

Practical essays on strictures of the urethra and diseases of the testicles, including observation on fistula in perinaeo and hydrocele ... prefaced with some remarks on life and organization / [Robert Bingham].

Contributors

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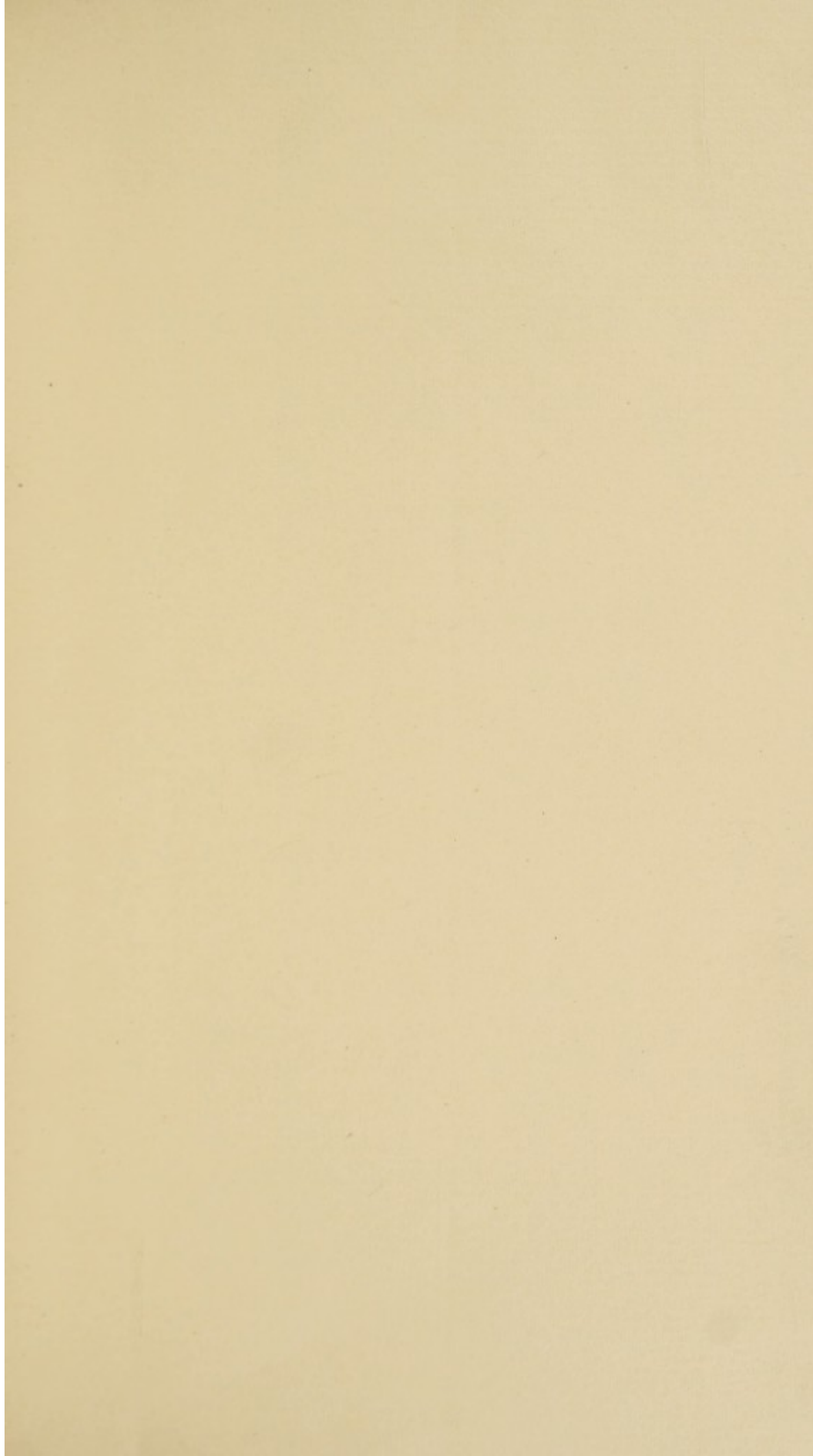
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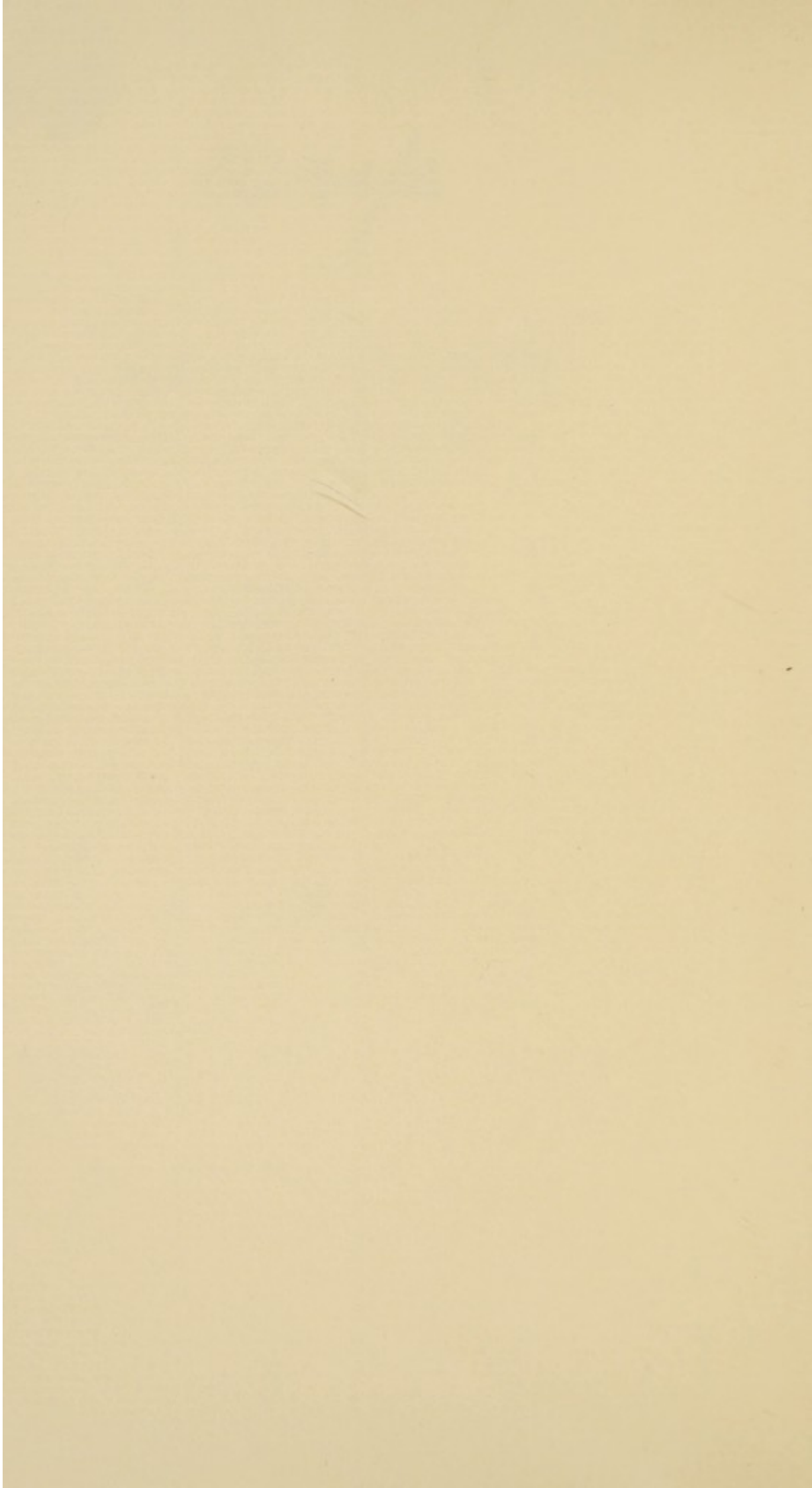



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CONTENTS OF THE LITERARY GAZETTE,

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Reviews of New Works (with copious Extracts or Abridgments):—Accum on the Adulteration of Food.—Mollien's Travels in Africa.—Anastasius, or Memoirs of a Greek.—The Percy Anecdotes.—George the III^d. his Court and Family.—Annual Biography and Obituary.—Attar's Persian Anthology.—Bayley's Poems.—Biographia Curiosa.—Britton's History of York Cathedral.—Brooke's Poems.—Fleury's Memoirs of Buonaparte.—O'Meara's Ninth Book of his History, and his Pensées et Maximes, by Las Casas.—Burckhardt's Travels in Nubia and Arabia.—Lord Burghersh's early Campaigns of Wellington.—Miss Burney's Country Neighbours, a Novel.—Chefs d'Œuvre of French Literature, in Prose and in Verse.—Cromwell's Memoirs of Oliver Crom-

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Delaplaine.—Account of an Indian Sect of Deists.—Description of a Mode of decoying Elephants.—Esquiroi on Insanity, with Notes by an eminent Physician.—Letter from Raoul Rochette to Lord Aberdeen, on Fourmont's Inscriptions.—Dispute between Savoisi and the University of Paris.—Oya Poc, a trick for Tooth-ache.—The Travels of a Dead Hare.—Account of a remarkable Hindu Sacrifice.—The Naval Surgeons' Fund.—Java and its Natural Phenomena.—Accounts of the Eruptions of Vesuvius, by a scientific Observer.—Weekly Digest of Public News.—Weekly Analysis of the Journal of Savans.—Weekly Contributions of Original Poems, many of them by distinguished Authors; and several Papers by the Hermit in the Country, being a Continuation of the Hermit in London.

Scientific Information.—Account of the Discovery of Anglo-Saxon Coins in Sweden, supposed to be Dane-Gelt—of Antiquities at Wiesbaden—of Arabian Antiques in Poland—of Oriental Astronomy—of the Measurement of an Arc of the Meridian, by Dr. Olbers, and in Germany, &c. &c.—of the Arctic Expedition—of Bracconot's Experiments for converting Rags into Sugar—of an Instance of personal spontaneous Combustion—of a remarkable Effect of Lightning—of a new Mode of printing Maps—of the moving Mountain at Namur—of Siderography, or the new Mode of Steel-Engraving, for the Prevention of Forgery—of the Turquoise—Weekly Meteorological Journal.—State of Vaccination in India.—Amber, a Vegetable Juice.—Discovery of immense Animal Bones.—Annual Distribution of Prizes, by the Society of Arts, &c.—Mr. Adams on Halones.—New Method of hiving Bees.—Grand ancient Monument at Bilsah in India.—Botanical Cards.—New Method of weighing Ships' Cargoes.—Invention for the Consumption of their own Smoke by Furnaces, Steam Engines, &c.—Theory of Earthquakes at Martinique.—New Expeditions, Russian, Danish, &c. to the Frozen Ocean.—Improved Mode of obtaining Coal Gas.—Remedy for Hydrophobia.—Description of Cast-iron Boat.—Notice to Mariners.—Curious meteoric Phenomena.—Threatening of Mount Etna.—Analysis of Sea-water.—New Theory of Spots on the Sun.

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the Bean Stalk, Don Quixotte; Pantomimes.—The Oratorios during Lent.—Debuts of Mr. Nathan, Mrs. Beaumont Mad. Vestris.—A new Hamlet.—Signor Torri.—Kean's Coriolanus, Admirable Crichton, Last Benefit, &c.—Performances at Dandum in the East Indies.—Foreign Drama. La Somnambule, Les Petites Danaïdes, Bouton de Rose, Vepres Odontiennes, La Bergere Chatelaine, Destouches les Comediens, Ennui, les Templiers, &c. &c.—Incidental Notices, &c.—*Virginus*, a Tragedy by Knowles.—*Virginus*, a Tragedy by Barlow.—Bothwell Brigg.—David Rizzio, an Opera, by Col. Hamilton.—Henry Quatre, by Morton.—*Tancredi*, a new Opera.—*Cephalus and Procris*.—The Lady and the Devil.—Montoni, a Melo-drama.—Shakespeare v. Harlequin, a Pantomime.—King Lear, by Booth, and by Kean.—Miss Macauley's Recitations.—Sadler's Wells, &c. &c.

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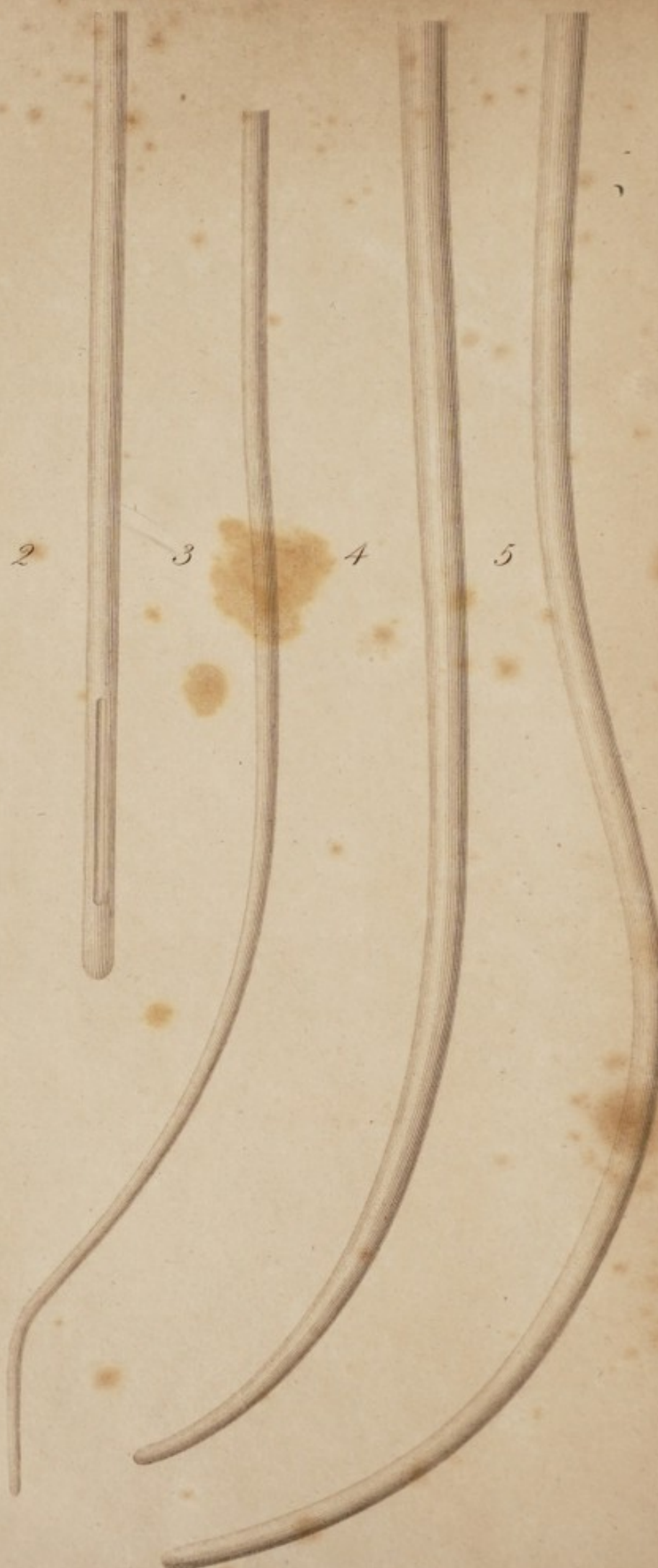
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Practical Essays
ON
STRICTURES OF THE URETHRA
AND
DISEASES OF THE TESTICLES,
INCLUDING
OBSERVATIONS
ON
FISTULA IN PERINÆO AND HYDROCELE.
ILLUSTRATED BY
NUMEROUS CASES AND AN ENGRAVING;
AND PREFACED
WITH SOME REMARKS
On Life and Organization.

—
By **ROBERT BINGHAM,**
FELLOW OF THE ROYAL COLLEGE OF SURGEONS.
—

*All extremes are error. The reverse of error is not truth but error.
Truth lies between these extremes.—Rev. R. Cecil's Remains.*

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TO

HENRY CLINE, SEN. ESQ.

Who has been long and universally looked up to as on the highest eminence of his profession, and who is no less estimable for his gentlemanly manners and his private virtues, this humble attempt at surgical improvement is most respectfully dedicated

By his obedient Servant,

THE AUTHOR.

12, Golden Square,
March 2, 1820.

HENRY OLIVE, Sec. 1860

PREFACE

Who has been long and un-
usually looked upon as on the high-
est eminence of his profession, and
who is not, however, for his
entirely honest and his pit-
tied, thinks this little book
at a singular improvement in most
respectfully dedicated to
the public, and to the
author, with the most
sincere and affectionate
regards.

THE AUTHOR.

It is a pleasure to me to
know that this little book
will be of some service to
the public, and to the
author, with the most
sincere and affectionate
regards.

P R E F A C E.

HAVING attended some interesting cases of irritable bladder and diseased prostate gland, I thought, as they were successfully treated, it might in some degree be useful to lay the particulars before the public; but, in arranging my notes for this purpose, I was led to see the close connexion which exists between diseases of the prostate, strictures of the urethra, retention of urine, and some affections of the kidneys; and this determined me to make some observations upon each of the above maladies.

The judicious treatment, however, of these complaints, involves a correct know-

ledge of so many general principles, several of which would require to be explained, that, to prevent tautology, I judged it would be right to preface the whole with some general principles for the treatment of local diseases, and afterwards only revert to them as often as they became applicable. All this could not be done perspicuously without adding some remarks on the theory and causes of local diseases, and giving an analysis of the actions concerned in their production, which would carry the argument so far back as to occasion a brief inquiry into life, its connexion with organization, and their mutual influence upon each other.

The idea that life is the result of organization has been so often and so ably refuted, that we should almost imagine it impossible for any one to retain that opinion after he had read the arguments which have

been advanced against it ; but I have met with some individuals thus circumstanced, and as the following statement has seldom or never failed to convince them, that the reverse is the truth, perhaps this may excuse my introducing it here.

For life to be the result of organization, it must happen that organization is the cause and life is the effect of the operation of that cause ; but if it can be shewn, that life exists before organization, then it will appear probable that life is the cause and organization the result, for no effect can precede the cause which produces it. The organization of a hybrid animal resembles that of each parent equally: a mule, for instance, in its organization, resembles the horse quite as much as it does the ass, which proves that the parents had an equal share in producing the organization of the

mule ; and, consequently, no part of its organization could have been perfected before the parents copulated.

Considering the short time necessary for the male parent to accomplish his part, we cannot believe that any of the organization of the future young is completed during that short period. Such an idea must appear so highly improbable that it would only be a waste of time to dwell upon it. Organization cannot possibly be completed in that short time, and yet of necessity something must be perfected, otherwise no young animal could be produced. The organization of every young animal partakes of the nature of both its parents : it cannot, therefore, be formed before each parent has contributed its share of influence to regulate the organization : it cannot be perfected during the union of

the two sexes, but it is perfected afterwards: it follows then, as a necessary conclusion, that the sexual intercourse perfects nothing but the principle of organization, or, in other words, the first germe of the life of the young animal—thus life exists before organization.

The process of generation, so far as it is understood, seems to be the same throughout all nature, both among animals and vegetables : viz. the female prepares an ovum, the male and female organs then each of them afford or throw off a portion of the life of the animal ; these two portions of life unite and form one perfect, homogeneous whole, which is concentrated upon the ovum ; and by its operation upon the ovum, the organization of the future young is governed, and gradually completed.

For the most part, the two sexes yield their portions of life at the same time, but there is a slight difference in this respect among some oviparous animals and vegetables. In fishes, and some other aquatic animals, the ova are detached from the female for some time before the male contributes his portion of life ; and in vegetables, the portion of life detached from the anthers, has sometimes to travel a long distance before it meets the stigmata.

In every instance, where the male sheds his semen into water before it comes into contact with the female ova, it must be considered a sufficient proof that the visible semen is only a vehicle for that which is more essential and invisible, viz. the principle of organization, or, in other words, life.

I suspect the common earth worm is an instance in which nothing but life, or the pure principle of organization, is thrown off. No penis has ever been discovered in that species of worm, but it has a large oval mass of medullary matter with which it closely adheres to its mate during copulation, and we know how well medullary matter is fitted to accumulate and conduct life, as in the brain and nerves.

Life is so extremely subtle and mobile, that we can readily believe two portions of it may be most intimately blended during a coitus, and then we have only to allow it to possess the same active properties as when it was united to the common stock possessed by the two parents, and it will account for the formation and growth of the young animal as well as for the nourishment of the body afterwards.

The fact of the ovum which produces the young being provided by the female parent, furnishes indisputable proof that the life of the hybrid does not result from organization, because if life results from organization, then organization itself must result from organization; and so sure as cause produces effect, one kind of organization would only produce an organization similar to itself; thus, if the organization of the young was the result of any organization which the ovum previously possessed, it must be of the same kind; and as that which the ovum possessed must result from the organization of the female parent, it must be similar to it; and consequently, the organization of the young must then bear a resemblance to that of its mother only.

In the mule, however, the organization bears an equal resemblance to both pa-

rents, and resembles neither perfectly, which can be accounted for in no other way than by allowing, that as the organization of the mule is peculiar, the principle or cause of it must have been peculiar—must have had a prior existence, and must have been derived from both parents equally.

The mere life of every part depends entirely upon a constant supply of fresh blood, but the function of every part depends chiefly upon the supply of nervous influence. Hence we must conclude that life produces all its partial or peculiar effects through the medium of the nerves, which induces a further conclusion, that all local disease commences in morbid nervous action. A different conclusion to this last can only arise by mistaking imperfection, or some other cause of local disease for disease itself.

The best analysis of local morbid actions, so far as they are comprehensible, is obtained from a close study of the different kinds of inflammation in their various stages, but as I am acquainted with no author who has treated this last subject so as entirely to meet my ideas, I found, that to convey my opinions perfectly, it would be necessary to write some observations on the theory and treatment of inflammation.

I then perceived, that however much might have been said upon the foregoing subjects, the whole would be very defective without some directions for the constitutional treatment* of local diseases. This

* Very much valuable information on this subject may be obtained from studying the works of Mr. John Hunter and Mr. Abernethy. I say studying, because a

is a point of vast importance; and, however well it may be understood by

great deal that they contain never can be thoroughly understood by a single perusal, and there is very much on this important subject which it is impossible to acquire from books alone, but which every one must make out for himself by experience, observation, and reflection. When any one has made this out for himself, he will, if he reads those authors again, be surprised to find how much they express that had entirely escaped notice in the former perusal, and that merely because he wanted that knowledge which is essential to the comprehending of the whole. But it may be remarked of surgery in general, that some of the most valuable parts cannot be taught,—every one must acquire them for himself. When a practitioner has discovered any thing by his own observation and reflection, he generally feels the subject so much more forcibly than when he derives the same information from reading, that he is apt to imagine he understands the matter better than others, not considering “there is something so intimate in a man’s own experience that

some individuals, it is by no means sufficiently so by the profession at large ; indeed it never is learned thoroughly, and it may with truth be asserted, that the want of this knowledge causes more reproach upon the practice of surgery than any thing else does ; the neglect, or mismanagement of the constitutional treatment often renders very trifling and simple cases complicated, serious, and sometimes incurable, and even fatal.

it never can be made to pass as a perfect whole into the breast of another." These considerations may, perhaps, obtain for some authors their due share of credit, who have hitherto been charged with plagiarism ; and they may perhaps excuse the publication of some works when others equally good, upon the same subject, are extant, because the same mode of instruction, and the same language, will not always convey the same ideas equally well to different persons.

It may be laid down as an axiom, that the same disease, existing under the same circumstances, may always be cured by the same remedy ; but the truth of this axiom proves the necessity of varying the treatment according to the difference of the accompanying circumstances, and sometimes the concomitant affections, for the time being will claim the greatest share of our attention. When we are careful to distinguish between the symptoms which arise accidentally out of the constitution, and those which are peculiar to the disease, the treatment of many cases which at first view appears difficult, then becomes very easy, as may be instanced in some venereal affections.

A gentleman who had suffered from gonorrhœa about a fortnight, called upon me one morning early. He was in extreme

distress : the prepuce, and glans penis, were greatly inflamed and swollen ; the orifice of the urethra bulged ; the discharge was profuse, and the dysury so great, that he was perfectly agitated at the mere idea of making water. I knew that these violent symptoms did not, in this instance, arise from the gonorrhœa abstractedly considered, but they were produced by a disordered state of the stomach, and such a disorder as required a strong stimulus to rectify it. I bid him go home and drink three or four glassfuls of port wine and take coffee for his breakfast. He did so, and from that time he felt no pain in making water, and all the other symptoms rapidly subsided.

This one example may suffice, otherwise an almost infinite number might be

adduced, because they are the effect of a principle which applies to every disease that comes within the province of the surgeon.

This digression may be excused by the importance of the subject; that, on the physiology of the nerves, I thought necessary to explain my theory of strictures. All the rest of the foregoing detail has been entered into, to shew how the Essay on Strictures originated, and also to demonstrate the impossibility of understanding any one disease thoroughly without possessing a knowledge of many others. But I shall not consider that I have expressed myself perfectly till the whole of my plan upon these various subjects has been completed.

The reason for publishing these Essays

without the others is, that the latter will require a long time for their completion, and by the manner in which these are received I shall judge whether the others are likely to be deemed worthy of public notice.

Every other work on strictures has been professedly written, more or less, for the purpose of recommending some one mode of treatment as being best suited to all cases. In this Essay various kinds of treatment have been considered, and an attempt has been made to shew that each one may occasionally merit the preference, and that the treatment of strictures, and of diseases of the testis, may and ought to be regulated by those general principles which govern the treatment of other surgical diseases. Besides this, it is believed that many things have been placed in a clearer

point of view than has hitherto been done. It is also thought that many parts lay claim to originality, and originality of that kind to which utility is inseparably attached.

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11. On the theory and scope of Statistics	23
12. On the classification of Statistics	24
13. The history and progress of the Science of Statistics	25
14. On the theory and scope of Statistics	26
15. On the theory and scope of Statistics	27
16. On the theory and scope of Statistics	28
17. On the theory and scope of Statistics	29
18. On the theory and scope of Statistics	30
19. On the theory and scope of Statistics	31
20. On the theory and scope of Statistics	32
21. On the theory and scope of Statistics	33
22. On the theory and scope of Statistics	34
23. On the theory and scope of Statistics	35
24. On the theory and scope of Statistics	36
25. On the theory and scope of Statistics	37
26. On the theory and scope of Statistics	38
27. On the theory and scope of Statistics	39
28. On the theory and scope of Statistics	40
29. On the theory and scope of Statistics	41
30. On the theory and scope of Statistics	42
31. On the theory and scope of Statistics	43
32. On the theory and scope of Statistics	44
33. On the theory and scope of Statistics	45
34. On the theory and scope of Statistics	46
35. On the theory and scope of Statistics	47
36. On the theory and scope of Statistics	48
37. On the theory and scope of Statistics	49
38. On the theory and scope of Statistics	50
39. On the theory and scope of Statistics	51
40. On the theory and scope of Statistics	52
41. On the theory and scope of Statistics	53
42. On the theory and scope of Statistics	54
43. On the theory and scope of Statistics	55
44. On the theory and scope of Statistics	56
45. On the theory and scope of Statistics	57
46. On the theory and scope of Statistics	58
47. On the theory and scope of Statistics	59
48. On the theory and scope of Statistics	60
49. On the theory and scope of Statistics	61
50. On the theory and scope of Statistics	62
51. On the theory and scope of Statistics	63
52. On the theory and scope of Statistics	64
53. On the theory and scope of Statistics	65
54. On the theory and scope of Statistics	66
55. On the theory and scope of Statistics	67
56. On the theory and scope of Statistics	68
57. On the theory and scope of Statistics	69
58. On the theory and scope of Statistics	70
59. On the theory and scope of Statistics	71
60. On the theory and scope of Statistics	72
61. On the theory and scope of Statistics	73
62. On the theory and scope of Statistics	74
63. On the theory and scope of Statistics	75
64. On the theory and scope of Statistics	76
65. On the theory and scope of Statistics	77
66. On the theory and scope of Statistics	78
67. On the theory and scope of Statistics	79
68. On the theory and scope of Statistics	80
69. On the theory and scope of Statistics	81
70. On the theory and scope of Statistics	82
71. On the theory and scope of Statistics	83
72. On the theory and scope of Statistics	84
73. On the theory and scope of Statistics	85
74. On the theory and scope of Statistics	86
75. On the theory and scope of Statistics	87
76. On the theory and scope of Statistics	88
77. On the theory and scope of Statistics	89
78. On the theory and scope of Statistics	90
79. On the theory and scope of Statistics	91
80. On the theory and scope of Statistics	92
81. On the theory and scope of Statistics	93
82. On the theory and scope of Statistics	94
83. On the theory and scope of Statistics	95
84. On the theory and scope of Statistics	96
85. On the theory and scope of Statistics	97
86. On the theory and scope of Statistics	98
87. On the theory and scope of Statistics	99
88. On the theory and scope of Statistics	100

TABLE OF CONTENTS.

	Page
SECT. I. A description of the various kinds of Stricture	
met with in the Urethra	1
II. On the theory and causes of Stricture . . .	7
III. On the symptoms of Stricture	23
IV. Preliminary observations on the treatment of	
Strictures	40
V. On Bougies	48
VI. On the mode of introducing Bougies . . .	61
VII. On the cure of Strictures by the simple Bougie	76
VIII. On the cure of Strictures by Argentum Ni-	
tratum	91
IX. On the cure of Strictures by Kali Purum .	113
X. On the cure of Strictures by Potassæ Sub-	
carbonas	126
XI. On the cure of Strictures by Natron Exsic-	
catum	158
XII. On the cure of Strictures by Unguentum	
Hydrargyri Fortius	177
XIII. Concluding remarks on the treatment of Stric-	
tures	217
XIV. Observations on Fistula in Perinæo . . .	230
XV. Observations on False Passages in the Ure-	
thra	266
On Diseases of the Testicle	285
On Suspensory Bandages	344
On Hydrocele	352

TABLE OF CONTENTS

Page	
1	SECT. I. A description of the various kinds of Stricture not with in the Urethra
7	II. On the theory and causes of Stricture
23	III. On the symptoms of Stricture
40	IV. Preliminary observations on the treatment of Strictures
48	V. On Boogies
61	VI. On the mode of introducing Boogies
73	VII. On the cure of Stricture by the elastic Bougie
81	VIII. On the cure of Stricture by Argentinum Nit- ratum
113	IX. On the cure of Stricture by Kall Tannin
126	X. On the cure of Stricture by Potassæ Sub- carbonas
158	XI. On the cure of Stricture by Nitrous Acid- atum
177	XII. On the cure of Stricture by Eugenolum Hoffmanni
217	XIII. Concluding remarks on the treatment of Stric- tures
230	XIV. Observations on Prolapsus of the Urethra
263	XV. Observations on False Passages in the Ure- thra
283	On Diseases of the Testis
314	On Suspensory Bandages
352	On Hypospadias

SECTION I.

A DESCRIPTION OF THE VARIOUS KINDS OF STRICTURE MET WITH IN THE URETHRA.

A STRICTURE of the urethra may be defined, a contraction of some part of that canal which renders it incapable of performing its functions properly.

Three varieties of stricture can be distinguished in practice: the spasmodic, which can be dilated to the full size of the urethra; the permanent, which admits of no dilatation; and the mixed kind, which partakes of the nature of both.

Dissection enables us to make other distinctions, but as the circumstances on which they are founded are seldom to be discovered during life, it is chiefly of use in giving us a more perfect knowledge of the disease in general, rather than in teaching

us to discriminate between particular cases, at a time when the distinction would be of service to regulate the treatment. But of spasmodic stricture we can learn nothing from dissection, because it depends entirely upon an active principle which ceases with life.

A stricture usually does not occupy much length of the urethra, seldom more than would be contracted by surrounding the passage with a packthread. Sometimes, however, it occupies a much greater space, being an inch or an inch and a half in length. The contraction of permanent stricture commonly surrounds the canal equally, and then the passage through it is in the centre. But sometimes the stricture is confined to one side, and then of course the direction of the urethra is altered. The two ends of a long stricture are often more contracted than any intermediate part; and not unfrequently there are irregular contractions throughout, and then the urethra pursues a tortuous course. Sometimes a stricture presents an appearance as though a thin membrane had formed across the urethra,

leaving a small hole in its centre for the urine to pass through, without there being any observable contraction in the surrounding spongy structure. In other cases there is a circular contraction, not only of the membranous lining, but also of the corpus spongiosum urethræ. On slitting open a long stricture, the membranous lining is sometimes seen to be puckered into longitudinal plaits or folds, but more generally, it presents a surface of irregular circular contractions.

A stricture of the urethra is almost always firmer, and more compact in its substance, than the other parts of the canal. This, occasionally, would seem to be the effect of the contractions crowding the original parts into less space; but, in most cases, there is an actual thickening from increased deposition, and then the change from health is much more conspicuous; and, in others, the alteration deviates still further from the healthy structure, being almost as white and hard as tendon or cartilage. There is one preparation in the Museum of the Royal College of Surgeons

which beautifully exemplifies the last kind of stricture, in its incipient state. The part is stretched open by a piece of quill ; and, upon very close inspection, an extremely narrow white line is observable, extending quite round, or, as the preparation exhibits it, quite across the urethra.

Several strictures may co-exist in the same urethra, and any part of the canal is liable to become the seat of stricture ; but it most frequently occurs at about four inches, or at six and a half, or seven inches from the external orifice, and is rarely found beyond the commencement of the membranous part.

Strictures have been met with at all periods of life, from four years of age, but I believe they most frequently form between the ages of twenty and forty years. They often exist for many years before they become very troublesome ; hence we may infer that their growth takes place very gradually. The same stricture frequently varies from better to worse, and *vice versa* ; and this sometimes suddenly, even when

not under medical treatment ; but some strictures are at all times very irritable, while others never occasion much inconvenience.

The consequences of stricture differ in the same degree. In strong constitutions not disposed to irritability, they have been known to exist for many years, without producing more inconvenience than results from a partial obstruction to the flow of urine, calling forth greater muscular exertion to expel it. In this case, the bladder thickens, becomes fasciculated, and grows more powerful ; while that part of the urethra which is situated behind the stricture, occasionally becomes dilated by the force employed ; but when the diseased part is very much contracted, this portion of the urethra sometimes ulcerates, or is ruptured, and the forcible action of the bladder injects the urine into the cellular membrane of the perinæum, scrotum, and prepuce, and that of the adjoining parts ; which, according to the state of the constitution, is attended with very unpleasant, or even fatal consequences. Under the most favourable circumstances, fistulous openings form in

different places, and the urine escapes by them externally ; but, in worse habits, the cellular membrane sloughs wherever the urine has reached.

Diseases of the testicles, ureters, and kidneys, and many other troublesome affections, often result from strictures, but they will be more particularly noticed in that section which treats of the symptoms of stricture.

SECTION II.

ON THE THEORY AND CAUSES OF STRICTURE.

It is well known, that nervous irritation in muscular parts, often occasions partial and obstinate contractions; and when this effect takes place in the urethra, I believe it constitutes, what is generally understood by the term, spasmodic stricture; but as this expression is also applied to any kind of stricture which can be dilated to the full size of the urethra, so, nervous irritation, muscular contraction, and a certain degree of inflammation, may all be present in spasmodic stricture.

The term nervous irritation, is in general used to express every kind of nervous disorder, so long as it is unattended with the peculiar symptoms of any specific disease; and whatever variety there may be in diseases or their symptoms, a corresponding difference in the nervous irritation,

must, I imagine, have preceded and given rise to them. If this be granted, it will be easily conceived, how a peculiar morbid irritation may cause spasm of a muscular part, or inflammation, or change of structure: and in this way a spasmodic stricture may be converted into a permanent one of any kind. I am disposed to think nervous irritation must always exist first; for, without it, I do not see how it is possible for any other action to arise in the part, and I imagine that a spasmodic stricture almost always precedes a permanent one. I am the more strongly inclined to this opinion, because the usual seat of stricture is, in what appears in the following case at least, to be the most sensible or nervous parts of the canal.

Having a patient whose lower limbs and pelvic viscera were partially paralyzed, I found it necessary to pass a catheter daily, to assure myself the bladder discharged its contents perfectly once in the twenty-four hours. He could not walk without supporters, and had great difficulty in throwing one leg before the other; but he could

stand with his back against the wall, and this was the usual position in which he was placed whilst I used the catheter. When the point of the instrument had passed about four inches, the right leg (the most paralytic of the two) was suddenly raised and thrown forwards involuntarily; and the same thing occurred as the point of the catheter moved in the bulbous and prostatic parts of the canal. This kicking was not only involuntary, but could not be restrained by the utmost efforts of the patient.

A permanent stricture is said to depend upon an alteration of structure in the part; but I very much doubt whether this always is the case, for I have examined some preparations, in which the contraction extended equally all round the urethra, and the parts included in the contraction appeared of a closer and more compact texture, simply because they occupied less space than when they were in a healthy state. The explanation which offered itself to my mind was, that the parts had been held in a contracted state until grown

rigid and unyielding. Upon the same principle, muscular fibres in other parts sometimes become fixed, of which we have an example in irremediable trismus.

Another explanation will account for the same appearances. Contraction with inflammation may have existed, and coagulating lymph may have been effused, which at first caused a thickening; subsequently, however, the inflammation may have subsided, and the effused lymph, or newly-formed parts, may have been absorbed, which left the original parts perfect as in health, only in a contracted unyielding state, because they were then united, and could only move together, whereas they were previously loose, and moved freely on each other.

I conceive it possible for muscular fibres to be so glued together as to be incapable, or nearly so, of performing their functions. In this case, I would not say there was a change of structure in the part, any more than I would say, there was a change of structure in all the abdominal viscera,

when they happen to be united to each other and to the abdominal parieties, by the effusion of coagulating lymph, in consequence of peritonitis. The arrangement of the fibres ought, in my opinion, to be changed, to constitute an alteration of structure: if there be not also a new modification of matter in the part.

Such a complete change of structure as that just described, is met with in very many cases of permanent stricture; and sometimes the part differs so greatly from the healthy structure, that in colour and texture it more nearly resembles tendon or cartilage. This must be the result of a peculiar, but inexplicable, morbid, nervous action.

Some permanent strictures look exactly as if a thin membrane was formed across the urethra, without the slightest alteration of structure having occurred in the original parts. I do not, however, apprehend that this membranous stricture is a new growth, anywise analogous to the fleshy band which forms across the tracheæ of horses called

roarers; for unless a caruncle be of that nature, I imagine nothing of the kind ever forms in the human urethra.* But if we suppose a very narrow circle of the membranous lining of the urethra, to be affected with nervous irritation and contraction, it would, in course of time, be sufficient to produce this kind of stricture. The reason for thinking membranous strictures form in this way is, that sections of them generally shew they are thickened in their circumference, just as we should expect would result from the two sides of the fold parting off to join the other portions of the membranous lining. In some of these cases of membranous stricture, there is an evident thickening of the corpus spongiosum urethræ: in these instances it would appear

* Mr. Whately mentions, page 58, in his Essay on Strictures, that once or twice he has known adhesions form between two opposite sides of the urethra. Three of my own patients have had the same kind of union take place within the urethra, and at such parts the canal was double. In one instance this occurred within sight of the external orifice: the union seemed to be merely an adhesion similar to that which sometimes happens between the labia externa pudendi of very young children; so that even in these cases there was no new growth.

as though contraction affected only the internal membrane or lining, and that adhesive inflammation had occasioned the thickening of the surrounding substance.

Strictures, occupying a much greater length of the canal than those just mentioned, may be produced by precisely the same actions, it only requiring for them to be more extensive in their operation. The long stricture, having an internal surface of irregular transverse folds or projections, or circular contractions, may, possibly, be produced by the same actions as the foregoing, if we suppose the contractions to have operated partially, otherwise this must be the effect of irregular thickening. When the internal surface of a long stricture presents an appearance of longitudinal folds or puckerings, I think it shews the contraction not to have affected the membranous lining so much as the surrounding parts.

The true explanation of the origin of some few strictures seems to be, that a portion of the urethra has been destroyed by

ulceration, accident, or other cause, and then nature has resorted to her usual mode of repairing such injuries; either by uniting the remaining parts by adhesion, if they happen to be brought into contact, or else, by forming granulations till the deficiency is made up, and then cicatrization takes place; after which these granulations are absorbed in the endeavour to restore or preserve an original surface. This is forcibly illustrated in contracted cicatrices, often observable in children's necks after burns: either of these processes must narrow the canal.

Formerly, it was a commonly received opinion, that strictures always originated in consequence of some previous venereal disease; but this idea is now so nearly exploded, as scarcely to deserve notice. Certainly the specific actions of gonorrhœa have not in general a direct tendency to produce strictures in the urethra; but I imagine they may have this effect under some circumstances. The usual course of this disease is, to keep up a discharge from the part until the diseased actions cease;

but if the discharge be checked before the morbid actions are removed, then the gonorrhœal action, not being able to relieve itself by the purulent secretion, would be very likely to excite such inflammation, thickening and contraction, as would constitute a stricture. Gonorrhœa may also lay the foundation of nervous irritation, which may continue when the specific actions have ceased, and may go on to terminate in the formation of stricture, just the same as irritation produced by any other cause.

There is great reason to fear, that irritating injections have many times given rise to stricture; and it is probable they have conduced to this effect, either by their own direct stimulus producing nervous irritation in the part, or else by their stopping the discharge of gonorrhœa, without curing the specific actions, as above explained.

Injuries done to the urethra by rough calculi escaping from the bladder, or violent blows upon the perinæum, may also

prove the exciting causes of stricture. I have met with one case in which the statement of the patient (who is of an excessively irritable constitution) convinces me, that his stricture, situated in the membranous part of the urethra, was brought on by the forcible introduction of too large a bougie.

But of all local causes, I know of none so liable to produce stricture in the urethra as an abuse of its functions; either by excessive indulgence, or, when they have commenced, by not allowing them to proceed and terminate as nature designed. We see this principle operating to create disease or imperfection in every part of the body. For example, too intense and too long continued thought, disorders the functions of the brain, producing irritability, or insanity, or apoplexy. Eating too much at a time disorders the stomach, and eating too frequently has the same effect. If the eyes are exposed to too much light, it occasions a morbid irritability of the retina, and viewing minute objects too closely causes amaurosis, or total blindness. A

long continued wilful retention of urine after the desire to evacuate has become urgent; protracting the act of coition; or an excessively frequent indulgence of it; all occasion too powerful contractions in different parts of the urethra: and it is well known, that all muscles are subject to be affected with cramp and spasm, after being exercised beyond their natural power. If this happens to muscles which have strong antagonists, how much more likely is it to occur in the urethra, which is only dilated by the urine or semen, neither of which ever fully distends the passage, when there is a more than usual disposition to contract. Excessive venery, and prolonging the act, have also a tendency to cause a greater determination of blood to the parts, besides much local irritation, which may lay the foundation of inflammation; and if these effects are produced by the former of these two causes, there will then be superadded constitutional or general irritability in consequence of exhaustion, which will materially increase the local diseased actions.

Disorder of the digestive organs is a very

common cause of stricture; and although an abuse of the functions of the urethra has probably the most direct tendency to produce it, I believe that disorder of some part of the stomach and bowels does, in fact, either directly or indirectly, give rise to stricture in the urethra more frequently than any other cause; and more particularly those disorders of the stomach and bowels which are brought on by excessive drinking of wine or spirits. It may be remarked, as in some degree proving this, that almost every retail spirit shop has a nuisance attached to it, where the customers relieve their irritable, if not more diseased, urinary organs. Numerous cases might be adduced to support the same opinion, but the following is so remarkable, it will probably be thought to do so better than many others in which the exciting cause was less conspicuous.

A gentleman mentioned to me, that he was longer in voiding his urine than formerly; it passed in a small stream; he had a very frequent desire to make water during the day, and was disturbed three times in

the night ; he had occasional pain in the urethra whilst his urine flowed, and sometimes he was troubled with pain in his right hip. He had lived very regularly and temperately all his life till within the last twelve months, but during that time and more especially the latter part of it he had been very dissipated, so far as regards sitting up late at night and drinking a great deal of wine. His tongue was furred, and the bowels were much disposed to constipation. I attempted to pass a moderately large bougie, but it encountered a stricture at about six inches from the external orifice, and could not be made to go beyond it. I then tried several small ones, but none could be introduced through the stricture. The pressure of the bougies against the stricture occasioned a good deal of pain, and some degree of faintness. I recommended him to take Pil. Hydrarg. gr. v. every night; to bathe the perinæum frequently in warm water, to live very temperately, and to abstain totally from wine.

After four days he called again, and gave the following account of himself. He had

drunk no wine; the pills had kept his bowels regular; he had no pain in the urethra or hip; he had not once risen to make water during the night since he began taking the pills; he voided his urine only three or four times a day, and it flowed in a full stream.

The large bougie, which would not before go through the stricture, now passed on quite into the bladder, without seeming to meet with any obstruction: but there was an unnatural degree of sensibility still remaining where the stricture had been.

In less than a week afterwards he came a third time. The stricture had returned in a considerable degree, so that the bougie met with some difficulty in penetrating it; and the frequency of voiding his urine had also recurred. Upon inquiring of him, he informed me that he had entirely omitted taking any of the pills, and had been out to one or two parties, and had drunk a deal of wine each time; but he was convinced he must adopt a more regular and temperate course of life. From this period he visited me occasionally to have a

bougie passed ; but as he lived properly, and kept his bowels regular with the pills, there was no farther trouble with the case.

The precise cause of stricture is often obscure, as patients frequently have strictures many years without knowing it ; and if they think they were aware of the first symptoms, it often happens they can recollect no deviation from their usual modes of life to which the disease can be imputed. Besides, stricture may be brought on by a combination of trifling causes, none of which individually would have been sufficient for the purpose ; and all together may have been so trifling as totally to escape notice. A predisposition to the disease may have existed in the constitution, and only have needed something to bring it into action. This is evinced in many patients by a contracted state of the foreskin ; and unless it previously existed, I conceive that many of the above mentioned causes would be found inadequate to the production of stricture. But if we suppose this natural predisposition to exist ; and if we reflect how greatly the urethra sympathizes with every other

part of the urinary and genital organs, and with many other parts of the body, it will give us an idea, how manifold, diversified, and variously situated, may be the causes of stricture. Diseases of the prostate gland, bladder, kidneys, or any of the chylopoietic viscera, numerous as these diseases are, may each one of them prove the exciting cause of stricture in the urethra.

SECTION III.

ON THE SYMPTOMS OF STRICTURE.

WHOEVER has well considered the mutual sympathies which exist between the different parts of the urinary and genital organs, and the various sympathies which exist between them and other parts of the body, cannot fail to anticipate, that the symptoms of stricture in the urethra must be extremely numerous.

A contracted stream of urine is always attendant upon stricture in the urethra; and yet it is astonishing to know how frequently this escapes the notice of the patient. Even medical men have not observed this symptom in their own cases; and it has frequently happened, that patients have affirmed they made water as well as ever they did in all their lives, and on that account there has been some difficulty in persuading them to have the urethra examined;

upon this being done, a stricture has sometimes been discovered that would not admit a bougie more than one-sixteenth of an inch in diameter. Indeed, so long as the urine is voided in an uninterrupted current, notwithstanding the stream be much contracted, patients generally declare they make water very well; therefore, in order to gain information on this subject, it is proper to see the patient empty his bladder. The stream of urine must necessarily be affected in proportion to the degree of contraction which exists at the time. In some cases the urine flows without any unusual effort, in a stream nearly as full as natural; in others, much less so; and, in some instances, the stream is no larger than a sewing thread. When the urine cannot be impelled along that part of the urethra which is anterior to the stricture, with sufficient force to separate the lips of the external orifice in their middle, it passes out in a forked stream; or, when the lips are only slightly separated in the centre, then the urine flows in a twisted stream; or if it comes away in a weak and very small stream, it breaks soon after leaving the pe-

nis, and sprinkles to the ground. In still more advanced stricture, the urine at times can only be expelled guttatim; and sometimes even this cannot be effected without such violent straining as causes a protrusion of the anus.

Many patients find it difficult to urge the urine through the stricture in the first instance; after which it flows freely until the whole is discharged. Under these circumstances, patients often learn to close the orifice of the prepuce with their fingers, to prevent the escape of the urine, whilst they make a violent effort to expel it; this forcibly distends the whole urethra, and seems to dilate the strictured part, for the water afterwards passes with greater ease and in a larger stream.

A contrary effect sometimes occurs: the desire to evacuate comes on, and the urine cannot be retained for a moment, but is instantly voided to the great annoyance of the patient.

Irritability of the bladder, in all its va-

rious stages, is a very common symptom of stricture, and often happens to so great a degree, that the urine is discharged every hour, or oftener; and this obliges the patient to rise frequently in the night. The irritation of the bladder, from stricture in the urethra, has been known to produce inflammation of the whole viscus.

Stricture, in a great proportion of cases, causes a discharge from the urethra. Sometimes this is little else than the natural mucus of the canal increased in quantity, and at other times it is pus. The quantity of these discharges is sometimes so trifling as almost to elude notice; but, at other times, there is a constant running. The purulent discharge so greatly resembles that which is seen in gonorrhæa, that it has not seldom been mistaken for that disease, till the obstinate continuance of the symptoms has led to such examination as betrayed the real nature of the complaint. This is the more likely to happen, because the discharge is often attended with ardor urinæ and chordee, and usually first shews itself soon after sexual intercourse.

In some rare cases of stricture, a few drops of blood now and then escape from the urethra, after evacuating the contents of the bladder.

Various kinds of sensation also, are produced in different degrees, by stricture in the urethra : as, an itching on some part of the perinæum, of the scrotum, or penis, and a fluttering or pulsating sensation in some part of the urethra ; numbness in the thighs is another symptom ; as are also a smarting or burning pain in the glans penis, and darting pains in the perinæum, shooting forwards to the glans penis, and backwards round about the anus, over the sacrum, and up into the loins ; pain in the hip, down the thighs, and on the inside of the knees, frequently occurs from strictures in the urethra, and pain has also been known in the sole of the foot from the same cause.

Coition is apt to aggravate the symptoms of stricture whatever they are. Sometimes this act is attended with pain and inability to emit the semen ; at other times only part of it passes, and the remainder steals

away when the erection has ceased. Retention of urine, has many times been brought on by sexual connection, in patients troubled with stricture.

The penis is variously affected by stricture. Sometimes the erections are excessively frequent and troublesome, amounting almost to priapism, and these may or may not be accompanied with seminal emissions during sleep; at other times the erections are weak and inefficient, and, occasionally, altogether wanting.

Sometimes swelling of one or more inguinal glands, and enlargement of the testicle, indicate the existence of stricture in the urethra: and another symptom is, hardness to be felt externally in the situation of the stricture. Inflammation and suppuration in the perinæum are also symptoms of the same disease.

Upon the authority of Mr. Hunter, it may be stated, that strictured patients cannot comfortably cross their legs; but whenever I have had an opportunity to notice this,

there has been, beside the stricture, disease of the prostate gland, or inflammation in the perinæum.

Some other symptoms have been mentioned as indicating stricture of the urethra, such as mucus secreted by, and poured out from the bladder; but I think this ought not to be called a symptom of stricture, for a mucous discharge from the bladder simply shews that viscus to be diseased. In like manner, if the prostate gland become diseased, and secrete copiously, I would not say its copious secretion was symptomatic of stricture. Neither would I call ulcer in the fauces or tongue symptoms of stricture, although I could be sure they arose from disorder of the stomach, and that the disorder of the stomach was produced by stricture in the urethra; because, for any thing to be deemed a symptom of disease, it ought, in my opinion, to be a direct consequence of, or an invariable attendant upon such disease.

Disorder of the digestive organs, very commonly exists with stricture of the ure-

thra ; but the propriety of arranging such disorder among the symptoms of stricture seems to me rather questionable. I have met with a few cases of stricture, in which there was not the slightest evidence of disorder in the digestive organs ; but I have never yet seen a single instance of stricture in the urethra, combined with disorder of the digestive organs, in which there has not been very great reason to doubt, whether the stricture gave rise to the disorder in the digestive organs, or was itself a consequence of that disorder. When, however, stricture in the urethra does exist, together with disorder of the digestive organs, so great a sympathy prevails between them, that any irritation in the one is sure to influence the other ; but it has appeared to me, with a single exception, that the state of the digestive organs has had more influence upon the urethral disease, than the reverse. In the single exception to which I have alluded, the sympathies appeared mutually great. Some particular constitutions are so extremely susceptible of diseased action, that it is really wonderful to observe, how very trifling an irrita-

tion in one part of the body, will lay the foundation of serious disease in another; therefore, if stricture of the urethra is liable to affect the whole system, (as we know sometimes happens,) producing violent rigors, &c. it may very possibly occasion disorder of the digestive organs.

I can also conceive it possible, that stricture in the urethra should have a direct tendency to cause ulceration in the fauces; for there undeniably exists a natural sympathy between the throat, mouth, and genital organs. I have had two patients with disease of their urinary organs, who told me, they always experienced a tingling sensation about their throats and ears when they wanted to make water; another patient, whom I have attended for gonorrhœa twice, never experienced the slightest degree of ardor urinæ, but when he wanted to make water, he had pain and stiffness in the muscles of his throat and neck; these pains continued while the urine flowed, and for some time afterwards; and I have, in several instances, known children, whilst tootthing, have a difficulty and pain in mak-

ing water, or, on the other hand, incontinence of urine, causing them to wet their dress and beds involuntarily.

Mr. Hunter, in his *Natural History of the Human Teeth*, mentions, that he has known tothing cause symptoms like those of stone in the bladder, and sometimes a purulent discharge from the urethra.

The *vox rauca*, and growing of the beard, are also proofs of a natural sympathy subsisting between the genitals and fauces, for the voice does not alter if the testes are removed before the age of puberty; and although the sympathies would appear to be somewhat different in females, because in them the *mammæ* enlarge as the genitals attain perfection, and there is neither beard nor change of voice, yet, in truth, the sympathies are the same as in the other sex: for, if the ovaria be extirpated, the voice becomes masculine, and a beard grows. An instance of this is recorded in Mr. Pott's *Essay on Hernia*. It may further be observed, that when young women have beards, they, in general, prove less prolific

than those females who have none. Another fact which came under my own knowledge, and which very strongly proves a sympathy to exist between the female generative organs and the lower part of the face, is, that a young lady who had a beard, lost it after her marriage. In the disease called the mumps, a direct sympathy seems also to exist between the submaxillary glands and the testes.

Numerous, however, as the symptoms are which have been mentioned as characterizing stricture of the urethra, it must be further remarked, that none of them are peculiar to that disease, therefore they cannot be depended upon, either singly or together, as decidedly indicating the presence of stricture. The only way to put this matter beyond the possibility of doubt, is, to examine the canal by the introduction of a bougie; but even this examination requires to be made with great care and judgment, or it may not prove a sufficient protection against error.

Suppose a bougie cannot be easily passed

along the urethra, we are not hastily to conclude there is a stricture. A tumour formed in the vicinity of the canal, may so compress its sides as to prevent the introduction of an instrument beyond a certain point; an enlargement of the prostate may have the same effect; it is possible too, that a caruncle, rarely as such things are met with, may be the impediment to the farther progress of the instrument. A urethra, inflamed from any cause, will often contract so partially on the introduction of a bougie, as might induce the inexperienced to believe there were strictures, when in reality there were none. Indeed, much depends at all times, upon the adroit manner of using this instrument, otherwise so much difficulty may occur in passing it along a healthy urethra, as will lead to the idea of there being considerable disease. But as the proper mode of introducing a bougie will be treated of in another place, I shall now confine myself to a description of the appearances met with on the bougie when it has encountered a stricture, and of other circumstances attendant upon this operation, which indicate the same occurrence.

What is termed a soft bougie, should always be employed to examine the urethra ; and it ought to be of the full size of the passage, which must be judged of by the external orifice.* If, when the surgeon is certain the bougie pursues a right course, it be suddenly stopped, and cannot be urged further, it should be held steadily in that situation a few minutes, and then withdrawn. If the point of the instrument look blunted equally all round, or, if it be rendered more conical, or if the composition covering the linen be pushed back, or if a circular impression can be noticed near the point, we may depend upon the existence of a stricture. If there be an impression all round the bougie, as though a string had been tied round it, it proves the stricture to include the whole circumference of the canal ; but if the same kind of impression only extend partially round the bougie, we know the stricture is not circular ; and by carefully observing how this impressed part of the bougie was situated in the urethra,

* The external orifice of the urethra may itself be the seat of stricture.—Vide Ramsden on the Testicle.

it will inform us which is the strictured side of the canal. Sometimes I have seen the extremity of the bougie blunted, so as almost to be flattened at the end, with the exception of a small point about the thickness of a knitting needle, and $\frac{1}{2}$ of an inch long ; but I have never noticed this effect when the stricture has been situated in any other part of the canal than near to the bulb, therefore I believe it is produced by the membranous stricture being much contracted ; because, whenever I have seen that kind of stricture, it has always been in the bulbous portion of the urethra. If the bougie is passed quite into the bladder, after some part of the urethra has afforded great opposition to its introduction, it should be allowed (if faintness, &c. do not prevent) to remain there a short time ; and then that part of the bougie which lies in the contracted part, will be impressed with the stricture according as it extends more or less round the urethra. The space which the impression occupies upon the length of the bougie, will shew the extent of the passage which is affected with stricture ; and if there be several im-

pressions on the bougie, they will indicate the presence of an equal number of strictures. Occasionally a little flattening of the extremity of the bougie, as if it had been pushed in for a short distance between two opposing surfaces will be caused by a stricture; but when this is observed, we must be especially careful to ascertain that the impediment to the introduction of the instrument was not created by any tumour, or enlarged prostate gland, pressing upon the urethra.

The strictured part is a diseased part, and almost always unnaturally sensible, so that a degree of pain is generally experienced when a bougie touches it though but slightly, and sometimes the pain is excessively acute and distressing. Besides, stricture very frequently has such a diseased surface, that extremely slight pressure or dilatation may produce hemorrhage to the amount of a few drops after the bougie is withdrawn; or, perhaps, a single drop of bloody pus may come away on the end of the bougie. It ought, however, to be stated, that before we allow blood, or pain upon the introduction of a bougie, to be

considered symptomatic of stricture, we must have no doubt of the bougie having followed the direction of the urethra; for both these circumstances may arise from the point of the instrument being pressed against the side of that canal.

Previously to introducing a bougie for the first time, we should always inquire of our patients whether they have undergone this operation before, and what was the result. If they have undergone it before, then false passages may have been formed, and without extreme care, the obstruction they afford to a bougie may be mistaken for a stricture. Perhaps, some clue to the discovery of these accidents, may be obtained from the patients, by such questions as the following remarks will suggest.

If, in the beginning of the treatment, the bougie could be passed quite into the bladder, and sometime afterwards could not be urged so far, excepting now and then as it were by accident; and if, at those times when the bougie was stopped, the operation was attended with most pain, and

perhaps bleeding, then we may be almost certain as to the existence of false passages: and the more so if this impediment occurs at either of the curvatures of the urethra.

SECTION IV.

PRELIMINARY OBSERVATIONS ON THE TREATMENT OF STRICTURES.

IN the cure of stricture we must always keep two things in view: to remove the diseased actions, and to restore the parts to their original state. To accomplish the former of these objects, we must diligently seek for the primary cause, and remove that before we can reasonably expect any permanent advantage; for should we be able to overcome the local disease by means of our applications, yet if the cause which originally produced it be not also removed, it will reproduce the disease, and that more easily than in the first instance, because the parts will have acquired a disposition to it.

From what has been said two sections back, it must be evident, that many of the causes of stricture will require much time

and very close observation to discover them. Under these circumstances, we must proceed by attentively noticing every thing that is found to aggravate the disease. This sometimes is the only way by which we can ascertain the primary cause; and when it fails to teach us that precisely, it occasionally points out what must have been the nature of it, and this, very often, is all that is wanted to direct us in the choice of the most suitable treatment. But whether we are thus successful or not, whatever aggravates the disease must be as carefully shunned as the original cause would be, if that were known; otherwise, should we by the help of remedies be fortunate enough to make some progress towards recovery, the time of cure will unavoidably be protracted. When once diseased action has begun, it is wonderful how easily it is continued; hence we cannot be too minute in avoiding every thing known or suspected to have that tendency.

For this reason, it often becomes necessary for patients to change their usual habits, and debar themselves gratifications

which otherwise would not have proved injurious. This is remarkably verified in the effects of different articles of diet, and the hours of taking food. Every thing that in the slightest degree disorders or irritates the stomach or bowels, is sure to aggravate stricture in the urethra ; and as some part of the digestive organs is almost always disordered in cases of stricture, it is astonishing how many things will be found to disagree, and that too, when taken in the smallest quantities. Sometimes the same article which agreed very well for a few days, will afterwards produce great inconvenience, and must be abstained from. Thus constant attention is requisite to preserve all the chylopoietic viscera in a tranquil state, and to effect this, some individuals should be allowed great variety of food, but be restricted to one or two kinds at each meal, and those to be taken in proper quantities, and at proper times. After these few cursory remarks on the necessity of attending to the state of the chylopoietic viscera in the treatment of strictures in the urethra, I shall conclude what I have to say on this subject by ob-

serving, that the disorders or diseases of the chylopoietic organs, may, in these cases be considered and treated as if they were entirely independent of any disorder or disease of the urinary or genital organs.

The necessity for patients deviating from their usual habits in these cases, may be again explained by the following facts: venery hurts no one who is in health, if not carried beyond the natural powers: but in strictured patients it has already been shewn to aggravate all the symptoms of disease. By way of farther illustration, it may be observed, that most strictures are accompanied with some degree of inflammation, and common sense teaches us, that whatever causes a determination of blood to an inflamed part, will increase the inflammation. Again, a diseased part cannot be preserved too quiet during the cure, for if we put diseased organs only to their natural uses, independently of such exercise causing irritation, it necessarily produces a determination of power to the part, which is likely to increase the disease, because,

diseased action is nothing but perverted natural action ; hence, the greater the power to support any action in a part, the greater will be the disposition to disease if that action be morbid. Upon this principle, I would recommend the minds of strictured patients to be kept as free as possible from venereal ideas.*

Should it be thought, on the contrary, that the secretions which take place during coition will relieve the turgid vessels, I would have it recollected, that previous to, and also whilst those secretions are taking place, the blood-vessels of the genitals undergo an extreme degree of excitement, and this gives them a disposition to carry more blood than before, in obedience to that law of the animal economy which causes the capability of function in a part to increase by exercise.

* “ Intellect is not omnipotent; but its actual power over the organized matter to which it is attached is much greater than is usually imagined.”—“ Medical cannot be separated from moral science without reciprocal and essential mutilation.” *Essays on Hypochondriacal and other Nervous Affections*, by John Reid, M. D.

Considering the great sympathy which the urethra, as constituting a part of the generative system, has, directly or indirectly, with every other part of the body, I think it may be said of stricture in the urethra, that it is an excellent specimen of local disease to illustrate the necessity of local and constitutional treatment going hand in hand; for the greatest possible attention to either of these circumstances alone, would very rarely accomplish its permanent removal.

Before concluding this section, I am anxious once more to urge the necessity of great attention to the state of the stomach and bowels throughout the whole cure, and for some time afterwards; and perhaps this cannot be done in a more impressive way than by relating a case that fell under my own observation some years ago. A young gentleman applied to be relieved of great pain in the perinæum, with frequency of making water, and difficulty in voiding it. There was a very irritable spasmodic stricture about five inches down the urethra. After much attention to preserve the di-

gestive organs healthy, and trouble in using the bougie, the stricture was dilated to the full size of the urethra, and the patient thought himself well, and left off seeing me. He continued tolerably comfortable for about a fortnight, when I was sent for, and found him in very great distress. He had violent strangury, with much pain; his tongue was excessively foul, and the bowels were constipated. Cathartic medicines and the warm bath relieved the most distressing symptoms, but the stricture had returned in as great a degree as ever. The former treatment again relieved him of all the symptoms of local disease, and he was considered well; but in a little while he was attacked with strangury a second time. The warm bath and saline aperients were equally successful in removing the violent symptoms, but the stricture returned to a degree quite as bad as before he consulted me. Stomachic and slightly aperient medicines, with the careful use of the bougie, once more made him comfortable. I then recommended him to go into the country; he did so for about a month, and has ever since remained free from stricture.

The local means of cure may be divided into mechanical and chemical, and must be employed upon the same general principles as regulate the use of similar remedies in the treatment of other local diseases, making due allowance for the urethra being an internal surface possessed of extreme sensibility; on this account the applications must be proportionably mild. But previously to entering more fully on the local treatment of stricture, I think it right to make a few brief observations on the instruments which are commonly resorted to for that purpose.

SECTION V.

ON BOUGIES.

THE urethra pursues a course far from straight, and its membranous lining is extremely thin, highly sensible, and very liable to be injured; hence, all instruments that are to be passed along that canal ought to possess the common properties of smoothness and flexibility, or if this last quality be wanting, they must have a certain degree of curvature suited to the bend of the urethra, communicated to them prior to their introduction.

Bougies are employed for different purposes, and according to the object in view they ought to possess some peculiarity of shape. If used merely to probe the urethra, the bougie should be cylindrical throughout its whole length, and its point should form a complete hemisphere of the same diameter as the bougie itself. An

instrument of this shape will find its way along a sound urethra more easily than any other, and it is the best of all calculated to detect disease; sharp pointed instruments are very liable to hitch in the lacunæ, or in a fold of the membranous lining of the urethra, therefore, if possible, the use of them should always be avoided. But if we have to insinuate a bougie through a diseased contracted part, the passage from the entrance to the middle of the stricture is almost always conical, therefore our instrument should be adapted to it; and when we use bougies to dilate * strictures with a view to their cure, the bougie ought to be more or less conical throughout its whole length, or at least so much of it as passes through the stricture. Small bougies require to be made much more conical than large ones, to give them strength, otherwise the temperature of the urethra softens them so very soon, as to render them almost useless. Bougies that

* Dr. Greenfield, in his treatise on the Stone and Gravel, relates, upon the authority of Prosper Alpinus, that the Egyptian physicians used to dilate the urethra by means of air, and that in this manner they extracted stones from the bladder without cutting.

are large enough to possess sufficient strength when softened by heat, had better, in the general way perhaps, be made conical for about an inch or an inch and a half from the point, and then be continued of the same diameter to the other end.

There are four descriptions of bougies now in common use: the plaster, the cat-gut, the flexible gum, and the metallic, each of which possesses advantages and disadvantages; but the observations which have been made as to shape, are applicable to every kind.

The plaster bougie is made by dipping a strip of linen in a melted composition of litharge, bees-wax, and oil, after which it is rolled up into the form of a bougie, &c. Surgeons always procure these instruments from men whose business it is to make them, therefore it is quite unnecessary to say more on their composition; but I cannot refrain from attempting to confute a ridiculous though prevalent idea among the manufacturers, who imagine that the time of the year in which these bougies are

used, requires them to vary in consistence, not knowing that the temperature of the internal passages of the human body never varies, therefore the bougie has an equal chance of being softened by the urethra at any season; but, as will be more fully explained hereafter, no plaster bougie should ever be introduced into that canal, without being previously warmed, softened, and bent, to enable it to accommodate itself the better to the sweep of the urethra. Hence, whether it be hard or soft in consistence, we have only to draw it more or less between our fingers till it is rendered sufficiently pliable to be used with safety.

There is another circumstance which some bougie manufacturers would do well to attend to, and that is, the quantity of composition covering the linen should be only just sufficient to give it a perfectly smooth surface. I have twice used bougies which were so thickly coated, that having passed through the stricture, and been allowed to remain there two or three minutes, they were griped so closely by the stricture, that on their being withdrawn, some of the

composition was left in the urethra beyond the stricture; it however came away afterwards with the urine. When bougies are thus thickly coated, they are often more difficult to get through the stricture, because the composition being pushed back by the stricture, forms a circular ridge, which cannot enter the contracted part.

The great advantages of the plaster bougie are, such toughness that they cannot break in the urethra, and when softened by heat, so much flexibility without elasticity, that if properly managed they easily accommodate themselves to the turnings of the passage. Cheapness also combines to recommend them, for when we have occasion to change the instrument often, any other kind would be very expensive. Plaster bougies are, however, objectionable in many cases, as being most expensive; for when there would be no impropriety in passing the same instrument again and again upon the same patient, they are often spoiled by once using, and thus a fresh one must be had every operation, especially when only small ones can be introduced, for very

small plaster bougies frequently do not possess strength enough to carry them through an obstinate stricture.

Small catgut bougies are sometimes preferable to plaster ones, because they are stronger; but they should be employed with great caution, for their elasticity gives them a constant tendency to preserve a straight direction, hence, they are liable to hitch in the urethra, and make false passages. They are objectionable too on another account, moisture spoils them. As to the catgut bougie being allowed to remain and swell within a stricture on purpose to dilate it, I much question the utility of this practice; for if the bougie would expand within the stricture, it would expand more on each side of it, and necessarily cause some difficulty in withdrawing it; which violence might do more injury to the stricture than would be compensated by the previous dilatation. Large catgut bougies are greatly inferior to large plaster bougies, for the reasons just mentioned; and I think either large or small catgut bougies should never be introduced further than six inches down

the urethra, particularly if there be any stricture beyond that part; for, as the elasticity of this description of bougie gives it a constant tendency to preserve a straight line, the point of it will never move in the axis of the curved part of the canal, consequently, there will be great danger of boring in a wrong direction; and if it should encounter a stricture, the probability of its being turned out of its proper course would be very much increased.

The flexible gum bougies, are made by repeatedly dipping catgut into a solution of elastic gum, until it has received a sufficient number of coats to answer the intended purpose. These bougies possess the advantages of great smoothness of surface, great flexibility, great strength, and considerable durability, for they neither swell nor spoil by moisture. Almost the only objection to them is their elasticity, which gives them a constant tendency to preserve a straight line; hence they are liable to one of the objections offered against the catgut bougie. But even in this particular, the larger flexible gum bougies may be so made

as to be less objectionable than the catgut bougie, for their propensity to remain straight depends principally upon the stiffness of the catgut they contain; therefore, if a very small catgut be contained in a large flexible gum bougie, it will possess nearly the same degree of pliability as the very small catgut bougie, with the advantage of a point much more obtuse, which will allow of its being used with perfect safety in many cases, where the simple catgut bougie would be very liable to do mischief. When the flexible gum bougies have been much used, they seem to acquire a degree of curvature, which makes them excellent instruments for many patients; and I think the same curvature may be obtained by simply keeping them in that form for a length of time. If we are obliged to resort to the very smallest bougies, for the removal of a stricture within six inches from the external orifice, the flexible gum bougies are then as good as any instruments that could be chosen.

Metallic bougies have a surface so finely polished, and so little cohesive attraction

exists between them and the urethra, that they pass with peculiar ease to the patient, through all strictures to which they can be applied with safety. So obvious must be the greater strength of these bougies, that it scarcely needs to be mentioned. Without elasticity, they possess very great flexibility, but not sufficient to allow of their being introduced as other bougies commonly are, that is, left in some measure to find the way for themselves. To fit them for this, they should be able to accommodate themselves to the turns of the urethra, as they meet with them, which they are not. Therefore, if metallic bougies are intended to pass quite into the bladder, they must be bent previously to using, into the same shape as the silver catheter, (vide plate, fig. 5,) and must be introduced in the same manner; which, in my opinion, forms an insuperable objection to their being employed for the relief of strictures situated in a part of the urethra which cannot be brought into a straight line with the body of the penis; because no instrument devoid of sufficient flexibility to adapt itself to the curvatures of the urethra as it meets with them, can

possibly be made to pass with any degree of certainty in the axis of that canal, along the curved parts of it; for granting that the instrument has received the same degree of curvature as the urethra, yet, so long as any of the curved part of the unyielding instrument remains in the straight part of the urethra, it will have a tendency to throw the point of the bougie out of the axis of the canal, and it is the direction of the point of the bougie which is of the utmost importance. It is true, every part of the urethra admits, to a certain degree, of being thrown out of its relative situation, and if we can properly avail ourselves of this circumstance, the middle or curved part of the instrument may be made to press laterally upon the urethra, so as to preserve the point in the axis of that canal. This, however, depends upon so much nicety, that the accomplishing of it is almost, if not quite, impossible, and the uncertainty of the criterion by which we are to judge of its being effected, will not justify us in calculating upon it. We can only suppose the point of the instrument keeps in the axis of the urethra, by the facility with

which it moves; and the delicacy of touch necessary to regulate our judgment of this will be entirely lost, if the instrument must be grasped firmly by the hand of the operator, and if it must be pressed firmly against any part of the urethra. But the degree of flexibility which the metallic bougies possess, renders them quite unfit for an operation of this kind, and their known liability to break, forms a very serious objection to their being used in any part of the urethra which requires them to be bent; for it is by frequent bending that they are broken.

Metallic bougies never receive any impression from strictures, consequently never stick in them; and for the treatment of strictures situated no further down the urethra than what can be brought into a straight line with the body of the penis, and which require only mechanical dilatation, there cannot be a better instrument than the metallic bougie.

Having made some remarks upon the four kinds of bougies in common use, I

beg leave to mention another, which combines several of the advantages of the foregoing, without being liable to the same objections, and possesses some good qualities peculiar to itself. This may be termed the hollow or compound bougie, as it differs in no respect from the flexible gum catheter, but in having no eye or aperture near its point. The various kinds of stilets which we may employ, give us great power of regulating the flexibility and strength of this instrument; and by withdrawing the stilet a little way, we shall obtain a flexible point of as much firmness as is desired. The case which first led me to think of the compound bougie, was one of strictures complicated with fistulous openings in the perinæum, &c. &c. The strictures were extremely obstinate, and difficult to penetrate with a bougie, which made great stiffness in the instrument necessary; and having passed two strictures, the bougie generally hitched in apertures by which the urethra opened into the fistulous sinuses. Under these circumstances, strength, to give me control over the point of the bougie, and some degree of curvature, were both

requisite to enable me to guide it over the fistulous apertures in the canal. Having got beyond these, and passed two more strictures, great disease of the prostrate rendered it impossible for me to get the instrument into the bladder, unless an additional degree of curvature could be given to it when it arrived there; for if a sufficient degree of curvature, such as would enable the instrument to pass through the prostrate and neck of the bladder, was communicated to it before it was introduced through the strictures, it would not penetrate them. These circumstances suggested to me the compound bougie; as a proper degree of curvature might be employed to carry it through the strictures, and then by withdrawing the stilet a short distance from the point, its curvature would be sufficiently increased to surmount the difficulties at the prostrate; and since I have had recourse to this instrument, the treatment of the case has proceeded very successfully.

SECTION VI.

ON THE MODE OF INTRODUCING BOUGIES.

IN passing bougies along the urethra, the course of the canal, the thinness of its membranous lining, and the natural mucas secreted upon the inner surface to lubricate and defend it from the salts of the urine, all deserve attention.

The course of the urethra differs with the state of the penis: if that organ be erect, the urethra makes only one bend throughout its whole length; but when the penis is not erect, the urethra naturally makes two curvatures; and as the convexity of each is in a different direction, both together, viewed in profile, represent a waverline, something like the letter S. The first, or smallest of these curvatures, is produced by the penis in its flaccid state falling down from the pubes; it can therefore

be removed, by gently extending the penis and supporting it in nearly the same degree of elevation as that it would assume during an erection. From the omission of this, and from the frequent practice of introducing bougies at a right angle with the body, it happens, that false passages are so often formed by the instruments boring towards the dorsum penis. The second, or larger curvature, is formed by the urethra going round the pubes, and afterwards turning up to meet the bladder. This curvature remains unaltered, whether the penis be in a state of erection or otherwise, and will always exist in some degree, although it can be very considerably diminished. For the attachment which the penis has to the broad surface of the pubes, is so loose, as to allow of that organ being brought into a straight line with that portion of the urethra which runs along the perinæum. To effect this during an erection, only requires for the penis to be depressed towards the perinæum; but if it is to be accomplished without an erection, a stiff instrument must be introduced along the urethra, till its point has passed beyond the arch of the

pubes, and then the penis may be depressed as abovementioned.

The thinness of the membranous lining of the urethra exposes it to be ruptured easily; and when we also recollect the course of the urethra, more need not be said to shew the necessity of extreme care on our part to keep the point of a bougie always moving in the axis of the canal; and that we ought never to employ force to urge it forwards when it seems to meet with opposition.

In a diseased urethra the natural mucus is often deficient, or so thin that it affords little or no defence to the canal: this suggests the propriety of coating bougies with some kind of ointment to lubricate the surface, and thereby facilitate their introduction; the same coating is also very proper for a bougie that is to be passed along a sound urethra, for, if used dry, it wipes away the natural mucus, and till this be secreted again, the patient suffers from ardor urinæ. What I mostly prefer for this purpose, is the ceratum cetacei, fresh

and good ; for if rancid it irritates Oil and lard are not so easily carried far into the urethra, being liable to be pushed back by the lips of the external orifice ; in which case, the bougie not only gives more pain to the patient, but is liable to the same objections as a dry one. Nothing should ever be neglected that will in the slightest degree facilitate the passage of the instrument, or prevent pain to the patient.

Bougies that are intended to go beyond the bulb of the urethra, should be bent up at the point before being introduced ; because, if perfectly straight and inflexible, they cannot be introduced beyond the bulb. The necessity for the bending up the point of the bougie before using it, is made strikingly evident, if we reflect but for a single moment, that the bulb is the widest part of the canal, and that the beginning of the membranous part is the very narrowest, so that the bougie having to move suddenly out of the widest part of the urethra into the narrowest, just where that canal begins to turn upwards, unless the point of the instrument is directed up-

wards also so as accurately to meet the entrance to the membranous part, the bougie will be particularly liable to bore out of the passage towards the rectum; more especially, as the principal swell of the bulb is posteriorly situated. Bougies that are to be passed beyond the bulb, besides being bent up at the point, should also be drawn through the hand a few times to warm and soften them previous to their being used; for when they are a little warmed, the urethra receives them more readily; and being softened, they are enabled the better to accommodate themselves to the turnings of the urethra as they encounter them. It is owing to the thoughtless mode of introducing plaster bougies cold, stiff, and straight, that so many false passages have been made in the bulbous part of the urethra. Various degrees of curvature will answer extremely well, if the bougie be previously softened and then pushed along the canal slowly; but that which is generally to be preferred, is shewn by figure 4 in the plate. Particular cases, and the purpose for which the bougie is employed, will sometimes require a differ-

ence in this respect, which will be more fully spoken of where those circumstances come under consideration: one example may, however, be given. About three years ago, I met with a case of stricture in the membranous part of the urethra, which could not be penetrated by a bougie having the usual curvature, and to get one through this stricture, it was necessary to preserve the point of the bougie perfectly straight for about an inch, and to communicate to the after part of it such a curvature as is above recommended. (Vide plate, fig. 3.)

The position of a patient, during the introduction of a bougie, is of very little importance, provided he be steady and have his thighs a little separated; but as it is generally done more conveniently when the patient stands with his back against a wall, I will describe the operation supposing the patient to be thus situated. A bougie being warmed, softened, bent up at the point, and smeared over with cerate as already mentioned, the surgeon is to take hold of the penis with his left hand,

placing his thumb and finger right and left behind the glans, that they may not interfere with the urethra, he must then gently extend the penis, and hold it from the body at about such an angle as it would naturally maintain during an erection; then, with the bougie in his right hand, he is to introduce the point of the instrument within the urethra, and gently press it onward till it enters the bulb; he should then lower his hand, to give the point of the bougie an elevation towards the membranous part of the canal, and then steadily and gently pass it on quite into the bladder.

If the above directions be closely attended to, the urethra be healthy, and the bougie large enough to distend the passage moderately, there will be no interruption to the progress of the instrument; but if there be disease, we shall meet with such impediments as are particularly noticed where such diseases are treated of. Sometimes, however, a small bougie will hitch in a lacuna, or gather a fold of the urethra before its point, owing to the mem-

brane's not being sufficiently stretched to keep its surface even, or the point's not moving in the axis of the canal. When this happens, it will be proper to withdraw the instrument a little way, and urge it forward again; and whilst pushing the bougie forward, the penis should be drawn out or extended as much as can be done without giving pain, as that is the only means of stretching the membranous lining of the urethra longitudinally, and is peculiarly needful in passing small bougies, because they have so little power to dilate or stretch the urethra transversely. Should the same obstruction occur a second or third time, it will most probably be occasioned by the point of the bougie taking a wrong course, the direction of the instrument must then be varied by the hand of the operator, moving up or down according to the situation of the obstacle. When the impediment is anterior to the arch of the pubes, it will, I think, usually be met with on the upper side of the urethra; and when behind the arch of the pubes, it will be found on the inferior or posterior surface of the canal. If the above

kind of manœuvring do not succeed, it will be necessary to withdraw the bougie entirely, and give the point a degree of curvature, which may carry it towards the side of the urethra opposite to that on which the obstruction occurs. Sometimes, however, after an instrument has once hitched in the urethra, it will be very difficult, and I have known it impossible, to avoid a recurrence of the same accident at that time: under these circumstances, the attempt has been renewed with complete success after waiting two or three hours. From this it would appear, that after a fold of the urethra has once been gathered before the point of an instrument, that membrane requires a considerable time to recover itself and fall back into its natural state.

When the exact situation of an obstacle is known, and when, as in the present case, it can be avoided only by the operator guiding the instrument, the bougie must be used cold, and be introduced quickly along the urethra, otherwise it will be so softened by the warmth of the canal, that

the operator will have no control over its point; and if the obstacle be situated in the bulb, or still farther down the urethra, the bougie should be crooked, and allowed a considerable time to grow cold and stiff before being used. The necessity for attending to these circumstances, increases in proportion to the smallness of the instrument; because the smaller the plaster bougie is, so much the more management will be required to introduce it properly, and so much the sooner does it become soft and ungovernable.

On ordinary occasions, it is of no consequence whether a middling sized bougie be passed rapidly or slowly, providing it moves with perfect facility; but it should invariably be urged forward with great attention, and extreme caution, whenever the slightest difficulty occurs. Large bougies should always be introduced slowly, to allow them time to soften and conform to the curvatures of the urethra; and when they arrive at the bulb, it is a good plan to wait a little before pushing them farther, as there it is they are obliged to take

on the greatest degree of curvature; and even when softened by heat, bougies that fill the urethra cannot on account of their bulk bend suddenly, or without so much force being employed as would be likely to create an unnecessary degree of pain, or perhaps burst through the urethra towards the rectum. The necessity for bending and slowly introducing large bougies is clearly pointed out by the following case.

A gentleman about forty years of age, having considerable irritation in his urinary organs, came to me, and said he had a stricture in the urethra; he made water, however, in a very full stream, and his symptoms were such as led me to doubt the existence of stricture; I therefore endeavoured to persuade him out of this opinion, when he told me, he had seen a surgeon who assured him that he had a stricture, and to convince him of this, had introduced a bougie which passed very well for about six or seven inches and then stopped; considerable force was employed, which caused great pain, and then the instrument passed on into the bladder; but

on its being withdrawn, a slight bleeding ensued. I suspected all this difficulty arose from the bougie not being sufficiently softened and curved ; and upon inquiry, the patient well remembered that the bougie was introduced quite straight. To ascertain the real state of the case, I selected a full-sized bougie, softened it by drawing it through my hand a few times, bent it, smeared it over with simple cerate, and then passed it quite into the bladder, without meeting with the slightest difficulty, or exciting the smallest degree of pain.

Many of the foregoing remarks on the introduction of flexible bougies apply equally to the use of inflexible ones ; for although the former are left pretty much to find the way for themselves, and the latter are almost entirely dependent upon the hand of the surgeon, guided by his anatomical knowledge ; yet, the successful introduction of inflexible bougies, depends upon such delicacy of feeling and nice management in accommodating the hand to the inclination of the instrument, that even inflexible bougies may almost be

said to find out the way for themselves, and to guide the surgeon's hand more than it guides them. As already mentioned, inflexible instruments that are to be passed throughout the urethra must have a degree of curvature imparted to them prior to their being used. That degree of curvature which suits the greatest number of cases is represented by figure No. 5, in the plate, and of course this had better be resorted to always, until the peculiarity of any case indicates that a different curvature would be more desirable.

Until the point of the curved instrument reaches below the arch of the pubes, it may be introduced either with its concavity or its convexity towards the patient's abdomen; the former is the most simple, and therefore the preferable mode, except it be rendered impracticable by the protuberance of the patient's abdomen.

The manner of passing the instrument with its convexity towards the patient's body, is objectionable, because when its point has got past the arch of the tubes, it

must be turned half round to reverse the position of the other end, and in effecting this turn, if the point be not made the centre of motion, there will be great danger of injuring the urethra. In taking this semicircular sweep, the instrument must be allowed to be loose upon the surgeon's hand, and he must delicately accommodate his hand to its movements as it inclines to approach to or recede from the body whilst he gently carries it round, and then the urethra surrounding it will determine the centre of motion to the point. But if the surgeon exerts the slightest degree of control beyond what has been mentioned, the point of the instrument will never constitute the centre of motion, and he will incur risk of doing mischief great in proportion to his unnecessary interference. Supposing, however, this half turn has been accomplished properly, and the handle of the instrument faces the linea alba, and its point rests in the urethra just beyond the arch of the pubes, then nothing is wanted to complete the operation, but for the surgeon carefully to depress his hand towards the patient's knees, which will elevate the

point of the instrument and conduct it along the curved part of the urethra, into the bladder.

If there is a passage for the instrument, and any difficulty should be experienced in performing the operation as above described, it will be most likely to happen at the commencement of the membranous part of the urethra; and in all probability will be owing to the point of the instrument's dipping too much towards the rectum. The best plan to obviate this with the hollow or compound bougie, will be to withdraw the entire instrument a little way, then steadily to hold the stilet where it is, and at the same time with the other hand to push forward the hollow part or sheath; this increases the curvature and generally directs the point accurately into the membranous part. An additional advantage results from this mode of proceeding; it makes the point flexible, which gives it an opportunity of finding the way for itself if perchance it should be a little misguided by the hand of the operator.

SECTION VII.

ON THE CURE OF STRICTURES BY THE SIMPLE

BOUGIE.

THE bougie is an instrument which acts upon the principle of a wedge, and its effects are different according to the circumstances of the case to which it is applied. It is intended to dilate the contracted parts and leave them less disposed to contract again, and if there be any unnatural deposition, the pressure of the bougie is designed to produce absorption. These effects are pretty certain when the bougie is properly used under favourable circumstances; but if the bougie be passed too frequently, or too much pressure be made at one time, then it brings on reaction or inflammation, which aggravates the disease more and more, just in proportion as the bougie is used. It is quite impossible to lay down precise rules for the management of every case, or every particular descrip-

tion of stricture, because we very rarely see two cases alike in all particulars, and the circumstances of each change from time to time so greatly, that we can only know how to regulate our future proceedings by close observation and reflection upon the effects of the past.

Some strictures possess so little irritability, that the more frequently they are dilated with the bougie the faster they give way ; but there are others so irritable they will scarcely bare to be touched with a bougie without being aggravated. The generality of cases however run into neither of these extremes. On first meeting with a case, we are obliged to form our opinion from the history and the then prevailing symptoms. Those of the worst description are usually accompanied with some disorder of the general health and peculiarity of constitution ; and if such irritability seems to be present, it will be advisable to use no bougie until the general health be improved, or the irritability of the constitution and of the part be somewhat allayed ; otherwise, by irritating the stricture,

the constitution may become still more irritable, and by reacting upon the stricture, may bring on retention of urine, or cause great distress in some other way. Providing there be no objection to the immediate use of the bougie, the following is recommended as the best mode of proceeding.

Select a soft bougie of nearly the full size of the urethra, and prepare it agreeably to the directions given in Section, No. 6. The bougie is then to be gently passed down the urethra till it encounters the stricture, against which it must be steadily pressed, to ascertain whether it will go through. Should the resistance seem to lessen, we may loose the instrument and watch if it recoils; if it does, there will be some reason to suppose the bougie bends. This, however, is no certain proof, because the irritability of the urethra may cause it to contract and throw out the bougie. If the instrument does not recoil, it will be a sign it has entered the stricture. But this circumstance cannot be relied upon implicitly, for a bougie much softened by the heat of the urethra, will often bend without

shewing any disposition to recoil, especially a small one. The experienced operator will often be best able to decide whether or not the point continues to move on towards the bladder, merely from the sensation communicated to his hand. In confirmation of this, I may just observe, patients accustomed to the bougie, have several times declared to me it continued to pass forward when I deemed its progress to be obstructed, and their confident assertions have induced me to urge on the instrument till nine inches of it were buried in the urethra, and then they have said that they felt it in the bladder; but on withdrawing the bougie, it has been so much crooked, as plainly shewed it had never passed the stricture.

Patients having stricture, usually complain of pain the first time a bougie is passed, and often of faintness. Should neither of these circumstances occur, the instrument may be allowed to remain some time in the urethra, to take an impression of the stricture through which it has passed. If, however, the stricture will not admit the

bougie, the latter should be held steadily against it for a short time, by which we shall obtain an impression on its point that will direct us in the choice of a smaller one; but if no information is to be obtained in this manner, then we must try different sized bougies till we find one that will pass, or clearly ascertain that none will go beyond the stricture. If, on attempting to withdraw a bougie that will not go through the stricture, we find it stick, and on examination afterwards, the composition covering the linen near its point be seen pushed back, it will prove it has partly entered the stricture, and so far give encouragement to expect future success. A bougie that does not pass the stricture, should always be withdrawn by the most simple retrograde movement, taking care to avoid any twisting or turning, and then sometimes it will be discovered, that one part of its point is less blunted than the rest. This, if accurately observed, will sometimes enable us to succeed, by introducing a small bougie with its point bent towards that side of the urethra where the former one met with the least obstruction.

I have known some strictures that would only allow a bougie to be passed by its being drilled through them as it were, by rotating it backwards and forwards between the thumb and finger, and at the same time gently pressing its point against the stricture. Another expedient that occurs to me is, to pass a flexible cannula of as large a size as possible down to the stricture, and then a small bougie within the cannula; this is a sure way to prevent the small bougie hitching against any of the lacunæ before it reaches the stricture; it likewise gives strength to the small bougie, and directs it in the centre of the canal. Should a stricture be of the membranous kind, the pressure of the large cannula against it will be likely, in some measure, to dilate the aperture through it, and thus the small instrument will have a better opportunity of entering. Again, too, should we have ascertained that the passage is towards one side, then the small bougie, having its point bent towards that side, may be protected from having its direction altered whilst within the cannula, and consequently may be conveyed exactly accord-

ing to our wishes. Mr. John Hunter mentions his having succeeded in getting a bougie through a stricture, by rubbing the perinæum opposite to the stricture. A case of stricture has been mentioned to me, of a young man who could not make water without he was tickled on his back, which would lead to an inference, that a similar tickling might facilitate the introduction of a bougie in some cases. I also remember a gentleman, a patient of mine, who had partial paralysis of the lower limbs and pelvic viscera, in whose case frictions with the hand were employed with a view to remove the paralysis, and when the thighs were rubbed it caused an involuntary flow of urine. Hence we might suppose, that rubbing in the course of the obturator and anterior cruval nerves, would be likely, in some cases of stricture, to facilitate the passage of a bougie. Engaging the attention of patients is certainly useful, therefore I would recommend their being held in conversation. I am convinced also, much depends upon having their confidence, and nothing conduces to this point more than for them to see on the part of the practitioner propriety

of conduct, delicacy of treatment, and a desire, as much as possible, to avoid giving pain.

If, however, all our attempts to get a bougie beyond the stricture be ineffectual, a question naturally suggests itself as to what is the best mode of proceeding; are we to use large or small bougies? to me it appears, beyond a doubt, preferable to employ as large a bougie as will go down to the stricture; for it is less liable to hitch in the urethra, and calculated to preserve in a healthy state all that part of it anterior to the stricture. The pressure of its broad point, if it meet with a membranous stricture, will have a tendency to dilate it; and, in every description of case, may alter the actions of the part, rendering them more healthy, and may, perhaps, promote absorption. I have known strictures, which, in the first instance, would admit no instrument however small to pass, which were afterwards treated with a full-sized bougie, until it has unexpectedly slid quite into the bladder; but, we shall certainly make more rapid advances

towards recovery, when we can get an instrument through the stricture; therefore, while we continue to employ the large bougie, it will be well to introduce a small one occasionally, that we may take the earliest opportunity of laying aside the large one, and resorting altogether to those which, by passing through the stricture, are enabled to act upon every part of it.

When a bougie can be passed through a stricture, the frequency with which the operation ought to be repeated, must be regulated by the degree of irritation it excites, and the duration of that excitement. The irritation should be allowed to subside very considerably, if not entirely, before the bougie is again used; otherwise, although the stimulus from the bougie may possibly remove the primary diseased actions of the part, it will be very likely to induce others equally distressing, or perhaps more so. Thus numbers of cases have been aggravated by the too frequent introduction of the bougie.* *Ardor urinæ*,

* The following case is related by Mr. Abernethy in his Lectures. A gentleman had strictures in his urethra; for

in a slight degree, is often felt for one or two days, and sometimes rather longer, after the first introduction of a bougie. This certainly should be allowed to go off before the operation is repeated, when it has arisen solely in consequence of the operation: for if it has previously existed as a symptom of the disease, we cannot reasonably expect it in all cases to be entirely removed by once dilating the stricture. Sometimes the passing of a bougie will excite a little purulent discharge from the urethra, and at other times an increased

twenty years he had worn a bougie for a full hour every day regularly, till at last he could neither introduce a bougie nor make water. In this state he came to Mr. Abernethy, who passed a small bougie and requested him to call and have the operation repeated in four days. The patient was very unwilling to omit the use of a bougie so long, under an idea that the passage would close. On the fourth day the same bougie ran along the urethra without the least difficulty. A larger one was then tried; at first it hesitated, but afterwards went into the bladder. Waiting four days more, the second bougie passed with the greatest readiness, and a third size was introduced. In short, in less time than three weeks, Mr. A. passed a larger bougie than the patient had been able to do for twenty-four years. Mr. A. then advised the patient to do nothing more, and he remained perfectly well.

difficulty in making water, with constant pain at the strictured part for two or three days. Occasionally, all the symptoms of stricture are aggravated for a short time by the use of the bougie, and in the cases of two of my patients, sickness at the stomach came on after the first passing of the bougie, and all the symptoms that previously existed were increased; this state continued for five days in the one, and in the other seven, and then they began to feel better in all respects. Indeed, when the irritation induced by the bougie abates, patients generally discover an amendment of the original disease. It is at this crisis, in most patients, that the bougie should be employed a second time, and by similar circumstances each succeeding operation may be regulated, till the instrument produces no inconvenience beyond a few minutes after it quits the urethra, and then it may be used every day if such frequent operations are found serviceable. It is not always necessary to delay the repetition of the operation till the patients find the disease lessened, for this in some cases will not happen till they have been under treat-

ment a considerable time ; in such, it will be quite sufficient if we wait till the effects of the bougie have in a great degree subsided ; and even if this should not be perceived, we certainly never need to wait longer than a week before repeating the operation, if it be right to use a bougie at all in the then prevailing state of the general health. Besides, there are cases in which it may be necessary to excite a little irritation by the bougie, and to keep it up a short time, to remove and keep off the morbid actions ; and when this happens to be needful, it will be right to introduce the bougie each succeeding time before the effects of the preceding operation have entirely subsided, otherwise the diseased actions may return in the interval. Some cases will go on extremely well whilst the bougie is introduced only once a week, but always grow worse if we attempt to use it more frequently. The same thing happens in other cases, if we pass the bougie oftener than every third day ; but generally speaking, as the diseased actions lessen, and the urethra becomes more familiarized to the

instrument, it may be resorted to more and more frequently, as before observed, if necessary.

The size of the bougie is to be increased in proportion as the stricture gives way; but here again the same general laws apply, as govern the frequency of the introduction of the instrument. By attempting too much at a time we shall often retard rather than hasten the cure, therefore it is always right to proceed cautiously. Some cases, which are attended with great irritability, will only allow the size of the bougie to be increased very slowly; and sometimes we must continue to pass the same bougie repeatedly, after the stricture would admit a larger one, and even when we begin to increase it, this must be done with the utmost circumspection; for a stricture will frequently continue to give way under this treatment, notwithstanding the instrument made use of does not dilate the contracted part to its full extent. Thus each individual case can only be properly managed by the closest observation, and

the most careful adaptation of our remedies to the existing circumstances as they vary from time to time.

With respect to the question of how long the bougie should remain in the stricture at each operation, we must be guided by the state of the diseased part. If the morbid actions are easily roused, it is naturally to be expected the longer it is stretched or pressed upon by the bougie, the greater will be the irritation produced, and *vice versa*. I very seldom do more than pass the bougie throughout the urethra and withdraw it; sometimes, however, I have kept it in the urethra five or ten minutes, but have never found any advantage to accrue from continuing it there longer. Indeed I have not found my patients able to bear the instrument for a longer time, without suffering great inconvenience, in the few obstinate cases wherein I wished to try the effect of long continued dilatation. That there are some cases in which the wearing a bougie in the urethra for some hours will do good, I am well assured, because Mr. John Hunter pursued

that plan very extensively and successfully. The cases to which this kind of treatment is suitable, are, I imagine, obstinate strictures, unconnected with local or constitutional irritability ; but in my opinion they may be much more expeditiously and pleasantly cured by the application of lunar caustic, or other medicines which have the property of changing the actions of the part.

SECTION VIII.

ON THE CURE OF STRICTURES BY ARGENTUM NITRATUM.

THE very tedious mode of curing strictures by the simple bougie, and the occasional seeming impossibility of getting through them by this means alone, suggested to Wiseman and to Mr. John Hunter, the idea of destroying the stricture by some kind of escharotic. Hydrargyri nitricooxydum was first tried, but without any apparent advantage. Argentum nitratum was then used, and by Mr. Hunter, with considerable success. He seems, however, to have been disposed to limit its application to what I have termed the membranous stricture, or at least those which occupy very little extent of the canal, as he writes, "I have seen one or two cases where the contraction was of some length and irregular, which would have puzzled me if I had attempted the cure with the caustic,

because I should have been apt to suspect that I was making a new passage, by my gaining ground and yet not relieving the patient by the removal of the symptoms." Sir Everard Home, Bart. has since tried it very extensively, and has favoured the public with the result of his observations.

Mr. Hunter conveyed the caustic to the stricture by means of a portcrayon within a cannula, and Sir Everard Home had the caustic rolled into the end of a bougie. Both these methods were found liable to serious objections, as the caustic occasionally acted to a greater extent than was intended, and sometimes has been left within the urethra. These considerations induced the late Mr. Howard to propose using the caustic in the form of powder on the point of a bougie, or else mixed with some simple ointment, which, in my own opinion, enables us to accomplish, in a way perfectly free from danger, all that the lunar caustic is capable of in the cure of stricture.

Mr. Hunter seems to have resorted to the lunar caustic as a remedy for strictures

in the urethra, with only one object in view, that of destroying those parts which obstructed the passage of the urine. Sir Everard Home states, that he sometimes used it to lessen the irritability of the stricture, and found it have the same effect as when applied to allay the irritability of an ulcerated surface.* I imagine it has a still more extensive effect, and changes the actions of the part far beyond the mere surface to which it is applied; or else, how are we to account for the discharge from the stricture being commonly somewhat different after its application. Thus it seems the *argentum nitratum* is capable of producing three different effects on strictures: first, of totally destroying them; secondly, of lessening the irritability of their surface, so that the simple bougie may be afterwards used with more advantage; thirdly, it may remove the diseased actions of the part and leave such as are more healthy.

It now only remains to describe the

* Vide *Observations on Strictures*, by Sir E. Home, Bart. from which much practical information may be gathered.

modes of applying the caustic with a view to effect these different objects, and to distinguish the particular cases to which each mode is best adapted. There are various reasons that would induce me to confine the destructive effects of the caustic to the membranous stricture ; among others, the degree of uncertainty that must exist, of our boring in the right direction when the stricture is impervious, or happens to be situated beyond or in the course of the bend of the urethra. Besides, if sloughs form they must come away, and then we may have dangerous hemorrhage from any other than the membranous stricture ; or the urine may possibly be injected into the cellular membrane, and produce mortification, &c. &c. Again, excepting there be a superfluity of surface, as may be the case in membranous stricture, I think we ought to be especially careful how we destroy any portion of the urethra, for as we perceive that there is in other parts of the body a constant endeavour to preserve a continuity of the original surface, so we may surely expect the same disposition to exist in the urethra ; and consequently, the more we

destroy, the greater will be the contraction that takes place when the parts cease to be dilated with a bougie. Another objection to the application of the *argentum nitratum* with the intention to make a passage through a long impenetrable stricture, is, that the caustic often irritates and excites inflammation, which may cause the stricture to become totally impervious for so long a period, as will render it necessary to puncture the bladder to get away the urine. Two or three cases of this kind are upon record. Could we confine the action of the lunar caustic precisely to the morbid stricture, there could be no objection to its use with a view to the destruction of such part; but this is utterly impossible; for I have seen a morbid alteration of structure which encircled the urethra in a line no broader than a common sewing-thread, and as the diseased structure is harder than the healthy parts, I think the caustic would be likely to act most powerfully where it was least desired.* Should the cauterizing

* This however would most probably be determined by the degree of life which the morbid parts possessed.

effect of the *argentum nitratum* be resolved upon, the following appears to me the best mode of applying it. A flexible gum cannula, as large as can be passed down to the stricture, should have a bougie introduced along it till its point reaches beyond the end of the cannula. The mere point of the bougie may then be a little softened by heat, and pressed on some very finely levigated *argentum nitratum* till its surface is well covered with it, and then drawn back within the cannula a little way. The cannula,* containing the armed bougie, ought to possess a proper curvature according to the situation of the stricture, and having some *unguentum cetacei* smeared upon it, should be passed down to the stricture, where it is to be held whilst the bougie is urged forward till its point comes in contact with the part on which it is designed to operate; against this the bougie is to be pressed for a few seconds, and then being

* If the cannula be of a very fine texture, it will be so pliable as to accommodate itself readily to the curvature of the urethra, and cause the point of the armed bougie to be accurately directed into the axis of that canal.

once more drawn within the cannula, they are both together to be removed from the urethra.

It will be advisable for the patient to make water soon after the operation, as that will wash out the canal, and prevent the action of the caustic from extending beyond the part to which it was applied.

The time for repeating the operation must be determined by the degree of irritation it excites, but I never would allow a shorter interval than three days, and it will often be better to wait four or five days or longer. A small slough will be formed, which should be allowed to separate and come away before any bougie is used again, and I think this generally happens in about sixty hours. Sometimes this slough will be seen to come away in the urine piecemeal, like little bits of skin, but it more frequently escapes notice.

The precise effects of this mode of applying the caustic, never can be known before-

hand, but one or two applications will enable us to form a pretty correct judgment as to what good will result from persevering in the use of it. Although it be thus delicately employed, it will occasionally cause hemorrhage to the amount of a few drachms, and sometimes it irritates so much as to produce a retention of urine or an increase of all the symptoms, and when this happens two or three times in succession, we may be tolerably certain that no good will result from the application of the caustic before some change is effected in the state of the constitution or of the part by other means; therefore the use of the *argentum nitratum* ought to be laid aside till more favourable circumstances prevail. Although the caustic should irritate at the first application, yet, providing the former symptoms are diminished when that irritation abates, we may venture to make a second trial, which generally will not be attended with so much irritation as before, and the original symptoms will be still further mitigated; and if similar effects follow each application, we may then persevere until we have accomplished all we

desire or expect from this mode of treatment.

The exact situation of the stricture should be clearly known before attempting its removal with *argentum nitratum*; indeed, the same thing should be accurately ascertained prior to each application, so that we may always be informed what progress we make. The membranous stricture cannot resist many touches of the caustic before it must be destroyed, therefore if we find the instrument is admitted further down the urethra without going through the stricture, we may justly conclude the case not to be a membranous stricture, and for the reasons before stated, I think we ought to desist from the use of the *argentum nitratum*.

Supposing however, that after a few touches of the *argentum nitratum* a bougie, no matter how small, can be passed through the stricture, I would strongly recommend from that time the *argentum nitratum* to be used in the form of ointment only, if there exist any reasons for supposing this remedy

is of all others best suited to the case. The strength which I usually begin with is one or two grains finely levigated and intimately blended with half a drachm of adeps suillæ; but when the pure caustic has been previously applied, we need not employ it so much diluted, and instead of two grains, four, six, or eight to half a drachm of ointment may be the proper proportions. If the argentum nitratum has not been previously tried, we ought never to begin with the ointment stronger than two grains to the half drachm, for even in that extremely diluted form I have known it produce a good deal of irritation, and in a few instances hemorrhage to the amount of a table spoonful or more.

The method of using it is as follows: select a flexible gum cannula of the full size that can be passed down to the stricture, introduce some of the caustic ointment within the point of the cannula, then having anointed the external surface, pass it down to the stricture; a bougie is to be introduced along the cannula and passed gently through the stricture; it may be

allowed to remain there a short time and then be drawn back again into the cannula; it may be repassed gently through the stricture once or twice more, and then the point of the bougie being drawn within the cannula, both may be taken from the urethra. In this manner the caustic ointment is pushed out of the cannula and carried upon the point of the bougie through the stricture. In addition to this method of introducing the ointment, there is another by means of the common bougie having a groove on the side. That of the grooved bougie is the most simple plan, but it is not applicable to strictures that will admit only a small one; whereas the bougie and cannula are adapted to all cases, and always possess this advantage, that the part of the instrument which enters the stricture may always be perfectly smooth and round; on the contrary, in the grooved bougie, sometimes the edges of the groove will not be so smooth and even as could be wished. The grooved bougie, however, is a more certain way of carrying the *unguentum argenti nitrati* into the stricture, and possesses the advantage of being

always at hand, for a practitioner may easily prepare it for himself when he happens to be unprovided with a cannula. The manner of preparing and using it is as follows: select a bougie as large as will go through the stricture, and with a sharp pointed knife, make two longitudinal cuts parallel with each other, and beginning within half an inch of the point; extend these incisions about an inch backwards, and as they deepen let them approach each other so as to take out a portion and form a groove; then round and smooth off the edges as nicely as possible. The groove is next to be filled with the unguentum argenti nitrati, and the bougie being softened, bent, and anointed (as already directed) is to be passed quickly down to the stricture, and steadily pressed against it till it enters; the bougie is then to be passed onward till the groove containing the caustic ointment be within the stricture, where it must be allowed to remain long enough for the ointment to be dissolved; lastly, the bougie is to be very slowly turned round to apply the ointment to the whole internal surface

of the stricture, and afterwards carefully withdrawn.

It ought to have been remarked, that prior to using the armed grooved bougie, the exact distance of the stricture from the external orifice of the urethra, should be ascertained and marked upon it, and a second mark should be made behind the former one, precisely at the same distance from it as the end of the groove is distant from the point of the bougie, which will be about half an inch; thus when the instrument is introduced to the farthest mark, it will indicate that the caustic ointment has arrived at the stricture.

It is a disadvantage in the grooved bougie, that the caustic ointment will unavoidably be applied throughout the whole of that part of the urethra which is anterior to the stricture, therefore it may be sometimes well to combine the two modes, and pass the armed grooved bougie within a cannula.

Whether the *argentum nitratum* be ap-

plied in its pure state or diluted in ointment, it causes the same kind of burning sensation to the patient, but the degree of this sensation will be proportioned to the strength of the preparation and the susceptibility of the parts. When it has acted violently, I have noticed that the arteries of the penis have pulsed more strongly as mentioned by Sir Everard Home, Bart. This burning smarting sensation, continues for a few minutes after the instruments are removed, and sometimes I have known it last twenty minutes or half an hour. At the first time of making water afterwards, a quantity of thick curdly matter usually comes from the urethra, and there is a slight degree of ardor urinæ, which often remains throughout the first day, gradually lessening at each succeeding time of evacuating the urine. If there has been a discharge from the stricture, the usual effect of the caustic application is to increase that discharge abundantly for some hours, after which it diminishes, and when this discharge has been thick and purulent, it is often changed to a thin watery ichor, which nearly if not entirely ceases as the irritation

from the caustic abates. So long as the irritation produced by the caustic continues, patients often make water with greater difficulty than prior to its application, but this goes off as the irritation subsides, and more especially after the parts have once more been dilated with a common bougie. Sometimes a drop or two of blood follows the urine when it is voided for the first or second time after the caustic has been used, and this even when it has seemed to operate but slightly. Sir Everard Home, Bart. mentions a few cases wherein the application of the caustic to strictures in the urethra affected the whole constitution, and brought on violent ague fits. It scarcely need be added, that other effects of the lunar caustic are to lessen all the symptoms which arise from the disease, when this remedy is suited to the case. It is only by close attention to these circumstances, that we are enabled to determine how far we are likely to succeed with the lunar caustic or whether we must resort to other means.

A CASE.

April 7. A gentleman applied to me on account of a purulent discharge from his urethra which had annoyed him about two years. Several practitioners had been consulted who had recommended internal medicines and the use of bougies without any advantage. The discharge was not considerable, but he felt a little pain every time he made water, and the orifice of the urethra was red and pouting. He was in the habit of drinking a good deal of wine and spirits, I therefore advised him to abstain from these, and see me again in a fortnight.

April 21. A full-sized bougie passed without any difficulty or pain till it arrived in the membranous part of the urethra, it there produced pain, and encountered a stricture, against which it was steadily pressed till it went on into the bladder. A spot of blood was observable on the point of the bougie on its being withdrawn. I then took a much smaller bougie, and having made a groove near to its point, filled it with unguentum argente nitrati and in-

troduced it so that the grooved part of the instrument lay within the stricture. This application occasioned a sense of heat and slight pain, but altogether not so unpleasant as what he had sometimes felt in making water. I retained the bougie in this situation about six or seven minutes to dissolve the ointment, then slowly turned it round three or four times and withdrew it.

April 24. He told me that he did not make water for several hours after having the bougie used, and then a vast quantity of curdly matter preceded the flowing of the urine. The discharge had since appeared much the same as before the bougie was passed, but the pain in making water was different, being a sense of heat with soreness which extended all the length of the urethra, and this warmth and soreness still continued though in a diminished degree. Under these circumstances, I thought it best not to use the bougie and ointment again till the urethra had more recovered from the effects of the former application. He was therefore requested to live temperately, and

keep the genitals and perinæum cool by frequently bathing them with tepid or cold water, and to call upon me when the soreness of the urethra had abated.

May 2. He had less pain in making water, but the purulent discharge was much the same; a full-sized bougie passed more readily and with less pain through the stricture, and when taken out again no blood appeared on its point, but one drop of bloody serum oozed from the urethra afterwards. The unguentum argenti nitrati was again applied, but rather more sparingly than before.

May 5. He thought himself much the same, only the effects of the last application of the unguentum argenti nitrati were slighter than in the first instance. It was repeated for the third time. The bougie created less pain and was less opposed by the stricture.

May 8. Thought the discharge was not so great. The full-sized bougie entered with more facility than at any former pe-

riod. Used the unguentum argenti nitrati again.

May 11. The discharge had sensibly diminished, and he had experienced no pain in making water excepting the first time after leaving me. Used the unguentum argenti nitrati more freely.

May 12. He called to inform me that in about four hours after the unguentum argenti nitrati was last applied, he made water attended with a little pain at the stricture part, and nearly a table spoonful of blood followed. At bed time he voided his urine without any pain; but rather more blood came away afterwards than had done in the middle of the day; he had however seen no blood since that time, neither had he experienced any pain in making water, and the purulent discharge from the urethra had entirely ceased.

May 13. The discharge seemed to be perfectly stopped, and he found no pain in making water; I therefore contented myself with passing the full-sized bougie along

the urethra. He told me when it arrived at what had been the stricture part, but said it caused no unpleasant sensation.

May 14. Made the same report of himself as on the 13th inst. I therefore treated him as before, using the bougie without the *argenti nitrati*.

May 17. There had been no return of discharge nor any pain in making water, he therefore concluded himself perfectly cured; but I told him it would be proper to pay some attention to his urethra until that part which had been diseased possessed no unnatural degree of sensibility to the touch of a bougie. I passed a full-sized instrument, and requested him to speak if he knew when it arrived at the seat of the stricture; he did so, which induced me to apply the *unguentum argenti nitrati* again sparingly, and to insure but little effect, I desired him to make water immediately afterwards.

May 21. No discharge had been noticed,

neither had he any pain in voiding his urine. I passed a full-sized bougie and he assured me it created no particular sensation in one part of the urethra more than another.

May 24. There had been no return of pain in making water, neither any appearance of discharge. A full-sized bougie detected no disposition to stricture, and gave no pain in any part of the urethra, he was therefore considered to be perfectly cured.

Although Mr. Howard was the first practitioner who recommended for lunar caustic to be applied to strictures, either diluted in ointment or in powder upon the extremity of the bougie, yet I do not recollect whether he relates any cases which have been thus treated, and I have no opportunity again of consulting his pamphlet. I have therefore given the above Case to illustrate the efficacy of this remedy when used in ointment, and its effects may be further judged of by two or three other cases which will occur in the sequel of this

Essay. Its utility in the cure of strictures when employed in a concentrated form, is already too well established to require any more being said upon the subject.

SECTION IX.

ON THE CURE OF STRICTURES BY KALI PURUM.

As a remedy for stricture in the urethra, the kali purum has been held forth as being far superior to the lunar caustic, and this it certainly is in many cases, but generally speaking, if the lunar caustic be judiciously used, the advantage which the kali purum possesses over it will not be so conspicuous. There cannot be the smallest doubt that if the kali purum were to be employed in the treatment of strictures in the urethra as liberally as the lunar caustic has been, we should witness equally bad or worse consequences than have ensued from the application of the argentum nitratum. The kali purum is a much more active and powerful caustic than the argentum nitratum, hence capable of more mischief, and if the ill effects of argentum nitratum used under unfavourable circumstances had not been known, it seems very probable that still

more dreadful effects would have been experienced from kali purum, for to this previous knowledge we must certainly attribute the great caution with which the kali purum has been used. Besides, when the argentum nitratum was first brought into notice as a remedy for stricture, surgeons were not so well acquainted as they now are with the necessity for attending to the state of the constitution, in order to preserve it as far as possible from being irritable during the application of the caustic. This circumstance has tended very materially to promote the success of the kali purum, and to the want of this, much of that mischief has been owing which is attributed entirely to the lunar caustic. I suspect the truth is in the medium, and that each remedy deserves a preference in particular cases, but what the peculiarities are which indicate such preference, it is extremely difficult to define; so far however as a general rule can be laid down, I think it may be said, that the argentum nitratum is best suited to the impenetrable membranous stricture, and the kali purum to long strictures penetrable by the bougie; but

there are cases in which we can never satisfactorily determine which of the two will prove most useful before making the trial, and I believe we shall then do well to adopt that which produces the least pain and irritation.

Mr. Whately, to whom we are greatly indebted for first proposing the kali purum as a remedy in strictures, gives the following directions for its use: "Put a small quantity of kali purum upon a piece of strong paper, and break it with a hammer into small pieces, about the size of large and small pins' heads. In doing this, care should be taken not to reduce it to powder. Thus broken, it should be kept for use in a phial, closed with a ground stopper. The bougie should have a proper degree of curvature given to it, by drawing it several times between the finger and thumb of the left hand.

"Before the caustic is inserted in it, it will be necessary to ascertain the exact distance of the stricture, to which the caustic is to be applied, from the extre-

mity of the penis. For this purpose, let the bougie (which should be just large enough to enter the stricture, with some degree of tightness) be passed in a gentle manner into the urethra; and when the point of it stops at the stricture, which it almost always does before it will enter it, make a notch with the finger nail, on the upper or curved portion of the bougie without the urethra, exactly half an inch from the extremity of the penis. When the bougie is withdrawn, a small hole, about the sixteenth part of an inch deep, should be made at the extremity of it's rounded end. A large blanket pin, two inches and a half in length, with the head struck off, will answer the purpose; the hole being made with the point of the pin. The extremity of the bougie should then be made perfectly smooth with the finger and thumb, taking care that in doing this the hole in it's centre be not closed. Some of the broken caustic should then be put upon a piece of writing paper, and a piece less than half the size of the smallest pin's head should be selected; the particle, indeed, cannot be too small for the first application.

Let this be inserted into the hole of the bougie with a pocket knife, spatula, or some such instrument; and pushed down into it with the blunt end of a pin, so as to sink the caustic a very little below the margin of the hole. To prevent the kali from coming out, the hole should then be contracted a little with the finger, and the remaining vacancy in it be filled up with hog's lard. This last substance will prevent the caustic from acting on the sound part of the urethra, as the bougie passes to the stricture. Let this bougie be oiled, when it is completely prepared for the office it has to perform. Then let the operator, without delay, pass it by a very gentle motion, with the curvature upwards, to the anterior part of the stricture, upon which the caustic is to be applied.

“ When the bougie has reached the anterior part of the stricture, it should rest there for a few seconds, that the caustic may begin to dissolve. It should then be very gently pushed forward, about one eighth of an inch; after which there should be another pause for a second or two. The bougie should then be carried forward in

the same gentle manner, till it has got through the stricture. The sense of feeling will generally inform the operator, when it has proceeded so far," but the notch on the bougie will answer as a more sure guide.

"When the caustic bougie has passed through a stricture, it should be immediately withdrawn by a very gentle motion to the part at which it was first made to rest awhile. After which, it should be passed very slowly through the stricture a second time; but without letting the bougie stop in its passage. If the patient complain of pain, or if he be faint, which last effect sometimes, though rarely, attends the operation, the bougie should be immediately withdrawn; but if these effects are not produced, we may repeat the operation of passing and withdrawing the bougie through the stricture, once or twice more before we finish the operation, which will not take up in the whole above two minutes."

The frequency with which the kali purum may be repeated, must be regulated entirely by its effects, upon the principles

I have laid down for the use of the simple bougie or argentum nitratum. Any irritation that may be excited, must be allowed to subside, or nearly so, before another application of the caustic, and in proportion as the irritability of the part abates, we may at each succeeding operation increase the quantity of the kali purum, but we ought never to exceed one twelfth of a grain at a single application. A stricture will usually admit a much larger bougie immediately after the application of the kali purum than it would have done prior to the operation, and there is a copious discharge of thick, white, saponaceous matter, shewing that the kali certainly excites the secretions more than the argentum nitratum; I think too, it less frequently produces any bleeding than the lunar caustic does. Thus, in the majority of cases, it possesses some advantages over the argentum nitratum.

We now come to explain the manner in which the kali purum operates on strictures in the urethra, and here I cannot but conceive Mr. Whately has fallen into some

error; for, after alluding to the manner of applying the caustic kali, he states, "by this procedure, the kali is equally diffused over every part of the strictured surface, and only *ABRADES* the membrane of the stricture, without producing a slough. The *DEGREE* of the abrasion is entirely under the control of the operator; by a little attention to the quantity of caustic employed, it may be increased or lessened at each application, as circumstances dictate. In this operation, a slimy substance is formed, compounded probably of the abraded matter of the stricture, and the oil and lard used in the operation, combined with the kali. In this manner the kali penetrates and dissolves the hard and diseased surface of a stricture, with a facility, which no other remedy, that can be safely applied will equal."

It appears to me however, that this explanation is not correct,* for if the surface

* Mr. Samuel Cooper author of the Surgical Dictionary speaking of the kali purum as an application to strictures remarks, "I am sorry I cannot add my favourable opinion of the practice. To *abrade* without destroying, is to me perfectly unintelligible."

of the stricture were abraded or rubbed off as the term implies, it must lay open vessels that would bleed if no slough were formed and remained attached to close their apertures. That in general neither of these effects does happen, I conceive to be tolerably proved, by there being hæmorrhage less frequently after the application of the kali purum than after that of the argentum nitratum; for though a slough may prevent hæmorrhage so long as it adheres, its separation would be followed by an effusion of blood. Further conviction is obtained by reflecting on the manner in which the kali purum is brought into contact with the stricture. The particle of kali purum is a solid mass buried in the end of the bougie a little within the orifice which contains it, and the remainder of the hole is filled up with lard even with the orifice. When the end of the bougie arrives at the stricture, the kali cannot act upon it without moving from its situation, and it must do this either in a solid or fluid form. If it pass from the bougie in a solid state, its operation will unavoidably cause the formation of a slough,

but this I believe very seldom happens, or else, for reasons above stated, we should more frequently have hæmorrhage succeed to its application. Allowing then that the kali escapes from the bougie in a fluid state, how does it become fluid? It cannot do so merely from the heat of the urethra; therefore it must be rendered liquid by blending with some fluid; possibly the lard melts and escapes from the bougie combined with some of the kali purum, or if this union does not take place, the escape of the lard gives the mucus access to the caustic which it is sure to dissolve. At any rate, in which soever of these two ways the kali purum is liquified, it must have its caustic property very much lessened if not destroyed, and must come in contact with the stricture very slowly, which affords time for the pouring out of a quantity of mucus which still further dilutes it. While this process goes on, the kali combines with the lard and mucous secretion, and they form together a saponaceous compound which every instant becomes less stimulating as it increases in quantity, until it ceases to have any sensible effect. Besides, this

mucus is so thick, and its particles move so slowly upon each other, that if it were not for the motion of the bougie continuing to *mix* the dissolved caustic with the newly secreted mucus, it is probable, the portion of kali first dissolved would be so completely enveloped after the lapse of a few moments, as to be kept from acting any further upon the part to which it had been applied ; so that I do not see how the substance employed by Mr. Whately, can, in any case, be made to exert its influence so as to “dissolve the hard and diseased surface of a stricture,” unless it accidentally slip in a solid state from its situation in the end of the bougie.

The circumstance which most of all encourages the idea that some part of the stricture is abraded by the use of the kali is, that immediately after its use, a larger bougie can be passed through the stricture than could have been previously made to enter. But this fact may be accounted for in another way, which I believe to be the true explanation. Most strictures are in a state of inflammation, consequently their vessels are turgid with blood, and ill dis-

posed to give way for the passage of a bougie. The application of the kali, as before stated, excites a very copious secretion which greatly relieves the turgid vessels, they are then much more capable of yielding, therefore the urethra dilates with facility to admit even a larger bougie than could have been passed before. No doubt too, the kali purum alters the actions of the part, and removes that nervous irritation which gives a powerful disposition to contract amounting sometimes to spasm, the removal of which very materially facilitates the introduction of a larger bougie. Besides, this saponaceous slimy matter is of a very lubricating nature, and on that account assists the passage of the bougie much more than oil or ointment does, because these last would be nearly wiped off the point of the instrument long before it arrived at the stricture. I am confirmed in the truth of this mode of explaining the effects of the kali purum upon stricture, by experiencing precisely the same results from the application of the potassæ subcarbonas, the natron præparatum, or even Windsor soap; but these will be more fully treated of in the sequel.

The kali purum, when properly used, is unquestionably an excellent remedy in some cases of stricture in the urethra, but without extreme caution it may do a very great deal of mischief. I cannot however discover that it possesses any kind of superiority over the potassa subcarbonas, or the natron supercarbonas, and as much less nicety will suffice in selecting the proper quantity of either of the two last for application, and as they are never likely under any circumstances to form a slough, &c. &c. I think they are greatly preferable to the kali purum.

Several interesting cases of strictures which were cured by the kali purum are to be found in Mr. Whately's Essay.

SECTION X.

ON THE CURE OF STRICTURES BY POTASSA SUBCARBONAS.

BEING strongly persuaded that when the kali purum operated beneficially it did not produce any abrasion of the stricture, but that it merely acted as I have explained in the last section by allaying irritation, and exciting copious secretions from the part, &c. &c. I was led to conclude further, that if this opinion were correct, precisely the same advantage would be derived from the application of potassa subcarbonas. An opportunity soon occurred to put this notion to the test, the result answered my most sanguine expectation, and considerable subsequent experience has only added confirmation of its truth.

Patients describe the sensations produced by the potassa subcarbonas as being

like those excited by the kali purum, and in all other respects, also, where it comes within the province of the surgeon to decide, the effects appear to me in every way precisely similar. The same kind of slimy saponaceous matter is formed, and a larger bougie can be passed immediately after employing the potassa subcarbonas than could previously have been made to go through the stricture. A slight degree of ardor urinæ also prevails for a few times of making water after its use, and when the irritation arising from the potassa subcarbonas has entirely subsided, the parts are left in a less irritable and more dilatable state than before. If the quantity of the potassa subcarbonas be not increased, it causes less pain at each succeeding application ; and if it be not used too frequently, a larger bougie is required in most cases to dilate the stricture properly every time the operation is repeated. A few instances have occurred to me in which eight or ten drops of blood have come from the urethra after applying the potassa subcarbonas, but I am undetermined whether or not to impute that circumstance quite as

much to the action of the bougie, as to the potassa subcarbonas, for in the same cases the introduction of a simple bougie has occasioned an equal degree of hæmorrhage. Sometimes I have known patients grow faint after having the stricture touched with the potassa subcarbonas for the first time, but never upon a repetition of it, and I do not think faintness occurs more frequently the first time of using the potassa subcarbonas than the first time of dilating with a simple bougie.

Thus far the advantages of the kali purum and potassa subcarbonas are about equal if they are both properly used, but there are some points of view in which the potassa subcarbonas certainly possesses great superiority over the kali purum. The latter is so extremely active and powerful a caustic, that a great deal of care and nicety is required in the management of it; perchance a little too much might be used, or it might accidentally escape from the end of the bougie in a solid form and have its operation confined to one spot of the urethra. This occurrence would unavoidably

attended with the formation of a slough from which serious hæmorrhage or other ill consequences might ensue. Here then we see how much the potassa subcarbonas deserves the preference, for it may be applied in almost unlimited quantity without producing slough, and with no further inconvenience than temporary irritation. Some few strictures are endowed with so little sensibility, that the more freely and frequently they are treated with suitable means, the more rapidly they are cured. In such cases, if an alkali be proper, the potassa subcarbonas has a decided advantage over the kali purum, because a much greater quantity of it can be used without risk of doing mischief, for Mr. W. says, the latter never can, under any circumstances, be employed with safety in a larger quantity than one twelfth of a grain at a time. On the other hand, there are some strictures in which great delicacy of treatment is necessary, at least we must attempt but little, otherwise we shall make no progress at all towards recovery. Here then, the potassa subcarbonas is decidedly superior to the kali pu-

rum as a more manageable remedy, for it is a much milder medicine, and therefore better adapted to those cases in which the utmost delicacy is required. On these accounts, to which might be added the difficulty of preserving bougies armed with kali purum at all times fit for use, the potassa subcarbonas claims a preference.

For the purpose of applying the potassa subcarbonas, a bougie quite as large as will pass through the stricture should be chosen, and in its point should be made a small hole rather larger than what the potassa subcarbonas intended to be used will occupy. The end of the bougie must be smoothed off with the fingers, and the potassa subcarbonas is to be pressed into this hole rather lower than its margin, and the remaining part filled up with lard or simple cerate. This being done, and the distance of the stricture from the external orifice of the urethra being marked on the bougie, the latter is to be prepared and passed down the urethra, agreeably to the directions given for managing a simple bougie, until it encounters the stricture, which will be known

by the resistance afforded to its further progress, but more certainly by the mark on the bougie having arrived at the orifice of the urethra; in this situation it is to be steadily held, till the patient experiences a smarting pain, which denotes that the potassa subcarbonas has begun to act upon the part; the point of the instrument should then be gently moved through the stricture backwards and forwards two or three times according as the feelings of the patient will allow, and afterwards withdrawn.

Another way which I frequently prefer, more especially when I wish the potassa subcarbonas to be applied liberally, is, to take a flexible gum cannula and push some lard into one end of it; the lard is to be carried within the tube, far enough to leave room for a proper quantity of potassa subcarbonas and a second quantity of lard after it, which being placed there also, the cannula may then be oiled and passed down to the stricture; a bougie must afterwards be introduced through the cannula, and it will push out the potassa subcarbonas

against the stricture. The point of the bougie is next to be very slowly passed and re-passed two or three times through the stricture as before directed, and then both it and the cannula are to be removed.

A third plan combines the two former modes, it is, to pass the armed bougie within the cannula down to the stricture, as being a surer way to avoid touching any part of the urethra anterior to the stricture with the potassa subcarbonas, than when the armed bougie is employed alone. This method has another advantage over the armed cannula and simple bougie, as being a more certain mode of carrying the potassa subcarbonas through the stricture; this however may almost be considered a superfluous precaution, for I believe the point of a bougie going through an armed cannula placed against the stricture, would seldom or never fail to carry some of the kali subcarbonas along with it through the contracted part.

With respect to the quantity of the potassa subcarbonas which should be used at

each application, that must be determined according to circumstances, and in proportion to the irritability of the stricture. It has already been stated, that the parts appear less and less affected by the potassa subcarbonas at each succeeding application, so that the quantity may be gradually increased if necessary ; but as we never can precisely know what degree of irritation it will excite before it has been tried, so we cannot begin too cautiously with the smallest possible quantity. In short, both as to the frequency of applying the potassa subcarbonas, and the quantity to be used, we may be governed by the same general rules which have been laid down for the management of the simple bougie.

When treating, in the beginning of this section, upon the comparative merits of the kali purum and the potassa subcarbonas, so much was said of the effects of the latter upon strictures, that little more remains to be observed upon the subject ; however there occurs to me another remark worthy of notice. Alkalies in general, seem in an

eminent degree, to possess the properties of lessening irritability and exciting the action of the absorbents in any part of the body to which they are applied. I will not undertake to say how far it is upon this principle that the potassa subcarbonas operates so beneficially in the cure of stricture, but I have known distressing pains in the loins, and other symptoms arising from stricture, completely removed in a few hours after the potassa subcarbonas had been applied to the contraction in the urethra.

Strictures that admit the urine to flow through them, cannot be impenetrable to a bougie except from the instrument's being too large, or by its not hitting upon the passage through the stricture; or if it enters without passing quite through, it must be obstructed in its course by some inequality or irregularity in the contracted portion of the canal. At any rate, if there be a passage for the urine, we may reasonably conclude that other fluids can penetrate, and if the potassa subcarbonas be applied to the anterior part of the stricture, possibly some of the saponaceous matter which will be

formed, may be made to enter and diffuse itself all over the internal surface of the stricture, and in that case it probably will have the same effect, though in a diminished degree, as when applied to the internal surface of the stricture by means of a bougie that passes quite through it. If it should so operate, there can be no doubt the time when a bougie can be passed, will be hastened; for if we can in any way lessen the morbid actions of the part, either by topical remedies, or by improving the general health, the contraction will give way to a considerable extent without any other mechanical dilation being used, than what will necessarily be produced by the expulsion of the urine. Common prudence however, dictates, that we should always make several attempts to insinuate a simple bougie through a stricture, before resorting to any application that may eventually irritate more. The effects of such attempts, closely observed, will teach how far it may be safe to employ the potassa subcarbonas. If the pressure of the bougie excite very little or no irritation, the use of the potassa subcarbonas certain-

ly will be justifiable ; if, on the contrary, the bougie produce a good deal of irritation, we ought to hesitate ; but we ought carefully to take into consideration at the same time, the possible chances there may be of the potassa subcarbonas irritating less. If the bougie be used delicately, there can be no question that it will cause less pain at the time than the potassa subcarbonas, but as they operate differently, the least subsequent pain and irritation may result from the potassa subcarbonas. The effect of a bougie that presses against a stricture without going through it, can be considered in no other light than as a certain degree of mechanical injury ; but the potassa subcarbonas operates medicinally, it excites a copious secretion which relieves the turgid vessels, and appears to allay nervous irritation the source of that increased action which keeps the vessels in a turgid state. I have applied the potassa subcarbonas to a variety of strictures, and have never yet known it occasion any kind of inconvenience, therefore should expect none to occur in the generality of cases ; but as we every now and

then meet with a patient possessed of a peculiar constitution, extremely susceptible of irritation, in whom remedies produce very unusual effects, we cannot proceed too cautiously in the first instance.

This caution is more especially necessary in cases of stricture impervious to a bougie, because the contraction in such being so much greater than when the bougie can be passed, so much less irritation would be apt to create a temporary retention of urine. It is a very rational supposition, that the smaller the quantity of potassa subcarbonas that happens to be applied, the less likely it will be to disagree, or, at least, that the irritation it produces will be proportioned to the power of the remedy. But although this may be laid down as a general principle, it does not operate invariably; we have familiar instances to the contrary in the effects of opium, a small dose of which will often increase that irritation it is intended to allay, at the same time that repeated and full doses of the same medicine would perfectly cure the disease. If such devia-

tions from this general principle occur in the effects of local remedies, as are known to do so in constitutional ones, (and that they do occur I am perfectly confident, although they are not quite so obvious in every case) it bids defiance to any attempt to specify the proper quantities of potassa subcarbonas which can, in the first instance, be resorted to in all the varieties of stricture with the greatest advantage: this is a circumstance which must be wholly determined by the experience and observation of the surgeon. I am disposed to recommend a trial of the potassa subcarbonas in every description of stricture, prior to using either the argentum nitratum or kali purum; because it is so much pleasanter a remedy than either of these two, and it has proved so generally successful. If however, it should fail to do good, it cannot be productive of mischief, and will by no means lessen the prospect of advantage to be derived from their subsequent application.

FIRST CASE.

A robust, remarkably healthy-looking man, between thirty and forty years of age, applied to me for some affection of his urinary organs. He could not tell what was the matter with him, but he had an incessant desire to make water, and great difficulty in effecting it. When it came away most freely it was in an extremely narrow stream attended with violent straining, and very frequently it would only flow guttatim. He had been in this state ten years. He ate and drank very freely, and his bowels were rather irregular. The smallest sized bougie could be passed only four inches down the urethra, it entered the stricture about one eighth of an inch, but would not go through. Considerable hardness was to be felt externally in the situation of the stricture. I recommended him to bathe the perinæum, &c. with warm water, to live temperately both as to eating and drinking, and I prescribed him *pil. hydrarg. gr. v. omni nocte et potassæ vitriolatæ 3ss. ter. quotidie.*

2d day. The small elastic gum bougie was passed with much care quite into the bladder. On attempting to withdraw the instrument, it was gripped very much, and all that part which had gone beyond the stricture was coated with calculous matter; he did not experience much pain, but a few drops of blood followed.

3d day. The bougie would not go through the stricture, which made me suspect he had not implicitly followed my directions, and with some reluctance he confessed to having been quite drunk the night before.

4th day. The bougie passed very well, and he began to make water better. Thus he went on for about a month, sometimes better sometimes worse, according as he lived more or less temperately. At the end of that time a bougie one size larger was passed; in a week more the bougie of the third size was got into the bladder; and in about three weeks longer the bougie was increased in size again. He remained in the same state for about a month longer,

when I determined to use the potassa sub-carbonas on the end of the bougie. He said it made him smart a little, but nothing of consequence; a larger bougie was then tried, and it went into the bladder without difficulty. The following day the same bougie was again easily introduced all along the urethra. Having relieved the patient so much that he could now empty his bladder comfortably whenever he desired, I wished to try how far it was possible to cure this patient solely by the use of the simple bougie, which he very naturally preferred as being least painful. The simple bougie was never kept in the urethra longer than five minutes at a time, but the intervals of using it were varied from every day to every second day, and then to once a week, but seemingly without any decided improvement during a period of six months. I observed, however, that whenever the use of the bougie was delayed longer than three days, the stricture was sure to be more contracted; in other respects he was sometimes a little better and at others worse, in proportion as he lived temperately and kept his bowels open. At

the expiration of the six months I resumed the application of the potassa subcarbonas, and repeated it every second morning in the following manner. The state of the stricture was first ascertained by the introduction of the simple bougie; the potassa subcarbonas was afterwards conveyed down to the stricture in the end of a bougie, as already described, and lastly, a bougie as large as the stricture would admit, was passed through it. With this treatment the cure went on rapidly, and in about six weeks was complete. A bougie quite as large as ever I had occasion to use could then be passed into the bladder with perfect ease, and there was no remaining hardness to be felt at the situation of the stricture. The instrument was employed for some time afterwards with a view to remove any disposition to disease if it had remained; and subsequently, the bougie was introduced for a considerable period, at the various intervals of a week, a fortnight, and a month, to see if the cure was likely to be permanent, but at none of these examinations was there any contraction discovered.

The great relief afforded to this patient during the first month, made him willing to submit to any plan that I proposed. Unless this had been the case, it is probable so fair an opportunity might never have occurred, to prove the very great advantage sometimes to be derived, from using the potassa subcarbonas to strictures in the urethra. The stricture was dilated to a certain extent in the first instance, by the introduction of the simple bougie, but afterwards, during a long period of six months, it seemed to have no further effect, so that I inferred the case was incurable by the bougie alone. Nothing could be more obvious than the benefit resulting from the application of the potassa subcarbonas. I have since thought, this would have been an excellent case to try whether a cure could have been accomplished by keeping the bougie in the urethra some hours daily, for the patient appeared in no wise disposed to irritability.

SECOND CASE.

A gentleman requested me to advise him how to get rid of a troublesome purulent

discharge from the urethra, which he imagined to be the remains of a gonorrhœa contracted by him about three months previous to his calling upon me. The medicines which were recommended to him soon checked the discharge, but he then began to feel more pain in the urethra whilst voiding his urine. He insisted that he made water as freely as ever he did in his life, but the increase of pain in the canal led me to suspect the existence of stricture, and upon introducing a moderately large bougie it was stopped at six inches down the urethra; it could be urged no further, and as slight pressure against the stricture occasioned much pain and faintness, the instrument was removed. When he had recovered himself, a small bougie was passed quite into the bladder, not however without great pain and faintness. He was desired to bathe the perinæum in warm water, to keep his bowels moderately relaxed, to live temperately, and to see me again in a week.

8th day. The discharge had in some degree returned; he felt easier in the ure-

thra; and he is sensible of making water in a fuller stream; a larger bougie was admitted through the stricture, and with less pain than before.

15th day. Much the same as he was a week ago in all respects.

27th day. The bougie entered more easily than heretofore, in other respects there is no decided alteration. The natron was applied to the stricture, and it created a good deal of pain and faintness.

2d month, 1st day. No discharge from the urethra; makes water much more freely; a full-sized bougie, after meeting with a good deal of opposition, was passed quite into the bladder, and did not cause any great pain; however, the stricture's allowing itself to be dilated to the full-size of the urethra, convinced me that it was spasmodic.

2d month, 3d day. Rather better.

2d month, 21st day. Continued very

comfortable, but the bougie did not pass so easily as before; the potassæ subcarbonas was used and seemed to create less pain than the natron.

3d month, 16th day. As there appeared to be no decided amendment, the application of the potassa was renewed. I represented to him that he saw me too seldom, and that the cause of our making so little progress was, his allowing so long an interval to elapse, that the good effects of one application were lost before it was repeated; he promised to be more attentive.

3d month, 22d day. The bougie passed with much greater facility, and the potassa was used again.

The patient was now become so comfortable that he did not like the trouble of attending to the stricture. He therefore began to live very freely and to keep late hours; he only saw me twice during the two following months, at both of which times the stricture was in a less dilatable state.

After this he called and had the potassa applied pretty regularly every sixth or seventh day for seven weeks, when he was judged cured, and has ever since remained free from stricture.

The natron exsiccatum was employed previous to the potassæ subcarbonas, but as the latter was attended with the least irritation it obtained the preference. In this case it may be remarked, that although a considerable period had elapsed between the first and last introduction of the bougie, it was used in all only sixteen times. When we take all the circumstances of the case into consideration, it is certainly an allowable inference, that if this patient had attended to himself properly he would have been well much sooner.

THIRD CASE.

A gentleman about fifty years of age, consulted me on account of some disorder in his urinary organs which had troubled him for twenty years. He had consulted several medical men, and never suspected a stricture, nor had his urethra been examined

with a bougie. He had pain down his thighs, and more or less violent but constant pain in the glans penis; very great frequency in making water, and very troublesome erections. His tongue was furred, his digestion bad, and he noticed that the pain in the urethra and other symptoms varied with the state of his stomach; and he was frequently obliged to take some aperient medicines to relieve the bowels.

A moderate sized bougie stopped at a stricture six inches down the urethra and could be urged no further, but a very small bougie passed all the way into the bladder, and the patient fainted. I advised him to shun all spirituous liquors, to eat no pastry nor any kind of rancid food, to take no suppers, to confine himself to a mild nutritious diet easy of digestion, and to bathe the perinæum with warm water night and morning. Sumat Pil. Hydrarg. gr. v. pro re nata.

In a week afterwards he called again and thought himself better. He told me that the sickness induced by the introduction of the bougie continued about three days, and

almost prevented his eating, it so completely destroyed his appetite; but since then, he had experienced less pain and less frequency of making water. The bougie passed with greater facility, a larger one went through the stricture, but was then withdrawn on account of faintness.

21st day. Better in all respects. The bougie which we in vain attempted to pass a week ago, now entered readily into the bladder and caused no faintness.

28th day. The bougie used last week, was employed again, without producing any faintness.

35th day. I now employed a larger bougie than heretofore, it passed with some difficulty, and caused some pain, but no faintness.

42d day. The same bougie was employed, but still it did not pass easily; patient told me his stomach and his urethra were always better and worse together.

49th day. Much the same as last week ; the stricture still resisted the progress of the bougie so much, that a larger one could not be tried with propriety. Thus we had made no progress within the last three weeks, I therefore deemed it a fit case for applying the potassæ subcarbonas. It created smarting, pain, and faintness.

56th day. The irritation of the potassæ subcarbonas soon went off in the urethra, but the stomach was so much affected for two or three days that his appetite was destroyed, he had however been more comfortable afterwards. The bougie now entered with the utmost ease, a larger one also passed readily, and no faintness ensued.

63d day. About the same as at the last report: the largest of the bougies which had been used passed easily ; I applied the potassæ subcarbonas again, and then used a still larger sized bougie, it passed easily and without causing faintness.

70th day. Said he felt himself in all re-

spects better than he had done for a long period: the largest of the bougies which was passed at the last visit, went all along the urethra with tolerable ease, but with considerably more difficulty than when used *immediately after applying the potassæ subcarbonas*. I repeated the application of the potassa, and probably should have attempted to introduce a larger sized bougie than that last employed, but the patient told me he was going to be so closely confined by business, as would prevent his seeing me for six weeks or two months, and was desirous to have a bougie to use upon himself occasionally. I gave him a middle-sized bougie, which was the largest that had been hitherto passed, desiring him to use it once or twice a week, and to continue taking his aperient pills when he thought necessary.

I received several notes from this gentleman stating that he continued much the same; but when about seven weeks had elapsed, he requested a friend of his to inform me that he had been confined to his bed for ten days with a fever, and was dread-

fully distressed with strangury. The strangury had lasted two or three days, and he had several times introduced the bougie but with only temporary relief. I considered the strangury to proceed from the disordered state of his general health, and therefore told him, that till his general health improved, nothing better could be done than for him to bathe the perinæum with warm water frequently, and drink plentifully of milk and water or barley water. Four days after this the patient requested me to call upon him ; he told me he was much better than he had been, that the fever was gone, and as the gentleman who usually attended the family had said he did not require any more medicine, he supposed I could now remove the strangury. He was extremely debilitated, and his pulse were small, and frequent; he had no appetite, and was frequently thirsty; his mouth and tongue were covered with apthous sores; he had tenderness of the abdomen, griping pains, and a disturbed state of his bowels; and the strangury continued as bad as ever.

After this examination, I felt confident

that the stomach and bowels were in much the same state as the mouth, and that the irritation at the neck of the bladder arose entirely from sympathy, and consequently no permanent good could be effected in the urinary organs till the irritation in the alimentary canal was allayed. With this intention, I informed him that he must eat only mild nourishing food which was light and easy of digestion, such as arrow-root and milk, jellies, and boiled meat; that he must bathe the perinæum with warm water, and take the following medicine:

R Carbonatis Sodæ ʒiss.

Vini Ipecacuanhæ ʒiss.

Tincturæ. Opii gtt. xxx.

Aquæ Fontanæ ʒvi. m. f. m. sumat coch. ij.
larga quartis horis cum Acidi Tartari pulv. gr. xiv. durante
effervescentia.

Capiat Pilulæ Hydrargyri gr. iij. pro re nata.

Three days afterwards I saw him again and found him considerably better; the strangury had abated within thirty-six hours of his beginning to take the medicines, and when he took them regularly, he remained free from irritation in the urinary organs; he also felt stronger and in better spirits,

his bowels were less disturbed, and his mouth and tongue had a more healthy appearance and were less sore. On passing the bougie, the stricture seemed to be in the state in which it was seven weeks ago. I again applied the potassæ subcarbonas and cautioned him against any sexual connexion; he replied, that the application of the potassa had always kept off the desire for sexual intercourse for five or six days afterwards. My next visit was delayed for a week, during which time very great amendment took place. His mouth had gained a healthy appearance, and his appetite began to return; there was no irritation in the bowels or urinary organs; he had no pain in the thighs or glans penis; he made water not more frequently than naturally; and he had not risen in the night which had usually happened twice. The potassæ subcarbonas was applied to the stricture, and a larger bougie passed immediately afterwards. There appeared so little danger of exciting reaction in the urethra by a more frequent use of the bougie, that I determined to employ it with the potassa every second or third

day for the future; and I was the more inclined to try this experiment, because the patient was particularly anxious to get well, and resolved to give up every thing else for a time, and attend wholly to the re-establishment of his health. The same diet and medicines were continued. Under this treatment, his general health improved and the stricture gradually gave way; the size of the bougie was increased about once a week, until a full sized one glided into the bladder without meeting with any impediment, and this happened in about forty days after the severe attack of strangury. I gave him some full sized bougies, and requested him to introduce one every third or fourth day for a few weeks. He went into the country and returned home in about three months in perfect health, and more comfortable than he had been for several years.

Towards the end of the cure the patient made the following singular observation: *Quum se putaret satis convalere ad coitum usurpandum, functiones viriles recte progressæ sunt donec videretur semen ad situm*

morbi pervenisse; quo tempore, ardor ac vires subito defecerunt sine emissionem, et non potuit actum perficere decumbens; sed è lecto surgens, stansque super aream cum uxore suâ, voto suo perfruitus est.*

I bid him dismiss all apprehensions on that subject, for he might depend upon it, that by the time the stricture was perfectly removed, he would find every thing go on properly, and the genitals would then perform their functions more fully than at any time during the existence of the stricture. The result proved me right, for he recovered his wonted powers very soon after he had left town.

The foregoing case is a remarkable in-

* It is difficult to say why the change of situation should occasion such a different result. A case somewhat parallel in other respects, is related by Mr. Hunter in his work on the Venereal Disease; it is the last in the chapter on Impotence. The same explanation seems to me applicable to both cases, viz. "that the same irritation takes place in the bulb of the urethra without the semen, that takes place there when the semen enters, in consequence of all the natural preparatory steps, whereby the very same actions are excited as if it came into the passage."

stance of a patient's suffering from stricture during twenty years, without the real nature of his complaint being suspected; it is also an excellent specimen of the natural sympathy which exists between the urethra and the digestive organs. In consequence of dilating the stricture with a bougie for the first time, the stomach became disordered, and did not recover itself for several days : and when his stomach and bowels were subsequently affected with thrush, it brought on a frequent desire to make water, and so much pain and difficulty in voiding it, as amounted to violent strangury, which entirely ceased as the digestive organs were restored to a healthy state.

SECTION XI.

ON THE CURE OF STRICTURES BY NATRON EXSICCATUM.

THE observations which might have been made on the natron exsiccatum as a remedy for stricture, are in a great measure superseded by what has been written on the potassæ subcarbonas. The apparent effects of both are so very similar, that I have not as yet been able to discover any remarkable difference. There must however be some variety in their medicinal properties, because, under particular circumstances, they are known to operate differently when taken into the stomach, or when employed externally in lotions. I therefore think it possible, that some cases of stricture in the urethra may be more successfully combated by means of the natron exsiccatum. Some I have treated entirely with it and they have done very well ; to others, both the natron exsiccatum and the potassæ subcarbonas have been applied, and seem-

ingly with equal advantage. In one or two instances, after the natron exsiccatum had been applied, the patients have complained of more pain than I remember to have succeeded the use of the potassæ subcarbonas; and once there was hæmorrhage to the amount of two or three table spoonfuls, (by the patient's calculation;) but I imagine these ill consequences are to be considered partly as the effect of mechanical irritation, and are not wholly attributable to the natron exsiccatum. As a medicine, the natron exsiccatum is at no time so easy of solution as the potassæ subcarbonas, and I have known it escape from the end of the bougie, when meeting with the mucus of the urethra, it has become hardened as if it had recovered its water of crystallization, and then the motion of the bougie surrounded by these hard particles has caused friction and pain. On this account, generally speaking, I prefer the potassæ subcarbonas; if however, a preparation of natron be deemed the most desirable application, it may be obtained free from the above objection by using fine soap softened with water, some of which

being put into the end of the flexible cannula and conveyed down the urethra, a bougie is to be carried through it and the stricture, as described when speaking of the potassæ subcarbonas. Or the natron exsiccatum, reduced to fine powder, may be mixed with spermaceti cerate and thereby diluted to any extent.

It is neither impossible nor improbable that the irritating effects of the natron may have been partly owing to its having been too much dried, so that it was rendered in some degree caustic.*

* Since writing the above, I have used the sodæ carbonas in a few instances, and have found it exceedingly mild in its operation, and consequently, not liable to the same objections as the dried subcarbonate which I have usually employed.

The following quotation from Dr. Duncan's Edinburgh Dispensatory, confirms the truth of my observations on the natron exsiccatum: "Soda is got in the form of solid plates, containing twenty-five per cent. of water, which cannot be separated by heat; of a greyish white colour, urinous taste, and burning *causticity*; acting with considerable violence on animal matter. Water in a certain proportion, when thrown upon it, is absorbed and *solidified*, with the disengagement of caloric and a lixivial smell. A larger quantity dissolves it. From the atmosphere it absorbs *moisture* and *carbonic acid*, becoming *less caustic*."

The first of the following cases shews the natron exsiccatum may sometimes prove remarkably successful.

FIRST CASE.

Being at a relation's in the country, I was requested by a neighbouring surgeon to see a case of stricture, that had annoyed him and the patient for the last twelve months; bougies had been passed ineffectually for the whole of the above period; however a much larger instrument could be passed at some days than at others, as the degree of stricture varied considerably. When I saw the patient, a bougie about one twelfth of an inch in diameter, could with difficulty be made to enter a stricture at four inches from the orifice. Having satisfied myself of this, I made a hole in the end of the bougie, inserted some natron exsiccatum, and passed it down to the stricture. It caused a smart burning pain, and in a few seconds the bougie moved with great facility through the stricture. When this was withdrawn,

a bougie, four sizes larger, passed very readily quite into the bladder. This was on a Saturday morning, and I recommended the patient to bathe the perinæum, scrotum, and penis, in warm water often during the interval, and to undergo the same treatment on the Monday, Wednesday and Friday following, and I promised to see him again on the next Saturday. Making inquiry at the time appointed, of the gentlemen who attended the case, he informed me, that after applying the natron exsiccatum on the Monday, a full-sized bougie passed along the urethra without detecting any stricture; he therefore considered the case cured. This happened five years ago, and I understand the patient has since continued well.

SECOND CASE.

A gentleman consulted me on account of a slight pain in making water and trifling discharge from the urethra. He had had two or three gonorrhœas, but not within the last five years. He lived very irregularly, drank

a great deal of wine, and often indulged to excess in venery. The symptoms which he felt had troubled him about two years. I introduced a small bougie, and discovered a stricture just at the commencement of the membranous part of the urethra. The bougie went on into the bladder, but in passing the stricture gave severe pain, and the patient became extremely faint. I recommended him to bathe the perinæum with warm water, and to keep the bowels moderately open by means of castor oil; to live very regularly, and temperately, and totally to abstain from venery.

2d week. Reported himself better, bougie passed with less difficulty, and it was attended with much less pain, and there was no faintness.

3d week. Better; having less pain and less discharge, and he perceived a considerable alteration in the stream of urine, it being much fuller, though when he first came to me, he strongly affirmed that he

made water in as full a stream as ever he had done in his life. The size of the bougie was now increased, and it passed with facility. The tongue still remains furred, and the bowels are scarcely open enough.

Sumat. Pil. Hydrarg. gr. v. hora somni omne nocte.

4th week. Much the same. After introducing the simple bougie, he permitted me to apply the natron exsiccatum. He complained of intolerable pain, and nearly fainted. This patient has acute feeling, and generally expresses himself strongly, therefore it is possible that the natron did not irritate to such an extreme degree as the above report would lead us to imagine.

5th week. He informed me that the pain in the urethra remained two or three hours after he left me last week, and that a little blood, perhaps a tea-spoonful, or more, came away afterwards. Upon the whole, however, he believed himself better. The bougie went through the stricture with

considerable more facility, and another, one size larger, was introduced. He so earnestly importuned me to use nothing but the simple bougie, that in future no medicinal applications will be resorted to. I therefore begged him to see me every three or four days, instead of only once a week.

6th week. Certainly better. The stricture gives way to the simple bougie; there is no discharge from the urethra; and my patient feels no pain in making water, except the first time in a morning. The same treatment was continued till he was nearly well, viz. until nearly a full-sized bougie would pass into the bladder, when he went to a carousing party, and this disordered his stomach extremely, and brought on a strangury. I told him to drink soda water, barley water, or a solution of gum arabic plentifully; to bathe the perinæum frequently in warm water, and take the following medicines:

R Hydrar. Submur. gr. iv. Pulv. Antim. gr. iij. Pulv.
Opii gr. i. m. f. pil. h. s. s.

R Salis Potassæ Nitrat. ʒiss. Vin. Antim. ʒj. Lac
Amygdal. ʒviij.

M. f. m. sumat coch. iij larg. quartis horis.

These directions were very imperfectly attended to, and he drank wine daily. Thus the strangury continued in some degree four days, and then he put off having the bougie passed for more than a fortnight. When we came to use the bougie again, the stricture was found to be contracted nearly as much as in the first instance; however it gave way more readily, and in about two months, the contracted part of the urethra was dilated by means of the simple bougie, to its natural diameter. I then requested him to live very temperately, and regularly, and to call now and then to have a bougie passed to prevent a relapse; all which advice was entirely lost upon the patient. He adopted his old habits and in six months the stricture returned, but yielded again to the bougie. If this patient could be prevailed on to live as he ought to do, I am persuaded he might keep himself free from stricture, but

as it is, I fear he will be more or less troubled with stricture all his life. This case points out the necessity of attending to the state of the digestive organs in cases of stricture in the urethra, and also the efficacy of the simple bougie; but it chiefly merits notice, on account of its being an instance of the irritating effects of the natron, to which I have already alluded.

THIRD CASE.

Oct. 1st. Mr. ——— has for the last three years been troubled with pain along the perinæum, sometimes he feels pain also at the extremity of the penis and over the pubes. During the last eight months, he has frequently had seminal emissions after making water, and always after straining to expel hardened fæces. The desire to urine is frequent, especially in a forenoon, and all the above symptoms are much increased the day after drinking two or three glasses of wine or walking a few miles. His urine flows in a twisted stream and soon sprinkles to the ground; it is scanty, high-coloured, and often contains a good deal

of mucus. A middle-sized bougie detected a stricture at four inches down the urethra. Steadily pressing the instrument against the stricture gave great pain, and caused it to pass six and a half inches where it encountered another stricture; this however yielded to pressure as the former had done, and the bougie went into the bladder. By far the most pain was created by the bougie going through the last stricture. The tongue was furred, the bowels were irregular, and much irritability prevailed throughout the whole system, which I imputed to his business confining him so much to the house, for he had had very little relaxation from business, Sundays excepted, for about five years. I recommended him to bathe the perinæum with warm water, and to keep his bowels regular by means of *pil. hydrarg. gr. v. hora somni et olei ricini primo mane pro re nata.*

Oct. 3d. He feels easier about the urethra; the same bougie was again passed into the bladder, it created rather less pain, but the opposition to its progress appeared to be as great as before.

Oct. 5th. Thinks himself a little better, still there is great difficulty in urging the bougie through the stricture.

Oct. 7th. Says he makes water more freely and less frequently. In some other respects too he is more comfortable. The bougie passed through the stricture with less difficulty, but still a great deal of pain attended that operation, although it was conducted in the most careful manner. It occurred to me whether we should not gain more by using the bougie less frequently whilst the habit was so irritable, I therefore determined to wait a week before introducing it again.

14th day. A degree of uneasiness has returned within these last two days. I found that the bougie entered with more difficulty, and was seemingly accompanied with more pain. I applied the natron exsiccatum to the stricture and it produced acute pain and faintness.

Oct. 17th. The patient is considerably better, he voids his urine more freely and

not so often ; the bougie passed the strictures with much greater facility and less pain ; the natron was applied again.

Oct. 20th. Yesterday and to-day he has been perfectly free from any uneasiness, and he imagines himself to be improved in his general health ; the stricture was in a more dilatable state, a larger bougie was passed with tolerable facility and little pain ; the application of the natron was again repeated.

Oct. 24th. The stricture at four inches seemed scarcely to exist, and the other stricture was much better. Repeated the application of the alkali. The same plan of treatment was persevered in till the end of six weeks, using the bougie and natron every third or fourth day. At the expiration of this time both the strictures appeared to be removed, and he was considered well ; however, I requested him to allow me to pass a bougie now and then to see if the strictures were likely to return. I saw nothing of him till Nov. 29th, when he sent for me to attend him at home. A

violent strangury had come on, accompanied with symptoms very like those which indicate a calculus passing down one of the ureters; he had pain in the loins and in the left groin; occasional vomiting; and he found some relief by bending his body forwards. The desire to make water was incessant, and the urine was excessively high coloured, scanty, and loaded with mucus. Tongue covered with a thick fur, bowels costive, pulse hard and ninety in a minute, and he was very feverish. He went into the warm bath as soon as it could be made ready, and afterwards, he was desired to apply warm flannels to the parts that were painful, to drink barley water *ad libitum*, and take the following medicine:

R Hydrarg. Submur. gr. v. Pulv. Antim. gr. iij. m. f.
pil. statim sumend.

R Potassæ Supercarb. ʒiv.

Vin. Antim. ʒj.

Aquæ Puræ ʒviiss.

Syrupi Croci ʒiij. m. f. m.

Cujus sumat. coch. ij. larg. secunda quaque hora cum
Acid. Tart. ʒss. durante effervescentia.

Nov. 30th. I learnt that a quantity of dark and hardened fæces had been voided,

and then he became much easier. He was, at the time of my seeing him, free from pain, the tongue was less furred, pulse soft and skin moist; the urine passed easily, and was almost natural in quantity and appearance.

Dec. 1st. He thought himself well, but rather weak. I examined the urethra with a bougie, and found that both the strictures had returned. The bougie was passed every other day, and the potassæ subcarbonas was applied to the strictures twice a week, and in a few days over a fortnight, both the strictures were again removed. I did not see him till Dec. 24th, when he sent for me in the morning, and told me he was attacked with strangury in the night, and still suffered great distress. There was high fever, furred tongue, the urine was scanty, extremely high coloured, and loaded with mucus, and there was an incessant desire to void it. The urine and mucus were particularly offensive to the smell, precisely the same, as to odour, as when the catarrhus vesicæ exists. He had pain in the loins, left groin, and at the pubes; there

was numbness of the thighs, slight sickness, pulse full, hard, and rapid ; he thought the bowels tolerably open. I advised him to use fomentations and go into the warm bath as soon as it could be made ready, and drink plenty of barley water ; and I wrote for him to have the same kind of medicines as in the former attack of stranguery, with the addition of pulvis opii gr. i. in the pill, as the bowels were not costive.

Dec. 2d. At nine o'clock in the morning, I found him almost free from pain ; he had just voided a quantity of black fæces which relieved him greatly, and he was in a profuse perspiration.

Dec. 26th. He has passed a comfortable night and feels perfectly free from pain, but greatly debilitated. The urine healthy and without mucus, he has had three stools, and the two last are of natural appearance.

Fifth day. A bougie was passed and the strictures were found to have returned ; the same treatment as before removed

them again in three weeks, when, without any evident cause, he was a third time attacked with strangury as before, only in a less violent manner and unattended with vomiting. It was thought this might have been brought on by drinking a few glasses of wine, but as there was such a sufficient cause in the state of the bowels in the two former illnesses, I deemed it right to move them and for him to go into the warm bath, &c. &c.

R Hydrar. Submur. gr. vj. Pulv. Antim. gr. iij. m. f. pil.
statim sumenda.

R Potassæ Nitræ ʒiiss. Vini Antim. ʒss. Lac. Amygdal.
ʒviij. m. f. m. sumat coch. iij. larg. quartis horis
et bibat Decoctum Hordei ad libitum.

The warm bath produced much relief for about four hours. The bowels have been acted upon three times this morning, the fæces are healthy, most of the symptoms are abated, but considerable irritation still remains ; let him repeat the warm bath.

Adde misturæ tinct. opii gtt. xxx. et vin. antim. ʒss.
sign. ut antea sumend.

Evening. He is much better, and has had a sound sleep since noon.

Dec. 27th. Fancies himself quite well except feeling great debility.

Sumat infus. gentianæ ʒiiss cum magnes. sulph. ʒss.
bis die.

Dec. 28. A bougie was introduced, and the stricture at the bulb had returned. It gave him intolerable pain to pass the instrument through it, but there was no longer any stricture at four inches. I strongly urged the necessity of his leaving business and going into the country a short time.

Dec. 31. We thought the stricture rather better, but his bowels were getting irregular again.

Sumat pil. hydrarg. gr. v. secunda quaque nocte et decoct. sarsaparillæ lb. quotidie.

This plan was continued and his health certainly improved, the stricture was also getting better considerably, when he went out of town. I requested him to persevere with the diet-drink and pills, and taught him to use a bougie upon himself. At the

end of six weeks he returned home perfectly well, and has never since been troubled with stricture. I am much mistaken, if these strictures were not originally induced by disorder of the bowels, and constitutional irritability through want of air and exercise ; at any rate, the necessity for attending to these circumstances in order to accomplish the permanent removal of the local disease, could not be more strongly proved.

SECTION XII.

ON THE CURE OF STRICTURES BY UNGUENTUM HY-
DRARGYRI FORTIUS.

I COME now to speak of another useful auxiliary to the bougie, which, so far as I can learn, has never before been employed in the cure of stricture: a remedy from which I have derived very considerable assistance, and which, on that account, I am disposed to recommend strongly: I mean the unguentum hydrargyri fortius. Six cases have been perfectly cured by it in the course of my practice. To three of these other remedies had been applied without any good result, but immediate improvement followed the use of the unguentum hydrargyri fortius. In a seventh instance, in which all other means seemed to disagree, it proved beneficial, and the case ultimately did well; but I am inclined to think, that the re-establishment of the pa-

tient's general health had most to do in the cure. Two more I lost sight of when they were very nearly well ; and in a tenth case, now under treatment, and to which the unguentum hydrargyri fortius continues to be applied, the improvement is as great as the time and circumstances will admit. Hitherto I have not used the unguentum hydrargyri fortius to a single case of stricture in the urethra where it has not proved beneficial ; but this is not sufficient to justify an inference that it never will prove worse than useless.

I have employed it very successfully in the cure of several obstinate cases of gleet from the urethra, but in an individual instance, in which I have since ascertained the discharge to proceed from disease of the prostate, the unguentum hydrargyri fortius irritated a good deal ; the whole canal inflamed and secreted pus copiously ; the external orifice pouted, and assumed the cherry-like appearance often noticed in gonorrhœa ; and to the further discomfiture of the patient, there was ardor urinæ. It

must, however, be remarked, that this gentleman has a very peculiar kind of constitution; and if to this circumstance we attribute the unpleasant effects which followed the use of the *unguentum hydrargyri fortius*, we cannot suppose they will occur frequently. And as it is possible for stricture to exist with a similar constitution, then, of course, we ought not to expect the *unguentum hydrargyri fortius* to prove useful in such cases.

The manner of applying the *unguentum hydrargyri fortius* is, to smear it upon the bougie, and pass it through the stricture, where it may be allowed to remain for a longer or shorter period, according as it is wished to exert more or less influence. To be brief, I have always been regulated in the use of it by exactly the same principles that have already been laid down in Section VII. for the management of the simple bougie. Sometimes it produces no sensation different from that which the bougie alone would excite: at other times patients have told me it felt warm, and sometimes very warm, but never amounting to a

painful sensation.* In two cases of stricture unattended with discharge, it has caused a little purulent secretion which ceased on the second or third day. This effect no longer ensued when the urethra was more familiarized to the ointment, and the strictures gave way whilst this discharge continued. In every other case, no effect was apparent but the diminution of the symptoms of disease. Besides using the unguentum hydrargyri fortius for the relief of gleet, I have, for years past, been in the habit of employing it for the removal of phymosis, or contraction of the prepuce, for which it has proved an almost infallible remedy. Contractions of the fore-skin are undoubtedly of the same nature as some contractions or strictures of the urethra. It was from reflection upon this, when all other remedies had had a fair trial and failed, that I was first induced to try the unguentum hydrargyri fortius as a remedy

* Since writing the above, I have met with three patients in whom the unguentum hydrargyri fortius, applied in the urethra, has occasioned a burning pain for some minutes after the bougie was withdrawn.

for strictures. In the first case related at the end of this section, it will be seen that all the other remedies produced irritation and hæmorrhage, and little or no good to compensate for these inconveniences; but no sooner did I have recourse to the unguentum hydrargyri fortius than an amendment took place; the discharge, irritation, and induration lessened, and at no one time did hæmorrhage ensue. These effects were regularly progressive until the cure was complete, and when I left off treating this patient no unpleasant symptom remained, the undurated part having become soft, flaccid, and dilatable, as any other portion of the urethra.

The unguentum hydrargyri fortius is known to excite the absorbents of any part to which it is applied; hence it is very much depended upon to dissipate indolent hard swellings, &c. It is also allowed to have great influence in changing the actions of parts, as it is particularly evinced in some hepatic diseases. When the morbid actions can be changed for those which are healthy, and the absorbents can

be stimulated to remove unnatural depositions, or thickening, every stricture will be curable that does not arise solely from imperfection. Thus, if we merely reason upon the generally acknowledged properties of the unguentum hydrargyri fortius, independent of those successful cases I have met with already, it promises to become one of the most valuable of our remedies for strictures of the urethra. It usually operates so very mildly that it seems peculiarly well calculated for very irritable strictures, when the argentum nitratum, or either of the alkalis might endanger the bringing on retention of urine; and in cases of stricture impenetrable to a bougie, although open for the discharge of the urine, it certainly merits the preference before all others. Lastly, in all cases that required more than the mechanical pressure or dilation of a bougie, I have been in the habit of employing the unguentum hydrargyri fortius, and as yet have had no reason to repent my choice; therefore I would strongly recommend for it to be tried in every instance prior to either of the afore-mentioned remedies, and for it to be laid aside only when

it proves inefficacious in any particular case.

If the stricture happens to be impervious to a bougie, the unguentum hydrargyri fortius may be conveyed to it in the end of a flexible gum cannula, and pushed from thence by a bougie, as described when speaking of the unguentum argenti nitrati. And in cases of another description, where the bougie can be passed through the stricture, the same kind of contrivance may be employed, if any circumstances make it desirable to limit the operation of the ointment to the stricture, but in general there appears to be no particular objection to its acting upon other parts of the urethra.

FIRST CASE.

A gentleman, twenty-five years of age, applied to me on account of a disease in his urethra, and gave me the following history of his complaint. About four years ago he had contracted a gonorrhœa, and suffered from it most severely for ten weeks

without the least mitigation. For thirty nights successively he had no sleep, the chordee and dysury were so violent, and blood always followed his urine. He had had two or three gonorrhœas since that time, and has seldom been without a purulent discharge from the urethra, which comes on and goes off without any assignable cause. He cannot account for the present attack, which has continued a few weeks. The discharge is purulent, and seems to flow constantly; he is troubled with chordee in the night, and his urine always dribbles away so as to wet his clothes long after he has made water. Vast quantities of different medicines have been taken by him, and a great variety of injections used, without any advantage. I suspected a stricture with great irritability of the urethra, and wished to pass a bougie, to which he assented. A bougie under the middle size was introduced very gently, it discovered excessive irritability of the urethra, which seemed to increase as it approached the neck of the bladder; there was a spasmodic stricture about the bulb of the urethra, and a stricture near the ex-

ternal orifice, in the course of which last considerable hardness could be felt externally for about an inch and a half in extent. This was the first time he had ever had a bougie passed, and upon its being withdrawn he nearly fainted; blood oozed from the urethra for two or three hours afterwards. I recommended him to bathe the perinæum with tepid water, and to take the following medicines:

Pulv. hydrargyri cum creta gr. v. omni nocte sumend.

R Natr. Exsiccata. ʒss.

Natr. sulphatis, ʒss.

Tinct. cardam. com. ʒss.

Infus. gentian. com. ʒviiss m. f. m. sumat coch. iij.
larg. bis die.

Friday. He thought himself a little more comfortable, having less chordee. The bougie now entered more easily, gave less pain, and much less blood followed than had done before, but he was again near fainting.

Monday, Oct. 14. Better in a slight degree; the bougie passed with greater faci-

lity, and was followed by only a single drop of blood. No faintness.

Friday, Oct. 18. Slightly better in the urethra, but troubled with griping from the pills; the bougie gave much less pain than formerly, and was not followed by blood, and there was no faintness. It should have been observed, the patient's tongue had all along been clean, but for a very long time he had pimply eruptions upon his face, and these still remained.

Sumat hydrargyri cum creta gr. v. secunda quaque nocte.

R Olei ricini ℥iv.

Vitel. ovi. ℥iv.

Syrupi simplicis ℥ss.

Infus. gentian. com. ℥viss m. f. m. sumat coch. iij.
larg. bis die.

Monday, Oct. 21. Much better. No chordee, discharge lessened, urethra less irritable, consequently the bougie created less pain, and was not succeeded by blood; eruptions on the face gone.

Friday, Oct. 25. Bougie passed with greater ease to the patient, and thereby

proved the urethra to be less irritable; in all other respects he appeared much the same.

Monday, Oct. 28. Gradually improving in all respects.

Monday, Nov. 4. Diminution of discharge, otherwise much the same; a larger bougie was tried and passed only one inch and a half, at which part the anterior stricture gave so much pain that the patient begged of me to desist.

Thursday, Nov. 7. Much the same. The bougie which on Monday last only entered about an inch and a half, was now introduced the whole length of the urethra, but it created severe pain at the anterior stricture, and was followed by a few drops of blood on its being withdrawn. Left off the mixture.

Sunday, Nov. 10. The bougie which was used three days ago, now passed with greater facility and less pain.

Thursday, Nov. 14. Bougie was introduced with less difficulty and pain than at any time heretofore. I smeared one over with axungia mixed with double its quantity of kali, pp. and pushed it about three inches down the urethra, it caused a good deal of smarting, and a discharge of curdly matter.

Nov. 17. The alkaline compound caused an unpleasant irritation without being productive of proportionate good effects, I therefore passed a simple bougie at this time.

Tuesday, Nov. 19. There is certainly a slight diminution of the discharge, and the bougie passed with greater freedom. Applied unguentum argenti nitrati to the anterior stricture by means of a slit in the bougie; it excited no perceptible pain, or smarting, but evidently operated to produce a discharge of curdly matter.

Thursday, Nov. 21. Discharge thickened, and rather less in quantity; the bougie

was not grasped so much as formerly by the stricture. I repeated the unguentum argenti nitrati, and prescribed for him balsam. copaibæ ʒss. bis quotidie.

Nov. 24. Better in all respects, but this cannot be imputed to the mixture, he having taken only one dose. Repeated the application of unguentum argenti nitrati.

Tuesday, Nov. 26. Continues to mend slowly. Renewed the application of the unguentum argenti nitrati gr. iv. ad ʒss. which was stronger than heretofore, but even this produced so little sensible effect that I determined to double the strength next time.

Thursday, Nov. 28. A considerable diminution of the discharge, and the bougie passed with greater facility, and less irritation. I then applied unguentum argenti nitrati gr. vj. ad ʒss. but still there was no sensible effect at the time ; it produced not even the slightest smarting, or sense of heat in the part. He has taken all the mixture last prescribed, and will discontinue it for

the present, to see how far the amendment proceeds from the local treatment.

Dec. 1. A very copious discharge followed the application of the ointment on Thursday last; and there has been a slight appearance of blood at the extremity of the penis frequently since that time; this determined me to use only the simple bougie this morning, and it passed the stricture more readily than heretofore.

Friday, Dec. 6. Much the same. Applied the unguentum argenti nitrati, and no bleeding ensued.

Tuesday, Dec. 10. Better in some respects. Less discharge, the unguentum argenti nitrati was applied both on the 8th, and to-day.

Tuesday, Dec. 31. We made so little progress under the aforementioned treatment, that I thought some advantage might accrue from changing it for the alkali, which was used at intervals of three and four days for nearly three weeks; the first effect was

to increase the discharge greatly, and to irritate the urethra so much, that the orifice bulged for about twelve hours afterwards, and then abated. I believe the stricture to be a little more dilated, but it rarely happens that the bougie is used in the gentlest manner without a drop or two of blood coming away.

Thursday, Jan. 2, 1817. The alkali and bougie were employed again in a very delicate manner, but not without being followed by a drop or two of blood.

Jan. 5. My patient tells me he has been troubled with nocturnal emissions these three or four last nights, to which he has never been accustomed ; there seems upon careful inquiry, no discoverable cause for them. I passed the larger bougie without any alkali through the stricture ; it certainly gave less pain than formerly. There has been less discharge, but the hardness felt along the course of the urethra for about an inch and a half in the situation of the anterior stricture, is not in the least degree abated.

Thursday, Jan. 16. No alkaline preparation has been used since the 2d instant; the irritability of the urethra has in a great measure subsided, but the hardness of the strictured part does not appear at all diminished, I therefore, this morning, used unguentum hydrargyri fortius upon the bougie.

Jan. 19. The ointment has not irritated in the slightest degree, and I am inclined to say, that if any change has taken place, there is less hardness in the strictured part. As the bougie which conveyed the unguentum hydrargyri fortius, seemed to move with greater freedom in the stricture, I determined to use a larger one which had very rarely been introduced before without drawing a little blood; it had this effect this morning, therefore I apprehend we must attempt the cure more gradually, and run no hazard of irritating by too much dilation.

Tuesday, Jan. 28. The ointment has been employed every second day, and seemingly with great advantage. The

stricture is more dilatable; there is less hardness in the strictured part, and the discharge is so far diminished, that not more than two or three drops come away in the twenty-four hours. It has occurred to me, that as the stricture is so near the orifice, whether its absorption might not be promoted by smearing the glans penis all over, night and morning, with unguentum hydrargyri fortius: he will adopt this plan.

Wednesday, Feb. 5. Since the last report, I have seen the patient every second day, and have been much pleased to observe the great amendment. The quantity of discharge does not amount to more than one or two drops in the course of twenty-four hours. The induration at the stricture is much diminished, and the larger bougie usually is admitted with more ease at each succeeding operation, therefore the contracted part must be in a more dilatable state.

Monday, Feb. 17. The induration and contraction have both given way consider-

ably within these ten days, but the patient mentioned this morning, that he thought the hydrargyrus had begun to affect his mouth; I therefore directed him to use no more within the prepuce for the present, neither was any applied within the urethra this morning.

March 13. The patient was deceived with respect to the hydrargyrus affecting his gums, therefore, as soon as this circumstance was clearly ascertained, I resumed the application of the unguentum hydrargyri upon the bougie. Before the end of February the discharge had entirely ceased, nor has there been any return; however, I have thought it prudent to continue the use of the bougie for a time, although the stricture seems to be entirely removed.

April 8. There having been no symptoms of disease, nor any appearance of a disposition to stricture, for these six weeks past, I now informed the patient he might consider himself cured, and that there was no necessity to consult me again for the same complaint; but if it would afford

him any satisfaction to know certainly that the disease was not returning, he might call upon me about once a month to have a bougie introduced.

The above case is particularly interesting upon several accounts: the stricture was remarkably obstinate; it resisted all other remedies, but readily gave way to the application of the unguentum hydrargyri fortius. I think too, there can be no doubt that it was originally brought on by gonorrhœa, or the very irritating injections that were employed for the cure of that disease.

SECOND CASE.

Mr. ———, a gentleman, aged 28, who enjoyed an excellent state of general health, but had suffered often from gonorrhœa, consulted me for a discharge from his urethra, and gave me the following history of his case. He had had several gonorrhœas, but recovered tolerably well from all of them, except the last, which he con-

tracted about two years ago, since which he has never been free from a discharge; sometimes it is better than at others, but always copious, and sometimes excessively so. The discharge is thick yellow pus, and when dried on linen, shakes off in the form of powder. He makes water very freely, but upon a more minute inquiry, he says he has noticed, that it sometimes flows in a forked, and always in a contracted stream, and now and then he feels slight pain at a short distance within the urethra. The orifice of the urethra was slightly inflamed. I made no doubt there existed a stricture, but deferred passing a bougie till the discharge should be somewhat moderated by such means as would produce this effect by lessening the irritation in the urethra. His bowels were generally costive. He was directed to take *olei ricini* 3j. bis quotidie et *pil. hydrargyri* gr. v. secunda quaque nocte, and to bathe the perinæum with tepid water night and morning. These means, in about three weeks time, lessened the irritation in the urethra so much, that no inflammation appeared at the orifice, and the discharge considerably

diminished. I then introduced a small bougie and detected a stricture at the bulb. After a little steady pressure the bougie moved on into the bladder. The urethra was sore throughout its whole length, and of course much more acutely sensible where the stricture was situated.

A week afterwards, the patient gave me the following account: For the remainder of that day on which the bougie was used, he experienced ardor urinæ, which also continued part of the next day. The orifice of the urethra inflamed, and the discharge increased exceedingly; but at the end of three days these symptoms began to abate, and he had since been more comfortable, and voided his urine in a fuller stream. The bougie was passed with more ease the second time, as the stricture appeared less contracted. Symptoms, such as occurred after the first introduction of the bougie, came on again only in a slighter degree. Waiting four days, the bougie was employed a third time, and it entered so much more easily than before that I ventured to introduce a larger one, which,

though only a middle-sized instrument, completely filled the urethra, because that canal was unusually small. The stricture made considerable opposition to the larger bougie, but ultimately allowed it to pass on to the bladder. The larger instrument, as was to be expected, excited more irritation than the smaller one, however the symptoms went off again in a few days.

At the end of a week, as I did not think the discharge had sensibly grown less since the use of the bougie, I determined to use the bougie smeared with unguentum hydrargyri fortius. Upon introducing the bougie, the stricture seemed to be in about the same state in which it was a week ago. I did not see him again for eight days, and then he told me he had been more relieved by the last introduction of the bougie than by every thing else that had been done. No irritation succeeded, and the discharge very considerably lessened. A week afterwards the operation was repeated with an equal degree of benefit. In four days more he called upon me, and said the discharge had nearly ceased, he only perceived a drop

now and then. On introducing the largest bougie which his urethra would admit, no stricture was discoverable. After an interval of six days he called again, and then thought himself quite well; he had neither irritation nor discharge; I introduced the bougie smeared with unguentum hydrargyri fortius, and it passed without difficulty, and seemed to find no stricture. From this time the bougie smeared with unguentum hydrargyri fortius was introduced every second morning for a fortnight, and once or twice at longer intervals afterwards; and then, as there was no return of the discharge, or apparent disposition to reproduce the stricture, the treatment was entirely suspended, and the patient has since continued quite well.

The above is a very interesting case, inasmuch as it decidedly proves the great superiority which some medicinal applications possess over the simple bougie in the cure of stricture. The bougie increased all the symptoms each time that it was employed alone, but when the unguentum hydrargyri fortius was smeared upon it, no

such irritation ensued ; a rapid amendment took place, and was regularly progressive till the cure was complete.

THIRD CASE.

A gentleman between twenty and thirty years of age, had been troubled for several months with purulent discharge from the urethra, and he made water in a very small stream, which was often twisted or forked ; he had also pain in his back and hip ; of course these symptoms excited a suspicion of stricture. I attempted to pass a middle-sized bougie, but could not get it beyond six inches. I then tried some other very small bougies, but none would pass further than six inches. He was therefore directed to live temperately and take pil. hydrargyri gr. v. secunda quaque nocte, and bathe the perinæum in warm water frequently.

Jan. 19. He makes water rather better, and thinks he has less discharge. A small bougie passed through the stricture and

went into the bladder. Whilst the instrument was in the stricture, he felt a burning pain, and this sense of heat continued some minutes after the bougie was withdrawn. He was advised to continue bathing the perinæum.

Jan. 23. Better every way; discharge rather diminished; makes water more freely, and has no pains in the loins; bougie passed with greater facility smeared with unguentum hydrargyri fortius.

Jan. 26. Continues to mend, makes water better; has no pain in the back, and very little discharge from the urethra. The unguentum hydrargyri fortius was used again, and the size of the bougie was increased. The bougie being passed beyond the stricture, was allowed to remain in the urethra until he experienced a sensation of heat, and then it was removed.

Jan. 31. No discharge, no pain in the hip or loins, and the patient makes water in a fuller stream. A bougie smeared with unguentum hydrargyri fortius was again

passed, and it seemed to enter the stricture with much greater facility.

Feb. 3. Better in all respects ; the unguentum hydrargyri fortius was used, and a larger bougie, which passed tolerably well.

Feb. 7. Still better ; urine flows in a fuller stream, and the bougie used four days ago now entered the stricture more easily.

Feb. 10. Not so well ; he had dined from home the day after seeing me, and had drunk a great deal too much wine. The bougie smeared with unguentum hydrargyri fortius passed with more difficulty.

Feb. 13. Better ; the stream of urine is larger, and the bougie went through the stricture more readily than on the tenth inst. From this time the bougie was introduced about every three or four days, and most frequently the unguentum hydrargyri fortius was employed. The size of the bougie was increased gradually, till

the urethra was dilated at the strictured part to its natural dimensions. Two or three slight interruptions occurred, owing to irregularity and neglect of himself, otherwise, the cure proceeded very well, and was complete in nine or ten weeks from his first applying to me. The bougie and ointment were applied in this case only twenty-five times.

FOURTH CASE.

A gentleman was troubled with a discharge from his urethra, the quantity of which varied a good deal at times; it had existed about two years or more, but he fancied that he voided his urine as well as ever he had done in all his life. Upon examination, a bougie was stopped by a stricture in the bulbous part of the urethra. I afterwards endeavoured to pass one or two small bougies, but could not introduce either of them through the stricture without employing more force than was justifiable. These attempts produced sickness almost amounting to faintness, and a little

bleeding from the urethra to the extent of four or five drops. He was desired to bathe the perinæum often with warm water and take

Sumat pil. hydrarg. gr. v. omne vel secunda quaque nocte.

June 23. This being the second day after using the bougie, he called, and then thought himself better; he said, he made water more easily, and in a fuller stream than he had done for a very long time previously. A small bougie passed through the stricture and went into the bladder.

June 26. Considers himself very much better; the stricture seemed to admit the bougie much more readily, and I therefore tried one of a size larger smeared over with *unguentum hydrargyri fortius*, which passed tolerably well, the ointment exciting a degree of heat in the urethra.

June 29. Reports himself greatly improved, the purulent discharge having diminished very considerably. The bougie was again increased in size and smeared with *unguentum hydrargyri fortius*.

July 2. The discharge has nearly disappeared; there is none discoverable excepting early in the morning. Unguentum hydrargyri fortius was used again upon the bougie.

July 5. Continues to go on well; bougie passes very readily; unguentum hydrargyri fortius was again employed.

July 7. Finds no discharge at the orifice of the urethra at any time; however, I still used the unguentum hydrargyri fortius. The bougie was increased in size as the circumstances of the case permitted, and the unguentum hydrargyri fortius was always smeared upon its surface; it was introduced about every third day, and before the end of July the patient had no remaining symptom of stricture.

FIFTH CASE.

A gentleman mentioned to me that he had pain in his back and some uncomfortable symptoms in his urinary organs, yet assured me that he made water as well as

ever he had done in any part of his life. I could not however be satisfied there was no disease in the urethra without examining that canal. A middle-sized bougie caused a prickling pain all along until it had entered six inches, it then was stopped by a stricture and could be urged no further. Extreme faintness coming on prevented my attempting to introduce a smaller instrument, at this time, I therefore advised him to bathe the perinæum in warm water and keep his bowels regular with castor oil.

Jan. 22. Much the same. A bougie half the size of that used yesterday, could not be made to pass the stricture, but an extremely small one went all the way into the bladder; it excited a good deal of uneasiness and faintness, and when I withdrew the instrument it was gripped very firmly by the stricture.

Jan. 27. He tells me, that since having the bougie passed he has felt some degree of soreness at the stricture, but he has less pain in the back, makes water in a fuller

stream ; and thinks himself better in all respects. The small bougie passed the stricture with more facility, and was attended with no faintness, and with much less pain than before.

Jan. 31. Continues to mend, and now perceives a very great difference in the stream of his urine. The bougie before used, now passed so readily, that I scarcely knew when it touched the stricture.

Feb. 1. Much the same as yesterday, but if there be any difference, he fancies himself better. A bougie twice the diameter of that hitherto employed, went through the stricture but excited acute pain ; his bowels are too much confined.

Sumat olei ricini ʒss. ter quotidie.

Feb. 3. Certainly better ; the bougie was increased in size again, and of course there was rather more difficulty and pain in passing the stricture.

Sumat pil. hydrargyri gr. v. alterna quaque nocte.

Feb. 6. Informed me that the pain in

his back had very considerably diminished, and that he made water more freely ; but as the urine passed the stricture, it caused a smarting, which however went off again almost immediately ; there was also some degree of soreness in the urethra at other times, which led me to think we had increased the size of the bougie too rapidly, and that the irritation produced from the last introduction of the bougie, had not subsided sufficiently to admit of its being used again at present.

Feb. 8. He finds himself more comfortable. The bougie detected a degree of soreness in the stricture, but went through more readily than at either of the two last operations.

Feb. 17. Unavoidable circumstances have prevented his seeing me for these nine days, and he has been living very freely. On passing the bougie, the stricture appeared to be nearly in the state last mentioned, I therefore repassed it smeared with unguentum hydrargyri fortius. I wished the instrument to remain in

the urethra for a few minutes, but a degree of faintness without pain came on, and compelled me to withdraw it.

Feb. 19. Says he is very much better; the bougie with the unguentum hydrargyri fortius was used again; there is soreness at the stricture, but less opposition to the introduction of the instrument.

Feb. 20. No pain in the loins, and bougie passed with greater facility.

Feb. 24. Better in all respects; the bougie smeared over with unguentum hydrargyri fortius passed the stricture with so much facility, that I introduced another two sizes larger, and met with but very little more opposition.

Feb. 26. Says he is so comfortable he has no complaint to make; however, the larger bougie did not enter the stricture with so much ease as before, and there was rather more soreness; probably it would have been better if the bougie had been increased only one size on the 24th inst.

or if I had allowed more time to elapse before repeating it.

Feb. 28. The bougie covered with unguentum hydrargyri fortius passed with greater facility, and there was less soreness at the stricture.

March 1. My patient was much the same. Unguentum hydrargyri fortius was used again.

March 4. The bougie passed so much more freely than before, that I was induced to try a full-sized bougie smeared with unguentum hydrargyri fortius; it passed with tolerable facility and very little pain. The bougie was not of the largest description, but full-sized in proportion to the urethra, which was less than usual.

March 7. The bougie passed as though there had been no stricture.

March 11 & 15. The stricture afforded no opposition to the bougie, neither was there any soreness at the part. He thought

himself well in every respect, but I deemed it prudent to continue the use of the bougie for a short time longer.

SIXTH CASE.

A gentleman about twenty-five years of age, of a spare habit, and who led a very sedentary life, consulted me on account of what he supposed to be stricture in the urethra. He had never had any venereal complaint, but for as long as he can remember, he thinks he has had a peculiar irritability of the urethra. The symptoms for which he asked advice were, occasional pains shooting in the perinæum, and his urine flowed in a forked or twisted stream so much contracted that he was long in voiding it. He had occasional frequency of making water, and always more or less dribbling, so as to wet his linen when he supposed himself to have done. And besides these symptoms, he seldom was without more or less purulent discharge from the urethra, and sometimes this was very profuse. His tongue was

foul, and he was very much troubled with indigestion. I told him it was very probable that a stricture existed in the urethra, but I would recommend him not to have a bougie used till his stomach was got into a better state; and with a view to this effect, I gave him some general directions as to diet, and wrote for him as follows:

Capiat pil. hydrarg. gr. iv. omni vel secunda quaque nocte.

R Tinct. gentian. com. ℥j.

Tinct. cardam. com. ʒvj.

Magnesiae sulphatis, ʒiv.

Aquæ puræ, ℥vj m. f. m.

Sumat coch. iij larg. primo mane et hora ante prandium.

This plan was persisted in for about a month, when he found his general health and spirits much improved; he digested tolerably well, and the purulent discharge from the urethra had entirely ceased. A bougie rather under the middle size was then introduced, but I could not pass it further than three inches because it excited such extraordinary sensations; they were indescribable, but he could keep neither his arms nor legs still, indeed, he perfectly

danced, and he became so faint as compelled me to withdraw the bougie before it had touched any stricture. He recovered but slowly from the faintness, and his stomach was so disordered by the operation, that he could eat very little dinner the same day, and threw it up again soon afterwards. There was no particular irritation felt in the urethra after the bougie was withdrawn, but the stomach did not recover itself for eight or ten days. At the expiration of that time I attempted to introduce a bougie again, but met with no better success, only the sensations excited thereby were less extreme. After the lapse of three days the attempt was renewed, when the bougie entered four inches, but I was obliged to remove it quickly for the sensations produced were such as attended the second operation. Three more days having passed, I made a fourth attempt, and succeeded in reaching a stricture at six inches before withdrawing the bougie. The sensations attending the operation in this instance were much the same as before, only there was less faintness, and he had more irritation in the urethra after the bougie was

taken away. After another interval of three days, the bougie was passed quite into the bladder. The stricture did not oppose great resistance, but rather more pain was felt, and sensations similar to those already mentioned were excited in a considerable degree while the point of the instrument moved beyond the stricture towards the bladder. On the bougie's being taken out the patient nearly fainted. During the following day, there was slight ardor urinæ; and for two or three days his stomach almost rejected his food, and he was troubled with indigestion. The bougie was not employed again for a week, in which time the patient had more than recovered himself; he felt better in several respects, and made water in a much fuller stream; the bougie was then passed with greater facility, and less unpleasant sensations attended the operation. From this period the size of the bougie was increased, as the stricture gave way, till one of the full size of the urethra was used. A bougie smeared over with unguentum hydrargyri fortius was now introduced every third or fourth day; the unpleasant sensa-

tions excited by it grew less and less as the stricture yielded; and in about eleven weeks from beginning the mechanical treatment, I considered the stricture perfectly removed.

The cure was not quite so regularly progressive as the above description would lead any one to suppose, for, as it has been mentioned how the introduction of the bougie sometimes disordered the stomach, so likewise, when any other circumstance did the same, we always found an increase of irritation in the urethra, and at such times the bougie did not pass so easily as it had done before. It became obvious, from the mutual sympathy which existed between these two parts, that if the disorder in either of them could by any means be perfectly removed, it would materially facilitate the cure of the other. This induced me to apply the unguentum hydrargyri fortius to the stricture, thinking it might render the cure both more expeditious and more permanent. Its use proved satisfactory in the highest degree; the bougie, so covered, was introduced only eighteen times, and

the patient has remained perfectly well these three years.

Attending to the state of the digestive organs, previous to passing a bougie, contributed very much to relieve the irritation in the urethra ; this is shewn by its causing the purulent discharge to cease entirely. What might have been the effect of using a bougie before the irritation in the urethra had been lessened by other means, it is difficult to say, but there can be no doubt that it would have occasioned much greater inconvenience to the patient, and probably have rendered the case much more obstinate. Before he entirely left off seeing me, I gave him particular directions to enable him to keep his stomach and bowels right, attention to which, it is very likely, has conduced as much as any thing to make the cure permanent ; for I believe there are grounds for supposing that this stricture was originally brought on by a disordered state of the digestive organs,

SECTION XIII.

CONCLUDING REMARKS ON THE TREATMENT OF STRICTURES.

WHEN treating of the various remedies which have been found useful in the cure of strictures, I endeavoured to point out the particular kind of cases to which each remedy seemed best adapted, and then added, that our choice must often be determined by careful experiment, and close observation.

There are, however, some anomalous cases of stricture, in which something more than mechanical dilation is requisite, and yet it seems to matter very little what else we employ, for they appear to do equally well with any one of those remedies which have been recommended in this essay ; and I believe there are also some cases that may be most successfully treated by employing a variety of applications in rapid succession. The necessity for changing our remedies frequently, is made strikingly

evident in local diseases, by what occurs in some cases of ulcers upon the legs ; and every practitioner of even moderate experience, must have had opportunities of knowing, that medicines lose their effect upon the stomach when taken for a long continuance. This arises out of a principle of accommodation, which pervades the body, and enables its different parts to perform their functions properly under a great variety of circumstances,—thus it operates to preserve health. But when, from the duration of disease, the parts are become habituated to the morbid actions, then the principle of accommodation, rendering our remedies of less avail, allows the morbid actions to be continued under a variety of circumstances,—thus it operates to keep up disease.

We cannot doubt that the urethra possesses this principle in common with other parts of the system, but it is not likely to be so evident in our treatment of stricture, as in those other instances that have been adduced, because in the latter examples the dressings are kept constantly on the

ulcers, and the medicines that are taken into the stomach are repeated several times in twenty-four hours, whereas the applications to strictures are used comparatively but seldom, often at intervals of several days, or a week. The case that suggested to me the foregoing ideas, was that of an obstinate stricture, attended with gleet, which got well after a frequent change of remedies had been employed. It ought, however, to be stated, that the treatment of this case was not conducted so methodically as to satisfy me completely whether the cure was effected by changing the applications or by persevering in the use of them. My opinion, therefore, that some cases of stricture will be most benefited by a frequent change of remedies, is grounded, it must be confessed, more upon general reasoning than actual experience, but I have been induced thus to mention what has occurred to me on the subject, in hopes that it may prove useful by exciting the attention of other practitioners.

Some cases of stricture are so obstinate that they appear to bid defiance to the

usual methods of cure. There is no great difficulty in dilating them to the full size of the urethra, but the discharge from them does not cease, and they themselves return shortly after the bougie is laid aside. In a case of this description which came under my notice, there was a stricture at four inches, and another at six inches and a half, and there was also phymosis ; I therefore concluded that the numerous contractions arose from a strong natural predisposition, for I could discover no other cause for the disease.

In addition to the bougie, such cases, I think, might be advantageously treated by a seton or blister in the perinæum, opposite to the diseased part, to be kept constantly discharging for a long period ; but these are such unpleasant remedies, patients will not submit to them. I apprehend the blister, or seton, might be productive of benefit upon the same principle as when it is applied near to diseased vertebræ.

Should there be several strictures in the same urethra, it need make little or no

difference in the mode of cure. If there be great irritability, we have only to proceed with more caution, treating only one at a time, agreeably to the directions already communicated ; but if there be very little irritability, then if a bougie can be introduced the whole length of the urethra, we may attempt the cure of them all at once ; for in so doing, we shall not only gain time but as one stricture occasionally produces others by sympathy, we are then sure of treating the one of most consequence, if such a one exist. However, if we resolve upon employing the caustic, we may try the effects of it once or twice upon the nearest stricture before we venture to use it further down the urethra.

The use of the hip bath, or bathing the penis scrotum and perinæum in water, is extremely useful, and ought never to be omitted in the treatment of any case of stricture in the urethra. Some patients find most relief from cold water, and others from warm, but in general it may be said that tepid bathing proves most beneficial. Different temperatures will be necessary

for different cases, and that most suitable for any individual can easily be ascertained by a little attention to the patient's feelings ; whatever temperature is most soothing is always to be preferred. But we must not be guided wholly by the effect of the water during its use, for however comfortable cool or cold bathing may be at the time, yet if it excite reaction afterwards, it becomes objectionable; our judgment must be chiefly influenced by the degree of relief experienced in the intervals. From observation I am inclined to say, that when local cold bathing does good in strictured patients, they are otherwise tolerably healthy, and free from irritability, and that the temperature of the bath requires to be increased in proportion as the patients are irritable, aged, or of bad constitution.

Strictures are commonly represented as being very liable to relapse, which I think may be accounted for in two or three ways. Without the exciting cause of the disease has been detected and altogether removed, as before explained, we

must expect the disease will return. It is not sufficient merely to avoid the cause of stricture, during the cure of the local disease, it must be carefully shunned for a long time, if not for ever after the stricture has been removed. But in this observation I would wish to guard against being misunderstood. Allowing, for example, that the drinking of wine was the original cause of the stricture, and that it was necessary to forbid wine during the cure, it is not meant to say, that wine is never afterwards to be drunk by the patient; it is only an excessive quantity of wine that needs to be avoided, or more correctly, *that quantity or manner of taking it which is known to operate prejudicially*; for it may so happen ultimately, that wine in moderation, and at proper times, may become necessary to preserve the digestive organs healthy, which always is of the utmost consequence. The next cause of relapse, I imagine to be, leaving off the remedies too soon. We are apt to rest satisfied with having dilated the urethra at the strictured part to its full size, whereas we ought to continue the use of the bougie and other

remedies much longer, with a view to eradicate all disposition to disease ; for without this be accomplished, we cannot reasonably expect to do more than palliate the complaint. And here again, we have very little chance of curing the local disposition to stricture, unless we preserve the general health good, and this often depends upon such a variety of circumstances as render it extremely difficult to be effected. Patients sometimes cannot do as they would wish, and others will not deviate from those injurious habits to which they are accustomed.

A CASE.

G. H. about forty years of age, applied to me on account of a discharge from the urethra, attended with a little pain in making water, and frequent troublesome erections ; there was also pain and sense of weakness in the loins. He told me he had never had any venereal disease, and he attributed these symptoms to debility brought on by too frequent connexion.

He had taken a variety of strengthening medicines without any relief. The discharge had been stopped once, but then he had more pain in the loins ; a middle-sized bougie occasioned a prickling sensation for about three inches down the urethra, and then encountered a stricture ; this however yielded to the bougie, which then passed on into the bladder without further impediment, but the patient nearly fainted. The symptoms gave way very considerably to the regular use of the simple bougie, and there appeared every probability of his soon being perfectly well. Unexpectedly he left off seeing me for about a fortnight, and then all the symptoms had returned equal to what they were in the first instance. He took some trifling remedies which improved his general health, and then the stricture was treated with the *potassæ subcarbonas* ; it gave way to this remedy until a full-sized bougie passed the whole length of the urethra without exciting pain, or meeting with any opposition, but there still was a little pain felt when the urine ran over the strictured part. The pain and weakness in the loins were very

seldom experienced. Anticipating a speedy cure he was elated, and one evening was tempted to have connexion; this brought on retention of urine, which lasted several hours. Bathing with warm water brought away his urine, but a considerable degree of strangury remained, so that he found it necessary to bathe the perinæum every time he wanted to make water for twenty-four hours afterwards. From this period he again became very much worse; the pain and weakness in the loins, the stricture, and the discharge from the urethra, all returned in as great degree as ever. I now applied the unguentum argenti nitrati to the stricture, and contrary to what usually happens, it was attended with no pain, and yet I know it had considerable effect, for a vast quantity of curdly matter worked out of the urethra by the side of the bougie. The proportion of nitrate of silver employed, was four grains to half a drachm of spermaceti cerate in the first instance, and afterwards it was increased to double the strength, but still this excited no more sensation than the weaker ointment. Under the use of this remedy the symptoms of his

complaint gave way, and he was nearly well, when suddenly all went wrong again and he was as bad as ever.

I then applied the unguentum hydrargyri fortius to the stricture, and it had a very good effect; it created no pain, and rapidly lessened all the symptoms of disease till the stricture admitted a full-sized bougie without difficulty, and I began to think the case would shortly be well. Business prevented his seeing me for about three weeks, when he came to me very unwell as respects his general health. He had so much fever in the night as prevented his sleeping, and his digestion was bad; in short, there was considerable irritability and disorder of the whole system. He had also painful erections, and a frequent desire to void his urine. Upon introducing a bougie, the stricture appeared very much contracted again. I was therefore so fully satisfied that no permanent advantage would result from local treatment till the general or constitutional health was established, that I advised his going into the country for a time; he did so, and this

proved of the greatest service. The pain in his back, and the weakness of his loins soon left him, and the discharge nearly ceased in consequence of the improvement of his general health. The stricture afterwards gave way to the simple bougie. I must, however, remark, that the habits of this patient are such, that unless he alters them greatly, I fear he never will be free from stricture long together.

We may infer from this case, the absolute necessity which exists in some instances, for attending to the state of the general health before any permanent relief can be obtained ; and when this has been effectually done, that the simple bougie will sometimes complete the cure, because mechanical dilation is then all that is wanted. The unguentum argenti nitrati caused no pain in this patient, in all other respects it operated as usual, the stricture dilated, and the discharge materially lessened. The potassæ subcarbonas occasioned pain, but the stricture gave way to its application more rapidly than it did to that of the unguentum argenti nitrati. No pain was produced

by the unguentum hydrargyri fortius, the stricture yielded to it very rapidly, and the discharge nearly ceased, therefore of the three remedies this last certainly merited the preference.

SECTION XIV.

OBSERVATIONS ON FISTULA IN PERINÆO.

PATIENTS afflicted with stricture of the urethra and fistulous openings by which the urine escapes, are not only miserably uncomfortable themselves, but the offensive smell caused by the lodgment and decomposition of the urine in their clothes, very frequently renders them a nuisance to others.

These fistulous sinuses communicating with the urethra are formed in three different ways. Sometimes the irritation of the stricture causes a small abscess in the adjoining cellular membrane, and when this breaks into the urethra, the urine gets into the cavity which contained the pus and excites inflammation and suppuration more externally; this second abscess bursts in the perinæum, and before it heals, a process of ulceration makes a com-

munication between the two, and then the urine escapes by this opening. These cases often get well spontaneously without becoming fistulous, and sometimes even after they have become so, for as the communication between the urethra and the perinæum is short and direct, no urine lodges, therefore the wound granulates and heals as after the operation for lithotomy. When a single opening of this description which has been formed near to the stricture, begins to close, patients find more urine pass through the stricture, and when the wound is perfectly healed, they make water through the penis in a fuller stream for a considerable time afterwards, than they did previously to the formation of such opening; which proves the stricture to be in a less contracted state. I think this may be accounted for, by supposing that the wound in the perinæum relieved the stricture upon the principle of counter irritation, and if so, does not this demonstrate the great advantage that might accrue in some cases from a seton or blister, as suggested in Section XIII. page 220?

At other times, the urethra ulcerates behind the stricture, and urine is injected into the cellular membrane of the perinæum, and perhaps forwards into the scrotum, a large abscess forms in one or other of these parts, and discharges itself by one or more apertures produced by the ulceration or sloughing of the integuments, and urine continuing to escape by these openings causes them to become fistulous.

Sometimes, when the urine has got into the cellular membrane, instead of its giving rise to a large abscess, it insinuates itself in different directions till it arrives at the skin, it there separates the cuticle from the cutis, or else it excites inflammation, and suppuration following the pus elevates the cuticle. In which way soever the cuticle is separated, it is attended with such irritation or itching as provokes friction enough to break the cuticle, and then the urine runs off externally and renders these little apertures fistulous. I have seen in the same patient, small fistulous openings of this kind all over the scrotum and peri-

næum and round about the anus, and they sometimes make communications between the urethra and rectum. When a number of these fistulæ exist, it occasionally happens that some of them heal spontaneously and others form, and sometimes those which had healed break out again, but I have never known the whole of them get well without the interference of art, as sometimes happens in the former two kinds in which the fistulæ are fewer, wider, shorter, and more direct in their course to the external surface. Another reason why all the numerous fistulæ of a single case seldom or never get well spontaneously, is, that besides the stricture, there is very often disease of the prostate gland. When first the urine begins to escape by these fistulæ the principal part is still expelled by the natural passage, but as the urine runs off more and more by these fistulous sinuses there is less of it forced through the stricture, which allows the contraction to go on at that part with greater facility, and as the opposition to the passage of the urine increases at the stricture, more of it is driven through the fistulous sinuses, so that

these two causes mutually promote each other till the urethra is obliterated at the stricture, and then of course all the urine is voided by the unnatural openings.

These circumstances can occur only in constitutions possessed of sufficient strength to set up the adhesive stage of inflammation which confines the urine to certain channels, otherwise it would be effused throughout the cellular membrane and produce extensive inflammation and sloughing. I imagine too, that these cases are only met with in phlegmatic, indolent, habits, which are not endowed with acute feeling or much irritability; and to the best of my recollection I have seen them only in this sort of constitution. Strictures do not usually soon become complicated with numerous long and tortuous sinuses and although they are, when so complicated, a source of great misery, they often exist for many years without bringing the patient into danger. They ought not however to be considered free from danger, because nobody can tell how suddenly a large quantity of urine may be forced into the cellular membrane

and cause mortification, or how soon violent inflammation and swelling may occasion retention of urine, either of which would be attended with extreme peril to the life of the patient.

In the treatment of these cases, we have only to prevent the urine's getting into the fistulous sinuses in the cellular membrane, and then the parts will in general become healthy and obliterate the unnatural openings. Our attention must of course be first directed to make a free passage for the urine along the urethra, and secondly to insure the exit of the whole by the natural canal. With regard to the first object, if the stricture be pervious to a bougie, the dilatation of it must be conducted upon precisely the same principles as are laid down for the removal of strictures unconnected with urinary fistulæ; and as to the second, the only way to prevent urine escaping into the fistulous openings, is to make it pass through a catheter from the time that an instrument of this kind can be introduced along the urethra quite into the bladder. The catheter may

according to circumstances, either be kept constantly in the urethra, or be introduced only when there is a desire to evacuate the urine. If the patient live at a distance from the surgeon, and cannot be taught to use the catheter upon himself, or if it would be imprudent for him to attempt it, as it may be for various reasons, then the catheter had better be allowed to remain in the urethra. Or if the patient be in a precarious state of health, so as to lead us to apprehend very serious consequences if any urine should get into the cellular membrane, then also the catheter had better be left in; and just in proportion to the smallness of the instrument that we are obliged to use, will be our inducement to do this, for when small there is generally more difficulty in the introduction; but should the catheter excite so much irritation that it cannot be borne in the urethra, we have but one plan to pursue so long as that irritability continues.

Sometimes the catheter will supersede the necessity for dilating the stricture with a bougie, and thus answer a double pur-

pose; but if we intend to simplify the treatment in this manner, we must be careful to increase the size of the catheter as the stricture gives way, otherwise, if the urethra be not tolerably filled up by the instrument, urine may be forced between the urethra and the catheter and thence into the fistulæ. Another reason for attending to this circumstance, is, if we do not employ larger catheters as soon as they can be borne, the cure, so far as it depends upon mechanical dilatation, will be proportionably delayed.

The greater part of the urine may sometimes come through the stricture when a bougie cannot be made to enter it, in that case we must adopt the means before recommended until a bougie can be insinuated beyond the stricture, and afterwards dilate till a catheter can be passed into the bladder, then we must proceed as above directed. But if no urine flow through the stricture, and if after judicious attempts to get a bougie through it we find it impracticable, we may reasonably conclude

that the urethra is obliterated at the strictured part, and that nothing less than an operation will restore the passage.

This operation is simple and easy to perform when the stricture occurs anterior to the scrotum, but becomes more complicated and difficult in proportion as the stricture is situated nearer to the neck of the bladder. Except when the stricture is met with in some of the projecting part of the urethra, there are several circumstances that would induce me to have the patient secured as is done for the operation of lithotomy, therefore in describing the operation I shall suppose the patient to be in a similar position.

If the stricture be situated anterior to the scrotum, we have only to introduce a director down to the stricture and then feel for and cut upon the end of it on the underside of the penis; the incision is to be extended so as to divide the stricture and enter the urethra behind it, after which, the director being withdrawn, a

flexible catheter is to be introduced the whole length of the urethra and the wound left to heal over it.

When the stricture is covered by the scrotum, we must make an incision into the urethra below or behind the scrotum and then pass a silver cannula from the wound forwards along the urethra till it reaches the stricture. Another cannula is then to be passed from the external orifice of the urethra at the glans penis down to the stricture, thus the ends of the two cannulas will be opposed to one another with only the stricture intervening. In this situation they are to be steadily retained by the surgeon's taking hold of that part of the urethra with the thumb and finger of his left hand; with his right hand he is then to carry a long straight trocar down the upper cannula through the stricture into the lower one. The trocar is now to be withdrawn, and a flexible gum catheter passed in the same direction till it has entered the lower cannula far enough to reach into the wound, when both the cannulas

may be removed by drawing them over the catheter. That end of the catheter which is in the wound, is then to be inserted into the posterior part of the urethra, and carried onward into the bladder to be retained there till the wound is healed.

The great nicety of this operation consists in the two cannulas being retained in a perfect line, so that no difficulty may occur in passing the trocar from one cannula to the other. Mr. Hunter directs this to be accomplished by the hand of an assistant confining the opposite ends of the two cannulas, but it appears to me that this will be much better effected by the surgeon himself, because he will then immediately discover and rectify the slightest variation, and his own fingers grasping the stricture will better enable him to guide the trocar through that part on its way into the lower cannula, than if an assistant held the part.

Should the stricture be situated between the scrotum and membranous part of the

urethra, the operation must be similar to that which has been recommended when the stricture is situated anterior to the scrotum, only we shall sometimes be obliged to lay open the perinæum before the end of the director can be felt, and very probably there will be more difficulty in finding the urethra beyond the stricture. A free incision is to be made in the perinæum, deep enough to lay open the anterior part of the urethra and expose the director, then the stricture must be divided. When this has been done, if the urethra beyond the stricture cannot be seen, it must be felt for with a probe, and being made out, the probe or bougie may be passed on to ascertain whether the canal is open quite into the bladder. A flexible gum catheter should then be introduced from the glans penis down the urethra into the wound, and thence along the posterior part of the urethra into the bladder. The cure must afterwards be conducted by healing over the instrument in the manner already described.

In some cases, when one stricture is di-

vided others will be discovered, and sometimes there is a contraction of considerable length occupying a portion both of the membranous and prostatic parts of the urethra. Under these circumstances, the operation is much more difficult and serious ; for if a more limited incision will not suffice to enable us to pass an instrument into the bladder, it must be extended from the wound in the perinæum quite into the bladder, as is done in the lateral operation for stone. An accurate anatomical knowledge of the parts is required, to make this extensive incision properly ; it should be carried on cautiously and slowly, stopping every now and then to feel with a probe for the natural passage in order to avoid any unnecessary division of parts, and as soon as an instrument can be passed into the bladder, a flexible catheter is to be introduced the whole length of the urethra, as before mentioned, and retained there till the wound be healed in the perinæum. But this last operation is inadmissible in some cases complicated with great disease of the prostate gland. The following is

a case in which the operation succeeded very well.

A journeyman carpenter, between forty and fifty years of age, had retention of urine, supposed to be occasioned by a stricture about six inches down the urethra; suitable means were employed to get away the urine without effect, so that the bladder became much distended, and the patient laboured under such extreme distress that it was deemed absolutely necessary to take away the urine without further delay. It was thought that if the urethra were opened behind the stricture nothing more would be needful; a metallic catheter was therefore passed down to the stricture, a free incision was made in the perinæum and the point of the instrument exposed; the incision was then extended with a view to divide the stricture. This done, no urine appeared, which evinced some other impediment to exist. A probe was then passed towards the bladder, but it did not proceed more than half an inch, before it was stopped by what was believed

to be another stricture. Under an idea that if this were divided the urine would certainly come away, the scalpel was carried into this second contraction about the distance of half an inch, but still no urine flowed. It was then agreed, that as the wound reached so nearly into the bladder, it would be better to evacuate the urine by extending the incision in the same direction far enough for that purpose. This being done, the patient experienced immediate relief, and the operation was finished by passing a catheter the whole length of the urethra. No unfavourable symptom occurred, and in less than six weeks the wound healed and the patient was considered well.

It is desirable, if possible, to detain the catheter in the bladder after any of these operations, not only till the wound has healed, but also till the fistulous sinuses are obliterated; this however cannot always be done, for the instrument sometimes appears to act as an extraneous body, and thus prevents the wound granulating, and supposing the wound heals kindly,

various things may forbid the patient's wearing the catheter till all the fistulous openings are closed; in that case, it is probable, every purpose may be answered equally well if the catheter be introduced every time the urine requires to be voided.

Very commonly, as before observed, the fistulæ heal spontaneously if the urine be hindered from entering them, but this does not always happen, and then it becomes necessary to trace them out with a probe and lay them open their whole length, after which they must be dressed with lint to make them fill up with granulations. Great attention should be paid to preserve the general health good, and the digestive organs in a healthy state throughout every stage of the treatment of these cases.

FIRST CASE.

Mr. ——— complained to me, that much of his urine escaped by a fistulous opening in the middle of the perinæum and only a small portion came through the penis, great part of the semen too passed through the fistula; he says, also, he never

felt any inconvenience in making water till five years ago when he contracted a gonorrhœa; he suffered very severely from it for a long time, and ever since there has been some difficulty in voiding his urine. About six months ago he first discovered a round swelling in the perinæum which he considered to be a large common bile; it suppurated, broke, and discharged matter; three or four days after it burst urine began to come through the wound every time he made water, which annoyed him a good deal; he could not, however, take proper care of himself as he travels great part of the year, and was just then obliged to leave home.

A small bougie encountered a stricture five inches and a half down the urethra but passed on into the bladder. He was directed to live temperately and to take Pil. Hydrarg. gr. v. omne nocte.

Oct. 3. Thought himself a little better; the bougie was introduced quite into the bladder, but the stricture did not seem to be sufficiently dilated to admit a larger one.

Oct. 5. Said he made more water along the urethra. The bougie was increased one size and passed into the bladder.

Oct. 8. Thinks himself mending. The bougie entered more easily, and another one size larger was introduced immediately afterwards.

Oct. 10. Less urine comes away by the perinæum, and the bougie passes with greater facility. The bougie was used every second or third day, and was increased in size as often as circumstances would admit. In a few weeks the stricture was dilated to the full size of the canal, and as this took place, the fistulous opening gradually healed.

SECOND CASE.

A. B. shewed me his scrotum, there was no inflammation, but it was very much enlarged, thickened, and had a loose flabby feel. On the under side, and thence backwards along the perinæum to the anus,

there was an immense number of very small fistulous openings through which the urine constantly oozed. His urine came away in a very small stream from the penis, and with considerable difficulty; and at such times he always experienced a smarting in the scrotum and perinæum. Upon close inspection several small vesicles, about the size of pins' heads, or rather larger, were observable; and when these were broken urine oozed out slowly. From this it would appear, that the urine having got into the cellular membrane, insinuated itself along till it reached the skin, and there was arrested in its further progress till the cuticle was broken, which would be likely to happen soon after the formation of the vesicles, as the patient frequently rubbed or scratched those parts to allay a troublesome itching. The introduction of a small bougie seemed to occasion no pain; it detected a stricture six inches down the urethra, but passed on quite into the bladder. The simple bougie was used every day, and the stricture gradually dilated, and as the urine obtained a more free passage along the urethra, less of it got into the fistulous sinuses.

In three weeks a flexible gum catheter was passed into the bladder, and the patient was afterwards taught to introduce it himself whenever he had a desire to make water. Thus the urine was in a great measure prevented from escaping out of the urethra into the cellular membrane, but not so much as might have been done, because the patient often neglected this operation; the stricture, however, regularly gave way to the bougie, and in about three months was dilated to the full size of the urethra. The patient being prevailed upon to use the catheter more frequently, the fistulous openings healed, and the scrotum regained its healthy state. Upon the whole, I certainly never met with a patient so totally devoid of sensibility, which probably will account for urine extravasated in the cellular membrane producing so little irritation.

THIRD CASE.

Sept. 21, 1817. T. S. came to me on account of strictures in the urethra, and fistulous openings in the perinæum and scro-

tum. He has had difficulty in making water for several years, but the swelling and fistulæ in the perinæum and scrotum, began about three years ago. Very little urine is voided through the natural passage, most of it comes away by the fistulous openings. The urine, which escapes backwards into the rectum, keeps up a troublesome tenesmus, so that he frequently thinks to have a motion when nothing but urine passes. He has also a constant desire to make water, and the violent straining necessary to effect it has produced a prolapsus ani, and painful hæmorrhoids. About the middle of the perinæum there is a hard tumour always to be felt ; this he discovered before the scrotum was affected, and it seems very probable that the urine escapes from the urethra at this part, and thence insinuates itself along the perinæum, forwards into the scrotum. At some seasons he is much better than at others, and when at the worst, he suffers an intolerable smarting along the perinæum and scrotum, especially when he attempts to empty the bladder. The scrotum was enormously swelled the day before applying to me, when, as usually happens

under such circumstances, the skin burst and discharged a large quantity of urine which afforded him relief. The scrotum still remains much swollen. I ascertained that he had a very much diseased prostate, and that the urethra was more or less diseased throughout its whole course. There was a stricture about an inch from the external orifice, another at three inches, and a third at five inches, which last appeared to be of considerable extent, for the bougie could not be urged beyond six and a half inches, and on being withdrawn, an inch and a half of its point looked as if it had been wedged in one long stricture. Before he left me, he thought himself easier for the introduction of the bougie. He had been into an hospital for six months, and had consulted several surgeons besides, but without any benefit. They taught him to use bougies upon himself, but he never had any kind of instrument passed into his bladder, either by himself or by any of those gentlemen who had attended him. Whenever bougies are used as far as they will go, he voids his urine more freely. He has a good appetite and clean tongue, but his

bowels are very irregular, and the pulse is small and frequent. I advised him to live temperately, to bathe the parts with warm water often, and at other times to wear a linseed poultice applied to the perinæum and scrotum, to use a bougie upon himself once a day till he again saw me, and to keep his bowels regular with small doses of oleum ricini.

Sept. 25. Better considerably. He can now make water from the penis in an uninterrupted stream about the size of the smallest bougie, which he has not done before for a very long time; the swelling of the scrotum is amazingly abated, the oleum ricini keeps his bowels comfortably open, and he has used the bougie upon himself every day, but cannot pass it further than formerly. I found, however, that the bougie which I introduced, and which is much less than those he is trusted to use, passed a little further. He will continue the same plan of treatment.

Sept. 28. Thinks himself better; but there is no very evident alteration since he

called three days ago. The small bougie would not pass further along the urethra than before. I attempted to use a larger one ; it discovered and passed through four strictures, but would not enter so far as the small bougie by at least an inch ; on its being withdrawn, the point seemed to have been wedged in a stricture about an inch, and for the same distance the composition was pushed back. I applied a small quantity of potassæ subcarbonas along the urethra for about six inches, and he told me it produced very little smarting.

Oct. 5. He has been prevented seeing me an entire week, neither has he been able to attend to himself properly. He tells me, that for two days after he saw me he made water considerably better through the penis but he has now lost his appetite, has a bowel complaint, and otherwise feels unwell. For these last three days he has used no bougie upon himself, and during all that time the whole of his urine has come away by the perinæum and scrotum ; but even in this respect he is considerably more comfortable than he used to be, as

the urine no longer dribbles away from him, but rushes off in a full stream when he wishes to void it. I passed the bougie down the urethra, but do not think it entered so far as formerly, it also went with more difficulty through those strictures which allowed it to pass. The bougie and cannula as mentioned, page 81, were then tried, but with no better success. I afterwards used a bougie smeared with Windsor soap, which caused a little smarting.

Oct. 25. From the date of the last report he visited me every three or four days, and always represented himself as being much the same or better. About four days ago, I received a note saying that the scrotum was again swelled, and that he had an increased difficulty in voiding his urine through the penis; but the thing which most distressed him was a violent diarrhœa. I went to his house, and advised him to bathe the parts very frequently in warm water, and take some powders, composed of *Creta cum Opio*. These means reduced the swelling greatly in about twelve hours.

Oct. 27. This morning he tells me the bowels are quieted, and as to his other complaints he has not been so comfortable for a very long time. The scrotum is almost reduced to its natural size, and about one third of the urine flows through the urethra ; the bougie did not seem to enter further than six and a half inches as before, but it certainly passed more freely. I now smeared it with unguentum hydrargyri fortius.

During November, December, and nearly to the end of January, I passed for him a bougie rather under the middle size about once a week, using the unguentum hydrargyri fortius with it. The instrument at first would not go beyond six and a quarter inches, but gradually penetrated to nearly seven inches. Although we made so little progress many circumstances indicated that the attempts were beneficial ; more than half his urine came along the natural passage, and that portion which formerly passed by the rectum entirely ceased ; in proportion as less urine came through the fistulæ, so the induration and swelling of

the scrotum diminished, until the part was nearly of its natural size; the irritation also abated so much that he only wanted to make water three or four times a day, and with a little management he contrived to keep his clothes dry, and free from any urinous smell; he was attentive to his diet, and this proved sufficient to keep his bowels open; his general health improved so greatly, that he became able to walk easily and without fatigue in thirty-five minutes a distance of three miles, which he before performed in an hour and a half with difficulty and extreme fatigue.

In the beginning of February, I employed a hollow or compound bougie, which has been described in Section V. this gave me an opportunity of using much greater force with more certainty of directing it properly. The two first times this instrument was employed, he complained of its giving him more pain than at any other, but the pain subsided almost immediately after the bougie was withdrawn. He thought afterwards that he voided more urine through the urethra, but

the instrument seemed to penetrate no further than before. Waiting three or four days the same instrument was used a third time ; it then passed a stricture, and went on to seven inches. At the end of three more days the same instrument passed on to seven and a half inches, and the patient informed me, that for the two preceding days the whole of his urine had come through the penis.

Feb. 25. It being a full week since he saw me, he gave the following account of himself : on the second day after the bougie was last used, the scrotum and penis swelled ; he experienced more difficulty in making water, and some pus, and much ropy mucus, came away from the urethra. On the fourth day the swelling abated considerably, and now the parts are no larger than they were previously ; some urine escapes by the perinæum, but by far the greater part passes the whole length of the urethra. The ropy discharge has not diminished in quantity since it appeared, I saw a good deal of it this morn-

ing, and am decidedly of opinion, that it is prostatic secretion. I employed the same compound bougie as before, it entered with rather more difficulty, but reached eight inches towards the bladder, which is half an inch further than it had hitherto been introduced. About the latter end of March, a flexible gum bougie, which from frequent use had acquired a considerable degree of curvature, was employed without the wire stilet, having unguentum hydrargyri fortius upon its surface. For the two first times of being introduced it entered no further than the former instrument had done, but at the third time (April 3.) it passed full nine inches along the urethra, but as it did not seem to move further I concluded it had not entered the bladder.

April 19. Since the last report, although no bougie has been used, the patient has continued to improve in some respects. The ropy discharge has diminished, and on some days he has seen none of it; he thinks too that a greater proportion of his water flows along the urethra; the bougie

last mentioned entered quite as easily as before, but penetrated no further; the unguentum hydrargyri fortius was renewed.

April 26. The patient has walked a distance of seven miles this morning on purpose to have the bougie passed, because he always derives benefit from the operation. He now very seldom sees any discharge from the urethra, and frequently no urine flows through the fistula, and at most not more than one-tenth part comes by that way. His general health is amazingly improved. The bougie, smeared as before with unguentum hydrargyri fortius, was introduced, and it certainly entered with greater facility, but did not appear to pass further; latterly he has subsisted principally upon vegetables, crout, &c. and he thinks, in the present circumstances of his case, this vegetable diet suits him best.

May 5. Four days ago the bougie was again employed, but with no better success than formerly. This morning, the bougie smeared over with unguentum hydrargyri fortius was passed nine inches, but it did

not enter the bladder. I thought it possible for its point to have hitched against the posterior lobe of the prostate, which induced me to try the flexible, or compound bougie, having its point bent considerably upward. It passed as far as the other bougie, and then appeared to encounter the same impediment. I therefore withdrew it about an inch and a half, and pushed the hollow part, or sheath, onward, whilst the stilet was held still, this made the bougie enter the bladder; I next pushed forward the stilet quite home into the bougie, and found the instrument moved about freely, which satisfied me it was in the bladder. He tells me that he feels better every time after seeing me; that formerly, when he wanted to make water, he was obliged to strain so violently as brought down the anus, but now he makes water with as little effort as ever he did in all his life.

May 10. Says he is better, but that for two days after last seeing me his scrotum swelled a good deal, it has however subsided again. The hollow or compound bougie was passed into the bladder again.

May 14. The bougie and stilet which had been used lately, now went into the bladder so readily that I began to think a more rapid progress might be made by using a larger bougie. One a full size larger was passed with very little more difficulty, but he complained of its exciting dreadful pain so long as it lay in the neck of the bladder, and on its being withdrawn a few drops of blood followed. Some days afterwards he informed me that he had more difficulty in voiding his urine, and that the scrotum had swelled greatly. This experiment with the larger bougie was tried several times, and always with so nearly the same result, as to convince me that unless the poor fellow could see me oftener and give up business for a time so as to afford him an opportunity of attending to himself properly, we must be content to proceed slowly as before. He drank a good deal of gin about the time of the scrotum swelling, which it is possible contributed to cause the swelling. Since he has lived more temperately he has been getting better.

June 20. Having been treated in the most gentle manner for this last fortnight, he has continued to improve, and is now much better than he has been for some years. The scrotum has never been so small since my seeing him, and he tells me that for these last four days he has made water in a strong stream which he could project from the penis to a distance of five or six feet, and that none has passed backwards by the fistula. He can now make water like other men without being obliged to go to a seat, which he always has done for these last four years.

June, 1818. During the last thirteen months, this patient has called upon me when it suited his convenience to have a bougie passed, which has happened about once in a fortnight, month, or six weeks. The hollow or compound bougie has gone into the bladder whenever I have attempted its introduction, and the pain and irritation which it used to excite whilst it lay in the neck of the bladder are now no longer experienced, so that a larger instrument of the

same kind can be passed with good effect. Whenever the instrument has been used unguentum hydrargyri fortius has always been smeared upon its surface.

Throughout the whole period of thirteen months he has voided his urine in much the same manner as that in which he was reported to do it at the commencement of that term, viz. about three or four times each twenty-four hours, and the urine has passed off in an uninterrupted stream, which could be projected to five or six feet distance from his body. When emptying his bladder, he usually holds one hand under the perinæum to ascertain if any urine escapes by the fistulæ; sometimes his hand is wet, and at other times it is not, but he tells me it is rarely that more than a few drops or a tea-spoonful of water comes through the fistula. In other respects he is very much better. The fistulous openings are all closed except one situated immediately at the back of the scrotum just where it joins the perinæum; no urine ever escapes by the rectum, he is no longer troubled with tenesmus, hæmorrhoids, or prolapsus ani,

and his general health and whole appearance are amazingly improved. Instead of having a sallow cadaverous countenance he looks strong and hearty ; instead of his carrying a stench always about him and being a perfect nuisance in company, there is now nothing offensive to the smell in him more than in others. The change is so great that his old acquaintances have frequently congratulated him upon his good looks, and told him they did not think it was possible for him to have lived so long. Even the gentleman who for six months had him under his care in the hospital, has stopped him once in the street to make inquiry and express his astonishment at so great an alteration.

I have been thus particular in mentioning such a variety of circumstances, to point out impressively that very much may often be effected by perseverance in the use of gentle treatment, in cases that are sometimes judged not only incurable, but which are thought to admit of little or no relief. It is to be regretted, that this poor fellow's situation in life prevents his seeing

me oftener and otherwise taking proper care of himself, for if what has been done, would enable us to judge what further might be done, we certainly should believe that if this patient was to rest from his employment for a time and have proper care bestowed upon his case, the only remaining fistula might be cured, and then, very trifling attention would preserve the urethra so far healthy as to make him comfortable for the remainder of his life.

SECTION XV.

OBSERVATIONS ON FALSE PASSAGES IN THE URETHRA.

By a false passage in the urethra is meant, a cul de sac running on one side but opening into it, and which has been formed by the mismanagement of bougies, catheters, &c. At first, the instrument being passed in a wrong direction either ruptures the membranous lining of the urethra, or excites ulceration, and then, at each succeeding time of being used, it is very apt to pursue the same course and reproduce one or other of those effects by which the false passage is gradually deepened.

When the false passage has been made by a bougie, it is generally situated either in the smaller curvature of the urethra near the pubes, or else in the larger curvature in the bulb just before the commencement of the membranous part of the canal. In

the former of these situations, I believe it is most frequently the effect of small bougies hitching in the lacunæ of the upper surface of the urethra; in the latter situation, it seems to be most frequently the consequence of using middle-sized or large bougies cold, stiff, and straight, which incapacitates them for yielding to the natural bend of the canal, and compels them to push through its inferior or posterior surface. False passages caused by catheters wounding the urethra, generally occur in the bulbous or prostatic parts, and may be owing either to the improper shape of the instrument, or to the bad management of it. But if the false passage originates close to a stricture, and has been occasioned by the diseased part turning off the point of the instrument upon the adjoining more soft and healthy parts, then, as every part of the urethra is liable to stricture, so any part may be the seat of a false passage. When false passages are situated at either of the two curvatures of the urethra, they will generally be found on the convex side of it. Thus, if situated near the pubes, they take a direction towards the dorsum penis;

and if met with about the bulb, they almost always take a direction backwards towards the rectum.

On discovering a false passage to exist, if the patient can certify that some degree of bleeding mostly succeeded to former introductions of the instrument, there will be tolerable grounds for concluding that the new passage has been made by repeated lacerations; but when no hæmorrhage has occurred it is probably the effect of ulceration.

False passages, considered in themselves, are of no kind of consequence, as they do not seem to injure the functions of the canal; they therefore acquire importance only when they obstruct the necessary introduction of instruments further along the urethra. For if, under these circumstances the patient should have retention of urine, it may happen that nothing less than puncturing the bladder will bring away the contents.

Should there be occasion to pass instru-

ments through a urethra in which there is a false passage, it will be of material advantage if we can learn the size of the instrument that inflicted the injury, and to effect the operation with any degree of certainty it is absolutely necessary to be acquainted with the exact situation of the false passage and the course it pursues. Without this knowledge, there will be no rule for guiding the point of the instrument, and if it be pushed along to find the way for itself success must be merely accidental: because all instruments that are pliable and expected to accommodate themselves to the turnings of the canal as they encounter them, will have the direction of their points altered by rubbing against that side of the urethra on which the false passages are usually situated, and this is the reason why bougies are found almost invariably to enter a false passage more readily than they continue in their proper course along the urethra. Any instrument that is intended to be passed beyond a false passage must possess a considerable degree of curvature, and whilst being introduced the convexity of it must be towards the false

passage, which will carry the point of the instrument against the opposite side of the canal. There will also be great advantage in using a large instrument, for if it exceed the size of that which made the false passage then the latter may always be eluded. A flexible gum catheter, and what I have described in another part of this essay under the term of hollow or compound bougie, are the best instruments to pass along a urethra in which there are false passages; for if either of these instruments be used with a curved brass wire stilet, we have more command over their points to guide them in different directions within the urethra than we have over any other kind of instrument. They possess one peculiarity which gives them a decided superiority in this respect, that of allowing their curvature to be very much varied and that suddenly even whilst they remain in the urethra. Thus, if introduced agreeably to the directions given in this section, and the stilet be withdrawn a little way the moment before the point of the instrument arrives at the false passage, it increases the curvature instantly, and throws the

point away from the false passage against the opposite side of the canal, and at the same time gives such flexibility to the point that it may glide close against the perfect side of the urethra without risk of wounding it.

If however the canal beyond the false passage will admit a tolerably large instrument, a plaster bougie may be made to answer the purpose very well, but then it must be softened and have a proper degree of curvature given to it a few days before it is wanted for use, that when grown cold and hard again it may retain the curvature. In this state it must be passed down the urethra hastily, lest it should become soft before it has gone by the false passage, as, in that case, all command over the point of it would be lost.

To avoid a false passage running towards the dorsum penis and situated near the pubes, the stiff and curved plaster bougie should be conveyed down the urethra with its convexity towards the patient's abdomen, which will keep the point of the

instrument rubbing along the under surface of the urethra till it gets below the arch of the pubes; it may then be turned round and carried forwards as usual; but if the false passage be situated near the bulb and pursue a course towards the rectum, then the bougie should be introduced with its concavity towards the patient's abdomen, and as soon as the point of the instrument arrives below the arch of the pubes, the operator must lower his hand to elevate the point of the bougie over the false passage on the inferior or posterior surface of the canal. It will be seen, by referring to the case at the end of this section, that there were two false passages on opposite sides of the urethra, which compelled me first to introduce the bougie with its convexity towards the abdomen, till the point was below the arch of the pubes, and then to turn the instrument half round and lower my hand, in order to elevate the point, and thus to guide it over the posterior false passage.

Providing the false passage be in a healthy part of the urethra, at a distance

from any stricture, I imagine the foregoing directions, properly attended to, will conduct an instrument into the bladder with tolerable certainty; but when the false passage commences close to a very much contracted stricture, we have scarcely a chance of success. If an instrument should unfortunately hitch in a false passage whilst we are endeavouring to get it into the bladder, the longer the interval of time that is suffered to elapse before we renew our attempt, the greater will be the probability of our future success. I make this observation from experience, and account for it under the supposition that the sides of false passages collapse, and perhaps have a natural disposition to close in a great measure, if not to become entirely obliterated, upon the principle of nature's always endeavouring to preserve originality of surface.

Should this however not take place, and the false passage unavoidably obstruct the further progress of instruments that are necessary to be introduced, there remains no other resource than an operation, very similar to the one mentioned for the cure of

strictures complicated with urinary fistulæ. But whilst operating to cure a false passage, we must remember, that if it be situated on the under surface of the urethra, we shall probably cut into the false passage first, and then the incision must be carried deeper to find the urethra, and vice versâ. The false passage ought to be laid open throughout its whole length, and made to granulate, otherwise it may be a source of great trouble at a future period. The operation should be finished by passing a flexible gum catheter into the bladder, where, if possible, it should be retained until the wound is healed.

If a stricture be complicated with a false passage, it will not, on that account, require any peculiar treatment, the cure must be conducted upon general principles, like that of any other simple case of stricture, the means recommended in this section being employed for avoiding the false passage, and conveying instruments beyond it.

A CASE.

Feb. 26, 1817. A married gentleman, aged twenty-four, applied to me to be relieved of strictures in his urethra. The exact period of their existence he could not tell, but he had been under the care of four different surgeons for these two years past, during which time he had constantly taken medicines, and used bougies, without any advantage, but on the contrary, had grown worse and worse. The first symptom which attracted his notice, was a discharge from the urethra, similar to what occurs in gonorrhœa, which still continues. When bougies were first resorted to, a middle-sized one could be passed quite into the bladder without any other inconvenience than causing pain at the strictured part. It is now a considerable time since any instrument entered the bladder. He conceives that false passages have been made, and when a bougie is propelled as far as it will go, he feels as though it turned from the urethra and went into his left thigh.

He has remarked, that those gentlemen who have hitherto attended him (with the exception of one who used a curved metallic bougie) always introduced the bougies cold, hard, and straight, and this generally caused blood to flow from the urethra. No inconvenience is experienced from the stricture further than what proceeds from the unpleasantness of the gleet, and the difficulty of expelling the semen and urine. On first attempting to make water it comes away by drops, but filling the prepuce with urine, and then making a strong effort to void it, whilst he continues to close the prepuce with his thumb and finger, this causes a degree of distention along the whole of the urethra, and he makes water more freely afterwards.

The stricture is at some times better than at others ; his tongue is slightly furred, and his bowels tolerably regular. Mr. ——— selected a small bougie as being the size of the one which last went quite into the bladder ; I bent up the end of it as usual, and tried to pass it but could not get it beyond

three inches, at which place I discovered that a false passage of about half an inch in length, had been made out of the urethra towards the dorsum penis. I turned the bougie for its point to rub along the under side of the urethra, and extended the penis to straighten the canal as much as possible, then easily introduced the instrument to seven inches, where it again rested, and could not be urged further. As I understood the stricture to be situated about six inches from the orifice, I concluded a second false passage had been made about an inch in depth. I gave him directions to abstain from venery, to bathe with warm water, to eat plain, mild, nutritious food, and to drink neither wine nor porter till he saw me again.

Sumat ol. recini ʒß ter quotidie.

March 1, Saturday. Much better. Makes water more freely, and has lost an uncomfortable sensation of numbness in his thighs. This shews that the urethra is relieved of a considerable degree of irritation, which I attribute chiefly to the warm

bathing, attention to diet, and state of the bowels, &c. because the bougie did not go through the stricture. The longer we can avoid the use of instruments in these cases the less likely they are to hitch in the false passages when it becomes necessary to pass any along the urethra: I therefore deferred using a bougie till he saw me again, for unless there should be an increase of irritation, there would be no danger of the stricture getting worse.

Wednesday, March 12. Although the patient has called upon me two or three mornings before to-day, yet as he declared each time that he felt better, the bougie was not introduced for the reasons assigned above. I now thought it would be proper to dilate the stricture if possible, and with this view I selected a bougie about the third size from the smallest, gave to it a considerable degree of curvature, and introduced it with the convex side towards the abdomen, to the distance of about four inches, which assured me it had passed the anterior false passage, I then turned the

instrument half round, to bring the concave side of the bougie towards the abdomen, and make the point rub along the upper side of the urethra, and in this manner continued to glide the bougie till it entered the bladder without having hitched in the posterior false passage. As the bougie went through the second, or furthest stricture, it produced a slight pain down the thigh, but on its being withdrawn no blood followed. I advised him to continue to bathe with warm water, and take the *oleum ricini*.

Wednesday, March 12. The pain down the thigh, induced by the introduction of the bougie, lasted several hours on the Monday, but went off in the evening after bathing with warm water, and he has made water more freely since then. The same bougie that we used on Monday was again introduced with equal facility. A bougie two sizes larger was then tried ; it passed by the first false passage, but hitched in the second ; however, by withdrawing it, and making the attempt with more care, it went into the bladder. This instrument

was gripped by the stricture, and of course excited more pain, but no blood appeared.

Saturday, March 15. Continues to improve in all respects.

Tuesday, March 18. The bougie entered the bladder so easily that I was induced to try a larger one, but failed in two attempts to get it into the bladder, it always entered the posterior false passage in spite of the utmost care. The former bougie was again passed into the bladder with the utmost facility. I have no doubt, therefore, that it is the stricture which turns the larger bougie into the false passage instead of suffering it to pass.

Friday, March 21. No kind of bougie could be passed into the bladder, and more than usual caution was required to get the instrument past the anterior false passage, but it always lodged in the posterior one. His general health evidently was not good; he had bad appetite, and furred tongue, his bowels also were irregular. These circumstances were fully sufficient, in my opinion,

to make the urethra irritable, and so to cause the bougie to enter the false passages more easily than it could pursue the natural course of the canal.

R Hydrarg. Submur. gr. iij.

Pulv. Antim. gr. ij.

Pulv. Opii, gr. j.

M. f. pil hora somni sumend ad tres vices.

R Magnes. Sulph. ʒiij.

Vin. Ipecac. ʒij.

Tinct. Cardam. com. ʒvj.

Infus. Gentian. com. ʒvij.

M. f. m. sumat Coch. iij. larg. ter die.

Tuesday, March 25. No kind of bougie could be got into the bladder owing to its hitching in the false passages; his bowels are rather irregular, and the biliary secretion not quite correct: he makes water with more difficulty.

Pergat in usu Misturæ sed adde mannæ opt.

ʒss loco Magnes. Sulph.

Tuesday, April 1. More comfortable in all respects. He makes water much more freely. The same bougie which had before passed into the bladder, now escaped the

false passages again, and went throughout the whole course of the urethra with the utmost facility.

Wednesday, April 9. Considerably improved. The bougie was easily introduced as on Tuesday.

Monday, April 14. Continues to go on well; has no pain, and voids his urine freely, and in a tolerably full stream. I tried a bougie three sizes larger, and that also passed very readily. It should be remarked, that to succeed in passing a bougie on this patient, it is necessary to give it a considerable curvature a few days before it is intended to be used, then, as it cools, it grows hard and retains the curvature, which gives a greater command over the point in guiding it so as to avoid the false passages.

April 21. Says he feels much better; experiences no pain of any kind, and makes water as freely as ever he did since he can remember any thing. The largest bougie

which had ever been introduced upon him, was again passed without any difficulty quite into the bladder.

April 28. Has not a complaint to make ; is so free from pain, and voids his urine so well, that he would consider himself cured if I could be satisfied of this myself. Having prepared, as abovementioned, nearly a full-sized bougie, I passed it all the way along his urethra readily ; it seemed to be gripped a little at the stricture, but excited no particular sensation, he continues the bitter mixture and tepid bathing.

May 8. A week ago the bougie was again used, and repeated this morning with the same result as last reported, only there was no gripping of the bougie, therefore I am disposed to consider him cured.

March 26. Passed a full-sized bougie into the bladder with the utmost ease, by attending to the forementioned precautions to avoid the false passages. I therefore informed him he might believe himself quite well.

This patient called upon me again in September to have a bougie introduced, when there did not appear the slightest disposition to stricture, and he still continues well after a lapse of three years.

Among other particulars which deserve notice in this case, it demonstrates how much may often be effected by the simple bougie, if at the same time due attention is paid to the general health.

ON DISEASES OF THE TESTICLE.

SECTION XV.

STRICTURES of the urethra often give rise to enlargement of one or both of the testicles ; this has been mentioned by Mr. John Hunter, in his work on the Venereal Disease ; it has also been taught by Mr. Abernethy, in his Lectures ; and the late Mr. Ramsden published a book expressly for the purpose of directing the attention of surgeons more fully to this subject. It appears to me, however, that this fact still remains insufficiently known, or else it is not enough considered. For, granting that few practitioners would see a chronic case of enlarged testicle, without ascertaining whether or not any stricture existed in the urethra if they could not otherwise satisfactorily account for the disease, yet when other causes were apparent, and those such as might be deemed equal to the production of the morbid state of the testis, as

for instance, when it seems to result from gonorrhœa ; then, I believe, the examination of the urethra, by the introduction of a bougie, would very commonly be omitted. Formerly it was recommended in cases of hernia humeralis, arising as a consequence of gonorrhœa, to irritate the urethra with bougies with a view to relieve the testis, but this practice was productive of so little benefit that it has long since fallen into disrepute. The idea originated from observing, that as the swelling of the testicle came on, the discharge from the urethra abated ; and as the enlargement of the gland lessened again, the discharge from the urethra returned. This indisputable proof of sympathy between these two parts naturally suggested the experiment of attempting to reproduce the discharge, and from erroneously supposing that the introduction of a bougie along the urethra would always prove successful, it appears to me, that we have fallen into the opposite error of neglecting it altogether in recent cases. Gonorrhœa does not always occasion hernia humeralis, so neither is every case of stricture in the urethra accompanied with

enlargement of the testicle, nay, the affection of this gland, under either of these circumstances, is comparatively a rare occurrence. We are then necessarily led to conclude, that some difference must exist between those cases which cause an affection of the testicle, and those which do not. Perhaps some cases may be explained by supposing that a stricture, or some other morbid affection, may have existed in the urethra prior to the gonorrhœa, but that the additional irritation of the gonorrhœa was necessary to enable the stricture, or other morbid affection, to cause an enlargement of the testis ; or, on the contrary, the gonorrhœa might have been incapable of exciting hernia humeralis, without being accompanied with the additional irritation of the stricture, or other morbid affection. The following cases appear to me to justify such an opinion.

FIRST CASE.

I went to see a gentleman who was confined to his bed with hernia humeralis on the

left side ; he had contracted a gonorrhœa, and suffered less from it than on similar occasions before, but just as he thought himself getting well, the left testis became painful and swollen. He had been advised to keep his bed, to apply leeches to the scrotum, and afterwards, to cover the part constantly with linen wet with some kind of lotion ; he also took some strong purgative medicine. These means lessened the pain and inflammation, and the gland felt softer, but he could not say that it had diminished in size. He had pursued this plan about a month with no material improvement on the whole ; sometimes he had been better for two or three days together, and then he had grown worse again.

At the time of my seeing him, he acknowledged himself to be better than he had been, but the size of the gland was very little altered. Upon examination, I found the testicle of its natural shape, but of about four times its proper bulk ; it did not appear to be much inflamed, and he told me he was almost free from pain when he lay quiet, but he could scarcely bear me

to handle the testis even in the gentlest manner, it was so extremely tender. The epididymis and lower end of the testicle were hard, otherwise the whole gland had the same kind of soft feel as is usually present soon after a violent inflammation of the part has been rapidly diminished; I therefore concluded the case was in a fair way to do well, and that nothing more would be necessary than for him to take some cathartic medicine, and keep the scrotum suspended, and enveloped in a bread and water poultice. This plan was adopted, and a very gradual amendment for about a week took place, and then, without any evident cause, the gland suddenly inflamed, again became hard, painful, and swollen. A bougie was passed, it detected a stricture in the bulbous part of the urethra, but went on into the bladder. After this he took some active cathartics, and the following day all the increase of pain, hardness, and swelling had entirely subsided. The poultice was continued, the use of the bougie was repeated every second day, his bowels were kept open by slight aperients, and in ten or eleven days the

testicle was reduced to its healthy size, and the patient walked out as usual. Bougies were afterwards employed, but as nothing remarkable occurred in this part of the treatment it would be superfluous to describe it minutely. The good effects of dilating the stricture were so conspicuous, as to leave no doubt in my mind that the state of the strictured part of the urethra was the sole cause of the enlargement of the testis which so obstinately resisted the usual remedies. Whether the stricture had, or had not any share in originally exciting the inflammation of the testicle may be the subject of a difference of opinion; but when I consider the relapse which took place without any assignable reason, I think it very probable, that the swelling of the gland never would have happened if there had not been a stricture in the urethra, and that the stricture might not have had this effect but for the increased irritation produced in it by the gonorrhœa.

The inferences which are drawn from the preceding case, are materially strengthened by the following.

SECOND CASE.

A patient had seemingly got well of gonorrhœa, when after two days, he called to inform me that he had tenderness, pain, and swelling of the right testicle. The gland was of about twice its natural size, hard along the posterior edge and at the lower end, and appeared adherent to the fore part of the scrotum. From the success which attended the introduction of the bougie in the former case, I determined to try it in this, intending to withdraw it if no stricture should be met with when it had reached seven and a half inches along the urethra, because I never knew a bougie produce any ill effects upon either of the testicles when it did not go beyond the termination of the seminal vessels. The bougie passed easily until it encountered a stricture at six inches, it then occasioned pain. The stricture yielded to a little steady pressure, and the bougie moved on into the bladder. The patient was told to keep himself quiet, to cover the scrotum with a bread and water poultice, and to use a suspending bandage; he also took

some purgatives. On the following day all the swelling had subsided, and there was no remaining hardness, except of the epididymis, and the gland could scarcely be said to be more tender than the healthy one, but a little discharge had reappeared from the urethra. After this time the bougie was used every third day for three weeks, when the patient was considered in all respects well. There was no stricture discoverable after the first week, but the discharge continued near a fortnight longer.

From the stricture being so speedily removed, we must suppose it was merely spasmodic, and I think it very likely to have arisen in consequence of the irritation attending the gonorrhœa: but whatever caused it, the good effects of the bougie in its cure, and also in relieving the testicle, were too obvious to need any comment, and judging from the advantage which resulted from the bougie in these two cases, we must believe that if it had been employed earlier in the first case, the cure would have been completed proportionably sooner.

As strictures of the urethra made it ne-

cessary to introduce bougies in the two foregoing cases, I will now mention some cases of hernia humeralis, in which no strictures were present, and which seemed to be brought on entirely by an inflamed, or irritable state of the posterior part of the urethra.

THIRD CASE.

A gentleman, about fifty years of age, desired me to attend him for an enlarged testicle ; he told me that he had contracted a gonorrhœa, and as that went off, the left testicle swelled, and grew very tender and painful; the pain had been so severe as to occasion vomiting. The gland was full as large as a duck's egg, and had been in this state for some time, though better on some days than on others; he had consulted three or four practitioners, and it had been reduced once nearly to its natural size, but it enlarged again, and he almost despaired of getting well. I wished to pass a bougie, but this was objected to; he was, therefore, directed to foment the gland by means of flannel wrung out of hot water, to envelope the scrotum in bread and water poultice,

and to keep it constantly supported to prevent the testicle's hanging by the spermatic chord. He lived abstemiously, took saline medicines, and every second or third night a dose of calomel, which always operated briskly the next day. For nearly a fortnight this plan was continued. During the first week his fæces were observed to be black, and he was almost constantly teased with pain in the gland, and also in the thigh of the same side, and for some nights the pain totally prevented his sleeping. On the ninth day his fæces became healthy in appearance; during the remainder of that day, and the following night, he was entirely free from pain, and the gland was less swollen, and less tender. The aching pain however returned on the two succeeding days and nights, and then he permitted me to introduce a bougie. I selected one about half as large as would be required to distend the urethra to its full size, and having smeared it over with unguentum hydrargyri fortius, passed it along the canal. It caused a pricking sensation all the way down to the bulb, and a burning pain as it moved on into the blad-

der; its progress was a good deal opposed through the membranous and prostatic parts of the urethra, and these parts gripped the bougie considerably whilst it was being withdrawn. The burning pain at the neck of the bladder remained for some time afterwards, but there was no pain in the testicle, and on the next day there was an obvious diminution of the enlarged gland. It should have been remarked, that the discharge from the urethra had recurred previously to my seeing him, but it ceased after the introduction of the bougie. The testicle kept reducing in size rapidly for a few days, it then became rather painful again, and the discharge from the urethra reappeared. At this period the bougie was resorted to a second time; it was admitted along the urethra more readily than before, and excited very little other sensation than a strong desire to make water, which very soon subsided. After this operation, the discharge from the urethra, and the pain in the testicle entirely ceased, the tumour rapidly lessened, and in four days the gland was reduced to its healthy size. A great frequency of

making water existed before the bougie was employed, but it went off afterwards.

FOURTH CASE.

A young gentleman, nearly well of gonorrhæa, was attacked with an inflammation and swelling of the left testicle. Rest was enjoined him, and a decided antiphlogistic plan of treatment was adopted. Under the use of these means the case went on extremely well, but when the gland was nearly reduced, it very unexpectedly took to swelling again. A small bougie was then passed, and the whole of the membranous and prostatic parts of the urethra were thereby ascertained to be in a state of morbid irritation. On the following day the gland was found again reduced in size, and the bougie was afterwards used a few times at short intervals, until the testicle was of its natural size, when the patient left off seeing me. In about a fortnight or three weeks the right testicle enlarged, and a frequency of making water came on, the calls were so urgent that he could with great difficulty avoid wetting his clothes; there

was also a slight gleet from the urethra. I found the whole gland swollen and tender, and the lower half, with the epididymis, was particularly hard. A bougie detected the same kind of irritation in the posterior part of the urethra, which has been already noticed. All the swelling disappeared by the next day, but the hardness still remained at the lower end of the testis and epididymis, and some degree of tenderness continued about a week longer. The bougie was introduced every three or four days, or once a week for some time afterwards to prevent another relapse, and the patient has since been very well.

FIFTH CASE.

J. W. twenty-five years of age and of spare habit, having contracted gonorrhœa, applied to a gentleman who gave him mercury till it brought on a slight ptyalism. Hernia humeralis of the left side occurred, and the swelling of the gland having existed nine or ten weeks, he called upon me. He was frequently troubled with shooting pains in the part, which extended up into his

loins, the testicle was very much swollen, exceedingly tender, hard, and unequal on its surface. The scrotum was inflamed and adhered all over the testis, and the spermatic chord was also enlarged, and tender to the touch. He had a bad appetite, a furred tongue, and a good deal of mercurial foetor of his breath, with much general debility. I recommended him to keep the testicle suspended and constantly wet with brandy and water, and to take internally

Opii gr. iss. hora somni pro re nata et Supertart.
Potassæ gr. x. c̄ Pulv. Rad. Gentianæ ʒj. ter. quotidie.

Under this treatment he continued mending nine days, and a considerable alteration took place during the time, the testicle then suddenly became larger, more inflamed, and more painful than it had been at any former period. He had noticed a little discharge from the urethra, and making water was accompanied with slight dysury; the urine also flowed in a small stream, and he voided it too frequently. I began now to suspect that the swelling of the testicle depended upon a state of the

urethra which could only be effectually cured by the introduction of bougies. The orifice of the canal being unusually small, a bougie rather under the middle size was employed; it passed very well down to the bulb, but all along the membranous and prostatic parts of the urethra it excited a painful, smarting, pricking sensation, and a strong desire to urinate, and a few drops of blood came away after withdrawing the bougie. This happened on Monday the 20th of April, and on the Thursday following I saw him again; the testicle was amazingly reduced, felt quite soft, was of its natural shape, and scarcely at all tender or painful when handled. The scrotum was grown flaccid, was apparently very little inflamed, and had desquamated. He passed his urine less frequently and in a fuller stream, the bougie met with less resistance and produced less unpleasant sensations, and only a single drop of blood appeared afterwards at the external orifice.

April 27. He reported that he thought

himself improving till about mid-day on the 25th, and then the gland felt heated, began to swell, and he made water more frequently and with some difficulty. The testicle at this time was nearly as large as when the bougie was passed in the first instance. I used the bougie again and it seemed to enter with less difficulty than before, and the patient felt less unpleasant sensations from it and no blood was seen afterwards. He was told to keep the scrotum constantly wet with the following lotion :

R Aquæ Ammon. acet. et Aquæ Ditillatæ āā ℥iv.
m. f. lotio.

May 2. The testicle was only a little larger than natural, and much softer than when examined on 27th ultimo; the bougie passed with more facility and created proportionately less pain.

During the last three weeks, the patient had taken for an alterative *Pilulæ Hydrargyri* gr. v. every second or third night, but this was now laid aside because he com-

plained of griping; and he took instead of it

Hydrargyri Submuriatis gr. iss. ̄ Pulv. Opii gr. i.
omne nocte.

May 4. Since the last introduction of the bougie he had not been so comfortable as he was previously; there had been a frequency in making water, and I plainly discovered the testis to be harder and increased in size. These circumstances brought to my recollection four other cases of enlarged testicle, in which the use of the bougie seemed to operate beneficially at first, and injuriously afterwards by causing irritation at the neck of the bladder. I began therefore to fear the same was taking place in this case, and determined not to have recourse to a bougie again till I was convinced of its propriety. Having met with two or three cases of irritation in the urethra which I thought were greatly relieved by small doses of the T. Lyttæ, I wrote for him to have Tincturæ Lyttæ gtt. vj. ter quotidie in addition to the Pil. Hydrarg. Submur. ̄ Opio omne nocte.

May 9. The body of the testicle was soft as when perfectly healthy and very little larger. The same treatment was continued.

May 12. Both the testicles were of the same size and in no wise painful or tender, but with a view to remove a little remaining hardness of the epididymis, he was directed to rub unguentum hydrargyri fortius upon the scrotum night and morning.

It will be observed, the bougie was not so completely successful in this last case as in the four preceding ones, but it must be allowed to have proved decidedly beneficial, and probably contributed in no small degree to promote the curative effects of the *Tinctura Lyttæ*.

All the foregoing cases of hernia humeralis shew that there was coexistent disease in some part of the urethra, the relieving of which tended more than any thing else to lessen the enlarged testicles. I am disposed to believe, that whenever hernia humeralis arises apparently in consequence

of gonorrhœa, there is always coexistent disease in the urethra; for, not only may stricture or other disease have existed prior to the gonorrhœa, and have contributed chiefly to the swelling of the testis; but, if we suppose a perfectly healthy urethra to be infected with gonorrhœa, and hernia humeralis to ensue, then if we simply reason from the facts such a case will afford, it may be shewn that hernia humeralis is not a metastasis of the gonorrhœal action from the urethra to the testis, but merely the effect of sympathy. If it were not so, I imagine we never should have it suddenly shift from one gland to the other. This well-known fact appears to me explicable in no other way than by supposing, that naturally or in health, only one testicle sympathizes with the urethra during each coitus, in like manner as only one ovarium sympathizes with the canalis uteri at any one time, and that, in disease, when the actions of the gland primarily affected do not properly correspond with the morbid actions of the urethra, then the other testis becomes affected. Two other circumstances greatly favour the idea that

hernia humeralis is entirely sympathetic, viz. the general prevalence of strangury, and the returning of the discharge from the urethra synchronous with the diminution of the testicle. The existence of strangury certainly proves irritation to be in the urethra, and the spontaneous reappearance of the discharge is owing, I apprehend, to the irritation in the urethra changing or lessening; for the discharge of gonorrhœa is the relief of the diseased actions, in the same way as copious secretion taking place from an inflamed part always diminishes or keeps under the inflammation. Assuming then, that when gonorrhœa has produced hernia humeralis the urethra still remains in a morbid state, surely, with a view to reduce the enlargement of the testicle, the disease in the urethra deserves to have some share of our attention, as being the chief cause of that enlargement.

It has already been mentioned, that Mr. Bromfield and some others recommended for the urethra to be irritated to reproduce a discharge, but this practice was not found successful and therefore was aban-

doned. It appears to me this treatment could not avoid failing very often, because the principle of it was certainly wrong. We should never think of irritating a stricture in the urethra to cure an irritable state of the bladder which was produced by the stricture, for common sense teaches us to attempt the cure of the stricture by the most effectual means, and with as little irritation as possible; upon precisely the same principle ought our treatment of the morbid state of the urethra to be regulated, with a view to relieve the *hernia humeralis*. To have no idea beyond the mere reproduction of a discharge betrays very superficial knowledge; the cure of the morbid state of the urethra is all that claims attention in the management of our remedies to that part, and providing this goes on properly, the recurrence or nonrecurrence of the discharge is a matter of no importance. Very great mischief might arise from the erroneous notion that the reproduction of discharge is necessary, because, for aught we know, any kind of irritation in the urethra may occasion *hernia humeralis*; and if when one of the testicles is swelled in conse-

quence of gonorrhœa, we were in every such case to go on irritating the urethra till a discharge was brought on, although it be granted for argument's sake that we might be so fortunate as to cure the gonorrhœal disease, we should often institute another irritation equally bad or worse. When the discharge reappears spontaneously, it is the effect of the irritation lessening; but when it is reproduced by artificially irritating the urethra, then it occurs from the necessity for it being increased, which makes a great difference, and should always be borne in mind. Having stated the result of my own experience as to the good effects of topical applications to the urethra in removing hernia humeralis, I have much pleasure in being able to mention the additional experience of my friend Mr. T. H. Ridgway,* for although his treatment differed from mine in not being mechanical, the advantage arising from it was fully as satisfactory. My friend has been in the habit of using a solution of argenti nitratum as an injection for the

* Regimental Surgeon to the Rifle Corps.

cure of gonorrhœa, and soon after he adopted this practice the following case came under his observation.

SIXTH CASE.

One of the privates in his regiment contracted gonorrhœa, but made no complaint till he was confined to his bed by a swelling of the right testicle; the discharge from the urethra continued notwithstanding the hernia humeralis had come on, and it was with a view to check this discharge that Mr. R. injected a solution of argentum nitratum; the testicle was supported, and the man was ordered to remain in bed. When Mr. R. saw him on the following day all the swelling of the gland had completely subsided. The injection was employed night and morning till the end of the third day, at which time there was not a vestige of discharge to be discovered, and the event shewed that the man was perfectly well.

SEVENTH CASE.

Not a great while after the occurrence of the foregoing case, another of the pri-

vates of the same regiment was confined with hernia humeralis ; there was no discharge, and the man strongly denied having had any connexion, but Mr. R. attached no credit to his assertions, and from recollecting the great and rapid alteration which took place in the size of the gland in the former case, employed the same remedy in this. On the next day, the discharge reappeared from the urethra ; but no material change was observable in the size of the testis, the injection was however persevered in, and by the end of the third day there was neither enlargement of the gland nor discharge from the urethra, and the man being quite well resumed his duty.

Mr. R. tells me, that since having the two cases just related, he has had many similar ones which were all treated alike and with equal success, but it is perfectly unnecessary to mention them in detail, because they do not afford any more instruction than those two which have been given. These cases unequivocally prove, that when hernia humeralis arises from gonorrhœa, whether the discharge ceases

or not, the cause of the swelling of the testicle still resides in the urethra, and that the removal of that cause is the speediest way of reducing the enlarged gland.

Mr. R. has mentioned to several practitioners his mode of treating gonorrhœa and hernia humeralis by means of argenti nitratum. Some of them have found it very efficacious, but in other hands it has not proved so successful, which Mr. R. accounts for by supposing there must have been a neglect of some of the following directions, all of which are of importance. The argenti nitratum must be dissolved in aqua distillata, the proportions may vary from ten grains to two scruples to the ounce, but it is best to begin with the weaker solution, and afterwards to increase the strength as occasion requires; it must be used with an ivory syringe, otherwise decomposition takes place and the nature of the injection is perfectly changed, which renders it more likely to do harm than good; lastly, the injection should not be thrown further than four inches along the

urethra, which can easily be regulated by the patient ; compressing the canal with his finger. It is quite sufficient to apply this injection night and morning, but it is essential that it be injected repeatedly at each operation, till the membranous lining of the urethra appears white or sloughy, which may be ascertained by looking between the lips of the external orifice. The stimulus of the injection at first, excites a copious pouring out of the mucus of the urethra, which coagulates on meeting with the injection ; all this coagulated matter must be pressed out of the urethra as often as it forms, and the injection must be used again and again till it produces no more coagulated mucus, for without this is done, the injection cannot have free access to the surface of the urethra, and then it cannot be expected to operate properly.

Whether the caustic injection or the bougie merits the preference I will not at present take upon myself to determine, but I should imagine that there are cases to which each of them is best adapted ; thus

far however is certain, that when organic stricture, or in words more generally applicable, permanent stricture exists, then the introduction of the bougie cannot be superseded, therefore a few directions for regulating its use may not be unacceptable.

It has already been remarked, that the passing a bougie along the urethra in hernia humeralis is advised with a view to remove morbid irritation from the canal, consequently, it is desirable to produce as little irritation by the instrument as possible, in the first instance; and for this purpose, the bougie ought to be under the middle-size, and well coated with cerate, to avoid distending the canal over much, and to prevent its wiping away the natural mucous secretion; it should likewise be introduced extremely slowly, as this is found to make a vast difference in the feelings of the patient, and of course creates less nervous disturbance. In all other respects the bougie may be passed agreeably to the directions contained in the section on that subject in the preceding essay, and by once introducing

a bougie we shall be able to make such observations as will direct our future proceedings. If a stricture be detected, and if that be supposed to cause the enlargement of the testicle, then the treatment of the stricture may be conducted upon precisely the same principles as are to be found in the preceding essay, without any reference to the morbid state of the testis, because, as that is only an effect, it will subside as the cause of it is removed. If however there be no stricture, but only a morbid irritability of some part of the urethra, then we must regulate the subsequent treatment chiefly by the effects of the bougie, which may be expected to become apparent sooner or later, in proportion to the time that had elapsed between the first enlargement of the testicle and the use of the instrument. If the urethra be examined by the introduction of a bougie immediately that the gland begins to enlarge, then, judging from the foregoing cases, it is very possible the effects of the instrument will be obvious in the course of twenty-four hours, and in that time the testicle may possibly be reduced to its natural size ; but when more

time is allowed to elapse before a bougie is passed, then a longer period may be required to demonstrate the effect of such operation. A diminution of pain, or of heat, or of tenderness, or of hardness of the enlarged testicle, may one and all be considered favourable, and the use of the bougie may be persevered in, even though no diminution of the testicle can be detected, because a mitigation of these symptoms must occur before any lessening of the testicle can take place; in short, if we do not perceive any decided bad consequences to ensue from the bougie, its use ought in my opinion to be continued. Any ill effects which can arise from the bougie will generally be evident within twenty-four hours, and they must be attributed either to the bougie's being altogether inapplicable to the case, or else to some kind of mismanagement, such as employing too large an instrument, or using it indelicately. When it can be clearly ascertained to which of these circumstances the want of success is owing, there will be no difficulty in deciding upon the subsequent treatment.

By thus recommending the mechanical dilatation of the urethra in cases of hernia humeralis, it is not meant to insinuate that all other means are to be neglected, because the inflammatory symptoms may run so high that venesection and cathartics must be employed to relieve the patient, before the good effects of the bougie, if it is applicable to the case, can be known. We are sometimes not sent for till the inflammation and swelling have existed for several days, and the testicle is upon the verge of suppurating; in such cases the most active antiphlogistic treatment must be adopted, and it would be highly criminal to trust to the bougie alone; indeed, I would not advise the introduction of a bougie in such cases until some abatement of the inflammatory symptoms had been effected by other means, or till these means are seen to be insufficient, because, as there is a chance of the mechanical treatment not suiting particular cases, so, if it should prove injurious under the above circumstances, it would be at a time of all others, when additional excitement ought most carefully to be avoided. I believe, how-

ever, that if the bougie be employed the same day on which the testicle begins to be affected, provided it be suited to the case, nothing more than its repetition will be necessary, unless mild aperients are also required to keep off any irritation which might arise from retained fæces, or from other disorders of the digestive organs, the necessity of guarding against which is made strikingly obvious by the next case that will be mentioned. It is extremely difficult to form an opinion as to the probable effect of the bougie before it has been tried, therefore, in recent cases of hernia humeralis resulting from gonorrhœa, if the swelling of the gland has come on suddenly, and the inflammation is violent, although we should see the case from the commencement, I think it would be most prudent not to introduce a bougie along the urethra till after the antiphlogistic plan of treatment has been in practice at least three or four days, because it is possible the bougie may not be required at all, for so long as a case goes on sufficiently well under one kind of treatment, any further interference would be unjustifiable.

EIGHTH CASE.

The following case appears interesting in several particulars, but the inferences drawn from it will be better understood when the facts upon which they are grounded have been related.

A fresh-coloured young man applied to me on account of an enlargement of the left testicle, it was about the size of a small orange, and rather flattened upon its sides; perfectly smooth on the surface, afforded considerable resistance to pressure, and felt rather elastic; the temperature of it was unnaturally great, and it had a slight adhesion to a thickened part of the scrotum in front; the spermatic vessels seemed healthy. I could however make out nothing of the epididymis, as it was buried in a sulcus at the back of the gland; pain was experienced whenever the testis was allowed to hang by the spermatic chord, and the same inconvenience resulted from my handling it. He was in the habit of drinking a great deal of gin, and made water very frequently. A bougie nearly the full size

of his urethra, occasioned a prickling sensation in passing down to the bulb, and thence all the way into the bladder it produced an acute smarting pain, and whilst being withdrawn was firmly grasped by the membranous part of the canal. He was directed to abstain from all kinds of spirituous liquors, to keep the testicle constantly suspended, and wet with a lotion of equal parts of

Aquæ Ammon. acet. et Mist. Camph.

And by way of gently moving the bowels, to take

Pilulæ Hydrargyri gr. v. omne nocte et Potassæ Sulphatis ʒiſs. ter quotidie.

On the following day, March 12th, he was much better, the testis being soft, and free from pain. It should have been mentioned, that he was frequently troubled with seminal emissions during his sleep.

March 13. He was much the same. I passed the bougie again, it entered with more facility, and was accompanied with less pain.

March 14. Better. Less tenderness, less hardness, and the gland had began to diminish in size.

March 16. He informed me, that after having the bougie used on the 14th, he walked about more than usual the remainder of the day. All the following night he experienced an aching pain in the upper part of the testis and along the spermatic chord, and the pain had continued to increase till he passed some fæces a short time before seeing me; he had had no stool for two days previously, and told me that he always felt easier in the testicle when he could relieve his bowels of either flatus or fæces. Upon examination I found the thickening of the scrotum was almost gone, but the testicle was much harder, and more tender at its back part. I recommended him to put on some leeches, and a bread-and-water poultice afterwards. Six o'clock P. M. the leeches had drawn well, and the wounds bled freely afterwards, but notwithstanding this, the testicle was greatly more swollen, inflamed, and very painful, and he had violent strangury;

pulse sharp and ninety in a minute. A poultice was applied all over the scrotum and the gland was kept suspended.

℞ Hydrarg. Submur. gr. vj.

• Pulv. Antim. gr. iij.

Pulv. Opii gr. j.

Pulv. Digitalis gr. iss.

M. f. Pil. hora somni sumend et primo mane segunte
Magnes. Sulph. ʒj. ex Infus. Sennæ ʒiss.

March 17. Much better; had very little pain, and that only at intervals; strangury was quite gone; the gland was reduced in size, and he slept well all night; he was purged three times early in the morning, which he thought sufficient, therefore omitted the draught; the evacuations were almost black, and very offensive. Always found relief in the testis when he could discharge from the bowels.

Sumat. Pil. Hydrarg. gr. v. hora somni et Haust.
Cathar. ut antea præscript. primo mane.

March 18. Passed a very comfortable night, and the cathartic medicines operated three times; the testicle was scarcely more tender than the healthy one, considerably diminished in size, and softer on the back part.

March 20. Much the same in all respects; stools continued extremely dark and fœtid; he frequently told me that the testicle was relieved when he could get rid of fæces or flatus; a strong evidence that the state of the gland depended considerably on that of the bowels.

Pergat in usu Lotionis et capiat Pil. Hydrarg. gr. v. omne nocte.

R Infus. Gentian. Com. ℥ij. Potassæ Sulph. ʒss. m. f. Haust. quotidie sumendus.

March 21. Saturday. Testicle had been painful great part of the preceding night, but more particularly so between the hours of three and four in the morning, which induced him to take a dose of the bitter medicine, after which a considerable quantity of flatus broke off the stomach, and he became perfectly easy. The distress probably arose from his having eaten heartily of some very indigestible food the day before; soon after getting up he passed a dark stool. I began to think the use of the bougie was no longer required in this case, but I introduced it very carefully once more to ascertain the state of the

urethra, and to decide if it was in any way concerned in producing the strangury. The canal appeared quite healthy, and no pain was occasioned by the operation.

Monday, March 23. He reported, that on Sunday afternoon, and all the following nights, the testis was exceedingly painful. I found the gland was become full as large and tender as when he first applied to me; the induration of the scrotum had also reappeared.

Was this relapse brought on by the bougie? I think not; because no strangury ensued, and because he had eaten some very indigestible food on the Saturday, and had experienced great relief from voiding some black fæces about three hours before seeing me; however, as there might be some doubt, I determined, if possible, to avoid using the bougie again. From this time the testicle was kept constantly suspended, and enveloped in a poultice; attention was paid to benefit his general health as much as possible, and the bowels were gently excited daily. He continued

much the same till he passed some tolerably healthy stools on the 20th of March, and then became free from pain. The next day he was considerably improved; the testicle remained free from pain, was diminished in size, felt softer, and was much less tender. Being weak, he took

Decoct. Cinchonæ ʒij. bis quotidie,

And the same plan was persevered in for about a fortnight, or nearly three weeks, when he was considered quite well.

This patient had a decidedly scrupulous constitution, and as the enlargement of the testicle came on insidiously, and had a peculiar elastic feel, such as I have noticed in strumous affections of that gland, I am of opinion this case was of that nature. Most probably the exciting causes were the disordered state of the bowels, and the morbid state of the membranous and prostatic parts of the urethra. Flatulency is a common effect of acute inflammation of the testis, but in this instance I believe it arose from indigestion, or the increased disorder of the bowels. It will have been

remarked, that the introduction of the bougie at first proved advantageous, but it afterwards became questionable whether the further use of it was not rather injurious. The most decided benefit resulted from correcting the vitiated biliary secretion, and the ultimate cure seemed to depend very much upon the same circumstance, because that so evidently tended to promote and strengthen the general health.

NINTH CASE.

This was a case of sarcocoele successfully treated. A tall, muscular, and particularly healthy looking man, gave me the following history of his case. He had frequently bruised his testicles whilst at work hewing with an axe, but excepting severe pain and sickness, which sometimes lasted half an hour, he never experienced any inconvenience from these accidents. To the best of his recollection, the first swelling in the gland came on in the year 1806, while he was on parade in a volunteer corps, marching and blowing the French horn; it was attended with violent pain

and sickness. A medical gentleman supplied him at this time with some kind of lotion, and in a few days the pain and swelling subsided. The testicle afterwards enlarged two or three times each succeeding year, but always returned to its original size upon his having recourse to the lotion, till January, 1811, when he was dreadfully afflicted with rheumatism, and as he got better, the testis gradually increased to the dimensions hereafter to be mentioned, and had ever since remained in the same state. Pain in the gland shooting thence up into his loins often troubled him ; he tried various external and internal remedies without avail till June, and then he applied to a physician, who prescribed pills with calomel and cicuta, which made him tolerably easy, but did not in the smallest degree lessen the testicle. In November the testis again became painful, and the front of the scrotum inflamed, however, by continuing the pills the pain went off, but a red indurated spot was left upon the scrotum.

At the time he first consulted me, January 5, 1812, the left testicle was at that

time about four inches long, between three and four inches broad, and from two to three inches in thickness ; of its natural shape, smooth on its surface, and incompressibly hard ; it was powerfully grasped by the cremaster muscle and held close against the abdominal ring, but I was able to draw it down sufficiently to ascertain that the epididymis and spermatic chord were both free from disease. An inflamed hardened part, nearly equal to half-a-crown in circumference, was situated on the anterior part of the scrotum, and this had an attachment to the corresponding part of the testicle ; his bowels were regular, but his appetite was indifferent, and he slept badly ; he made water often, particularly after drinking spirits, of which he partook frequently at the solicitation of his customers, as he kept a retail spirit shop. The urethra was large, I therefore introduced a bougie nearly of the full size : it gave considerable pain in passing along the membranous part, and the patient could not avoid crying out as it went through the prostate, and on its being withdrawn one

or two drops of blood followed. I recommended him to abstain from spirits, and avoid every thing that could produce a determination of blood to the parts, and prescribed

Pil. Hydrarg. gr. v. secunda quaque nocte et Potassæ Sulph. ʒss ter quotidie sumend.

The bougie was used every third or fourth day. Under this plan he soon began to sleep well, his appetite improved, the gland became free from pain, and felt rather softer, the urethra got less irritable, and he voided his urine less frequently.

Feb. 2. He drank sherry wine till he was completely intoxicated. On the 4th, the inflammation on the scrotum had considerably increased; the testis, and an inguinal gland of the same side, were both painful, and the latter enlarged. The urethra having continued in much the same state for the last ten days, it induced me to employ a larger bougie; a full-sized one excited no pain except when going through

the prostate, and then the patient cried out, as in the first instance.

Capiat pil. omne nocte et Pulv. ter quotidie ut antea.

Humidet scrotum constanter cum lotione sequente.

R Aq. Ammon. Acet. et Aq. Puræ partes æquales.

As he told me that he had not resolution enough to avoid the folly of drinking to please his customers, I advised him to take water coloured with the syrup of red poppies ; this plan being pursued for three days, removed the pain, but made no other alteration. He was then directed to take pil. hydrarg. gr. v. twice a day, and to keep the testicle suspended, and four leeches were ordered to be applied to the scrotum, but only one of them fixed, and he did not trouble himself to get more ; in other respects no alteration was made in treatment.

Feb. 8. The testicle was softer, and I thought it appeared rather less, but the inflammation of the scrotum and irritability of the urethra were both greatly diminished.

Feb. 14. He complained of being

purged, which induced me to direct him to take only one pill in the day.

Feb. 19. Much in the same state as for ten days previously. The bougie was passed, and allowed to remain in the urethra a few minutes. From this time (Friday) he was prevented calling upon me till the following Wednesday, when he said, that, after having had the bougie introduced, a considerable degree of strangury came on, and it still continued, so that his urine escaped from him by only drops at a time. A degree of tenesmus also prevailed, and he was troubled with a dull weighty pain in the perinæum, and round the anus, which particularly annoyed him when sitting in a chair. The testicle had also been highly inflamed, greatly swollen, and very painful, and the inflammation of the scrotum had increased, but was better again. On examination the gland was become softer, and evidently diminished in size. To ascertain that no retention of urine existed, I passed a small flexible gum catheter; it occasioned pain, and I could feel that it was spasmodically grasped by the distant part of the urethra;

only three ounces of highly-coloured urine came off. I advised him to drink plentifully of diluents, to apply leeches and fomentations to the perinæum, and to take the following medicines :

R Hydrarg. Submur. gr. iij.

Pulv. Antim. gr. iij.

M. f. pil. statim sumend.

R Tinct. Opii gtt. xl.

Tinct. Digitalis gtt. xl.

Potassæ Nitrat. ʒiss.

Sy. Croci ʒv.

Aquæ Puræ ʒviiss.

M. f. m. sumat coch. iij. larg. quartis horis.

Six o'clock, P. M. he was something easier ; had made a quart of urine, but had had no fæcal evacuations. Leeches had been omitted.

R Hydrarg. Submur. gr. iij.

Pulv. Antim. gr. iij.

Pulv. Opii gr. fs.

M. f. pil. hora somni sumend.

R Infus. Sennæ ʒiss.

Magnes. Sulph. ʒvj.

M. f. haus. primo mane capiend.

Thursday, Feb. 25. He got up to make water frequently in the night, otherwise thinks he should have slept well. He had

had five copious stools, and felt much relieved ; the dull pain in the perinæum and the tenesmus still continued, but in a less degree ; he was going to apply the leeches.

Eight o'clock vespere. Leeches drew pretty well, and the pain and tenesmus were abated. He still complained of strangury. Thinking that the frequent desire to urine might possibly be kept up by the potassæ nitras, his medicine was changed.

R Potassæ Subcarb. ʒiss.

Vin. Antim. ʒß.

Tinct. Digitalis gtt. xxx.

Syrupi Croci ʒiij.

Aquæ Puræ ʒviiss.

M. f. m. sumat coch. iv. larg. quartishoris cum coch. mag.
succu limonis recentis.

R Tinct. Opii gtt. lx.

Olei Olivar. ʒj.

Muc. Gum. Acaciæ ʒij.

Aquæ Fontanæ ʒiv.

M. f. Enema hora somni injecienda.

Friday, 26. Slept soundly all the night, and after having had a copious stool, the strangury, tenesmus, and the dull pain in the perinæum, entirely left him. At this

time the testicle was not of half its former bigness; the diminution which had occurred previous to the late attack of pain and swelling, was scarcely observable, therefore it may almost be said that the whole of this great reduction in size took place within the last five or six days.

March 2. The testicle continued to lessen; he agreed to take one pill every night, but said that the lotion and other medicines were so troublesome to him that he wished to try without them for a while.

March 10. A still further reduction in the size of the gland was observable; the scrotum looked red, but the thick indurated part was scarcely to be discerned. He had drunk two or three quarts of linseed tea most days, which he passed off for ale, and thus avoided spirituous liquors.

March 25. The gland felt as hard as it did the first day he shewed it to me, but it was no larger than it was on the 10th instant.

March 26. Patient got drunk with gin,

and I feared he had also indulged himself with spirits, although he would not confess it, otherwise there appeared no way of accounting for the increased hardness of the testis.

April 2. He informed me that he had taken two pills each day, and totally abstained from spirituous liquors; the testis was both smaller and softer than when last reported.

April 11. I was gratified to find a very considerable diminution had taken place in the gland. He now told me that he had taken no pills for four or five days, and for a longer period he had drunk not less than twenty glasses of Maidstone gin per day (equal to five half pints wine measure) I cautioned him against such intemperance under an idea, from what occurred on the 2d of February, that if he persisted it would produce a relapse of the swelling.

May 10. The patient said he had persevered in drinking gin and ale in large quantities, though perhaps not quite so

much gin as formerly. On examination the testicle was found to be of its natural size, and nothing incorrect was observable, except a soft fulness of the epididymus, as if the veins were varicose, such as sometimes remains after common hernia humeralis.

I would observe upon this case, that the very trifling reduction which took place in the size of the gland during the first month, appears to have been merely the effect of diminished impetus in the circulation. I am rather disposed to this opinion, because, when there was unequivocal proof of the absorbents acting, the diminution was astonishingly rapid for a few days, and afterwards progressive to the end, under circumstances that were very unfavourable.

We have much less controul over the absorbents than we have over the blood vessels, and this happens because the former are placed more in the extreme parts of the system, and commence their actions there. They are difficult to excite into action, and it is frequently difficult to stop them when acting. This observation

applies to the absorbents all over the body, but particularly to those of the testicles, for those glands being the essential parts of the genitals, they are, as it were, placed more out of the constitution than any other organs, and therefore are in truth the most extreme parts of the whole system; and this, in my opinion, does in some degree account for the occasional absorption of the testicle in toto.

In the above case, the absorbents were difficult to excite in the first instance, but when set a going they continued to act (though more slowly of course) even while the habits of the patient were calculated to reproduce the enlargement of the gland. The cure seems to me explicable by what we know of phlegmonous inflammation when it gets well by resolution. There is first, increased nervous action, then increased action of the blood vessels, then effusion of coagulating lymph causing tumour and hardness; and lastly, the effects of these excessive actions are removed, by a lessening of those actions which produced them and by the setting

up of increased activity of the absorbents ; which action of the absorbents continues long after the other actions have ceased, till the parts being perfectly freed from all redundant deposition, are restored to their natural and healthy state. The diminution of the testicle by absorption, I believe for the reason above stated, did not commence till after acute inflammation had been excited in the gland, and this opinion leads me to adopt one of the two following conclusions ; either the stimulus necessary to excite the absorbents into action unavoidably produced inflammation, or else, the absorbents were excited into action by the inflammation, their action being the last which occurs in inflammation as above explained ; the latter conclusion is I think most probable, because we know the action of the absorbents is very much influenced by the state of the blood vessels.

The idea of rousing an enlarged testicle into a state of active inflammation with a view to its subsequent reduction, has, I imagine, never been proposed hitherto. The case last mentioned, shews that it may

prove useful ; and, I conceive, there may be some instances in which it is the only practice that will be attended with success. It is a plan certainly not to be recommended in cases of true carcinoma, or medullary sarcoma, or any other affection of the testicle resulting from a specific morbid action, because in such states of the testicle any attempt to excite inflammation is likely to have no other effect than to aggravate the existing disease ; but in simple fleshy enlargements, where no specific action prevails, and where the cure is to be effected entirely by the absorbents removing all that is redundant, then, if mild soothing treatment fails to cure, we may have a tolerably fair chance of succeeding, if by any means we can produce acute inflammation of the enlarged gland.

Under these circumstances, almost the only objection which can be urged against using a bougie in the urethra with a view to inflame the enlarged gland, is, the possibility of irritating and inflaming the wrong testicle. This appears not unlikely to happen in some cases if the hypothesis be cor-

rect, which I have advanced a few pages back, to account for the sudden translation of hernia humeralis from one testicle to the other ; because if, as there stated, only one testicle secretes at a time, we must suppose it would be that one which was most ready, or in the fittest state to perform its function. If this reasoning be admitted, then it will shew how the bougie introduced for the express purpose of irritating the urethra, may perchance inflame the healthy gland instead of the unsound one, owing to the predominance of long established natural sympathy over that which is morbid and recent. Agreeably to the same theory, the sound testicle would be still more likely to sympathise with the urethra, in cases where the morbidly enlarged state of the other gland had been produced by some cause perfectly independent of the urethra, for then there would be less probability of any morbid sympathy existing which might help to direct the influence of the bougie to the diseased testicle.

I have thought it right, to admit the possibility of the bougie's inflaming the wrong gland, both by way of caution, and also from considering, that after disease in the urethra has enlarged one testicle, it sometimes acts upon the other in the same manner, and then, instead of the gland, primarily affected, getting well, both of them remained diseased; but I have never known the bougie to act differently than by affecting the enlarged testicle, and I conceive it is most likely always to have that effect because diseased parts are, in general, more susceptible of inflammation than healthy ones. Should the disease of the testicle have been of long duration, and have been brought on entirely by some affection of the urethra, then, I imagine, there may be established so strong a morbid sympathy between the two parts as will almost ensure the effect of the bougie upon the enlarged gland. It is not proposed to use the bougie with the intention of irritating the urethra, until after it has been unsuccessfully employed to reduce the testis by correcting any morbid irritation that may

have existed in the urethra, and which may have caused the enlargement. Perhaps, therefore, while we are employing the instrument with this intention, we may, by carefully watching its effects, be enabled to judge how it will operate when resorted to for a different purpose. Should we perceive the slightest change in the diseased testicle which can be attributed to the bougie, it certainly may be considered a favourable indication, inasmuch as that circumstance shews the gland to sympathise with the urethra ; and it may encourage us, when other means have failed, to resort to the bougie with a view to excite inflammation of the enlarged testis, as already explained.

Some testicles sympathise with the urethra much more readily than others and sometimes when the urethra suffers from the most violent irritation, the testicles do not seem to be influenced in the slightest degree. It is evident, therefore, that if we wish to inflame a testicle by using a bougie in the urethra, the most violent measures are not the most likely to be successful. I

believe the surest way to excite inflammation in a testicle by means of a bougie, is to employ one rather larger than what the membranous and prostatic parts of the canal will admit with ease, and to introduce it frequently, as every day or oftener, and the effect will probably be further promoted by repeatedly moving the instrument to and fro along the urethra at each operation, and it may be allowed to remain within the canal for a longer time than what I have recommended for the cure of strictures. To the best of my recollection, such was the practice whenever I have known the bougie produce hernia humeralis accidentally ; unquestionably it is the safest mode of proceeding, and, in my opinion, it is the only one that we should be justified in adopting.

When the testicle has inflamed equal to what usually occurs in acute hernia humeralis from other causes, then the use of the bougie must be suspended, and that kind of treatment should be had recourse to which is usually employed for the reduction of that complaint.

Before quitting the subject of diseased testicles, I think it right to add a few cautions against the hasty extirpation of them, and more especially against a repetition of the operation when the second gland becomes morbidly affected soon after the removal of the first. It is of no use to amputate a diseased part, unless we can remove the cause of that disease, either by the operation or by other means distinct from it ; for if the cause be allowed to exist, we must suppose it will operate again to the production of similar disease. When, therefore, we have not good reason to believe that the cause of the disease has ceased, or that it will be removed by the operation, or that the removal of the diseased gland is previously necessary to give us an opportunity of eradicating by other means the cause of such disease ; if none of these circumstances prevail, castration ought not to be recommended. These cautions are the more necessary, because, although it is known that enlargement of the testicle frequently arises merely in consequence of the gland sympathising with some other part, yet I do not recollect that it has ever

been even suggested, that diseases of the prostate gland, independently of diseases in the urethra, might occasion a morbid affection of the testicle. Our knowledge that the functions of the two parts are called into exercise both at the same time, and by the same stimulus, should lead to such an inference, and several other arguments may be adduced in favour of this opinion ; but the following case sufficiently proves it to be well founded.

TENTH CASE.

An old gentleman had a cancerous affection of the prostate gland ; as the disease advanced, one of the testicles slowly enlarged, grew excessively hard, and became subject to shooting pains which extended along the spermatic chord. The same thing occurred in the other testicle a few months afterwards, and the disease in both the testicles continued to increase till the patient's death.*

* I was permitted to open the body, but the other particulars of this case are intended to appear in a future Essay on Diseases of the Prostate Gland.

Previously, therefore, to extirpating a diseased testis, we should not only satisfy ourselves as to the state of the urethra, by introducing a bougie, but also make ourselves acquainted with the state of the prostate gland by an examination per rectum. If these cautions required more being said to justify them, two cases, wherein operations were performed, might be adduced; but I suppress them lest their publication might subject me to the charge of being influenced by an invidious motive.

Protrusion, therefore, to be prevented, we should not only raise ourselves to the state of the upright, by introducing a bougie, but also make our

ON SUSPENSORY BANDAGES.

IN the treatment of diseased testicles, the use of a proper kind of suspensory bandage is often of first-rate importance. This is required chiefly to prevent the gland hanging by the spermatic chord, and sometimes it is found useful to afford a little steady and equal pressure upon the body of the testis ; it also occasionally serves another good purpose, that of protecting the morbid part from the friction of the patient's dress. The calico bandages in common use, are liable to objection on account of their making unequal pressure, and they being of an unyielding nature, the patient is not equally comfortable in different attitudes. The inequality of the pressure is frequently to be obviated by employing more skill and care in manufacturing them to fit the particular patients, but their want of elasticity never can be done away except they be made wholly or in

part of different materials. I have found leather an excellent substitute ; it is capable of affording all the requisite support, whilst it yields sufficiently to accommodate itself accurately to the inequalities of the surface to which it is applied, and having acquired any particular shape, it retains that in preference to its original form. Leather too, being fitted accurately to the part, sits closer, and more effectually guards it from friction than either calico or linen, it is therefore every way deserving of the preference. As the calico bandage, properly made, answers very well in the generality of cases, and is more easily procured, it may be resorted to till it is found to be objectionable, but when this sort of bandage will not suit, then, perhaps, we might do well to try one made entirely of leather, with the exception of the girdle which should not be of yielding materials, otherwise it may slip over the hips, and become useless.

There are some cases in which a suspensory bandage of an entirely different kind is found to be the most effectual, if not

the only one which can be worn. Some diseased testes are accompanied with tenderness of the spermatic chord as high up or even beyond the abdominal ring; in these, any pressure, however slight it may be upon the spermatic chord, not only occasions pain in the part pressed upon, but also excites pain, heat, and swelling, in the diseased gland. Indeed, these effects may be produced in every case if there be a sufficient degree of pressure applied upon the spermatic chord. The mode in which it operates is by impeding the return of the blood along the vein from the testicle, and very probably it irritates the spermatic nerves and arteries: more need not be said to prove it, of all other parts, the one which ought to be most carefully defended against pressure. The following case suggested to me a bandage which possesses every desired quality.

ELEVENTH CASE.

A young gentleman riding about fifteen miles on horseback, in the course of the

journey bruised his right testicle several times against the saddle, but as the attendant pain soon went off, he thought very little of the injury the gland had sustained; upon waking, however, the next morning, he discovered the testicle was swollen to three or four times its natural size, felt heated, and was exceedingly tender when pressed, but otherwise was not painful. Out of delicacy he asked no advice, and after awhile he thought himself perfectly well, excepting a slight hardness which could be felt at the back part. Two or three years after this, the gland was affected with shooting pains which extended along the spermatic chord into the loins, and being alarmed by discovering as he thought a great enlargement of the testicle he asked an opinion.

On making a careful examination I found he had a hydrocele which probably contained an ounce and a half of fluid, the testicle appeared very little if at all larger than natural, it was however harder than its fellow, and rather tender, and there was induration of the epididymis similar to

what frequently occurs after hernia humeralis. Under these circumstances, I judged the best remedies would be an occasional brisk cathartic, the constant use of a calico suspensory bandage during the day, and gentle friction night and morning with an embrocation of spiritus camphoræ and aqua ammoniæ puræ to promote absorption. The calico bandage, after a short trial, was thrown aside, as the patient fancied himself made worse by wearing it; the pain was increased in the gland, and he had moreover pain at the pubes, which seemed to be occasioned by the bandage pressing unequally. The cathartics and embrocation were continued till the fluid contained in the tunica vaginalis was absorbed, and the patient became free from pain. When easy and free from swelling, he always omitted the embrocation, because it occasioned severe smarting upon the scrotum, and as often as the remedy was neglected the pain and swelling returned. He noticed, however, that the tumefaction did not always recur with the same degree of rapidity, and by close observation he found this to depend upon more or less

blood being determined to the testis. If he drank wine after his dinner, or if he allowed his dress to rub against the affected side of the scrotum, or if his small-clothes were drawn up quite tight, (for they then generally pressed against the spermatic chord near to the abdominal ring,) either of these circumstances being permitted for an hour or two, never failed to produce heat and pain, and by the following morning the hydrocele would be considerably increased; which plainly shewed the swelling to result from increased secretion or effusion, and not from diminished absorption.

In this state he remained a long period till at last he remarked, that he was invariably comfortable when he wore a particular pair of leather small-clothes, and if the pain, heat, and swelling, prevailed to the greatest degree, by wearing these leathers for two or three days successively, he became perfectly comfortable, and the hydrocele subsided. Upon comparing these leathers with others, their peculiarities seemed to

consist in being of a soft, thin, texture, so that they accommodated themselves accurately to the shape of the wearer, and their brace-buttons were placed very wide apart towards the sides, which occasioned the line of draught by which they were held up, to extend down the sides of the abdomen nearly to the spines of the two ossa ilia, and thence obliquely in the direction of the groins to the perinæum. Thus the scrotum was well supported, and gently and equally compressed, without the slightest degree of undue pressure being made against the spermatic chord.

Leather small-clothes of the above pattern constitute the most perfect suspensory bandage imaginable. A pair of leather drawers which are kept up by spring-braces, may be made to answer the same intention equally well, and might be rendered preferable to either of the forementioned bandages by cutting off the thighs of the drawers within one inch of the perinæum, which would save expense, if it answered no other good purpose.

TWELFTH CASE.

Since having under my care the case just related, I have met with another in many respects very similar; but in this latter case the exciting cause appears to have been repeated attacks of hernia humeralis in consequence of gonorrhœa. The common calico bandage could not be worn with comfort, neither did it afford any relief from pain, but a leather bandage of the above description, applied constantly, keeps the patient easy; if however the use of this bandage be neglected, the pain in the testicle and groin always recurs.

ON HYDROCELE.

THE leather suspensory bandage besides being useful in affections of the testicle, may be advantageously employed in the treatment of varicocele and hydrocele; for in both these complaints, pressure against the spermatic chord should be avoided, whilst at the same time steady and equal compression all over the scrotum is desirable.

○ In the present day, scarcely any kind of treatment but an operation is thought of for the cure of hydrocele; such practice, however, I am persuaded is unnecessary in some cases, and in others the propriety of obliterating the cavity of the tunica vaginalis may rather be called in question. The case of the young gentleman who hurt his testicle whilst riding, proves that hydrocele, occasionally at least, is produced by increased secretion from the vessels of the testicle. No doubt this effusion relieves

the turgid blood-vessels of the gland, but when the cavity of the tunica vaginalis no longer exists, such relief cannot be afforded, and then it seems very possible that deposition might take place producing sarcocele. The same objection does not lie against obliterating the cavity of the tunica vaginalis when the hydrocele proceeds only from diminished absorption, because nothing is then wanted but to supersede the necessity for greater activity of the absorbents : inasmuch, however, as torpor of the absorbents, and obliteration of the cavity of the tunica vaginalis, constitute two imperfections, so then it is always preferable, independently of it causing less pain, to cure our patients by promoting the absorption of the fluid when practicable; and that this is sometimes to be accomplished, even when the hydrocele is very large, the following case sufficiently demonstrates.

THIRTEENTH CASE.

June 21. I visited Mr. W—— aged sixty-seven: he had a difficulty in making water, which seemed to be occasioned by a large hydrocele pressing against the under side of the urethra. The tunica vaginalis contained about a pint of fluid, and the scrotum was so greatly distended, that the integuments of the penis were drawn down to contribute to the general covering, and no part of the penis except the glans projected. He refused to undergo the palliative operation, therefore an embrocation of spiritus camphoræ and aqua ammoniæ puræ was advised to be rubbed on the tumor night and morning.

June 26. He thought himself much better; the urine had come away freely during the last three days, and this relief led us to suppose some degree of absorption had taken place, although there was no sensible diminution of the swelling. He was directed to persist in the use of the embrocation.

July 11. Said he was more comfortable than he had been for some months previously; there was evident decrease of the tumor, and the integuments covering it had begun to feel loose. He was recommended to continue the embrocation, and take some cathartic medicines, and *hydrargyri submurias et magnesia vitriolata* were prescribed. From this time I did not see the patient till the ensuing December, when he informed me that the hydrocele had totally disappeared before the end of August, and he had remained well ever since.

By the progress towards recovery being regular after the absorbents had been stimulated into action, and by there being no disposition to a relapse after the remedies were discontinued, I conclude that the accumulation of fluid in the tunica vaginalis in this case arose entirely in consequence of diminished absorption. Whether the leathern suspensory bandage would have been as beneficial in this case as it was in that already noticed, which resulted from increased secretion, it is

impossible to say, because this occurred to me before I was acquainted with the bandage, and therefore I had no opportunity of trying it on this patient: I am however disposed to think it would have been useful, because pressure properly applied is the most effectual means we possess of exciting the absorbents.

Hydrocele is frequently met with in children, but these cases in general require nothing more for their removal than the application of stimulating embrocations, and brisk cathartics. Some of these cases however are much more obstinate than others, and I imagine the use of the leather suspensory bandage will be found (if not alone yet in conjunction with other means) materially to accelerate their cure.

Sometimes the fluid accumulated in the tunica vaginalis of boys, descends from the abdomen, owing to the communication between the two cavities not being obliterated. These cases may be distinguished by the swelling disappearing when pressed, and in such a spring truss must be worn to

obliterate the communication between the two cavities prior to the application of the leathern suspensory bandage, otherwise the testicle might be pushed up into the abdomen, and if, while it was there, the neck of the tunica vaginalis should happen to close, the future descent of the testis would be prevented. When the opposing surfaces at the neck of the tunica vaginalis have firmly united, there will no longer be any objection to the leathern suspensory bandage being worn, but most frequently this will not be necessary, because the cure then proceeds without further assistance.

THE END.

Wise men are facitured
at all events before
But it does not follow
that facitured men
are wise - But the
world thinks them so
and they do not ^{any} deny
the mis take - Feb. 15. 1851.



