighty chemical and mechanical powers.

THE MUSCULAR NERVOUS FIBRIL.

I now proceed to the minute anatomy of a primitive nervous fibril, and that of a primitive nervo-fibrous fasciculus, demonstrating—when it is possessed of vitality by means of the arterial circulation—the correct explanation of the eighty-four electro-chemico-nervo-fibrous actions of centres which terminate in ganglions or in the ventricles of the brain.

From microscopic examinations of the minute anatomy of a primitive muscular fibre, it may be thus described:—1st. The primitive muscular nervous fibril consists of

* It is singular that it has not been thought to be spasm that "stops up the nose."