Dr Ramsbotham
with Mr Ramsden's
respects

Practical Observations

ON

THE SCLEROCELE.

T. DAVISON, Lombard-street,
Whitefriars, London.

Practical Observations

ON

THE SCLEROCELE

AND

OTHER MORBID ENLARGEMENTS

OF

THE TESTICLE;

ALSO

ON THE CAUSE AND CURE

OF

THE ACUTE, THE SPURIOUS, AND THE CHRONIC

HYDROCELE.

THE WHOLE ILLUSTRATED BY CASES.

TO WHICH ARE ADDED,

FOUR CASES OF OPERATIONS FOR ANEURYSM,

Subclavian, Femoral, Popliteal, and Femoral-popliteal,

With Practical Remarks, and Plates.

BY THOMAS RAMSDEN,

Surgeon to the Royal Foundation of Christ's Hospital, to the Foundling, and Assistant Surgeon to St. Bartholomew's Hospital.

" But though I would at all times vindicate the profession from any unjust attack, I would by no means be supposed to think that there is not large room left for the industry of us and of our successors; some of the operative parts of the art are in a state capable of improvement, and the treatment of some diseases might certainly be altered for the better.—Pott.

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1811.

John Ramsden
9 Old Jewry

TO

SIR JAMES EARLE,

Senior Surgeon to St. Bartholomew's Hospital, &c.

MY DEAR SIR,

I gladly embrace this public opportunity of acknowledging how very highly I am indebted to the instructions and advantages which I have derived from your superior skill, and steady friendship.

To have so long enjoyed the benefits of your professional example, and to have been always encouraged by your personal kindness, are favours which will ever impress my mind with the deepest sense of gratitude.

I am, my dear Sir,

Your most devoted

and very humble servant,

THOMAS RAMSDEN.

Coll. M.D. December 1, 1810.

PREFACE.

IN offering this volume to the public, I know not that any apology is necessary to those of the profession who are anxious for the progress of the healing art, and desirous that it may be improved by accumulated experience and observation. But while I confide in the liberality that encourages every attempt to enlarge the boundaries of medical science, it is not without much diffidence that I have ventured to innovate on the established practice in those disorders which are the subject of the following chapters. I trust, however, that I have never lost sight of the respect due to eminent authorities, and that I shall not be thought wanting in veneration for the great masters in

the surgical art, while I presume to suggest such changes in opinion and practice as have been derived from experience only.

Having long had reason to suspect that the common induration of the testicle has been often confounded with schirrhus, I am now induced to present such facts and observations as may prevent that mistake hereafter, and establish a distinction which, if just, must be allowed to be of great importance. Nor will it be less my object to inquire whether, in other affections of this gland, our practice may not be very materially improved.

In the case of most diseases, where the cause is not obvious, we have been accustomed to assign an origin that is at least plausible; but in the case of many morbid derangements of the testicle even

conjecture has not been very successfully employed. Perhaps our curiosity has been checked by a recollection of the ability already displayed, and the acknowledged superiority of investigation already devoted to the morbid history of this gland. While, however, we venerate the labours of our predecessors, and admit that they were such as ought to repress the rashness of theory, and the zeal of innovation, they cannot be admitted to limit the progress of experience, and the evidence of such facts as, had they occurred in their practice, would have been, no doubt, incorporated in those valuable works by which our opinions have been so long guided *. With respect to the pathology of the testicle, I confess, that if accident had not directed my attention to what I have been enabled to bring forward in this volume, I should have rested in the

* See the works of Mr. Pott.

opinion that the subject, as handed down to us, was exhausted, or that very little remained for future elucidation.

One consequence of our ignorance of the real cause of many morbid affections of the testicle has been, that we have considered them as idiopathic, and wherever this opinion is adopted it will seem to derive support from a variety of appearances that in truth are only calculated to impose farther on the judgment.

A testicle, for example, which has become enlarged and indurated without external injury, or any other obvious cause, is observed to increase in resistance, and to acquire a craggy inequality of surface. In its farther progress it perhaps presents an accumulation of watery fluid within the tunica vaginalis, or underneath the coverings of the spermatic chord. Sometimes

all this proceeds slowly; at other times the testicle suddenly becomes painful, inflames and suppurates, and, throwing out a gleeting fungus, assumes characters of that disease which, in the female breast, and other parts of the body, we call *cancer*. Yet many of these features, although unquestionably characteristic of schirrus and carcinoma, may be clearly proved to be the natural consequence of a species of irritation which I shall endeavour to describe in the following pages.

While, therefore, it is not my intention to deny the existence of idiopathic disease in the testicle, I am fully authorized, and have great pleasure in asserting, that such a disease is extremely rare, and that very many cases of morbid induration, hitherto supposed to be idiopathic, may be safely considered, and successfully treated, as aris-

ing from a principle of irritation concealed within the urethra. And while I am equally ready to admit that the testicle may be liable to what we term Schirrus, and also to Sarcocele, both of which lead to an untractable state of ulceration, I have ventured to question whether our present theory of the nature of these diseases, may not be exchanged for one more sound.

In this investigation, my chief object is to shew that irritation, frequently applied to a testicle, will produce appearances and consequences very similar to what are esteemed true characteristics of schirrus and carcinoma. And from this fact (for such it is) I deduce that the *malignancy of the ulcerative stage of true schirrus in the testicle* does not, as has been supposed, depend on the presence of any morbid poison, but differs from the *malignancy of the ulcerative stage of*

the common indurated testicle, merely with regard to the part of the gland in which irritation causing its derangement, has been primarily established.

In illustrating this opinion, it is to be remarked that when a testicle is affected by true schirrus, as it is termed, its morbid alteration will be found to originate within its organic structure; but when the gland becomes indurated and enlarged in consequence of exterior causes of excitements, the morbid symptoms are, in the first instance, entirely confined to the surrounding or intervening cellular substance. And hence, alone, I conceive it is that schirrus is attended at an early period with a peculiar sallowness of countenance and other symptoms of derangement in the system; while the common indurated testicle will exist and frequently advance to a great extent

without at all interfering with the general health of the patient.

This sallowness of countenance has been generally pronounced a decisive symptom of cancerous malignity in the part or in the habit. But if we admit irritation in idiopathic disease to be primarily established within the organic structure of the gland, and recollect the important influence which the testicle possesses in the animal economy, we may very rationally account for the sallowness of countenance and other symptoms of general indisposition, without being obliged to trace them to cancer.

This theory of mine will not, I hope, be supposed to rest on an imaginary foundation, if it shall be found supported, as it certainly may, by the appearances of the diseased parts on dissection.

If a testicle, enlarged and indurated by idiopathic, schirrous, derangement, be divided and examined, its organic structure, even before the gland has become painful or inflamed, will be found imperfect or totally obscured; "the centre *" (as is admirably described by a celebrated surgeon in his definition of schirrus in the breast, and which definition is equally applicable to the testicle), is more compact and has a more uniform texture than the rest of the tumor, and is nearly the consistence of cartilage. This middle part does not exceed the size of a silver penny, and from this in every direction, like rays, are seen ligamentous bands of a white colour and very narrow, looking in the section like so many irregular lines passing to the circumference of the tumor, which is blended with the

* The centre here does not merely imply the middle part of the gland; any part of a gland may form the central point of its disease.

substance of the surrounding gland. In the interstices between these bands the substance is different, and becomes less compact towards the outer edge."—HOME.

But, on the other hand, if a testicle indurated and enlarged from excitement exterior to itself, be examined before it has become painful or inflamed (and we have occasionally opportunities to do so), the morbid alteration will be found in the cellular substance only, and will appear more and more faint as it approaches nearer to organic structure, which is yet entire, or in some degree distinguishable.

From these premises the following opinion, subject to future correction, is respectfully offered, viz. That the disease which we are accustomed to call true schirrus in the testicle, *consists solely in irritation primarily established within its orga-*

nic structure *, and that such idiopathic induration differs from symptomatic induration in the following particulars: the *former always proceeding* FROM *organic structure towards the surrounding cellular substance;* the *latter as uniformly proceeding from the surrounding and intervening cellular substance* TOWARDS *organic structure.* It may not perhaps be superfluous to add here, that by "*organic structure*" those parts of a gland are meant which are necessary to its particular functions, and the office which it holds in the animal economy.

I farther think, that the morbid distinction just stated is maintained until the part

* Some consider schirrus as arising from mechanical obstruction, in which opinion I am disposed to coincide, so far as mechanical obstruction may, as well as other causes, prove a *source of irritation.*

becomes painful or inflamed, after which time the derangement, whether idiopathic or symptomatic, loses its real pathognomonic features*, and, independently of any morbid poison, acquires malignancy by the laws † of common irritation only; such malignancy varying in its progress and

* We are too much accustomed to look for pathognomonic characters, *and to believe that we discover them* in the advanced stages of organic disease, *where they are never to be found.*

† When irritation is established at any one point, that point becomes a cause of excitement to a second, and so on in succession until the part originally affected is lost in the surrounding derangement, each structure constituting (as it thus successively takes on chronic irritation), a *new source* of farther disease.

A morbid testicle, or breast, or other tumor in an advanced state of enlargement, is not therefore to be viewed as the *distinct effect* of the *original derangement*, but should always be considered as consisting of *several diseases*; and to this synchronous action of a *variety of morbid causes*, I am disposed to attribute the *confusion of character*, the *untractability*, and the *malignancy* (when they open into ulceration) by which such local affections are characterized.

symptoms, according as the organic structure may have been primarily affected, or secondarily broken in upon *.

Many other facts might be advanced to strengthen these opinions, but the following will probably appear completely satisfactory. It is acknowledged by every surgeon of experience, that the disease in the testicle which we call schirrus (and it is the same with the sarcocele) will, if it escapes excitement from general indisposition or external injury, be carried, like the common indurated testicle, for a long series of time without advancing; and this fact surely cannot be reconciled with the idea of a morbid (can-

* I think it probable that the *varieties* we observe in the appearance of untractable malignant tumors entirely depend on the *part* or *structure* in which *irritation* may happen to be *first established*, and on the *consequent difference of succession* in which the structure of surrounding parts may become deranged.

cerous) poison being present within the gland.

The Sarcocele, which has been unfortunately * considered by our best authors merely as a variety of Schirrus, in fact possesses very few morbid characters in common with it; it is true indeed that the Sarcocele commences within the organic structure of the gland, and proceeds according to the laws of common irritation, but in outward character and on dissection it displays features which are peculiar to itself †; since it is fleshy and elastic to the feel,

* I say *unfortunately*, because I believe it to be a circumstance which has greatly perplexed and confounded our inquiries.

† The morbid distinctions so obviously applicable to the schirrus, the sarcomatous, and the sympathetic enlargements of the testicle, are also observable in the female breast. Of these diseases the latter is, however, in the female breast, by very much the most frequent.

and when divided is often found to contain within its substance partial collections of bloody sanies; it is also in a great measure freed from that ligamentous radiated appearance, which in true Schirrus is so uniformly observable *.

* The *hydatid* having been frequently found within a diseased testicle or breast, has been supposed by some authors to constitute the basis of *schirrus;* but such opinion is at once refuted by the *consolidated character* which true *schirrus* always displays. I think it highly probable, however, that the *hydatid* (or at least encysted fluid) within organic structure constitutes the proper basis of the *sarcocele;* since that disease always displays more or less of a *vesicular* appearance.

Mr. Home in his observations on "Cases of hydatid in the breast, the symptoms of which exactly resembled those tumors that become cancerous," does not consider hydatids "as forming a part of the poisonous disease, *but as accidental complaints superadded to it.*"

As Mr. Home, with his usual candour, has declared his object in publishing those cases to be that of exciting inquiry, I feel assured he will pardon me for saying, that the facts he has stated do not appear to me to warrant the conclusion which he has drawn from them. In each of the cases stated by Mr. H. the tumor previous to its extirpation had become *painful* and been observed to *increase in size.* This fact therefore leads

The prosecution of this enquiry has not only enabled me to explain many of the phenomena of the indurated craggy enlargements, and of the malignant states of

me to believe, that the "*unusual compactness of the surrounding gland*," which that gentleman describes, and which would closely resemble *a fleshy elasticity of feel*, was the ground-work of future induration, *solely occasioned by the irritation of the increasing hydatid.*

If this opinion of mine be correct, it follows that Mr. Home in the cases referred to has afforded us (though accidentally, if he will excuse my using such an expression) two very admirable illustrations of *true incipient sarcocele.*

Case XXVI. "The contents of the tumor were a bloody sanies, the coat a thin membrane imbedded in the gland of the breast. *The surrounding gland was unusually compact*, but in no respect diseased."

Case XXVII. "The surrounding gland was not in a diseased state *but unusually compact*, from having been compressed by this hydatid."—Vide Home on Cancer, Chapter IV. page 102 to page 110.

In each of the above cases the patient (as is very usual) endeavoured to trace the complaint to a previous accident; but as this vesicular disease is known to occur *where no accident has happened*, and *obvious contusions* of the testicle or breast *do not produce it*, I am inclined to believe that the *sarcocele* is an *idiopathic* affection.

the testicle on the simple principle of neighbouring excitement, but has also led me to believe that the watery effusions into the tunica vaginalis are dependant on a similar cause, although many of them, for reasons hereafter to be explained, are not so entirely under the control of the treatment I shall have to offer, as those derangements of the gland which are characterized by induration.

In consequence of my considering the watery effusions of the testicle in this point of view, I have been induced to add some observations on those complaints which are called Hydrocele and Hydrosarcocele. By these I shall attempt to shew, that the radical cure of the former does not depend on an obliteration of the cavity of the tunica vaginalis, and that many diseased testicles, which under the latter term have been subjected to extirpation, might have

been recovered without pain or confinement.

To distinguish the common indurated testicle from true schirrus I shall call it sclerocele, a name merely expressive of hardened enlargement; and when it is accompanied with water within the tunica vaginalis, I shall term the disease hydrosclerocele.

I shall also treat of the hydrocele of the tunica vaginalis testis, at present considered but of one kind under three divisions, and distinguish them by names descriptive of the particular states under which such effusions or accumulations of fluid take place.

If the distinctions I have endeavoured

to point out between symptomatic and idiopathic induration should hereafter be admitted in practice, a more general change of terms will be necessary. The term schirrus, which in its indiscriminate application has led to infinite error, may, I think, be spared, and with some advantage, abolished. In speaking of symptomatic induration, we might distinguish it by the simple term sclerocele; and when we speak of idiopathic induration, it might be named idio-sclerocele.

The term carcinoma, if retained at all, should also have distinct applications; when applied to the ulcerative stage of symptomatic induration, we might use the term (carcinoma) singly; when we mean to express the ulcerative stage of idiopathic induration, we might call it idio-carcinoma.

The term sarcocele being descriptive of that state of enlargement of the gland to which it is applied seems unobjectionable, provided it be relinquished when the disease enters into its ulcerative stage and loses its pathognomonic characters.

CONTENTS.

CASES OF ANEURYSM, WITH PRACTICAL REMARKS.

ERRATA.

Page 67, line 13, for " glands" read glans.

Page 213, instead of " the only method which ought to be practised in this disease," read, the only operation which ought to be practised upon, *the tunica vaginalis*, in this disease.

Page 258, for " very much larger than the head of any full grown fœtus," read, full as large as the head of a child eight or ten years of age.

p: 37. l. 7 a wanting

Practical Observations

ON

MORBID ENLARGEMENTS

OF THE

TESTICLE, &c.

It is a common remark, "that we are liable to overlook those truths which are placed nearest to us." This observation is particularly applicable to the present subject, since we have remained ignorant of the true source of many morbid affections of the testicle, notwithstanding a variety of familiar facts have constantly pointed to its disclosure.

Our later writers, by their important anatomical distinctions of the parts concerned in the diseases of the testicle, have corrected many serious mistakes of the earlier practitioners. The operative prac-

tice, in cases which have been deemed incurable, has also through the same means been much improved; but the curative treatment, by which operations might be rendered unnecessary, being continued on erroneous principles, is yet unsatisfactory and inefficient.

Every circumstance connected with the present pathology of the testicle tends to shew that its diseases have been too generally considered as idiopathic, and our resting upon such opinion may account for the little progress we have made in the knowledge of the diseases of this gland. Such an opinion, by diverting our attention from the point to which it ought to have been directed, has occasioned a misapplication of our remedies, and induced us to pronounce certain states of the gland incurable, when a more correct knowledge of the cause of derangement would have brought them within the power of remedy. It has

also, doubtless, in many instances led to the more unfortunate result of subjecting a patient unnecessarily to a painful and humiliating operation.

I shall attempt to demonstrate that a large proportion of the affections of the testicle are secondary; that is, not originating in the gland itself, but dependent upon a principle of concealed irritation within the urethra. I shall also in the following pages adduce numerous facts to prove, that several even of the more malignant appearances of disease in this gland, as well as others of less serious character, are merely gradations of derangement from the same cause*.

Numerous morbid affections take place in the human body which are attributed

* They have hitherto been considered as varieties of one idiopathic disease.

to a principle of sympathy. Sympathy, in the professional acceptation of the term, is used, as I conceive, to express a consent between neighbouring or distant parts, which (consent) is indicated by some obvious deviation from health, or change of sensation in the parts so sympathizing*. The present inquiry has, however, convinced me, that an equally extensive prin-

* Mr. John Hunter divides sympathy into two kinds, general and partial: he considers fever as an example of the former, and then divides the latter into three species, under the terms remote, contiguous, and continuous. As an example of the remote he specifies "pain in the shoulder, in inflammation, and other affections of the liver;" as an example of the contiguous he mentions "disturbance in the bowels from affections of the parietes of the abdomen;" and as an example of the continuous sympathy he instances "the spreading of inflammation." It is to be observed that the presence of each of these sympathies is made evident to the patient by some deviation from a state of health, or by a change of sensation in the sympathizing part; whereas the principle of latent irritation, which I now introduce as a cause of morbid derangement of the testicle, exists for a length of time without producing any obvious deviation from health, or any change of sensation in the parts concerned.

ciple occasionally prevails in the system different from sympathy, and which may exist for a considerable length of time, and even until it has effected a derangement of structure, without the patient being made conscious of its presence by any alteration of health, or by any change of sensation, either in the part primarily affected, or in that subsequently deranged, till such derangement of structure be actually established.

It is this principle which I consider to be the basis of a large proportion of the diseases of the testicle, and which, on account of its extreme subtlety, I shall hereafter distinguish by the term latent or insensible irritation*.

* By the application of the epithets *latent* and *insensible*, I wish merely to imply that the change in the membrane of the urethra from a natural healthy state is of a concealed nature, is shewn only by its effects on other parts, and passes unobserved by the patient.

The power of this principle to effect a derangement of the testicle can be exemplified in the gland itself; and may also be inferred from analogy in a variety of instances, in which other parts of the body (much less susceptible than the testicle, and situated also at a greater distance from the source of excitement than that gland is from the urethra) are occasionally placed under induration, from causes equally subtle and unobserved as that which is so frequently concealed within the urinary passage.

Subtle or insensible irritation, as yet but little regarded as an occasion of disease, will, on accurate enquiry, be found to constitute the basis of many of the more serious complaints which claim surgical assistance; and so fertile a source of morbid derangements will afford ample scope for future investigation. To me this subject

appears highly interesting and important; and I cherish a hope that the industrious prosecution of it, by explaining the nature and cause of several diseases which we know at present but imperfectly, may supply the means of cure or relief in some bodily afflictions which have hitherto been considered as beyond our art.

Many instances of the baneful effect of this latent yet powerful agent of disease daily present themselves in various parts of the system, but which we have not been accustomed to trace to this particular source; I shall therefore introduce a few familiar examples of the general influence of insensible and slight irritation, previous to the more particular examination of its effect on that important gland, which is exclusively the subject of the present enquiry.

When a susceptible or bloodshot* point of membrane exists within the cavity of a joint, although so slight and subtle as to create no sensible uneasiness to the patient, it will cause such enlargement and induration of the adjoining parts as has been frequently mistaken for an expansion of the condyles themselves; this state of parts commonly † exists in that derangement of the knee joint which is called the white swelling.

* I have borrowed this term bloodshot from the expression of a professional gentleman of superior experience in the appearances of morbid anatomy.

† I believe I might say always, instead of commonly. I am indeed of opinion that a bloodshot state of membrane is the common basis of the white swelling; in other words, that the chronic enlargement and induration of parts surrounding joints, and the hectic fever which ensues, are solely dependent on such a source of slight excitement within their cavities. I ground this opinion on the strict analogy which the progress of white swelling seems to bear to those morbid derangements of various parts of the system which can be traced to similar sources of latent irritation.

A similar effect takes place in those affections which we term scrofulous, and which seem to commence in the medullary parts of bones, in the tibia for instance, when a partial absorption of the body of the bone is taking place, or any very minute particle of osseous matter is slowly making its way towards the surface, the surrounding parts, without being in any degree inflamed or painful, will increase in bulk, and assume a resistent hardness, bearing every external resemblance to an increase of bony substance: yet these appearances immediately subside on the exfoliating bony particle being set at liberty.

The common corn on the toe or foot is capable of inducing a flinty induration and enlargement of the inguinal glands, without in itself being sufficiently painful to awaken the attention of the patient to the part on which it is situated; in these cases,

indeed, not only the source of irritation, but the affected gland also, will be so entirely free from uneasiness, that the induration will often advance to a considerable size before the patient becomes conscious of it*.

The mischiefs of insensible irritation frequently extend beyond those parts which are first exposed to its influence; when, for instance, it has occasioned an induration of any distant or neighbouring gland, such gland in its turn becomes a source of excitement to others, until the whole lymphatic system successively be affected†.

* It must not be supposed that I am here describing a common sympathetic bubo. The affection of a gland under that term is always marked by change of sensation, that is, by an increased sensibility in the part, and the cause producing it is always obvious.

† Many cases of general glandular disease, which we are in the habit of terming scrofulous, may be traced to some slight source of irritation as an exciting cause; true constitutional scrofula is, in my opinion,

Latent irritation, besides inducing enlargement and hardness of glands, and

comparatively a very rare and unusual disease, and though we are accustomed to say "such a one is predisposed to scrofula," I think the observation is less frequently well founded than we have hitherto believed it to be. This observation applies also to that state of the knee and other joints which is termed the white swelling. Whether the white swelling has originated in a subject obviously suffering under constitutional glandular affection at the time, or whether it is to be traced to an accident in a subject otherwise of good stamina, and at the time of such accident in apparent health, we indiscriminately call the disease in the joint scrofulous, and reconcile ourselves to this general term by supposing that the accident has aroused a dormant predisposition to scrofula.

"What disorders of the joints do we see produced by very slight injuries done to them! Disorders which are clearly and plainly scrofulous, and which would not have appeared at that time, or in that part, had it not been for such accident: but surely no man will from thence conclude that such people have no scrofulous taint in their blood or glands previous to such strain or bruise."—Pott.

It is foreign to my present subject to say more on these points, but I recommend them to the attention of the profession, as likely to suggest some practical distinctions in the treatment of the glandular affections, and of the treatment of diseased joints. I will venture,

other parts as rugged and resistent as that state which we frequently call scirrhus, has the further property of placing distant or neighbouring parts under characters and symptoms which are generally believed to be distinctly characteristic of certain constitutional affections.

Thus in cases of confirmed syphilis, long after the venereal virus has been eradicated by a sufficient and judicious use of mercury, and the patient has been appa-

by way of example, to remark, that in the diseased knee joint, from constitutional scrofula, a specific benefit will be derived from sea air and sea bathing; but in the white swelling, originating in an accident, and dependent solely on the irritation which such accident has established within the cavity of the joint, no more benefit will be derived from a residence near the sea than would be obtained from the pure air of any inland county. In the medical treatment of these affections I would also say, that when a joint partakes of constitutional scrofula, great benefit will be gained by free doses of soda; but in affection of joints from irritation such medicine will be useless.

rently restored to health, ulcerations will take place in the throat or on the palate, so exactly resembling the symptoms of venereal disease in these parts as to deceive even an experienced practitioner; yet such ulcerations eventually disappear on the exfoliation of some particle or portion of bone from the interior of the nose, which had latently produced the mischief.

A singular example of the effect of subtle and distant excitement is afforded in worm cases, in which the sympathetic irritation within the nose, by long continuance, will cause thickening and abrasion of the membrane, and even exfoliation of the bones. These appearances in children have been occasionally mistaken for hereditary venereal disease; and a hasty, incautious expression of such an opinion by a professional man has sometimes involved parents in the deepest distress.

Of mischievous consequences of continued or repeated irritation* we have an

* It appears to me more than probable that the indurated liver of the spirit-drinker, which is commonly called scirrhus, is an effect of continued and habitual irritation in the duodenum, at the extremity of the ductus communis choledochus entering that intestine. There are no two parts of the human body which, on first mention, would be supposed to bear less resemblance to each other than the liver and the testicle; yet on investigation it will be discovered there exists a particular analogy between them. The liver has its excretory duct terminating in a channel (the duodenum), exposed to continual irritation from free living. When such irritation in the duodenum has been kept up, or continued to a great extent, this viscus or gland becomes hardened and enlarged; an effusion takes place into the cavity of the abdomen, and constitutes the common ascites. The testicle has its excretory duct also terminating in a channel (the urethra), which is exposed in a variety of ways to irritation. When this irritation is established, or is continued, the gland becomes indurated and enlarged; an effusion takes place into the cavity of the tunica vaginalis, and constitutes the hydrocele; so that whilst the indurated testicle, accompanied with fluid within the small portion of peritonæum, which forms its sacculus, is denominated the hydro-sclerocele of that gland, the indurated liver with fluid within the peritonæum of the larger cavity of the abdomen might, with perhaps not

example in the membranous polypus, which, if injudiciously treated with sternutatories,

less propriety, be termed the hydrosclerocele of that important viscus. In occasional derangements of health, which are characterized by a fæcal discharge of a black or a clay colour, it is always believed that the liver is primarily affected, and that its functions are imperfect; and the success of a dose of calomel or blue pill in promoting a flow of bile into the intestine is received as a confirmation of the correctness of such theory. I presume, however, to doubt both the premises and the conclusion, conceiving it more reasonable to attribute such interruptions of the discharge of bile into the duodenum to irritation and spasm upon the excretory duct, than to suppose the functions of the gland itself liable to such changes and vicissitudes. If a patient who has indulged in free living, and thereby induced a hardened state of the liver which can be felt externally, be taken from his irregular habits, that is, if his duodenum be released from irritation, the intestines will be supplied with bile, notwithstanding the morbid induration of the viscus continues, and he may live many years under such circumstances.

When I was learning my profession at St. Bartholomew's hospital, several of my cotemporaries, who were studying for physic, were exceedingly inquisitive in examining the dead subject: I gladly joined in their enquiries. I recollect, in opening subjects whose fæcal discharge previous to death had been received as a proof that the liver was diseased, it was not uncommon

becomes thickened, fleshy, and incurable. Instances also are frequently obtruding themselves of the common steatoma being made, by slight irritation, to project a fungous excrescence, and to assume malignant appearances strongly resembling cancer.

Among the preceding examples of the baneful effect of latent irritation, those which are characterized by enlargement and induration are most analogous to the derangements in the testicle, of which we are to treat. The other instances are stated merely to shew, that repeated or continued irritation, however slight, and whether sym-

to find that viscus in a perfectly healthy state, whilst, on the other hand, where no such appearance had been observed in the fæcal discharge, it was oftentimes found to be enlarged and of stone-like resistance.

Perhaps if an enquiry into analogies between distant parts of the system was industriously prosecuted, it might supply many useful hints in our curative practice.

pathetic or immediate, is a very frequent cause of many malignant appearances of disease.

The derangement of a gland from insensible irritation usually has two stages, which may be distinguished by the terms indurative and ulcerative. The indurative stage appears principally to consist in a thickening of the intervening and surrounding cellular substance; and though the external appearance of the gland may be materially altered, yet in this stage its organic structure is not broken in upon, its functions are not destroyed, nor is the disorder in any way offensive to the constitution: but the ulcerative stage *, which

* When a previously indurated gland has become painful and inflamed at some distance of time, such a process has been called *secondary* inflammation. But the term *secondary* should be applied, in strictness, to parts which in the first instance have been enlarged by inflammation, and subsided into a quiet

may be said to commence when the superficies appears reddened, or the gland becomes tender to the touch, occasionally produces excitement in the system, with obvious derangement of health; and if its progress be not arrested before the internal organic structure of the gland is exposed, a malignant disposition will often be communicated to the adjacent parts, and in some instances be revived in them after the gland originally affected has been extirpated. To such cause, and not to any constitutional malignant disposition, we may attribute in many cases the extension of disease which has taken place along the spermatic chord, after the removal of a fungous state of testicle. This observation is also applicable to a variety of tumors in

state, previous to the second attack of inflammation. It cannot with propriety be applied to the second stage of a gland, enlarged by insensible irritation.

other parts of the body as well as in glands, and is exemplified in one of the annexed cases of Steatoma.

STEATOMA,

rendered malignant by common irritation.

CASE I.

A gentleman seventy years of age, yet of good stamina and active habits, was introduced to me for an opinion respecting a fungous excrescence with an ulcerated surface, situated immediately under the left eye. The eye was partly concealed by the upper edge of the fungus, the surface of which was about the breadth of half-a-crown, but its base was much narrower. The tears trickling down the cheek, and mixing with the purulent and sanious discharge from the ulcerated surface, had ex-

coriated all the neighbouring parts, and formed an additional source of irritation and distress.

The case had been previously submitted to the inspection of an eminent oculist, who declined any interference, under the apprehension of its being cancerous. After examining the tumor with attention, and being informed that at first it was nothing more than a common painless wen, in which state it had remained dormant for several years; and observing also that in other respects the gentleman was in pretty good health, I gave it as my opinion that the tumor might be removed with safety, at the same time expressing my apprehensions, in consequence of the malignant action which appeared to be established in the neighbouring parts (and to which they had been so long habituated), that the mischief might proceed at some future period;

but at all events the removal by the knife would afford temporary relief, and give the only chance of a permanent cure.

The patient consented with cheerfulness, and went through the operation with great resolution; in the performance of it I was obliged to remove the whole of the under eye-lid, and a small portion of the tunica conjunctiva from behind the lower ridge of the orbit; yet I found it impracticable to dissect away every part of that membrane in which diseased action seemed to have spread itself. The wound however healed beyond my most sanguine expectation; within a fortnight from the operation the patient was to all appearance perfectly recovered, and the eye, which had been rendered very opaque and defective by the irritation of the ulcerated tumor, was also restored to its power of vision.

In this favourable state my patient left town, but in a few weeks returned to shew me a small fungous point which had begun to rise from behind the lower edge of the orbit, at the part of which I had been suspicious at the time of the operation, and which could not be removed. This fungus was at first destroyed by the argentum nitratum; and on its re-appearance was removed by a very deep dissection within the orbit, but it was reproduced, and had acquired the size of a large walnut, when the patient was happily released from his misery by a mortal sickness, totally unconnected with the object of the present observations.

Upon examining the tumor after its removal at the first operation, and dividing through its substance, nearly half the original cyst with its cheese-like contents was found in an unaltered state. In this

case it is worthy of remark, that continued irritation had the effect of changing the appearances usually attendant upon a common steatomatous tumor so completely, as to induce a suspicion of the presence of cancer, as well as of establishing diseased action in the neighbouring parts, capable of extending its effects after the original source of irritation had been removed.

Steatoma made to assume a malignant appearance by common irritation.

CASE II.

An ulcerated tumor, about the size of a common hazel nut, situated upon the upper lip of a beautiful young woman twenty years of age, was submitted to a consultation of surgeons. Its surface was of a high livid colour, had a granulated appearance, and discharged an offensive sanious matter, which constantly dripping

into the mouth produced great inconvenience and distress.

The disease was described as having at first appeared like a soft wart, which gave no pain or trouble until several unsuccessful attempts had been made by the patient herself to remove it by horse-hair, which had produced much irritation in the tumor, and increased its size.

It was now become acutely sensible, and being pronounced of a cancerous nature *, the surgeons present united in opi-

* Whoever will investigate the previous history of the malignant tumors which present themselves in practice, will, in a large majority of cases, trace their origin to some such simple and originally inoffensive cause as that which I have here stated.

Since I commenced writing these pages, a case has occurred in St. Bartholomew's hospital of a terrific disease of the under lip, bearing every character of cancer, which had originated in a common chop, and been rendered malignant in consequence of its being frequently irritated by the razor in shaving.

nion that not only the tumor ought to be removed, but that part of the lip also should be taken away with it, to secure the patient from future mischief.

On the following day the operation was performed, by removing a portion of the upper lip with the tumor upon it, and afterwards bringing the edges of the wound together, as in the operation for the hare-lip.

On examining the tumor after removal I found it to be a common steatoma, the cyst of which had been ruptured by repeated irritation. The base of the cyst, with the remains of its curd-like contents, were unaltered.

The disturbance of distant or neighbouring glands from sources of irritation, which are obvious, is often rapid, and seldom

admits of any distinction between the indurative and ulcerative stages; being attended also with a change of sensation in the parts affected, it always awakens the patient's attention to his complaints as soon as the derangement commences; but when a gland enlarges from insensible irritation, it commonly, as I have before observed, increases much in size, or advances very far in its indurative stage before the alteration is noticed, or the cause producing it suspected.

Some affections of the testicle originating in an inflammatory state of the urethra are well known; such as the swelling of that gland after the operation of lithotomy, from the presence of gonorrhœa, and from some states of stricture. Such sympathies, as they are called, are always sufficiently marked to direct the early attention of the surgeon to their real source; but in the

absence of such positive evidences, it has not been usual to consider the derangements of the testicle as dependent on any particular state of the membrane of the urethra.

When, for instance, a patient with an indurated testicle, in reply to the questions of his surgeon, confidently asserts that he is not sensible of any complaint in the urethra, that he passes his urine without uneasiness and without impediment, every suspicion of an unhealthy state of its membrane vanishes, and further investigation as to that point is thought unnecessary. If, however, it had been the general practice in every affection of the testicle to examine the urethra with a bougie, the following important fact might have long since been established; viz. "That a source of irritation capable of deranging the testicle is frequently present within the urethra,

and yet completely unknown to the patient." It may be proper to observe, that the particular state of membrane of the urethra to which I now allude is totally independent of stricture, or of any diminution of the diameter of the canal *. At the same time I am aware that even stricture may exist, and to a considerable degree, without the patient being conscious of it.

This fact can only be accounted for by reflecting on the slow and gradual manner in which in cases of stricture the canal sometimes becomes lessened, and the stream of urine diminished, and by considering that the slight irritation which would from time to time attach to such a state of urethra might easily be disguised under the excite-

* Vide John Hunter, page 111, on Venereal Disease. No diseases of the urethra have been suspected to exist which did not immediately lessen the stream of urine.

ments which are daily experienced in the urinary passage by those who indulge in the luxuries of the table.

A striking instance of this kind presented itself to my notice several years ago, in which a gentleman had long suffered under stricture, causing a material diminution in the stream of his urine, and yet he had not observed such alteration:

CASE III.

An elderly gentleman came from the West-Indies to place himself under my care for a disease in both his testicles. They were enlarged to at least four times their natural size, and were rugged, irregular, and resistent, yet free from pain: the spermatic chord of the left side was thickened as high as the abdominal ring;

that of the right side was in its natural state. On questioning him as to the state of his urethra, he assured me he made his water without any uneasiness, and in a full stream. The only time he had suffered from gonorrhœa was more than thirty years before, and during that long interval he had been free from all complaints excepting this enlargement of the testicles, to which his attention had been more particularly attracted about five years before the time I first saw him.

Under these circumstances I adopted a mode of practice which, at that time, I had been taught to consider the most judicious; the patient was put upon a course of mercurial friction, the scrotum was occasionally bled with leeches, and during the intervals of bleeding was covered with a common linseed poultice. After three weeks continuance of this plan the size

and induration of the testicles were not in the least altered, and I proposed the introduction of a bougie to ascertain the state of the urethra. My patient was incensed at the suggestion, and replied with a considerable degree of warmth, " that he was surprised I could advise a measure which must necessarily be painful and useless, since he could again declare that his water came away in a full stream, as freely as that of any man living." Silenced for the present, but not satisfied by this answer as to the true state of the urethra, the plan before recommended was persevered in for another fortnight, and the mercurial friction was pressed to the full extent of producing a sore mouth and ptyalism, without making the slightest impression on the disease of the testicles.

I now again ventured to urge the introduction of a bougie, to which my pa-

tient, discouraged by the little advance he had made towards a cure by the means already used, reluctantly consented.

The first bougie, of a middle size, was stopped in its progress near the bulb of the urethra by a stricture which encroached so much upon the diameter of the canal, that I was obliged to go down to the lowest sized bougie before I could succeed in passing one into the bladder.

Thus was a diseased state of the urethra detected, of the presence of which my patient was wholly unconscious, and of which I might likewise have remained in ignorance without such an experiment.

By the daily use of the bougie of increasing size, even before the end of the first week a very considerable softening and reduction of both testicles were effect-

ed; and by the further perseverance in this plan for the space of a month they were entirely restored to their natural size and state.

The observation which my patient made to me on this occasion was to the following purport: "I thought you, Sir, very injudicious in proposing the use of a bougie when I assured you I could pass my water perfectly well, the result however has proved that I was deceived; and I cannot but express my astonishment that I could have supposed I made water perfectly well, when the stream was not more than one-fourth of its proper size."

This gentleman remained in London about three months after the testicles had regained their natural state, during which time a bougie was occasionally passed, fully to establish the area of the canal, and to

secure the parts against a relapse: he then returned to Jamaica.

The above case appeared to me worthy of particular consideration: as it was the first which convinced me that such a disease might exist in the urethra without any consciousness on the part of the patient. The knowledge of this fact led me to adopt in all subsequent cases of morbid affection of the testicle the use of the bougie in order to ascertain the state of the urethra, and I can confidently assert that such practice has, in numerous instances, accomplished the recovery of this important gland, when, in conformity to the opinions which, at my introduction into the profession, were maintained by the highest surgical authorities, it would have been deemed incurable, or admitting of no alternative but extirpation.

The causes tending to produce a derangement of the membrane of the urethra are too numerous to admit of being distinctly specified; many of them are very remote, and others probably too minute and latent to be discovered by surgical investigation. In general it may be said, that whatever occasions a frequency of muscular action upon the urethra, or a frequency of excitement within it, or whatever induces a temporary inflammation of the canal, may establish a state of irritation in its membrane *.

Thus constitutional irritability, high living, excess in venery, indulgence in onan-

* There is a prevailing prejudice in the world, especially among those who are the least acquainted with the animal economy, that all affections of the testicle must necessarily have their origin in some act of indiscretion or venereal indulgence; and men of strict moral conduct have been frequently deterred from asking assistance by the fear of exposing their character to such an imputation.

ism, gonorrhœal inflammation, irritating injections, calculi in the bladder or kidnies, piles, and other affections of the rectum, &c. may become, through the medium of increased action, excitement, or inflammation within the urethra, the remote causes of morbid derangement of the testicle.

There is however another cause which is very commonly productive of that derangement of the urinary passage now under consideration, and which I believe has not been noticed, viz. an unnatural diminution of the external opening of the urethra.

In the majority of persons who apply for assistance under complaints of the testicle or of the urethra, which are not to be traced to gonorrhœal inflammation, the urethra will be found to be more contracted at its orifice than at any other part of the

canal. This state of its extremity is very different from the stricture which is sometimes situated immediately within the aperture, as well as from that appearance of this part, which is called the blind urethra*.

This diminution of the orifice of the urethra is occasioned by membranous fence, which partially closes up the lips of the extremity of the canal; it may sometimes be an original mal-formation: yet I apprehend it is for the most part produced by cohesion during infancy, and is analogous to the union we sometimes see between the prepuce and glans penis in the male child, and between the nymphæ in the female†.

*A description of the blind-urethra will be met with in the course of the annexed cases of sclerocele.

† It frequently happens in the female infant that there is a cohesion of the nymphæ, and which may at a tender age be very easily separated. I have seen a perforation made with an instrument on this occasion, but such an

Unimportant as this diminution of the extremity of the urethra may at first appear, many valuable facts may be deduced from it. It is the only instance, I believe, in which an immediate cause of spasmodic stricture in that canal can be demonstrated, by occasioning too strong and too frequent action of the adjacent muscles upon its diameter; at the same time, it affords an excellent illustration of the manner in which other causes, although more remote, may either predispose the urethra to stricture, or establish in its membrane a state of latent irritation.

operation is injudicious, alarming to the parents, and quite unnecessary. If the nymphæ be not separated during infancy, they in the course of years become consolidated and have the appearance of an adventitious membrane, which has been erroneously considered as an original mal-formation of parts, and is therefore called the imperforated hymen. The male child also is liable to a similar adhesion of the prepuce to the glans penis, which if not remedied in proper time, consolidates the glans penis so firmly with the prepuce as to give the appearance of original mal-formation.

Whenever this membranous fence exists, or whenever the orifice of the urethra, from any cause, is smaller in its diameter than that of other parts of the canal, a sudden check is opposed to the free exit of the urine or semen at each attempt to propel them, and the increased muscular action, which is induced by the revulsion of those fluids upon the membranous part of the urethra, becomes at length the foundation of some of its diseases *.

Patients who have not been aware of this peculiarity of structure at the extremity of the urethra, have frequently, on my pointing it out to them, described to me the painful check and sense of distension they have experienced at each act

* In the same way, when one stricture has been established in any part of the urethra, it becomes the cause of the formation of others between its seat and the bladder.

of passing urine or semen; but for which they could never before satisfactorily account.

The presence of this membranous fence, besides being the cause of derangement in the membrane of the urethra, also becomes the means of retarding its recovery, after disease has been there established: it aggravates all the symptoms in gonorrhœa, and if stricture has taken place, the removal of that state of membrane will be interrupted by the difficulty of introducing a bougie of sufficient size to make the necessary pressure on that part where the stricture is situated.

Latent irritation may be established at any part of the urethra between the bulb and the bladder. When this is the consequence of previous inflammation, it is confined to some distinct and acutely sen-

sible point of the membrane, which bleeds on the slightest pressure of the bougie.

When it is the result of preternatural muscular action, or of excitement, it is not confined to so distinct a point, neither is it so acutely sensible; but consists rather of a tenderness of the membrane, and particularly of that part of the canal which is within the prostate gland; it will also bear the pressure of the bougie without either bleeding at all, or not to that degree as in the former instance.

As the state of membrane which constitutes a source of derangement to the testicle is only discoverable by the bougie, and the immediate object of the enquiry is to detect an unhealthy state of urethra not indicated by obstruction, and sometimes confined to a minute point, the

greatest gentleness and accuracy will be requisite in the examination.

The bougie should be larger at one extremity than at the other, and should be of sufficient size at its larger end to occupy the whole diameter of the canal without distressing it by distension: previous to its being used the bougie should be oiled, and drawn through the fingers until it has acquired a proper degree of curvature to correspond with the sweep of the urethra: if a bougie be introduced which does not fill up the area of the canal, it will not only be liable to entangle in the lacunæ and thus embarrass the enquiry, but will miss or pass over any obscure point of irritation, upon which some degree of pressure ought to be made. A bougie also which has not been previously tempered and curved will stop at the sweep of the canal,

and will not pass forward into the bladder, until sufficient force has been applied to make it, by pressure against the membrane, adapt itself to the rising course of the passage. Such a degree of pressure will produce some hesitation and a sense of pain in the most healthy urethra, which may lead an inexperienced practitioner to suppose he has detected a stricture or unhealthy state of membrane, when in reality no such state exists.

The bougie, prepared as above described, is to be gently and gradually introduced with its larger extremity foremost: when it reaches the seat of irritation, which I have before said will be found between the bulb and the bladder, if such seat be confined to a distinct point of the membrane, the patient will express an acute pricking sensation, and the bougie on being withdrawn will generally be followed by

some drops of blood. But when the seat of irritation consists in a derangement of a greater extent of membrane, the patient will describe a sensation of tenderness or soreness rather than of acute pricking, and the removal of the instrument will be seldom followed with any appearance of blood.

In each of these deranged states of the canal, more or less of spasm will occasionally occur during the act of passing the bougie; if the unhealthy state of membrane is limited to a distinct point, the spasm will be momentary, and the bougie will be felt as if suddenly to start from the affected part; but where a greater extent of membrane is deranged, the spasm will be of longer duration, and the extremity of the bougie will appear to be gently grasped during the remainder of its passage into the bladder.

Whenever either of the above states of the urethra is coexistent with an indurated enlargement of the testicle, experience authorises me to say, that such derangement of the gland is to be considered as dependent upon the altered state of the urethra: it therefore will become the duty of the surgeon to direct his attention to the restoration of the natural state of that canal, in order that he may relieve the affection of the testicle dependent upon it.

Since it is scarcely possible that any two cases can be found so exactly similar as to be cured precisely by the same means, it will be difficult to lay down any general rule as to the number of times the bougie is to be employed: it may be sufficient to observe, that the introduction of the bougie must be repeated at proper intervals until it passes freely into the bladder, without producing any of the uneasy sensa-

tions experienced at its first application, and until the affected testicle be perfectly restored to a natural and healthy state.

Of the morbid enlargements of the Testicle.

If the ancients have laid themselves open to censure for enumerating and describing more diseases of the testicle than are now supposed to attach to it, it must in candour be acknowledged that the moderns have fallen into an opposite extreme; and by considering several of its morbid derangements merely as varieties of one species * of disease have overlooked many important distinctions.

* "Thus the sarcocele, the hydro-sarcocele, the schirrhus, the cancer, the "caro adnata ad testem," and the "caro adnata ad vasa spermatica," which are really little

This observation more particularly applies to the sclerocele, the scirrhus, and the sarcocele.

It may be here necessary however to premise, that when a testicle from any cause whatever becomes deranged, the true pathognomonic characters will be obscured or lost as soon as the painful or inflammatory state of such derangement commences: in other words, the sclerocele, the scirrhus, the sarcocele, the scrofulous testicle, and that which has been called venereal, though characterized by certain distinct features previous and even up to

more than descriptions of different states and circumstances of the same disease, are reckoned by the ancient writers as so many different complaints."

POTT.

"These different appearances, though distinguished by different titles, are really no more than different stages (as it were) of the same kind of disease.

POTT.

the time when they become painful, or are rendered so by accident, will from that period all assume a common mixed character, so alike in appearance, that unless a surgeon attends carefully to the preceding history of the disease, and to the symptoms which have marked the progress of such derangement, he will not be able to discriminate these diseases in their more advanced stages *.

The features which distinguish the sclerocele, the scirrhus, and the sarcocele from

* No man can be more ready than myself to commend the study of morbid anatomy; the above fact however leads me to fear, that they who expect much practical knowledge to be derived from such enquiries will be disappointed. Organic diseases lose all their pathognomonic characters long before they prove fatal, and are submitted to ocular investigation; as organic disease proceeds, it creates for itself, as it were, new causes of further morbid derangement, until the whole eventually becomes a chaos of matter, which defies all discrimination.

each other, will be found to be less strongly marked between the sclerocele and scirrhus, than between either of those two affections of the gland and the sarcocele. The state of testicle which has been called venereal bears some slight resemblance to the sarcocele, but the scrofulous testicle differs from all.

Of the Sclerocele or indurated Testicle from latent irritation within the Urethra.

The alteration which latent irritation first produces in the testicle, for the most part consists in an enlargement and induration of the epididymis, very much resembling that state in which the epididymis is frequently left after hernia humoralis. Sometimes, however, the body of

the gland is the first part which becomes hardened, at others the induration will commence in the spermatic chord. As the induration advances it acquires a peculiar callosity and cragginess; and the vas deferens, the epididymis, the body of the testicle, and the spermatic chord, all partaking of the derangement, eventually become blended in one hardened, irregular mass, in no way, that I am aware of, differing in outward character, or immediately distinguishable, from that morbid alteration of these parts which has been generally denominated scirrhus.

During the progress of such morbid alteration in the gland, an undue effusion of serous fluid will occasionally take place within the tunica vaginalis, or underneath the coverings of the spermatic chord; in the former case producing a hydro-sclerocele, and in the latter a hydro-spermato-scle-

rocele*. When a testicle has reached this state of disease, the progress of its farther derangement becomes uncertain and indefinite, but the most usual course is a languid suppurative inflammation at the lower part of the scrotum, with the projection of an irregular granulating fungus through the aperture of the abscess.

Notwithstanding the sclerocele will in some few instances, on account of the constriction of fluid, become painful at a very early period of the induration, yet in most cases the morbid derangement is so subtle at its commencement, and its progress is so extremely gradual, that the disease sel-

* This is a consideration of great practical importance, since fluid, when tightly constricted, will oftentimes feel equally hard and resistent as the indurated gland or chord, and therefore add considerably to the obscurity of the case on examination. Fluid, when tightly bound down upon an irritable testicle, is also capable of producing general symptoms in the system which might seriously mislead an inexperienced practitioner.—Vide Case X.

dom becomes the object of surgical care, until the patient's attention is either attracted by the inconvenient bulk of the tumor, or some accidental circumstance occurs, and diverts it from the usual course. There is scarcely an instance of sclerocele of the testicle which does not corroborate this remark, by bearing incontestible evidences of its having existed long before the time at which the patient dates the discovery of his complaint. On this account a patient will frequently attribute the enlargement of the gland to hard riding, to a strain, to a cold, to a fever, or to some other occurrence which has had no influence in the production of the complaint, but merely induced disturbance in a testicle, previously indurated, and ready to become enlarged upon the application of any exciting cause.

We sometimes however meet with pa-

tients whose cases are to be considered as an exception to this general rule or course, in whom the common sclerocele of the testicle will advance with great rapidity, independantly of any constricted fluid, and of all the accidental circumstances to which I have referred. These are persons who are constitutionally irritable, and in whom the testicle and membrane of the urethra partake of the general susceptibility of the system.

But if a surgeon be consulted in a case of sclerocele of the testicle before the gland has taken on a diseased action of its own, the rapidity with which such derangement has proceeded will be found to be rather favorable to the cure than otherwise.

I have observed in cases in which the seat of irritation within the urethra is acutely sensible, and in which the enlargement of the testicle has been rapid, that

the cure is much more obedient to the treatment by the bougie than in those in which the source of irritation is less sensible, and in which the gland has been more slowly habituated to its influence. In the former cases, also, the removal of the source of irritation will be always sufficient, alone, to perfect the recovery of the testicle; but in the latter it will frequently be requisite after the cause has been removed from the urethra, to have recourse to local mercurial friction for the purpose of dispersing some remaining point of induration in the gland.

The preceding observation, however, is to be considered as only applicable to that rapidity of progress in the sclerocele of the testicle which is solely dependant upon an increased degree of susceptibility in the seat of irritation within the urethra, and must on no account be confounded with

the quickened course of disease, which is occasionally excited by general indisposition, or by injury to the gland itself. These cases differ essentially from each other, and require a very different mode of practice. In the former the early treatment of the urethra will stay the progress of derangement in the testicle, and probably effect a speedy cure; but in the latter such resort to the immediate use of the bougie will frequently be injurious, and by aggravating all the symptoms, may place the gland beyond remedy.

If we reflect on the anatomy of the testicle, we must believe that when the breaking open or the actual exposure of its organic structure takes place, the functions of the gland will be destroyed; and this state of parts, which has been commonly called the "spoiling of the testicle," has at all times been admitted as a sufficient

ground for advising the operation of castration. It must be of great importance, therefore, to ascertain whether we are not liable to be misled by appearances, and to condemn a testicle to the knife, under the idea of its being spoiled, even whilst its vascular structure yet remains entire *.

Of the several morbid affections of the testicle, which are presumed to be fatal to its vascular structure, the formation of matter within the body of the gland may be considered as the most frequent. I suspect, however, in many instances in which abscess takes place within an indurated enlarged testicle, that the suppurative process is restricted to the previously thickened cellular substance, which by its intervention must necessarily be supposed to maintain the vascular structure of the body of the

* Vide Case XXIX.

gland, as well as the continuous convolutions of the epididymis, in a state of extensive separation *.

When, in consequence of suppuration within the sclerocele, a fungus is projected from the lower part of the scrotum (which is a very common occurrence), such morbid affection has been extensively admitted as authorizing the extirpation of the testicle, and I will acknowledge I have myself, on some occasions, acted upon such opinion; but later observation has shewn even this state of disease, in the early period of such fungated appearance, to be frequently confined to the cellular substance, or to the coats of the gland, and for the most part therefore totally independant of the vascular structure.

* It may be observed in the common varicocele of the testicle how easily its organic structure admits of extensive separation.

If in true sclerocele the organic structure was liable to be "spoiled" at all times when suppuration takes place within the substance of the tumor, we should surely obtain frequent proof of such a fact, and yet I can truly declare (in cases in which I have had an opportunity of controling the derangement in the gland by the timely and early treatment of the urethra), I have scarcely seen a single instance where I had reason to suppose the functions of the gland to be eventually "spoiled," merely in consequence of matter having formed amidst the induration.

Allowing, however, the exposure of the organic structure of the indurated testicle to be sometimes an immediate consequence of suppuration within its substance, when such an effect results solely from a source of irritation within the urethra, it would by no means justify the early removal of the part as a measure of necessity.

Even under such distressful circumstances, if the patient be content to retain the gland in its defective state, the treatment of the urethra will, I believe, in most instances, prove competent to the preservation of the remaining portion, and render it in future perfectly inoffensive to the constitution; provided such treatment be resorted to, when the patient is not suffering under general indisposition, and before the neighbouring parts have taken on a diseased action in consequence of the long continuance of irritation *.

Sclerocele of the Testicle from latent irritation within the Urethra.

CASE IV.

A gentleman about thirty years of age, who bore obvious evidences of a nervous,

* This is one of the circumstances which distinguishes the sclerocele essentially from the sarcocele. When the

irritable habit, and who had indulged with women, and in the luxuries of the table to an imprudent excess, shewed me his left testicle in a state of enlargement and induration. The body of the gland was increased to three times its natural size, and very unequal on its surface. The epididymis was also enlarged, and peculiarly craggy and resistent. This state of testicle had been gradually coming on for several months, yet occasioned no pain or uneasiness. The spermatic chord was in a healthy state, and of a natural size.

structure of the testicle is exposed by that suppurative process, which is merely a consequence of irritation within the urethra, the gland may be restored to a quiescent state, and may be so far recoverable: but when the organic structure of the testicle is exposed by the progress of sarcocele, such a compromise must not be expected.

This observation applies also to the scrofulous testicle. Although large portions of the gland will slough away, in what is called the scrofulous testicle, yet in many instances the remaining parts will heal up, and continue through life without occasioning farther inconvenience. Vide Case XII.

In this case there was no membranous fence, nor any obstruction to the passage of urine, and the patient assured me, notwithstanding the dangers to which he had been exposed, that he had never contracted gonorrhœa; so that the only circumstance to direct my attention to the urethra was the characteristic induration and cragginess of the testicle, and I considered it sufficient ground for proposing the introduction of a bougie. When the bougie reached as far as the bulb it was firmly grasped by strong spasm, and being at length set at liberty, it discovered a state of extreme tenderness throughout the whole of the membranous part of the canal. The withdrawing of the instrument was followed by several drops of blood. As this source of excitement in the urethra became less sensible to the subsequent applications of the bougie, the hardness and unnatural bulk of the testicle gradually subsided, and after a few weeks

were entirely reduced, without the aid of any other medicine than occasional doses of the Epsom salt.

Sclerocele of the Testicle from latent irritation within the Urethra, mistaken for Omental Hernia.

CASE V.

An Irish gentleman about forty years of age, apparently in good health, consulted me on account of a complaint which he had been told was a rupture of the caul (omental hernia), and which, though originally unattended with pain, had lately, at times, occasioned him very severe sufferings toward the back; he had first noticed a hard lump between the testicle and the groin about twelve months before I saw him, which gradually got larger, and at length quite concealed the testicle. He

could not account for this complaint, as he was not conscious of any strain or accident, though he recollected that his attention was first called to it during a fit of coughing. This was the patient's account.

On examining the part I found that the testicle and chord were completely obscured in one hardened mass, which extended to the groin, and at length lost itself within the abdominal ring; the disease was characterized by many rugged irregularities, and in handling had a feel certainly not very unlike hardened omentum. I could not learn however that it had even when the lump was first discovered been returned within the ring, or that there was any other ground for believing it to be a rupture than that it had been discovered whilst coughing, and I therefore told my patient that I suspected it was a diseased testicle. To my interrogatories respecting

his urethra, he admitted that he had once had a gonorrhœa, attended with such severe inflammation as to occasion retention of urine, which was relieved at that time by the introduction of a bougie, but that he had never since found occasion to use the bougie, neither had he the least reason to think he required one. I nevertheless prevailed on him to submit to the examination, and detected at the membranous part of the urethra a degree of stricture which was acutely sensible. I say a degree of stricture, because, though it retarded the course of the bougie, it did not absolutely stop its passage, and yet the sensation was very different from that which is given by the grasping of a bougie by spasm. There was a very considerable discharge of blood when the bougie was withdrawn, and the bleeding occurred twice afterwards, but in much smaller quantity. The bougie from this time was used almost daily, and before the end of the third

week had occasioned a sufficient softening and reduction of the chord near the abdominal ring, to shew that the patient had no hernia. From this time the general bulk became less and less rugged, and after a perseverance in the use of the bougie for two months, was so far reduced that there remained no more thickening of the parts than just rendered them distinguishable from those of the opposite side. During the last three weeks of this treatment the patient also made use of local mercurial frictions.

N. B. At the commencement of this case the disease was in that state which the ancient writers named the caro adnata ad vasa spermatica.

Sclerocele of the Testicle in the Groin.

CASE VI.

A servant, a black man, was sent to me by his master for advice respecting a tumor in the right groin, which had been increasing for some time in size, and was very troublesome; when he inclined his body forward or raised his leg in going up stairs, he suffered great pain, and the pain on some occasions had caused fainting and sickness.

The tumor was rugged and resistent; it was too moveable to be a gland, and there was no circumstance which led me to suppose it to be omentum, I therefore directed my attention to the testicles, and having discovered only one of them (the left) to have

descended, told my patient, that I thought the swelling in his right groin was the other testicle in a diseased state: he said "it was very likely, for the stone on that side had always remained close up against the belly ever since he was a child."

This patient had the blind-urethra, that is, the aperture which seemed to be the natural entrance of the urethra, only reached about the eighth of an inch into the glans penis, whilst the channel through which the urine really passed, terminated underneath the glands, full an inch short of its extreme point, and was so much contracted at its opening that it scarcely admitted the end of a common probe. I desired the man to make water in my presence, and observed whilst his urine slowly dribbled off, that the whole of the urethra behind the contraction was exceedingly distended and distressed. On my asking the patient

whether he always completely emptied his bladder when he made water, he replied "that he did not, for it would take up too much time."

Before I could ascertain the internal state of the urethra, it of course became necessary to enlarge its aperture. The bougie was stopped by spasm before it reached so far as the bulb, and produced great pain; upon the spasm subsiding it passed a little onward, and was then again stopped; it met also with a similar interruption immediately before its entrance into the bladder; when it was withdrawn I observed it had received three impressions at distances, which corresponded with the parts of the canal where it had been interrupted in the course of its introduction. After the bougie had been repeated a few times, the tumor in the groin became much softened and less unequal on its surface,

and before the expiration of three weeks (by which time the bougie passed freely into the bladder without pain or receiving any impression) the morbid feel and character of the tumor was exchanged for that of a healthy and perfect testicle.

Sclerocele of both Testicles commencing within the body of the Glands.

CASE VII.

A young man about twenty-eight years of age, of a sickly countenance and emaciated habit, consulted me respecting an enlargement of both his testicles, each of which was full five times larger than in its

natural state, and had a stony hardness, with a craggy ruggedness of surface. The spermatic chord of each side was also thickened and indurated up to the abdominal rings, and equally knotty and resistent as the substance of the testicles.

This patient assured me he had never contracted gonorrhœa, and that he passed his water without difficulty, as he always had done, therefore could assign no adequate cause for the appearances of this complaint, which begun, he said, in the very centre of the testicles, and had been coming on gradually for about twelve months without any attendant pain. On proceeding to introduce a bougie, I particularly remarked a membranous fence at the orifice of the urethra, which so much diminished the diameter of the canal at its entrance, as to oblige me to exchange the

bougie I had intended to use, for one of a much smaller size.

The bougie detected no stricture, but as it traversed the membranous part of the canal, the patient uttered expressions of most acute pain; a copious flow of blood followed its being withdrawn, and continued several minutes in considerable quantity.

Being thus satisfied of the presence of a deranged state of the urethra, and presuming that the ultimate cure of the disease of the testicles would depend upon the restoration of the natural state of that canal, I repeated the introduction of the bougie at the intervals of one or more days, and with pleasure observed a gradual reduction in the size and hardness of the testicles, as well as of the spermatic chords; this improvement progressively continued

in proportion as the unnatural sensibility of the urethra diminished, so that at the end of two months the testicles and spermatic chords had regained their natural size and softness, excepting a small portion of the epididymis of the left testicle, which still remained in some degree of induration. This indurated point continued for a while almost stationary, but it at length gave way to local mercurial friction.

It is necessary to remark, that as the size of the bougie was increased I was obliged to divide the membranous fence abovementioned. The patient took small doses of rhubarb combined with bark during the cure, and by the time the testicles were restored to their natural state his general health was much improved; he has since grown lusty, and is in high health.

Sclerocele in both Testicles, one of which suppurated, arising from latent irritation within the Urethra.

CASE VIII.

A middle-aged gentleman from York consulted me, on account of a disease of long standing in both his testicles, for which he had at different periods been under the care of three surgeons of great eminence, without gaining any relief. Each testicle was enlarged to three times its natural size, of a stony hardness, with great irregularity of surface; the right spermatic chord was indurated and thickened up to the abdominal rings; the left was in its natural state. This degree of disease, though so considerable, was unattended with pain.

The patient when young had once contracted gonorrhœa, but from that period of time to the present he had never been conscious of any difficulty or inconvenience in passing his water. The following is his history of his case. About six years before he consulted me he had observed a trifling hardness and enlargement at the bottom and back part of his left testicle, which was then shewn to a surgeon of the first practice in London, who applied a soap cerate plaister to the part and prescribed the blue pill. This plan having been persevered in for two months, without producing any alteration in the affected testicle, it was at length relinquished, under an assurance that the complaint would never be productive of future inconvenience. At a subsequent period, however, when the patient was on a voyage to America, he had the mortification to find that the original disease in the left testicle was

not only increasing, accompanied with some reddening of the skin, but that the right testicle also was beginning to be affected; and by the time he had reached the end of his voyage, the inflammation, which had been progressively going on the left side, had terminated in suppuration. On his arrival at Quebec he placed himself under the care of a professional gentleman, who gave him mercury very liberally, and, by proper applications, succeeded at the end of two months in healing the ulceration, and in inducing a quiescent state of the parts, but without making the slightest impression on the induration. On the patient's return to England he again sought advice, but instead of consulting the gentleman who had seen the case at its commencement, he shewed the indurated testicles to another surgeon equally eminent in the profession. This gentleman confined him to his chamber, and subjected him to a

mercurial course for the space of eight weeks, during the greater part of which time a severe ptyalism was kept up. These very active measures having also failed to effect any reduction of the hardness in the testicles, after a lapse of a few months more, the disease was submitted to my attention in the state I have already described.

Suspecting there might be some latent derangement of the urethra inducing the mischief in the testicles, I gently introduced a bougie, which detected a point of extreme tenderness and sensibility as it passed along the membranous part of the canal, and on its being withdrawn there followed several drops of blood. From this time the bougie was used every second day, and as the unhealthy part of the urethra became less sensible, the enlargement and induration of the testicles proportionately sub-

sided; so that within two months from the commencement of my attendance, both the testicles were restored to a natural and healthy state, without the aid of any other medicine than occasional doses of castor oil or Epsom salts, to prevent costiveness. This patient had the membranous fence at the orifice of the urethra, which rendered its aperture at least one-third less in diameter than the area of the rest of the canal.

N.B. At the commencement of this case the disease was in that state which has been called the caro adnata ad testem.

Fungous Sclerocele from latent irritation in the Urethra, in which the induration commenced within the body of the Gland.

CASE IX.

A lieutenant in his majesty's navy, about forty years of age, shewed me a fungous excrescence of very malignant appearance and discharging a bloody sanies, which was projected from the lower part of the scrotum, accompanied with an enlargement and craggy induration of the testicle. The spermatic chord was not thickened or enlarged.

About twelve months before, he had encountered a severe attack of fever on shore at the Cape of Good Hope, during which the body of the testicle enlarged

without much pain, and became particularly craggy, the scrotum gradually inflamed, and suppuration at length followed. When the abscess broke, about two table spoonfuls of matter were evacuated. A fungus was soon after thrown out from the ulcerated surface, and had been twice removed, once by caustic, and a second time by ligature; it was, however, after each removal reproduced, and had assumed the appearances under which I saw it. This complaint was in a general way unattended with pain, but if excess in exercise or in living, happened to take place, the tescicle then became acutely tender, with painful sensations in the course of the spermatic vessel towards the loins. The patient acknowledged to have frequently suffered under gonorrhœa, but assured me he had never experienced any impediment in passing his water.

The first introduction of the bougie discovered a point of extreme sensibility near the bulb of the urethra, and induced a degree of spasm in that part which for a few seconds impeded its progress into the bladder: upon withdrawing the bougie a considerable quantity of blood was lost from the urethra, but this occurrence did not again take place during the further treatment of the case.

By the daily introduction of the bougie for a few weeks, the unhealthy point in the urethra gradually diminished in sensibility, and was at length completely removed; the testicle also assumed its natural size and softness, but the fungous excrescence did not diminish, though it had a much less malignant appearance, and had also ceased to discharge the bloody sanies. Under these circumstances I removed it by liga-

ture, the ulceration soon healed, and all marks of disease disappeared.

By the above practice this patient was in about two months perfectly cured of a disease, for which he had been told it would be necessary for him to submit to the humiliating operation of castration. During the cure the assistance of medicine was not required, further than occasionally acting on the bowels by small doses of the Epsom salts.

I apprehend in the above case the fungous excrescence was projected from the surface of the tunica albuginea, and that the appearance of bloody sanies was merely occasioned by the watery secretion of the tunica vaginalis occasionally mixing with blood from the fungous granulations.

This latter circumstance highly demands our attention, since such a discharge of bloody sanies has been very commonly considered in the testicle as a characteristic feature of cancer.

I once saw an instance in which the watery effusion of an indurated excited testicle escaped in such quantity through the ulcerated tunica vaginalis, that it was at first mistaken (by a very experienced surgeon) for urine, which had escaped from a ruptured urethra.

Of Scirrhus in the Testicle.

Many of the symptoms of what has been called a scirrhous affection of the testicle, are so similar to those before described as belonging to sclerocele, that there is little doubt they have been frequently confounded. Enlargement of the gland, resistent hardness, and cragginess of surface, with an occasional effusion of serous fluid within the vaginal coat, characterize both diseases. In cases, therefore, where the similarity is so imposing, the distinguishing features will with difficulty be collected, and may be considered rather as negative than positive; the surgeon must form his judgment from the absence as well as from the presence of certain symptoms.

If I was required to give a distinct de-

finition of scirrhus, it would be necessary to enumerate all the symptoms before stated as belonging to sclerocele; and, excepting that scirrhus is generally accompanied with derangement of the system, and is also commonly attended with darting pains before obvious inflammation takes place, I should be compelled to acknowledge that I know no other character by which it may with certainty in the first instance be distinguished from that state of testicle in which enlargement and induration are produced by latent irritation within the urethra.

Since sclerocele and scirrhus are in their symptoms so similar, and yet so different in their nature and results, it would be a great desideratum in surgery to establish such distinctions as will hold good in every instance; but I must in candour repeat that I know of none but those which

I have mentioned; at least in the first stage of the disease.

Whenever a testicle increases in size, is craggy on its surface, and of a stony hardness, whether with or without watery fluid within the tunica vaginalis, at whatever part of the gland the induration may have begun, the first enquiry ought to be whether such a diseased alteration be dependent upon an unhealthy or too susceptible a state of urethra. If in spite of a proper attention to the urethra, and of a general or local trial of mercury seasonably and judiciously used, such induration and cragginess continue to extend, and especially if severe darting pains * in the direction

* Even this character should be received with caution and reserve. The common sclerocele, in an irritable habit, will be painful at an early period of the induration; and if accompanied with fluid constricted within an unyielding tunica vaginalis, will (in consequence of the pressure of such fluid against the gland) be attended with

of the loins come on before the skin appears reddened and inflamed, the disease must be viewed as scirrhus.

True scirrhus is however, in my opinion, notwithstanding we read of it so often, a disease of rare occurrence in the testicle; and can never be during the indurative stage so obviously demonstrated as to justify the removal of the affected gland, unless it has become progressive in resistance, to the treatment before recommended for sclerocele.

darting pains toward the loins. (Vide Case X.) I shall have occasion to make further remarks on this point when I treat of spurious hydrocele.

Sclerocele under all those features which are generally considered as characteristic of true Scirrhus.

CASE X.

An American gentleman, about thirty-eight years of age, requested my attendance that he might consult me on account of a disease in his left testicle. The gland was increased to three times its natural size; was hard and particularly craggy at every point, except on its fore-part, where the surface was quite smooth, yet scarcely less resistent than at the other parts of the enlargement. The epididymis, and a considerable portion of the spermatic chord, were completely lost in this general mass of derangement.

My patient first noticed his complaint about eight months before I saw him, from

which time it had been slowly increasing. In its earlier stages it was free from all uneasiness; but during his voyage to England, and since his arrival, it had been attended with extreme pain, which was described as darting at intervals towards the loins with so much severity as nearly to deprive him of rest, and was very much increased by the necessary handling of the gland, although there was no appearance of inflammation. He assured me that he had never contracted any venereal infection, and that he was not conscious of any present complaint in his urethra, since he voided his water freely and without pain, and had always done so from his infancy. He had a pallid, unhealthy complexion, was much emaciated, and appeared to be extremely irritable.

The unfavourable state of the health, the darting pains towards the loins, added to the craggy and resistent hardness of the

affected testicle, and the pain he suffered on its being handled, strongly impressed my mind that the disease was true scirrhus, and I expressed my apprehensions to him without reserve; adding, however, that it would be prudent, notwithstanding these discouraging circumstances, to subject the case to certain tests before such an opinion was acted upon.

My first object was to ascertain the nature of that point of the tumor, which, though not less resistent than other parts of it, possessed a smooth equality of surface; and on placing a lighted taper behind it, I discovered, by the partial transparency, that a small quantity of fluid was contained within the tunica vaginalis; a fact which gave me some little encouragement, since it seemed not improbable that the attendant pain with which this case was so particularly characterized, might arise from

the tightness with which the unyielding tunica vaginalis bound down the fluid upon the irritable testicle.

My next step was to examine the urethra with the bougie: on proceeding to do so, a membranous fence at the orifice of that canal presented itself to my notice, which reduced its aperture to nearly one half in diameter less than that of the rest of the canal. A bougie, proportionate in size to this contraction, passed freely down the urethra till it had reached the membranous part, where it was suddenly grasped by a strong spasm, attended with considerable pain, which compelled the patient to call out and me to desist. In a few minutes, when the spasm had gone off, I ventured very gently to press forward the bougie, though with considerable suffering to the patient, till it had entered the bladder: on its being withdrawn it was

followed by a considerable flow of blood, which alarmed my patient, yet to me afforded some hope of eventually saving the testicle. As the bougie passed on from the point at which its ready progress first became impeded, it appeared to me to traverse a soft spongy surface, from which the bleeding probably proceeded.

The enquiry having thus given me good reason to believe that the affection of the testicle might be sclerocele, I advised the application of leeches to the part, with such other general means as seemed likely to bring it into a more quiescent state, preparatory to the further use of the bougie. After a few days I carefully let out the water from the tunica vaginalis with a lancet*, and had the satisfaction to find that

* A trocar always occasions the integuments to recede more or less before it penetrates, and where the quantity of fluid is small, greatly endangers the testicle. I have in such cases, therefore, used a lancet and an eye probe. I hold the flattened end of the probe closely against the

its evacuation completely removed the darting pains towards the loins, which had previously been so distressing.

I now proceeded in my treatment of the urethra. On the second application of the bougie it produced considerably less pain than at its first introduction, yet it again occasioned some bleeding. After it had been used a few times at the intervals of two or three days, the testicle became obviously less hardened, and there was not the slightest appearance of a renewal of the effusion into the tunica vaginalis; the health of my patient was also even at this early period of the treatment much im-

blade of the lancet, very near to its point, and at the instant the puncture is effected, press the probe onward by a motion of the thumb, whilst I at the same moment retract the lancet by a motion of the finger. By these precautions the puncture is made without penetrating more than merely through the scrotum and tunica vaginalis, and the orifices in these coverings are maintained by the probe, in correct correspondence with each other, until the fluid is drained off.

proved, probably from his being able to enjoy his natural rest. From this time the introduction of the bougie created less and less uneasiness, and caused no further bleeding; the enlargement of the testicle, epididymis, and spermatic chord, proportionally subsided; and by the expiration of three months this gentleman was not only quite cured of his local complaint, but also restored to a good state of general health.

In the latter part of the treatment it became necessary to divide the membranous fence above mentioned, to allow of the introduction of a bougie proportionate to the natural diameter of the urethra.

Of that morbid State of the Testicle which has been called Venereal.

We occasionally meet with a testicle in a state of considerable enlargement and induration, which is free from pain, for the most part, without any fluid within the tunica vaginalis, unattended by any thickening of the spermatic chord; and although hard and resistent, yet retaining an uniform smoothness and equality of surface.

This state of gland is unconnected with any derangement of the urethra; and being frequently observed to take place during the progress of syphilis, and to yield to mercury, has been supposed to constitute one of the symptoms of that disease.

In its general features it bears some resemblance to the sclerocele, the scirrhus,

and the sarcocele; but in its particular characters it is essentially different from them all. It resembles the sclerocele and scirrhus in hardness and resistence, but differs from them in its uniform smoothness and equality of surface; it resembles the sarcocele in smoothness and equality of surface, but is distinguishable from it by hardness and resistance.

The above described state of gland has been called venereal (venereal sarcocele); but it does not appear to me sufficiently clear that any of the cases recorded by Mr. Pott under that head can be received as proofs of a venereal affection of the testicle, notwithstanding his patients exhibited decided marks of the presence of general syphilis at the time.

It is certainly not unusual to meet with a state of testicle similar to that above de-

scribed, in men who have never been exposed to syphilis. This fact, amongst others, induces me to believe that such a morbid state of gland, although occasionally present with symptoms of confirmed lues, is no other than common glandular derangement which yields to the alterative powers of mercury, and not to the specific effect of that mineral over venereal disease.

The inguinal glands will sometimes enlarge and become hardened in persons who have never contracted the venereal disease, yet such a state of glands will give way to mercury.

Besides the multitude of local examples which might be adduced as illustrative of the fact, I may observe, that when a more general glandular affection is coexistent with lues, no surgeon ever allows such affection to constitute a part of that

disease; neither does he look upon the disappearance of such glandular derangement as any test of the cure of the syphilitic affection.

If an affection of the testicle be ever venereal, that is, if the testicle ever contains within its structure venereal virus capable of contaminating the general constitution, such virus must be received immediately from the point upon which it was first deposited, and afterwards diffused from the gland over other parts of the body, or the gland must be secondarily affected by the virus through the medium of the system.

If we could suppose the affection of the gland to be a primary symptom of syphilis, it ought to occur early, and more frequently, and the testicle should be subjected to the same inconveniences from

venereal abscess, and subsequent ulceration as the glands in the groin in bubo*.

If it be a secondary symptom, it seems impossible to explain why the testicle should be alone liable to secondary affection from the virus, whilst other glands are exempted from such effect.

With the exception of some few lymphatic glands, which are placed nearest to the point of infection, it may be said, I think, that all glands of the body, of whatever description, whether they be secretory or absorbent, are totally † unassailable

* I make this remark solely for the purpose of reasoning, being well aware that the doctrine of a direct and immediate absorption of virus is inadmissible when applied to a secretory gland like the testicle.

† "The glands nearest the origin of the disease are in general the only ones that are attacked, as those in the groin, when the matter has been taken up from the

both by the primary and secondary powers of the venereal virus.

The inguinal glands for the most part constitute the exception alluded to; being almost the only lymphatic glands which are met with in a state of venereal suppuration and ulceration; and they also would most likely escape such inconveniences, if they were not situated within the immediate sphere of irritation*.

penis in men."—Vide JOHN HUNTER on the Venereal Disease.

Mr. Hunter has said, "in general are the only one that are attacked." I am not aware however that we have any certain evidences of any description of glands, excepting those which are situated as above described, suffering from venereal disease.

* "It might be supposed that the matter was weakened or much diluted by the absorption from other parts by the time it gets through these nearest ramifications, and therefore has not power to contaminate those which are beyond them; but it is most probable there are other reasons for this. I once suspected that the nature of the poison was altered in these glands as it passed through

We have been too apt to consider the suppuration of glands from absorbed poisons as the necessary and specific effect of such poison, when, in fact, the suppuration is produced by the attendant irritation.

As I have already shewn that irritation, however slight or obscure, is fully competent without ulceration to the derange-

them, which was the reason why it did not contaminate the second or third series of glands, and also why it did not affect the constitution in the same way as it did the parts to which it was first applied; but this explanation will not account for the next order of glands to suppurating buboes, not being affected by the absorption of venereal matter. It appears to me, that the internal situation of the other glands prevents the venereal irritation from taking place in them; and this opinion is strengthened by observing, when one of these external glands suppurates and forms a bubo, which is to be considered as a large veneral sore or chancre, that the absorption from it, which must be great, does not contaminate the lymphatics or glands next in order by the venereal matter going directly through them."—JOHN HUNTER on the Venereal Disease.

ment of a neighbouring gland, I am not without the hope, that the facts I have adduced may be useful in illustrating other phænomena which occur in the glandular system, and for which we have hitherto been unable satisfactorily to account.

Whether these opinions on the nature of that affection of the testicle which has been called venereal are well founded or erroneous, is perhaps of no great practical importance, since experience has taught us that whenever the gland presents the characters of that morbid enlargement, which I have defined, it will be proper to subject the patient to a judicious and well regulated course of mercurial frictions, which, for the most part, has the effect of restoring the gland to its natural state.

This affection of testicle, however, is sometimes blended with the sclerocele; and

whenever therefore a derangement of the urethra shall be ascertained to be present with it (I have already said that in every instance of morbid enlargement of the testicle the urethra should be examined), it will be right to resort to the occasional use of the bougie during the mercurial course.

I have to remark also, that in a majority of instances where the case is of this mixed kind, the back part of the testicle will be found, on a careful examination, to be more rugged and unequal, than the general bulk of the tumor.

State of Testicle which has been called Venereal.

CASE XI.

A married man about thirty-five years of age, of delicate constitution, but without any obvious marks of a diseased habit, shewed me one of his testicles enlarged to at least six or seven times its natural size; it was without pain, excepting that its great weight upon the chord occasioned a very distressing sensation. The whole gland was exceedingly hard and resistent, but perfectly smooth on its surface. He could in no way account for its enlargement. He had been confined, he said, a few months before I saw him with a severe cold and fever, but had not at that time remarked any alteration in the testicle, though within

a fortnight afterwards it began to swell. He assured me he had never had gonorrhœa or chancre, and that he passed his urine perfectly. I examined the urethra, but could not detect any unhealthy state of the membrane. Under these circumstances I advised a course of mercurial friction, and kept the part enveloped in a bread and water poultice of very moderate warmth.

As soon as the mercury had begun to affect the gums, an evident impression was observable on the tumor, and about six weeks after it was perfectly restored to its natural state.

The above description of swelled testicle, unaccompanied by syphilitic symptoms, yet yielding to mercury, must be so very

familiar to every practitioner, that I consider it unnecessary to trouble my reader with more cases of the kind.

I have already stated my reasons for believing its occasional presence with syphilis to be accidental.

The State of Testicle which has been called Venereal, accompanied by Sclerocele.

CASE XII.

A middle aged gentleman in a public office, accustomed to free habits of living, consulted me respecting a considerable enlargement of one of his testicles, but in a

state of too much tenderness at that time to allow of a very accurate examination. The spermatic chord, however, was obviously in its natural state.

My patient declared that he had never contracted gonorrhœa, but attributed this complaint to hard riding; at the same time observing, that "he believed it had been coming on for some time." He had a general feverish disposition, his skin was hot, and his tongue dry; the antiphlogistic plan was therefore recommended, with the occasional use of purgatives. By these means the general symptoms were in a few days relieved, and with the assistance of local applications the tenderness of the testicle was removed, yet little alteration had taken place in its size.

As the part would now bear handling,

I examined it with all possible accuracy, and satisfactorily ascertained there was no fluctuation.

The general face of the enlargement was free from inequalities, and had all the character of that state of the testicle which has been called venereal; but the back part of the tumor was craggy and irregular.

On my proposing the introduction of a bougie, the patient evaded it; and either alarmed at the measure, or satisfied with the present temporary relief from the more pressing symptoms, absented himself from me for several weeks. On again coming to me the tumor was not at all altered in appearance or size, and he was now willing to consent to my former proposal. On my passing a bougie, when it reached the caput

gallinaginis, he complained of very acute pain, which continued for several minutes after the bougie was withdrawn; and on making water soon afterwards, a vermicular piece of coagulum was observed to have been evacuated.

Having thus ascertained that this was one of those mixed cases which would require the joint assistance of mercury and of the bougie, I prevailed on my patient to confine himself entirely to his chamber, and commence the frictions.

The subsequent introductions of the bougie were each time less and less painful, and the testicle diminished in proportion as the irritability of the urethra was removed, and the system became affected by the mercury, so that by the expiration of two months, the gland had perfectly recovered

its natural state. The membranous fence at the orifice of the urethra was present in this case.

It is impossible to say in what degrees or proportions this enlarged testicle yielded to the treatment of the urethra, or to the alterative powers of the mercury. I had an opportunity however of observing that the craggy hardness at the back of the testicle was removed at a very early period of the cure; an effect which I attribute to the bougie.

Of the scrofulous Testicle.

When a testicle increases in fulness of size, retaining in a great measure the outward features of the gland, is at the same time free from pain, or any affection of the spermatic chord, and is characterized by a soft, pulpy, relaxed feel without elasticity; such a state of gland, (probably with reference to the habits in which it is usually met with) is called the scrofulous testicle.

Children and adults are equally liable to this affection. It occurs in those children who have light or red hair, a delicate skin, with a florid complexion, and such other general external appearances as are supposed to mark a disposition to scrofula,

and especially in those who shew any tendency to mesenteric obstruction.

It takes place in those adults who are naturally of a weakly, delicate constitution, or whose system has been weakened, and general health impaired by a long residence in hot climates, or by an irregular course of life.

In children it is no unusual occurrence to find, even before the testicle has acquired any considerable degree of fulness of size, the skin of the scrotum to give way, the testicle repeatedly to slough, and the parts afterwards to cicatrize without much difficulty.

But in adults the skin of the scrotum seldom gives way, so as to expose the body of the testicle until a very considerable in-

crease of bulk * has taken place; yet such enlargement is not attended with pain or affection of the spermatic chord, neither is there any derangement of the health, farther than seems to arise from general debility.

In such an enlarged state of gland the skin of the scrotum will redden and break sometimes in several places, and will expose different parts of the substance of the testicle in a state of slough. The progress of the sloughing, however, is commonly very slow, and only takes place at intervals; so that a patient will carry a diseased testicle

* It is to be remarked, that when the scrofulous testicle is about to enter into its second stage, which is generally a short time before the skin begins to appear discoloured, it gradually loses its grand characteristic feature, viz. its soft, pulpy feel, and acquires a degree of general hardness very much resembling what is attendant on the first stage of that state of the testicle which has been called venereal.

of this description, from time to time throwing off sloughs and for many years, without the mischief extending up the chord, without much injury to the general health, and without being incapacitated for the common avocations of life.

If the sloughing ceases before the gland be quite destroyed, the surface of the remaining portion frequently becomes elevated above the level of the skin of the retracted scrotum, and projects luxuriant granulations, which, from the difficulty of being restrained within proper bounds, very much impede cicatrization.

The scrofulous testicle is seldom offered to a surgeon's notice till the skin of the scrotum begins to redden; at which time, such a degree of alteration has taken place in the structure of the gland as for the most part renders sloughing unavoidable.

A scrofulous affection will often take place in both testicles at the same time; in some instances accompanied with other glandular derangements, but more frequently without them.

It is so obviously different from any of the several states of the gland already described, that it will be needless to dwell upon its distinctions; it may, however, be observed, that irritation within the urethra will induce upon a testicle previously disposed to, or suffering under, scrofulous affection, such a change in its appearances as will materially alter its pathognomonic symptoms.

Its real characters may also be obscured either by the presence of varicocele or of hydrocele.

The local treatment of the scrofulous

testicle should be the same as is applicable to any other gland in a sloughing state. In the general treatment, the object should be to maintain, as far as possible, a correct state of bowels, to support the patient's strength by proper tonics, or, if possible, to remove him into the neighbourhood of the sea. In short, to pursue such local and general measures as would be considered most judicious in any other scrofulous affection.

When the sloughing ceases, leaving a mutilated portion of the testicle very much protruded, and the cicatrization, in consequence of such protrusion, seems to be highly improbable, or when the cure from other circumstances is likely to be long procrastinated, the patient will act wisely in submitting to the removal of the diseased part; the functions of which are already past recovery.

The principle, however, on which a scrofulous testicle ought to be removed, differs essentially from that which would guide a surgeon in advising the extirpation of scirrhus or sarcocele; because in parting with a scrofulous testicle the patient gets rid of a disease extremely troublesome, which keeps him in a state of great weakness and under continual anxiety, although without endangering his life; on the other hand, in submitting to the removal of scirrhus or sarcocele, the patient is released from a disease which, if not seasonably extirpated, might ultimately prove fatal.

Scrofulous affection in both Testicles.

CASE XIII.

L. D. a soldier about forty years of age, who had served in the West Indies, was returned home invalided on account of a disease in both his testicles, for which he was afterwards received into St. Bartholomew's hospital. Both sides of the scrotum had ulcerated at the lower part, and a slough, which appeared to arise out of the substance of the enlarged glands, was protruded through each aperture of the ulceration.

The patient had no complaint of the urethra, and attributed the disease entirely to a free use of spirits, and the relaxation of a hot climate on a constitution naturally

delicate. The affection of the testicles gave him no pain. His appetite continued good; and though he looked weakly, his constitution did not seem to be irremediably injured. The bark, with natron, was directed to be taken three times a day, and the parts were dressed and poulticed.

The sloughing on the right side continued till the whole of that testicle was destroyed; but on the left it ceased when about half the gland had been removed. In eight or ten weeks the patient was discharged with his general health apparently improved and the parts healed, leaving no other external appearance than a drawing-in of the scrotum where it had united with the lower part of the spermatic chord on one side, and with the remaining portion of the testicle on the other.

Scrofulous Affection of both Testicles, one of which was extirpated.

CASE XIV.

A gentleman about forty years of age consulted me on account of disease in both his testicles, each of which had acquired a considerable size, but remained soft and pulpy in its texture. He was of pallid complexion, of emaciated appearance, and had in the early part of his life suffered under a constitutional affection of the hip-joint.

He was, however, free from pain; the spermatic chords were in a natural state, and his attention had only lately been called to the local complaint in the testicles by their increase of bulk.

As his bowels were exceedingly irregular, and his health obviously much impaired, those general measures were adopted which seemed to me most likely to correct the derangement of the system, and I contented myself with keeping the affected parts enfolded in a lotion consisting of aq: ammon: acetat: and spirits of wine, with a view of supporting the skin, and of counteracting the sloughing process, with which I knew the testicles were threatened. On the left side the treatment was successful, and the gland recovered; but on the right side, within two or three weeks from my first seeing the case, the testicle gradually lost its pulpy soft feel, and became partially hardened, with a further increase of its size. Little gatherings soon after took place under the skin, and ulcerating, exposed the affected gland at several parts in a sloughing state.

The season of the year admitting of it, I advised my patient's removal to the sea side, where the exposed gland continued to throw off large sloughs, but in other respects his health was very considerably improved.

On his return to town in the following autumn he had no complaint he said to make, but on account of the difficulty of keeping the ulcerated testicle within the scrotum, so as to allow the part to heal." On examination I found a diseased substance, for I could not call it testicle, suspended from the chord, and very far projected.

As it was obvious from the state of parts that there was no chance of getting the sore to cicatrize, and if any portion of the organic structure remained, that it could be of no use as a testicle, I advised

its extirpation, to which the patient submitted.

N. B. I cut into this diseased substance after I had extirpated it, but was unable to discover any vestiges of the glandular structure.

Of the Sarcocele.

When the body of a testicle increases in bulk, feels fleshy and elastic, is perfectly smooth and uniform on its surface, without thickening of the spermatic chord, and occasions no pain or inconvenience but from its weight, or on being handled, I should suspect such affection of the gland to be sarcocele *.

This disease is idiopathic, and has hitherto been incurable; although it may occasionally exist for years without making much progress, it is always liable to sudden and dangerous changes, which

* "If the body of the testicle, though enlarged and 'indurated' to some degree, be perfectly equal in its surface, void of pain, has no appearance of fluid in its tunica vaginalis, and produces very little uneasiness except what is occasioned by its mere weight, it is usually called a simple sarcocele, or indolent *scirrhus*." POTT.

may place it even beyond the reach of an operation.

As the disease proceeds, it induces derangement of the system, and the countenance of the patient assumes a peculiar sallowness of appearance.

In the more advanced stage of sarcocele, even without the presence of pain, there will occur partial collections of fluid, commonly of bloody sanies, within the body of the gland, which present themselves by mamillary elevations of the tunica albuginea. The fluctuation in these elevations will be so distinctly felt as occasionally to mislead the surgeon, and induce him to puncture them, under a supposition that the bulk of the tumor wholly consists of a collection of fluid *.

* In some few cases of sarcocele a small quantity of fluid, but of a limpid kind, will also be found within the

Such a mistake may lead to the most serious results, since it seldom happens that the gland will again subside into a quiet state.

When the disease in its regular progress, or by the excitement of any accidental circumstances, reaches its painful or suppurative stage, it will lose its elasticity, assume the common characters of irritation, and, projecting a painful gleeting* fungus from the ruptured part, ex-

tunica vaginalis, and will be bound down so tightly on the diseased gland as to render it painful and progressive at an early period. I have a patient at this time under my observation with true sarcocele, and I have twice within the last eighteen months stopped the progress of the disease by cautiously evacuating a small quantity of fluid from the tunica vaginalis. I do not, however, venture to recommend the practice; and would gladly prevail upon my patient to part with his testicle, but he has hitherto resisted my advice, and will probably repent it, as the gland is daily liable to be placed beyond the reach of an operation.

* "Gleeting." This sort of discharge, or a discharge of "bloody sanies," is not a pathognomonic character,

tend with a rapidity which not only sets all means of relief from surgical treatment at defiance, but sometimes renders castration itself ineffectual.

It will appear from the preceding observations that the fleshy elasticity, with the total absence of induration * and cragginess, are the chief characters which distinguish sarcocele from other morbid enlargements of the testicle; on this ac-

though it has hitherto been considered as such. When a fungus of any description is projected through the tunica vaginalis, the natural but excited secretion of that sacculus mixes with the purulent discharge of the fungus, and gives the "gleeting appearance." When this secretion of the sacculus happens also to be tinged with blood in passing over the irritable surface of the fungus, it constitutes "the bloody sanies," on which so much stress has been laid as a supposed character of cancer in the testicle.

* "Every species of sarcocele consists primarily in an enlargement, '*induration*,' and obstruction of the vascular part of the testicle." Vide POTT.

count a collection of blood or watery fluid within a diseased or thickened tunica vaginalis may easily be mistaken for sarcocele.

The fleshy elasticity of a testicle in the first stage of sarcocele is so similar to the feel of fluid through the medium of thickened membrane, that the most experienced surgeons have been deceived by it. This deception indeed is acknowledged to be so imposing, that it has now become an established point in practical surgery, invariably to puncture a supposed sarcocele, previous to the intended operation of castration.

Since sarcocele is idiopathic, in all its stages incurable, and even in an apparent quiet state liable to sudden and dangerous changes, it will be the duty of the surgeon, as soon as he has distinctly ascertained its

character, even before the gland has acquired a painful state, to explain to the patient the danger of his retaining a testicle under circumstances of such extreme hazard, and submit to him the propriety of its removal.

Of the Watery Effusions into the Tunica Vaginalis.

The natural sensibilities of the testicle, and its sympathies with an unhealthy state of the urethra, are probably not less instrumental in causing those complaints which are characterized by watery effusion into its tunica vaginalis, than they have already been shewn to be productive of the morbid enlargements of the gland itself.

Various have been the conjectures on this subject: some authors have attributed the collection of watery fluid within the tunica vaginalis to a varicose state of the spermatic vessels; and others again have considered it, when connected with a diseased state of the testicle, to be dependant on obstruction of

the absorbent vessels. It must, however, be admitted that these enquiries into the causes have, in no instances, been directed beyond the testicle itself*.

If we consider that the testicle is frequently distended and distressed by its seminal secretions when the party has no opportunity of gratifying the passions which occasion such action in the gland, and reflect also on the various causes of derangement and excitement to which it must be in other ways exposed, we may reasonably presume that nature in her abundant contrivances would not neglect to provide so important a part of the human frame with

* It has been remarked that, "whatever tends to increase the secretion of fluid into the sacculus beyond its due and necessary quantity, or prevents its being taken off by the proper absorbents, must contribute to the production of hydrocele. (Pott)." I am not, however, aware that any notice has been taken of causes existing at a distance from the gland itself, which could produce an increase of secretion of fluid into the tunica vaginalis.

every facility of relief, when placed under such circumstances, by means within itself.

It is supposed that the construction of the coverings of the testicle is intended merely for the constant supply of a lubricating fluid to prevent adhesion.

I am induced, however, to believe, that the exhalent vessels of the tunica albuginea, and the form of the sacculus of the tunica vaginalis, comprehend provisions far beyond those which are usually attributed to them, and that the mere lubrication of the cavity (though one of their offices) is not the whole intention of nature in the peculiar contrivance and formation of these parts.

An important office of the exhalent vessels of the tunica albuginea appears to me to consist in the readiness of relief which

they afford, through the means of effusion, to the testicle, whenever it is distended, or disturbed, either from natural causes or from disease. I farther consider the cavity of the tunica vaginalis to be peculiarly constructed as a receptacle* into which the excretory vessels may instantly empty themselves at all times when such sudden or immediate relief is required; so that notwithstanding the absorbent vessels may be provided with powers to meet such emergencies, yet the effusion being in many instances sudden and more rapid than the absorption, an undue proportion of fluid will, for a short period at least, occasionally

* Other organs, which are liable to be suddenly overcharged with blood, and distressed by distension under passion or great exertion of the body, probably possess a similar provision. I do not think it unreasonable to suppose, for instance, that the cavity of the pericardium and the ventricles of the brain, even in their healthy state, are occasionally receiving effusions for the temporary relief of their respective organs, when those organs are placed under circumstances above described.

remain in the sacculus without being noticed.

Without such means of self protection, it seems to me probable that an organ so delicately constructed as the testicle would, at an early period of life, be endangered by the influence of venereal passions, or destroyed by other causes of accidental excitement. And if these provisions really exist, they will not only explain many phenomena which occur in the sudden variations of the quantity of fluid within the tunica vaginalis; but, as they evince the extreme sensibilities of the testicle, will afford farther proof of its liability to become deranged by such a slight and subtle source of irritation, as I have before stated to be frequently concealed within the urethra.

Of the acute Hydrocele.

This complaint consists in a sudden effusion of watery fluid into the tunica vaginalis testis, attended with pain. For the most part it occurs in persons of nervous or irritable habit, generally when they are placed under circumstances of venereal excitement, and never but in such as have stricture, or whose urethra is in some degree in an unhealthy state.

Its commencement is marked by severe suffering in one of the testicles (I have never seen both glands affected), darting with great violence along the spermatic chord, and extending to the back and loins. The scrotum, without becoming inflamed, is soon distended to a considerable size; the pulse is quickened, and sometimes

irregular; but the tongue seldom becomes dry or furred; neither is the skin heated, as in common inflammatory attacks.

In bulk and outward appearance, and so far as the part is painful on being handled, this complaint very much resembles hernia humoralis, from which, however, it is in fact very different, and on account of requiring another mode of treatment ought to be carefully distinguished.

In the acute hydrocele the testicle is not enlarged or diseased, but being in a very irritable state, becomes extremely painful when any pressure is made upon the already distended tunica vaginalis. In the hernia humoralis the bulk of the tumor consists of an inflammatory enlargement of the compages of the gland itself.

Acute hydrocele, if the tumor be not too

painful to bear such a test, will necessarily be characterized by elasticity and fluctuation, and generally by transparency. In hernia humoralis the tumor will be firm, possess a considerable degree of resistance, and always be impervious to light.

I have in some instances made the experiment of pouring cold water upon the acute hydrocele, but as cold constringes the scrotum, and thereby produces upon the testicle an effect similar to pressure, such a proceeding has greatly aggravated every symptom.

Bleeding from the arm, which might be suggested as a proper and useful measure in hernia humoralis, is in acute hydrocele unnecessary, and in the habits in which the latter most commonly occurs does mischief.

The principle of practice should com-

prehend those means which are best calculated to allay general irritability, and particularly to produce local relaxation, since the pressure of the effused fluid against the irritable and tender testicle is the chief cause of the distressing pain, with which this complaint is always accompanied.

The treatment I have found most beneficial is, to apply leeches (proportional in number to the violence of the symptoms) to the scrotum, and when they have fallen off, to direct the patient to sit in the warm hip bath for a proper time; a brisk purgative may then be given, and after its full operation, a free dose of laudanum combined with some sudorific medicine. In cases in which the pain is peculiarly distressing I have found it necessary to give the anodyne, without waiting the effect of a cathartic, and in some few instances to

direct the farther use of laudanum in an enema.

On the patient's getting from the warm bath into his bed, the whole of the distended scrotum should be enveloped in a large warm bread and water poultice, and should be kept carefully suspended.

By such means I have never failed within twelve hours, and frequently in less time, to remove all the painful symptoms; and when they subside the patient has only a common transparent hydrocele, which is generally within a short though uncertain period spontaneously absorbed.

I have before remarked that this complaint is dependant on stricture, or on some more latent unhealthy state of urethra; it will therefore always be necessary when the excitement has subsided to direct the

attention to the treatment of the urethra by the bougie, as the only means of securing the patient against a recurrence of similar distressing symptoms, whenever he may accidentally be again exposed to causes of excitement.

Acute hydrocele constitutes one of those cases dependant on an unhealthy state of the urethra, in which an early introduction of the bougie will be injudicious. A reasonable time (perhaps two or three weeks) should be allowed to afford an opportunity for the urethra to recover a more quiescent state, and for the fluid to be absorbed before the bougie be used: but in case the hydrocele has not disappeared at the expiration of such period, it may be suspected that the existing mischief in the urethra has become permanently active, and continues to excite effusion, and the bougie should, then, be resorted to as

the probable means of completing the cure of the hydrocele. In those cases in which the fluid is absorbed within the above period the application of the bougie will be adviseable as a proper precaution, and the only security against a relapse.

Acute Hydrocele arising from an unhealthy State of the Urethra, of which the Patient was unconscious.

CASE XV.

I was requested to visit a gentleman of nervous, irritable habit, who was attacked with symptoms similar to those of hernia humoralis, and who was supposed to be suffering under that complaint.

The patient complained of great pain in the part, especially on its being handled, which darted with considerable severity along the spermatic chord, towards the loins; the scrotum was much swelled, tense, and tender; but the resistance of the tumor and the discoloration of the skin were by no means to that degree as is usual in the common hernia humoralis.

Notwithstanding the acuteness of the pain there were no general feverish symptoms; the skin continued cool, and the tongue moist. No probable cause could be assigned by the patient for this sudden attack, excepting his having undergone some bodily fatigue in a journey from the country. My patient assured me he passed his water without pain or difficulty, but admitted that he had occasionally a slight gleet. Cold water was poured upon the scrotum in the hope of relieving him; but the painful symptoms were so much increased by it, that it became necessary to discontinue its use, and to place the patient in the warm bath, by which he was immediately much relieved, and with the assistance of an opiate, after a purgative, passed a comfortable night. The next morning he was free from pain, and though the tumor was not diminished in size, it would bear handling without producing any material distress.

Upon more minute examination an evident fluctuation was now perceptible within the tumor, and the true nature of the disease distinctly ascertained by placing a lighted candle behind it; its transparency proving it to be hydrocele.

Within a few days from this time the fluid was spontaneously absorbed, and no other vestige of disease remained, except a slight degree of tenderness in the testicle of that side. I expressed my belief that the urethra was not in a healthy state, probably having a slight point of irritation in some part of its course, and proposed the introduction of a bougie, but my patient left London without submitting to that expedient.

After a few weeks he wrote to me, that his testicle was again affected in a similar manner, and accounted for this second at-

tack by stating that he had passed some hours of the previous day with an interesting female, under circumstances which excited strong venereal inclinations without the opportunity of gratifying them. I again advised the use of the warm bath, that the bowels should be kept freely open, and that he should avoid exposure to such excitements. By attention to this advice the swelling subsided, and the fluid was a second time spontaneously absorbed.

A short time afterwards I received another letter from the gentleman, stating, that having accidentally fallen into company with the same female under similar circumstances, the disturbances in the testicle had been renewed, and the hydrocele reproduced, which, as before, spontaneously retired upon his keeping himself quiet, and free from such excitements.

On his next visit to London he consented to the introduction of the bougie, which produced acute pain when it reached the caput gallinaginis, with a slight tinge of blood after it was withdrawn. These circumstances satisfied me that all his previous complaints had their origin in this source of irritation in the urethra. The patient's anxiety however induced him to consult two other surgeons, gentlemen of great eminence, the first of whom detected by the bougie the same point of irritation which I had previously discovered, though it was then become less sensible, and did not bleed when the instrument was withdrawn; before he consulted the second surgeon the point of irritation had subsided. He was at this period recommended to rub mercurial ointment upon the scrotum, and to the effect of the local friction (which he used much too slightly either to do good or harm) he attributed his ultimate recovery.

There is no doubt however but that he was solely indebted for his cure to the previous introductions of the bougie.

Acute Hydrocele, arising from Stricture within the Urethra, of the presence of which the Patient was unconscious.

CASE XVI.

A gentleman of the city about thirty years of age, who had been long inconvenienced by a slight gleet, with occasional tenderness of one of his testicles, without hardness or enlargement, after having drank too freely of wine, and indulged with a favourite female, was suddenly seized towards morning with a most acute pain in the irri-

table testicle, the scrotum immediately begun to swell, and in a short time increased to a considerable size. I saw him the following day about noon; the scrotum was very much distended, and the tumor exceedingly painful on being handled, so that the case assumed characters very much resembling those of hernia humoralis: the tumor was however more elastic to the finger, and less reddened externally than in that affection of the testicle; the skin of the patient was cool, and the tongue moist.

Soon after the attack the patient had poured cold water over the part, in the hope of procuring some abatement of the excruciating pains which darted from the testicle to the loins; but the experiment only tended to aggravate his sufferings. I advised the immediate application of six leeches to the scrotum, and directed the

patient, on their falling off, to sit in warm water up to the loins; his bowels were also emptied by a brisk cathartic; after the bleeding had ceased the scrotum was wrapped in a warm poultice; and at night he took thirty drops of tinct. opii.

On my visiting my patient the next day, instead of finding him in bed as I expected, I was surprised to see him at business in his counting-house, apparently well. Upon examining the scrotum, the bulk of the tumor was not in the least reduced, but my handling it caused very little pain; the symptoms which resembled hernia humoralis on the preceding day were now exchanged for those of a common transparent hydrocele.

In a day or two afterwards the fluid began to be spontaneously absorbed, and by the end of the succeeding week the

whole tumor had disappeared, leaving no other marks of previous disease than some degree of tenderness of the testicle.

On my second visit I had hinted to my patient a suspicion that he had a stricture, of which I considered his gleet, and the sudden derangement of the testicle to be symptomatic; I therefore now prevailed on him to allow an examination of the urethra by the bougie.

By the introduction of the bougie a very irritable stricture was detected near the bulb of the urethra, which gradually yielded within three weeks to its repeated use.

This patient had not the least suspicion of the presence of stricture, attributing the

continuance of the gleet merely to relaxation. The tenderness of the testicle, to which he had been long accustomed, ceased upon the restoration of the natural state of the urethra; and though he is in the frequent habits of indulging freely both in women and wine, he has continued free from any return of affection in the testicle for upwards of two years.

Of Acute Hydrocele.

CASE XVII.

A merchant in the city who had walked to London (for the sake of exercise) from his country seat, was seized with a most severe and distressing pain in one of his testicles.

On examining the part I found it swollen to the size of a small orange, and much resembling one in form. The patient was lying in great agony, and could scarcely bear the tumor to be touched. Having however put the skin of the scrotum gently upon the stretch, and placed a lighted taper behind it, I distinctly ascertained that the tunica vaginalis was distended with fluid.

This fact led me to question my patient as to the state of his urethra. He had suffered, I learned, under a gleet for many years, the consequence of gonorrhœa. About five years before the present attack (and since he had had the gleet) the testicle was affected precisely in the same way, on his return home after a fatiguing day of hard shooting.

Under these circumstances I ordered my patient to sit in warm water, and to pursue the measures which I have pointed out in the previous cases, and within a few hours he was totally relieved from his severe sufferings.

On the following morning the tumor, though not at all reduced, would bear handling without pain, and I again took an opportunity of observing its transparency. After a few days it obviously

begun to lessen, and before the expiration of a fortnight the hydrocele totally disappeared, leaving the testicle in a natural and healthy state.

I now proceeded to examine the urethra with a bougie, and detected an extremely irritable stricture in the membranous part of the canal; this experiment was followed by a few drops of blood.

By the further use of the bougie at seasonable periods, the stricture was removed and the gleet ceased.

Of the Spurious Hydrocele.

The morbid enlargements of the testicle are frequently accompanied with collections of watery fluid within the tunica vaginalis, and thus constitute a very extensive class of diseases, for which at present we have no term which is uniformly applicable.

In consonance with the commonly received opinion that the several morbid affections of the testicle are merely "varieties of one species of disease," these mixed cases have been much too generally considered under the term hydrosarcocele, a name which solely belongs to an incurable affection of the gland; and by the indiscriminate use of which a testicle has doubtless in many instances been subjected to extirpation, when under another denomination

it would have been deliberated upon, and perhaps eventually recovered.

The distinctions which appertain to diseases of the testicle, when unaccompanied by watery fluid within the tunica vaginalis, are equally referable to those same diseases when water is present with them in the sacculus; it is obvious, therefore, that any term which aims in all cases to be expressive of the nature of the affection of the gland, must, in a majority of instances, be unappropriate.

The morbid enlargement of a testicle, accompanied with watery fluid within its tunica vaginalis, may be sclerocele, varicocele, sarcocele, scirrhus, venereal, as it has been called, or scrofulous; and though some of these states may by an intelligent surgeon be recognized through the body of the fluid, or immediately upon the tunica vaginalis having been drained

of its water, yet the characters of the disease of the gland are sometimes too much confounded to make it prudent for the surgeon to attempt to designate such disease until it has been subjected to certain tests of surgical treatment.

These considerations have induced me to class the morbid enlargements of the testicle, accompanied with watery fluid within the tunica vaginalis, under the general head of Spurious Hydrocele*, and to reserve the

* Mr. Pott in referring to this description of mixed case, says, "They who choose it may call this a species of "hydrocele, and the literal sense of the word will cer-"tainly vindicate them; but they will by that means run "the risk of confounding together two things extremely "unlike to each other, and which require different treat-"ment: I mean the true simple hydrocele, in which the "testicle is soft and sound (only perhaps a little more lax "and larger than ordinary), and the hydrosarcocele, in "which the testis is not only enlarged but hardened, and "not in a sound and healthy state."—(Vide POTT on Hydrocele.)

By my arrangement of these cases under the head of spurious hydrocele, I trust I have not only avoided the

application of the term which is to describe the disease in the gland until opportunity has been allowed of submitting the case to a more deliberate investigation.

The spurious hydrocele demands our particular attention, not only on account of the accurate discrimination it requires, but also as a part of surgery in which our judgment and practice have been hitherto most seriously misled.

With reference to the disease in the testicle it consists of many varieties, but in regard to the collection of fluid in the sacculus it is confined to two states, which are solely distinguishable by quantity. Sometimes when the quantity of fluid is small, the diseased gland can be distinctly

confusion which Mr. Pott foreboded, but that I have also guarded against the serious mischiefs which resulted from the too general use of the term hydrosarcocele.

felt, and the extent of its enlargement can be correctly ascertained by manual examination: at other times the quantity of fluid is considerable, and totally conceals the deranged gland under all the external appearances of true hydrocele; so that occasionally on letting out the water of a supposed hydrocele, with an intention of proceeding to the radical cure, the testicle itself is discovered to be diseased when no morbid affection has been previously suspected.

Though the real distinction between these two states merely applies to the different proportion of fluid, yet, unaccountable as the fact may appear, this circumstance has had a prejudicial influence on our operative practice with regard to the gland itself.

In those cases in which the quantity of

fluid has been small, and in which the gland could be ascertained to be diseased through the body of fluid, we have in every instance considered it to be our indispensable duty to deliberate before we have ventured to pronounce the disease in the gland incurable, and determined on its removal: but in many cases, in which the disease in the gland has only been first discovered on letting out the fluid of a supposed true hydrocele, it has not been unusual immediately to proceed to its extirpation.

This dangerous principle has been inculcated from the earliest periods of surgery, and though our modern authors have placed it under some restrictions *, is

* These few restrictions are explained in the following note.—" When I say *natural*, *soft*, and *healthy state* " of the testicle, I do not mean that the testicle, in a true " simple hydrocele, is never altered from its natural state " when unaffected by any disease: I know the contrary; " I know that the testicle in a hydrocele is very fre-

yet admitted in practice to a very serious extent *.

If a testicle, after evacuating the fluid

" quently *enlarged in size and relaxed in structure, as* " *well as that its spermatic vessels are often varicose;* I " use the words *in opposition* to the *diseased indurated* " *state of the scirrhus testis.*—(Pott.)

* " We are by most of the writers on this subject " advised, in operating for the radical cure of an hydro- " cele, to regard carefully the state and condition of the " testicle; and if we find it *enlarged, hardened, putrid,* " *fungous, or any other way really diseased, to remove it* " *immediately: which advice, within proper limitation, is* " *certainly good. A testicle, in almost any of the just-* " *mentioned circumstances, ought, undoubtedly, to be* " *removed.*"—(Vide Pott on Hydrocele.)

If my reader after perusing these quotations can suppose I have in any way mistated the practice, I must refer him generally to the works of the several authors who have written on this subject; in all of which he will find abundant proofs of the common sclerocele being mistaken for scirrhus or sarcocele, and of its being prematurely extirpated under that erroneous designation. Our predecessors in surgery did not know that the sclerocele was dependant on an unhealthy state of the urethra, and could not cure it; whenever therefore an induration of the testicle became progressive, castration was the only alternative they had to propose.

from its tunica vaginalis, be found merely enlarged in size, relaxed in structure, in an advanced stage of varicocele, or even with its epididymis somewhat indurated, I am well aware that such states of the gland have not been thought sufficient to authorise its extirpation, or even been considered as objections to attempting the radical cure of the hydrocele: but when the gland, after draining off the watery fluid, has been discovered to be *enlarged*, *indurated*, and *craggy*, which are common features of the simple sclerocele, I will venture to affirm it has invariably been pronounced to be so far spoiled as to be incapable of performing its proper functions, or supposed to be affected by scirrhus, and therefore immediately removed as the only means to secure the future health of the patient.

Notwithstanding I have seen the tes-

ticle under such circumstances extirpated by surgeons whose experience was eminently calculated to vindicate the practice, and in the earlier years of my professional life I have acquiesced in the operation, later observation has convinced me it is erroneous, and that it cannot be too speedily rejected.

It must be from inattention or accident alone that a gland, for the first time discovered to be diseased, on the water being discharged from the tunica vaginalis, can require to be immediately extirpated.

If, for instance, a surgeon should plunge a trocar into a true sarcocele under the supposition of its being a hydrocele (and such an occurrence has happened to very experienced surgeons), it would doubtless be prudent and perhaps absolutely requisite

directly to proceed to the extirpation of the gland, lest by delay it should be placed beyond the reach of any future operation. But independent of such mistake or accident I cannot conceive a case upon which an experienced surgeon would prepare to operate as hydrocele, in which the necessity of instant castration can possibly arise.

When a testicle, after the evacuation of the fluid from a supposed true hydrocele, is discovered to be in any way or to any extent enlarged and hardened, whether the spermatic chord does or does not partake of the induration, instead of proceeding to the excision of the part, as has been hitherto too frequently done, it would be proper to have recourse to the bougie for the purpose of ascertaining how far the affection of the gland may be dependant upon an un-

healthy state of the urethra; and if any unhealthy state of the urethra be discovered, it is incumbent upon the surgeon to wait the result of the judicious treatment of that membrane before he pronounces the disease of the testicle to be incurable.

The introduction of the bougie should be also resorted to in those cases of spurious hydrocele in which the enlargement of the testicle can be recognised by examination through the fluid in the tunica vaginalis, even before the evacuation of the fluid. From my own experience I can state, that when this practice has been adopted, the necessity of evacuating the water has in many instances been superseded, and under the simple treatment of the urethra by the bougie the testicle has not only been restored to its healthy state, but the undue accumulation of water has

been removed by the natural powers from the tunica vaginalis*.

I cannot conclude these few observations on spurious hydrocele without expressing my regret that one of the leading characters of hydrocele, viz. transparency, which by the ancient writers was justly considered "the grand characteristic," should in the present day be so much disregarded. If to submit a tumor of the scrotum to the test of transparency can be considered as a reflection upon the judgment of any individual, I must for myself protest against such an imputation, and have no scruple in saying, that the surgeon who in affections of the testicle will trust solely and entirely

* In some very few instances the fluid has remained after the reduction of the enlarged gland by the treatment of the urethra; but when this has been the case the simple tapping of the tunica vaginalis has, so far as my experience goes, always proved sufficient to the radical cure of such remaining hydrocele.

to the tactus eruditus (as it is termed), when it is in his power to obtain more indisputable evidences of the nature of the disease, gratifies his vanity at the risk of his patient's security.

The most intelligent surgeons of this or any other country have admitted, much to their honour, that they have been occasionally deceived by the enlargements of the testicle, and have been induced to suspect water to be present where none has existed. Every advantage ought therefore to be taken of all the means which may in any way tend to elucidate points in practice which are frequently so very obscure.

I well know that the tunica vaginalis is now and then so much thickened, or the fluid is of such a nature as to prevent the passage of the rays of light through the scrotal tumor; and that we have then no

other alternative than to trust to the previous history of the case and the tactus eruditus; but even in such instances the absence of transparency will create a seasonable caution as to the further treatment of the case.

It is enough to justify the experiment, to know that in the majority of cases in which there is a collection of watery fluid within the tunica vaginalis, the transparency can be satisfactorily ascertained by placing a lighted taper behind the tumor, and that such a test will frequently decide the nature of the tumor when it would otherwise have remained doubtful.

This test of transparency has within my own observation in many instances discovered the presence of watery fluid, when under the previous manual examination of experienced surgeons, the scrotal tumor had been

pronounced to consist entirely of an enlargement of the testicle.

To submit a scrotal tumor to the test of a lighted candle is a measure due also to the feelings of the patient himself. Let the surgeon always remember, when he is consulted respecting a complaint in the testicle, that the mind of his patient is suffering under the apprehension of being afflicted with a disease which may affect either his manhood or his life. If it be practicable then by shewing that the tumor is transparent, to convince him that he has got only an inoffensive hydrocele, such a fact will afford great consolation.

There are many other considerations which render the test of transparency particularly valuable.

When the tunica vaginalis includes an

enlarged testicle with a quantity of fluid, the opaque proportion of the tumor will describe the extent of the enlargement of the gland; and when the pressure of the fluid upon an irritable testicle, in consequence of the unyielding nature of the tunica vaginalis, renders its evacuation necessary, the partial transparency will be a most important direction to the operator in making his puncture for that purpose.

When also the testicle is affected with varicocele, along with a collection of watery fluid within the tunica vaginalis, the test of transparency will afford the best security against wounding the enlarged vessels and producing the hæmatocele; and thus in all cases of spurious hydrocele, will prove a most desirable protection against those accidents by which alone the testicle can be placed under circumstances demanding its immediate removal.

Of Hydrosclerocele (spurious Hydrocele) originating from latent Irritation within the Urethra, established during a previous Hernia Humoralis.

CASE XVIII.

A gentleman of healthy habit, about thirty-five years of age, shewed me an enlargement of his right testicle of the size of a common orange. It was rugged and resistent on its posterior surface, but smooth and elastic on its fore part, without any fluctuation sufficiently distinct to enable me by handling it to decide whether there was any contained fluid. But on placing a lighted taper behind the tumor, with the skin of the scrotum drawn tight, the degree of transparency removed every doubt, and shewed me that the case was of a mixed kind.

My patient told me that this complaint he believed was the consequence of a gonorrhœa contracted about twelve months before, during which he had been attacked with a painful swelling of the testicle; and although a trifling degree of hardness and enlargement had remained after the gonorrhœa was removed, he had suffered no material inconvenience till within about six weeks before he applied to me, when the lump had begun to increase in size, but was unaccompanied by pain. The spermatic chord was in a natural healthy state, and there was no obvious interruption to the passage of the urine.

A bougie was introduced, which occasioned a most acute pain with a temporary spasm, immediately on its reaching the membranous part of the urethra; it however soon passed onward into the bladder without detecting any stricture, or other

derangement of the canal, excepting the sensible point of irritation above mentioned. On withdrawing the bougie there was a slight appearance of blood.

By the repeated use of a bougie at short intervals the point of irritation became less and less sensible, and as this effect took place the testicle gradually resumed its natural state; the fluid also which had been effused into the tunica vaginalis was by degrees spontaneously absorbed, so that by the expiration of three weeks from the commencement of the use of the bougie, the testicle was restored to its natural state, and the patient perfectly recovered.

The use of mucilaginous drinks was recommended during the cure, with occasional doses of castor oil.

Of Sclerocele in one Testicle, and of Hydrosclerocele (spurious Hydrocele) in the other; dependant on Stricture within the Urethra, but originating in common Hernia Humoralis.

CASE XIX.

A middle aged gentleman asked my opinion respecting a swelling of both testicles, accompanied with a frequent inclination to make water, and a considerable degree of difficulty in passing it; these swellings had taken place about six weeks before he came to me, during a severe fever.

More than twenty years previous to this time he had suffered under gonorrhœa, attended with hernia humoralis of the left

testicle; after the removal of the gonorrhœa a small, hard, painless tumor had remained in the epididymis of the inflamed testicle, and continued without increasing or producing any inconvenience until the illness above-mentioned.

Upon examination both testicles were found of a stony hardness, considerably enlarged, with a craggy unevenness of surface, and were exceedingly painful on being handled. The tunica vaginalis of the right testicle contained about an ounce of fluid, which, however, did not prevent the hardness and inequality of the gland from being distinctly perceptible.

The bougie detected a stricture near the bulb of the urethra, and on the first introduction occasioned acute pain, with temporary spasm; but as soon as the spasm subsided it passed readily into the bladder

without farther obstruction; a few drops of blood followed its being withdrawn.

By the further use of the bougie at short intervals the increased excitement to make water was relieved, the testicles became softened and considerably diminished in size; but as I found after three weeks perseverance in this plan that some fluid still remained within the tunica vaginalis, I carefully evacuated it by means of a lancet and probe, and the effusion was not renewed. Before the expiration of six weeks the urethra was restored to a healthy state, and both testicles were reduced to their natural size; no other evidence of derangement continuing than a small induration of the epididymis of the left testicle, which was now exactly (the patient observed to me) in the same state in which it had remained more than twenty years.

To assist the reduction of this hardness I advised a small quantity of mercurial ointment with camphor to be rubbed upon the part every night, which in a short time succeeded to my wishes.

N. B. In this case we find that a common induration of the epididymis (the consequence of gonorrhœa) remained dormant for the space of twenty years, and that at the expiration of this long period, the excitement of fever caused it to become progressive, and to assume those characters which are usually considered as belonging to scirrhus.

When this patient asked my assistance he was taking some tonic medicines by the advice of his physician, as a restorative

after the effects of fever, and I saw no necessity for altering that plan. This patient had a membranous fence at the orifice of the urethra.

Of Hydrosclerocele (spurious Hydrocele) dependant on latent Irritation within the Urethra, but originating in Hernia Humoralis.

CASE XX.

A gentleman about twenty-eight years of age shewed me a swelling of the right side of his scrotum, about the size of a swan's egg. It was hard and irregular on its back part, but elastic and more even anteriorly, giving the sensation of a small quantity of fluid, being contained within the tunica vaginalis, in front of an enlarged testicle,

which, on the part being subjected to the test of transparency, proved to be the case.

This tumor gave no pain, and bore handling without much inconvenience. The spermatic chord was of its natural size. The patient passed his urine in a full stream, and believed his urethra to be in a healthy state. A degree of hardness had been observed in the epididymis for more than two years, which was left by hernia humoralis from a gonorrhœa; and many local means had been tried for its removal without effect.

This gentleman had occasion to go to Gibraltar; and during the whole time he resided there, the hardened epididymis remained stationary; but on his passage home it began to enlarge, and the scrotum gradually attained the size I have already described, notwithstanding he had immediately on his arrival in England applied leeches to

the part, and used various other means with a view of reducing it.

Such a history of the case necessarily pointed out the propriety of ascertaining the real state of the urethra, although the patient was quite unconscious of any derangement of it. When the bougie reached the membranous part of the canal, it occasioned an acute sensation of pain, accompanied with spasm, and for a few seconds was stopped in its progress, but as soon as the spasm had subsided it passed on into the bladder without further interruption. On the bougie being withdrawn there was an appearance of blood.

A bougie was repeatedly introduced at short intervals, and after the first fortnight passed into the bladder without causing any uneasy sensation. The effused fluid gradually disappeared; the enlarged induration of the testicle gave way, and

within six weeks the bulk of the tumor was reduced to a small point of hardness in the epididymis.

For the removal of this remaining induration I advised the local friction of mercurial ointment with camphor, which soon succeeded; and about the end of two months, from the time my patient first consulted me, every mark of disease was removed.

No other medicine was given during the treatment of this case than occasional doses of Epsom salt.

N. B. In this and the two preceding cases it will be observed, that the induration of the epididymis had become progressive without any obvious external cause to account for such alteration. I think therefore I may venture to pronounce, that ac-

cording to the old practice (of which the use of the bougie did not constitute a part) these testicles could not have been cured. I am very desirous of calling the attention of my reader to this observation for the purpose of correcting the following mistaken principle, which has hitherto (as may be collected from the writings of our best authors) been extensively admitted in practice, viz. that, although the hardness remaining after hernia humoralis, was not considered of any importance so long as it continued stationary, yet if at any subsequent period it happened to be excited through the medium of its first cause within the urethra, and to become progressive, then the testicle was supposed to be so far spoiled as to be incapable of performing its proper functions, or to be visited by scirrhus, and under such impression, it was to be extirpated.

Of Hydrosclerocele (spurious Hydrocele) which had the appearance of true Hydrocele, dependant on a latent, unhealthy state of Urethra.

CASE XXI.

Mr. ———, about thirty-two years of age, consulted me on account of a hydrocele which had been tapped about six months before, and had been reproduced: the fluctuation was distinctly evident, and on placing a lighted candle behind the tumor, it appeared transparent, and bore indeed every external appearance of a true hydrocele.

Having however drawn off the fluid in the usual manner by means of a trocar, to the quantity of nearly a pint, the testicle,

contrary to my expectation, proved to be somewhat hardened and enlarged, though not to such extent as would have forbidden, according to the present practice, an attempt at the radical cure of the hydrocele by injection, had such a measure been in contemplation.

This state of gland made me suspect the source of its derangement to be in the urethra, and I questioned my patient very particularly on that point. He assured me he not only never had been affected with gonorrhœa but that he had "never known woman:" yet he acknowledged himself to have been addicted to the practice of onanism whilst at school, and to have carried it to a considerable extent. His urine had always, as he believed, passed off freely in a natural and full stream, and he was perfectly unconscious of any complaint of his urethra.

The bougie on being introduced discovered an extreme tenderness of the whole extent of the membranous part of the canal, and when withdrawn, was followed by a considerable discharge of blood. On its second introduction (on the following day) its passage into the bladder gave less pain and did not produce any bleeding; it was therefore repeated at short intervals; and before the expiration of the third week the testicle was perfectly restored to its natural size without any renewal of effusion of fluid into the sacculus.

This patient had the membranous fence occupying about one-third of the aperture of his urethra.

N. B. After the first tapping of this spurious hydrocele the fluid had been renewed,

and would doubtless have been a second time reproduced, if recourse had not been had to the bougie. But after the second operation, the timely introduction of the bougie removed the cause, which had been constantly acting upon the gland and exciting effusion, and prevented that effect from again recurring.

This case, amongst many others, proves, that derangement of the urethra, to such a degree as will produce a morbid alteration of the testicle and effusion into its sacculus, may take place without previous gonorrhœal or any other inflammation of its membrane.

Of Sclerocele in one Testicle and of Hydro-sclerocele (spurious Hydrocele) in the other, from latent Stricture within the Urethra.

CASE XXII.

A gentleman of healthy appearance, about thirty-five years of age, consulted me respecting a swelling which had been gradually coming on for some time in both testicles. Each gland was considerably enlarged, rugged, and resistent; the same characters of disease extended up each spermatic chord, even to the abdominal rings; and on placing a lighted taper behind the tumors a small quantity of transparent fluid was distinctly perceptible in the tunica vaginalis of the right side; but there was no attendant pain, except on the parts being handled.

This gentleman some years before had suffered severely from stricture (the consequence of gonorrhœa), which was removed by caustic. About a year after the removal of the stricture a small hard lump presented itself at the lower and back part of the left testicle, and was dispersed by mercurial friction. At a subsequent time the patient again contracted gonorrhœa, which had scarcely left him when both testicles became hardened and enlarged, and continued to increase until they reached the state above described.

No alteration was observed to have taken place in the manner of his passing his urine to induce him to suppose he had any return of stricture.

On introducing a bougie I was foiled in my first attempt by a stricture at the membranous part of the urethra, but after-

wards succeeded in passing one of a smaller size into the bladder.

As the urethra recovered under the further applications of the bougie a proportionate alteration took place in the indurated parts, and before the expiration of two months the fluid was not only removed from the sacculus on the right side, but the knotty enlargement of the spermatic chords and testicles was so satisfactorily reduced, that there remained only a very trifling induration of the epididymis of one of them, which soon after gave way to mercurial friction.

Of Hydrosclerocele (spurious Hydrocele) from an unhealthy state of the Urethra, established during the inflammatory Symptoms of Abscess in Perinæo.

CASE XXIII.

Mr. ———, a very intimate friend of mine, about thirty years of age, was so much troubled by ascarides in his rectum, and had so far neglected the complaint, that the irritation they occasioned and the further excitement from his scratching the surrounding parts, caused an abscess to form in perinæo. During the inflammatory state of the abscess, the urinary passage and neck of the bladder suffered severely, and for three days he was totally unable to void any urine without the assistance of the warm bath and cathe-

ter; at length, the abscess having given way, all inflammatory symptoms subsided, and as measures had been adopted to remove the ascarides, within a reasonable time he appeared perfectly well.

In about six months after this illness my friend consulted me on account of a peculiar fullness of one side of his scrotum, which had attracted his attention only the day before; it was without pain, and proved, on being put to the test of transparency, to consist of a trifling enlargement of the gland and a small quantity of fluid within the tunica vaginalis.

To my questions as to the manner of passing his water, he assured me he experienced neither difficulty nor uneasiness, and that he had never contracted gonorrhœa.

Although I proposed to myself to examine the urethra with a bougie, I felt desirous of watching the progress of the complaint for a short time, previous to my resorting to that expedient. I directed my patient, after bleeding the part with leeches, to enfold it in linen wetted with Goulard lotion, to keep his bowels moderately open, and to maintain, so far as possible, a state of rest, either by confining himself to his bed or by lying upon a couch; and he strictly conformed to this advice. The tumor however continued to increase, and at the expiration of three weeks had acquired considerable bulk. On again submitting it to the test of transparency, I ascertained that its greater proportion now consisted of the enlargement of the gland.

Under these circumstances I examined the urethra, and detected an extremely irritable point of membrane near the pros-

tate gland, which bled freely on the slight pressure from the bougie, but did not, on the spasmodic action of the canal subsiding, refuse a passage to the bougie into the bladder.

The bougie was not repeated until the third day, at which early period an obvious reduction of the bulk of the tumor had already taken place, and the point of irritation within the canal had become very much less sensible, and did not bleed.

The tumor having shewed a disposition to lessen with such rapidity, I allowed longer intervals between the introductions of the bougie than in most other cases; and had occasion to use it only six or seven times before the urethra and the testicle were restored to a natural state, and the undue accumulation also of fluid within the sacculus was entirely removed.

N. B. I attribute this hydrosclerocele entirely to the derangement of the urethra established during the inflammatory symptoms of the abscess in perinæo.

Of the chronic or true Hydrocele of the Tunica Vaginalis Testis.

The chronic or true hydrocele consists in an undue accumulation of the watery secretion within the tunica vaginalis testis, unattended by any inflammatory affection, or other morbid alteration of the testicle itself.

In every description of hydrocele it is to be presumed that the body of fluid does not continue uniformly and identically the same, but is in a constant course of absorption and renewal, though the process of such change be imperceptible to the patient.

In mixed cases (in which there is a derangement of the testicle or spermatic chord) the accumulation of fluid within

the sacculus may, in part, be occasioned by obstruction in the absorbents, and in part by an increased action in the exhalent vessels; but in the true chronic hydrocele, the accumulation of the fluid appears to me, to be solely dependant on an increased action in the exhalents*.

The prevalence of the hydrocele in hot climates has led some authors to suppose it to arise from local relaxation; but this opinion is at once refuted by the common fact, that a very long and continued use of fomentations, warm bathing, and poultices (which is frequently prescribed in complaints in the

* Mr. Pott considered the true chronic hydrocele to arise sometimes from impeded absorption and sometimes from increased secretion; I venture, however, to think that it solely arises from the latter.

"If the quantity deposited be too large, or if the regular absorption of it be by any means prevented, it will be gradually accumulated, and by distending, the containing bag will form the disease in question."—Vide Pott on the true hydrocele of the tunica vaginalis testis.

perinæum, scrotum, &c.) does not produce it.

By others this complaint has been attributed to a varicose state of the spermatic vessels; but this is not better founded than the former opinion, for though we often find the hydrocele present with the varicocele, we much more frequently meet with the varicocele, even in its most advanced states, unaccompanied with any accumulation of fluid within the sacculus. Yet these causes, however imaginary, are the only ones to which the true chronic hydrocele has ever yet been attributed *.

* "The hydrocele is a disease from which no time of life is exempt; not only adults are subject to it, but young children are frequently afflicted with it, and infants sometimes born with it. What is the immediately producing cause I will not take upon me to affirm. Ruysch is of opinion that it proceeds from a varicose state of the spermatic vessels. What real foundation there may be for such conjecture I cannot say; certain it is, that the spermatic vessels are very frequently found varicose in persons afflict-

One of our best authors has observed, that "whatever tends to increase the secretion of fluid into the sacculus beyond its due and necessary quantity, or prevents its being taken off by the proper absorbent vessels, must contribute to the production of the hydrocele."

This position is in every point of view unanswerable, but certainly does not go so far as to afford a sufficient illustration of the disease. It has however probably

ed with this kind of hydrocele; but whether such state of these parts ought to be regarded as a cause or as an effect of the disease is a matter worth inquiring into."—Vide POTT.

I consider the accumulation of watery fluid within the tunica vaginalis of young children, and "with which infants are sometimes born," though arising from excitement, to be different from every other species of hydrocele. It is in them a complaint which almost always cures itself, and is probably therefore solely dependant on the temporary excitement which the testicle occasionally experiences in the course of its descent into the scrotum, especially when such descent is in any way retarded. It differs from the true hydrocele, by being temporary, and from the acute, by being without pain.

induced us to desist from an enquiry into the more remote causes on which such irregularity in the secreting or absorbing vessels primarily or secondarily depends. But as I have in the preceding pages endeavoured to demonstrate that the acute and the spurious hydrocele are dependant on excitement within the urethra, I shall now offer a few observations in support of an opinion that the chronic or true hydrocele is produced by a similar cause under further modifications.

We have already seen that the testicle will become hardened and enlarged, and that the sacculus of the tunica vaginalis will be distended with watery fluid in consequence of various degrees of excitement within the urethra, from the irritable and acutely painful stricture, down to that concealed, subtle, and local derangement of the membrane which is totally free from pain, until it is pressed upon by the bougie, and which

may exist for years without the patient being conscious of its presence.

It cannot therefore be unreasonable to suppose, that an habitual susceptibility of the whole membrane of the urethra may, in some instances, be induced by general or local causes, and although it create no conscious sensation to the patient, may have the power of gently provoking the excretory vessels of the testicle somewhat beyond their natural action, and thus by destroying the balance of fluid, in course of time establish that undue accumulation which characterizes the chronic or true hydrocele.

I am induced to offer this opinion from a variety of facts which have presented themselves to my observation, and which lead me to suspect that in almost every case of true hydrocele, the urethra will be found either to have been exposed at some

previous time to excitement or inflammation, or to be in a present state of increased sensation, from constitutional irritability, from the membranous fence, or from some other of the several general or local causes to which I have in the preceding pages referred the derangement of this membrane.

The prevalence of hydrocele in the East and West Indies, instead of being attributable to the relaxation of the climate, may more reasonably be referred to the constant excitement to which the urethra is exposed from the habits of the table; since it is well known that in those hot countries every individual indulges in high seasoned dishes, and in the most stimulating description of diet.

The frequency of the hydrocele being present with varicocele may also be satisfactorily explained, by referring to that state

of continual excitement which is kept up by the distension and weight of the loaded vessels. In the more advanced states of varicocele nothing is more common than an habitual gleet or weeping from the urethra, which is occasioned by the dragging of the varicose vessels; and it certainly appears not difficult to suppose that such excitement in the urethra, when once established, may in its turn re-act upon the testicle, and produce a case of hydro-varicocele.

By admitting the true chronic hydrocele to be solely dependant upon an increased action in the excretory vessels, either temporary or permanent, we shall be able to explain many circumstances which occur in the course of this complaint, which it will otherwise be difficult to understand. We shall thence discover why it is that discutient applications, which succeed in promoting the dispersion of accumu-

lations of fluid connected with an indolent or obstructed state of the absorbents, generally fail in producing such effect on the true hydrocele. We shall find that the bulk of the tumor may occasionally vary as the urethra of the patient is more or less exposed to excitements from diet or other accidental causes. By this view of the disease we may also be enabled to account rationally, for many of those occurrences which are observed during the progress of the radical cure by injection, and perhaps derive from such experience a considerable improvement in our practice.

Though I consider the chronic hydrocele to be thus connected with the urethra, it by no means follows that we can rest on that practice in the process of cure, which I have represented to be so successful in the acute and in the spurious hydrocele. In a former part of this volume I have

stated that the sclerocele of the testicle, whether with or without fluid in its sacculus, yields most readily to the use of the bougie when the progress of induration in the gland has been most rapid, and the point of irritation within the urethra on which it depends is most susceptible; but the chronic hydrocele being slow in its progress, and dependant on a much more modified state of derangement in the urethra, is on such account, very little under the influence of the treatment of that membrane, and must be referred to some other operation for its permanent cure *.

* When a tumor of the scrotum presents itself under the external appearances of true chronic hydrocele, and is coexistent with an acutely deranged urethra, and especially if the patient has any dislike to the hydrocele being tapped, the treatment of the urethra by the bougie will always be a fair experiment previous to the letting out of the water, and I may assert from my own experience that it will in some few instances prove successful in curing the hydrocele; it is probable, indeed,

that in the cases in which this treatment has succeeded there might be concealed sclerocele, but such a fact would not lessen the propriety of the experiment. In cases which present themselves under all the appearances of true hydrocele in which the urethra is less obviously deranged, I believe that an attempt to cure the complaint by the use of the bougie will lead to no other result than an unnecessary waste of time.

Of various Operations practised for the Cure of the chronic or true Hydrocele; and of the mistaken Principle on which all of them have been adopted.

Although it may be admitted that the operative practice in the true hydrocele has attained a state of great perfection, it cannot be denied that many practical facts have been overlooked, and that the principle on which its radical cure should be undertaken, is not sufficiently understood.

The history of the curative treatment of this very common disease occupies a considerable place in many of the works of our best authors, and affords an interesting example of that fickleness, indecision, and error, into which the most intelligent writers are occasionally precipitated, by premises too hastily assumed. A short

sketch therefore of its history may illustrate the point of practice I am about to consider.

In the earlier ages of surgery, when anatomy was but little understood, the collection of fluid within the tunica vaginalis, constituting the complaint in question, was supposed to have descended from the cavity of the abdomen, and several methods of treatment were devised consistent with such an opinion, and some of them indeed were adopted under the further erroneous idea, " that the fluid contained in the cyst was in itself noxious, or that the general habit of the patient was relieved, and many other disorders prevented by the humour falling or being deposited in that part; or from an opinion that the cure of it ought not by any means to be hastily or rashly attempted. The seton, the tent, and the cannula were used with a view of palliating the disease,

whilst the caustic, the cautery, and the ligature, were designed to prevent the supposed descent of the water from the abdomen into the scrotum; and the injection was resorted to as a means of constringing a supposed breach in the lymphatic vessels." —(POTT.) Such were the early theories on this subject.

When by an improved knowledge of anatomy the parts concerned in the disease became more accurately known, these opinions were relinquished. As, however, the measures they gave rise to, had destroyed the cavity of the tunica vaginalis and cured the hydrocele, the obliteration of that cavity was assumed as a principle on which future operations should be grounded; "though therefore, says Mr. Pott, these methods, or methods like these, did continue to be used, yet they were with another view, not with an intention to lengthen the time of a cure by making a gra-

dual drain for the prevention of other disorders, but merely to abolish the cavity of the tunica vaginalis by such a degree of inflammation and suppuration as shall produce an union between the coat and the albuginea testis."

Thus we trace the intention of obliterating the cavity of the sacculus up to the earliest period of surgery, and we find surgeons of our own time not only admitting such obliteration as necessary to be obtained, but pronouncing it to be "the only rational end which can be pursued" (Pott) in the operative treatment for the cure of the true hydrocele.

It had been observed, "that the cure of the hydrocele was sometimes effected by inflammation, which succeeded those means which were intended only to procure temporary relief; the trocar, the ancient method of letting out the water

by a small incision, frequently produced it; and the seton, the tent, and the cannula, though used for another purpose, were often found to be followed by it; they were, indeed, originally designed to discharge the water gradually, and to continue such a drain from the parts where it had been collected, as might prevent any of the ill consequences apprehended from the removal of the local disorder: but the inflammation which supervened sometimes producing a cohesion of the sacculus to the surface of the testicle, what was originally calculated for a palliative remedy only, was by many adopted for a radical one."—(POTT.)

About this period the tent and the cannula acquired many advocates, and were more particularly esteemed for possessing the power of effecting the cure without

subjecting the patient to the terror of a large wound, or the testicle to absolute exposure.

The principle however continued the same. Some operators, who adopted the method from a desire of exciting a degree of inflammation sufficient to produce obliteration of the sacculus, were carried beyond the point they wished to attain. Others, from the fear of doing too much, fell short of their intended purpose. So that after awhile these operations experienced the fate of the preceding ones, and were succeeded by the incision and the caustic, which, by effecting a cure through a process of incarnation, were calculated to render the obliteration of the cavity of the tunica vaginalis more certain.

After a trial of the incision and the caustic the operation by seton was revived,

and an improved method of using a cannula for the silken skein to pass through was suggested to afford protection to the testicle.

About this time also some ingenious experiments were set on foot, with a view of promoting adhesion of the sacculus * by a strong, stimulating, *external application.*

All these methods however proving either too painful or not sufficiently destitute of risk to be persevered in, the professional world, already divided in opinion, became equally divided in their practice, and whilst

* "The point to be aimed at is the evacuation of the fluid, to be succeeded by a perfect cohesion between the tunica vaginalis and tunica albuginea."—(Vide KEATE's Cases of Hydrocele.)

"That to excite the absorbents to perform their office, and to procure an adhesion of the coats of the cyst to each other, so as to prevent the water from again collecting, is the necessary desideratum in this disorder." —(Vide KEATE's Cases of Hydrocele.)

some adhered to operations which had of later days been adopted, others returned to those which obscured the earliest dawn of surgery, and which ought for ever to have been discontinued *.

During the unsettled state of this part of operative practice, it occurred to a surgeon of great eminence † to revive the long neglected method of cure by injection, in which happily for mankind every other radical operation seems to be now concentred. To this therefore I shall confine my subsequent observations.

* The several operations for the radical cure of the hydrocele have at different periods been so capriciously adopted, relinquished, and revived, that it would be not less difficult, than I conceive it unnecessary for me to attempt to refer them to their original inventors, especially since every information which can be given on this subject is already before the world in the very able works of Mr. Pott. It is worthy of remark, however, that none of the operations alluded to, are inventions of modern surgery.

† The present Sir James Earle.

Of the radical Cure of the chronic or true Hydrocele by Injection.

I consider what is termed the radical cure by injection, the only method which ought to be practised in this disease: because it is not attended by those severities and risks which attach to all other modes, and is generally so satisfactory in its final result. Its superiority is indeed in every point of view so conspicuous, that I have long ranked it as one of the most perfect surgical operations we are in the habit of performing.

But notwithstanding the preference I am induced thus decidedly to give to this operation, on account of its producing a permanent cure by very gentle means, many reasonable objections may be offered

against the principle on which it has been adopted.

I have already shewn that by whatever means the cure of the hydrocele has hitherto been attempted, whether by ligature, cautery, incision, excision, caustic, tent, cannula, seton, or discutients; in all these experiments it has been the avowed intention of the operator to abolish the cavity of the tunica vaginalis; from a belief that its obliteration was necessary to the permanent removal of the disease; and it will appear that the same intention has guided the operator in the radical cure by injection.

"The proper object," says Sir James Earle, in his treatise on the cure of hydrocele, "of all operations for the radical cure of the hydrocele is to produce such an adhesion of the distended vaginal coat of the testis with the gland, or such a

consolidation of contiguous parts, as shall annihilate the cavity in which the water constituting this disease is contained. We know that this effect can be produced by a certain degree of inflammation, and are unacquainted with any other process, either natural or artificial, by which it can be brought about."

When the radical cure was set about by incision, by caustic, by excision, or by seton*, the cavity of the sacculus was filled up by

* The seton has been ranked among those methods which were supposed to effect a cure by inflammatory adhesion,

> " and the cure is accomplished merely by the coalescence or cohesion of the tunica vaginalis with the tunica albuginea."—(Vide POTT on cure by seton.)

but this conclusion is not correct: the fact is, that the effect of the seton was of two kinds, and took place at two distinct periods; the seton occasioned inflammatory adhesion between every part of the surface of the sacculus and albuginea, excepting that which itself occupied, and then being taken away by a few threads at a time, it left its own channel to be filled up by a process of incarnation.

the process of incarnation, and its final obliteration was a certain consequence. When the radical cure happened accidentally to succeed to the common tapping, or inflammation was intentionally produced by the friction of a cannula; the cure was yet supposed to depend upon a similar result, though certainly without sufficient ground to authorize such a supposition.

I am ready to allow that when inflammation is induced to a certain extent, the annihilation of the cavity of the tunica vaginalis will be a necessary consequence; but I know also that the radical cure of the hydrocele may be effected (and is so in a large majority of cases) by excitement of that sacculus without any such extinction of its cavity.

The effect of throwing injection into the tunica vaginalis is of two kinds. If a

very strong stimulating injection be used and retained within the cavity for an unreasonable length of time; it occasions a painful enlargement of the testicle, and places the patient under all the distressing symptoms of the hernia humoralis.

If, on the other hand, an injection be used of more moderate strength, be retained but a short space of time, and special care be taken to prevent the cannula of the trocar from rubbing against the testicle; it produces a slight inflammatory excitement of the excretory vessels without any enlargement of the gland itself, and places the patient under symptoms very much resembling those I have stated to be present in acute hydrocele.

In the former instance, where the inflammation is so severe as to occasion the hernia

humoralis *, the surface of the gland and the surface of the tunica vaginalis are in contact with each other, and frequently become adherent †.

In the latter instance, where the injection produces an effect nearly similar to acute hydrocele (which is the only effect a judicious operator should aim at), the surface of the gland and the surface of the

* Mr. Pott's operation by seton always produced an inflammatory enlargement of the testicle. Speaking of the symptoms attendant on the course of cure, he says, "After which the patient may lie upon a couch to the end of the attendance, which is generally finished within three weeks or a month at farthest, and during all that time no other process or regimen is necessary than an inflammation of the same part, from any other cause, for example, as hernia humoralis would require." —(Vide POTT on cure by seton.)

† Mr. Pott, speaking of the abolition of the cavity of the tunica vaginalis, says, "This I do know to be sometimes, and I believe most frequently is, the consequence of a severe hernia humoralis, as well as other inflammations of the testicle."—(Vide POTT on cure of hydrocele by seton.)

sacculus are carried away from each other by the immediate effusion, and any adhesion between them is mechanically impossible.

I shall exemplify this fact by several cases, in which the separation of the surfaces of the sacculus was ascertained by the transparency of the tumor during the whole process of cure, and which afford therefore unequivocal proof that such cure was not dependant on inflammatory adhesion.

Having thus stated that the practice in the radical cure of the hydrocele by injection (like every preceding method of operating), embraces objects and intentions that are unnecessary and ought not to be attained, I will now endeavour to shew that the theory on which it is founded, is also fallacious.

We are indebted to Sir James Earle for explaining to us the considerations which originally led to the use of injection for the cure of this complaint, "as adhesion and consolidation of sinuses and other large cavities," says this author, "had been frequently procured by injections of various kinds without causing great inflammation, and the necessity of large divisions of the skin and integuments had thereby been prevented; it was to be concluded that a cure of the hydrocele might be effected by the same gentle means."

This conclusion however is by no means warranted, neither does the comparison which has been thus drawn between the sinus and the sacculus in reality exist.

The injected sinus, I have to observe, becomes obliterated through a process of

incarnation, which is, in every respect, so obviously different from the inflammatory adhesion of secreting surfaces, that it might seem intrusive, if I were to trouble my reader with any further remarks for the purpose of pointing out to him their distinctions.

But although I cannot admit that the sacculus of the tunica vaginalis bears any resemblance to the common sinus with which it has thus been supposed to correspond, yet I will attempt to demonstrate that it does correspond with many local affections where no analogy has been suspected.

If I should succeed in proving such analogy, it will not only assist in elucidating the cure of the hydrocele itself, but also correct an erroneous theory (at pre-

sent entertained), with regard to the process, by which the cure of other local accumulations of fluid is effected.

When we obtain the removal of any accumulation of fluid by those means which are known under the general term of discutients; whether such fluid be diffused or encysted, we take it for granted that its disappearance is solely owing to an excited action in the absorbents; yet I am of opinion, in the latter instance where such discutient treatment succeeds, that the principle of such cure rests solely on the suppression of the excretory vessels, and that the absorbents are only secondarily concerned.

If a tumor consisting of matter or of extravasated blood remains in an indolent state after the inflammatory excitement

has subsided, it may frequently be dispersed by any of the mildest class of discutient applications; and in this case, the cure is solely attributable to an excited action in the absorbents.

But if a tumor be constituted of fluid within a cyst, or enveloped within the surface of an excreting membrane, the stimulus required for its removal must be sufficient to produce a degree of inflammatory excitement of the enclosing membrane, and in this case the cure will primarily depend on the suppression, which always succeeds to such excitement of the excretory vessels.

The large ganglion of the knee (to which housemaids from their habit of kneeling are very subject) will resist every degree of stimulus to the skin that falls short of producing an excitement of the membrane

within which the fluid is effused. But if the part be blistered, until the envelope of the fluid becomes excited, though the stimulus be then discontinued, the ganglion will after a reasonable time gradually disappear, and by such gradual reduction satisfactorily prove that its cure is not effected by inflammatory adhesion.

The ganglion of the wrist, which consists of an accumulation of the fluid provided for the lubrication of the tendon (and therefore bears a closer analogy to the true hydrocele), will also resist every degree of stimulus which does not act as a rubefacient and produce excitement of the tendinous sheath, within which the fluid constituting the complaint has been effused.

In this ganglion of the wrist we have a yet stronger proof that the radical removal of encysted fluid does not depend on ad-

hesive obliteration of the cyst or cavity in which such fluid has been contained; for if such was the result the tendon would become fixed, and the finger to which it belonged would lose the power of flexion and extension; experience, however, has shewn that such an occurrence is not to be expected.

As I am aware that the above examples do not afford a visible demonstration of the excitement of an excreting surface being sufficient (as I have asserted it to be) for the suppression of its morbid effusion, and it might, by some, be said that they do not bear directly upon the fact I am attempting to establish, I shall add one other familiar instance by which the evidence appears to me to be completed.

If in a common gleet of the urethra, claret, or a solution of sublimate be inject-

ed, it will at first occasion an excitement of the membrane, with a considerable increase of the discharge; then the excitement of the membrane will subside, and the gleet gradually disappearing, the patient will in a reasonable time experience all the benefits of a radical cure *, and this will happen notwithstanding the excretory vessels obviously derive no adventitious restraint from coalescence of surface.

I shall pronounce it therefore to be by a process similar to the preceding examples, and not by adhesion of the surfaces of the sacculus, that the injection of port wine and water when properly used, effects the

* "I knew a gentleman who threw into the urethra, for a gleet of two years standing, Goulard's extract of lead undiluted, which produced a most violent inflammation, but when this inflammation went off the gleet was cured."—(Vide John Hunter on irritating injections.)

radical cure of the chronic or true hydrocele *.

* I know that the true hydrocele may be cured by external discutients, but the method is much too painful ever to be recommended or endured. Mr. Keate, as I have before shewn, supposes the solution of sal ammoniac in vinegar to possess the double merit, first of "exciting the absorbents to perform their office," and next, "of procuring an adhesion of the coats of the cyst to each other;" but I apprehend Mr. Keate is deceived as to the real process which takes place under such an application. So far as my observation extends, the solution of sal-ammoniac in vinegar does not succeed until it has been used of sufficient strength to induce an excitement of the sacculus itself, and I must therefore attribute its success solely to its correction or suppression of the excretory vessels, the action of the absorbents being secondary and of inferior consideration. I say "inferior consideration," because if any accumulation of fluid should remain in the sacculus after the suppression of the excretory vessels has been effected, the radical removal of such undue accumulation of fluid would be obtained by simple tapping. An occurrence very similar to this does sometimes present itself in hydrosclerocele after the removal of the exciting cause from the urethra. I have never, however, seen an instance of true hydrocele in which the absorbents have failed to take up the fluid after the increased action of the exhalent vessels has been properly suppressed by a judicious use of the injection.

Although the radical cure of the chronic hydrocele by injection is open to the preceding observations so far as regards its principle, yet as an operation it is entitled to unqualified praise.

The mode by injection is of high antiquity, and appears to have been alternately practised and disused by the capricious fate which has attended all other operations for this complaint. Being wrong in principle it was frequently found to exceed its intended purpose. Some experiments made in France, with the intention of promoting adhesive inflammation, having suggested the employment of strong stimulating injections, and done great mischief, the operation fell into disrepute in this country, and remained almost totally neglected for many years.

Its revival therefore affords an important lesson, by shewing us that what is

fruitless or dangerous in the hands of the incautious, may, under the guidance and moderation of the more judicious practitioner, be productive of infinite good.

The present Patron of this truly valuable operation, which has changed severity and torture into mildness and comparative ease, had noticed the errors of previous experiments and avoided them; instead of making use of strong irritating injections, he cautiously measured the degree of stimulus, and progressively increased it until he could ascertain the precise point at which it might effect the cure without risk of failure, or the danger (to use his own words) "of deranging more than necessary "the economy of those tender organs which "are the seat of the disease."

With respect then to the materials of which the injection is compounded and

their proportions, I have nothing at present to suggest; neither do I presume to arrogate to myself any method in its application different from that which I have had the honour to learn from the example of its Patron.

It will be obvious in comparing my cases with those already on record, that there are many which nearly correspond; and if the cases to which I allude had been submitted, subsequent to the operations, to the test of transparency, as mine were, I have no doubt but the professional world would have had the advantage of receiving an illustration of the real process of cure from an abler pen than mine. I have to state one other circumstance, however, to which this deficiency in the history of the operation may be attributed.

The greatest attention during the whole

of the operation is necessary to prevent the friction of the cannula against the testicle, and we have been cautioned on this point, upon which however sufficient stress has not been laid.

When the scrotum contracts on the evacuation of the hydrocele, it will raise the mouth of the cannula, and at the same time depress its other extremity against the gland, if special care is not taken to prevent it; and however mild the injection may be, this circumstance alone is capable of altering the whole course of cure by inducing a state of hernia humoralis, instead of a mere excitement of the sacculus.

The farther extremity of the cannula, therefore, should from the moment of its introduction be so managed that its side shall bear against the surface of the tunica vaginalis, a few lines away from the testicle,

and the hand of the operator should never quit it, for an instant, until sufficient distension is produced by the injection to prevent the extremity of the instrument from reaching the gland. The same precaution should be taken on letting out the injection, and even during the actual withdrawing of the cannula.

This however has not always been done; the inconvenient form and bulk of the apparatus used for the operation, for a long while after its revival, rendered it impossible for an inexpert operator uniformly to observe all these precautions, and to this I attribute the variation which has taken place in the process of cure, and, consequently, in the sufferings and confinement of the patient.

I have never as yet altered the proportions of the injection as used by its

Patron, but I have strictly attended to the management of the cannula.

Having merely the excitement of the sacculus in view and not its adhesion, I have indeed seldom retained the injection within the sacculus beyond seven minutes, yet I attribute the mildness of this mode of operation, principally to the care of the cannula; and if that be properly attended to, I will venture to affirm that the cure of the true hydrocele, which formerly subjected a patient to great sufferings, and frequently exposed him to considerable risk, may be radically obtained with little pain, and without any greater sacrifice, than a few days restriction from business and the common habits of society.

CASE XXIV.

Of the Cure of the Chronic Hydrocele by Injection.

In the year 1801, a gentleman thirty years of age submitted to the operation of injection for the radical cure of a hydrocele. It held about a pint of fluid, the testicle was in a perfect healthy state. The injection, consisting of one part of water to two of port wine, was retained within the tunica vaginalis for the space of seven minutes. For the first two minutes the pain was severe, but it then ceased. On the following morning I was somewhat disconcerted at finding the scrotum though enlarged yet without any discoloration, and that handling the tumor, excepting when it was pressed at the back part, produced no pain.

On the third day the distension was further increased, and the enlargement of the scrotum appeared full as great as before the operation, yet without any pain or any external appearance of inflammation.

Under these circumstances I allowed my patient to return to his wine and usual habits of life, from which I had previously restricted him, advising him, however, to call on me twice every week that I might examine the state of the tumor. Three weeks having gone by in this way, and the hydrocele continuing to all appearance (for at each visit I ascertained its transparency) precisely as when he had first consulted me, I at length considered the operation to have failed; acknowledged my disappointment, and recommended him to have it repeated at some future convenient time with a stronger injection than that which I had before used.

Six weeks passed before he again called on me, when he agreeably surprised me by shewing me the testicle completely cured of its hydrocele.

He said that the hydrocele had began to decrease about the latter end of the fourth week, a few days after I had last seen him, and had gradually lessened till at length it totally disappeared. He also added, that having seen me frequently place a lighted taper behind the tumor he had been induced to do the same, and had distinctly observed a degree of transparency till within a few days of its complete reduction *.

* It was this case which first led me to suspect that the operation for the hydrocele by injection did not cure by adhesion, and which gave rise to my later investigation of that fact. As this case occurred before I had conceived the idea "of the true hydrocele being dependant on an unhealthy state of the urethra," I cannot speak to the state of that membrane in this particular instance.

Cure of true chronic Hydrocele by Injection.

CASE XXV.

Mr. A. N. of very nervous system, who had passed several years in India, shewed me a tumor of the scrotum as large as a moderate sized cocoa-nut, which on examination proved to be a hydrocele. He had never suffered, he said, under any disease of the urethra from venereal excesses, but had frequently experienced temporary strangury, in consequence of eating freely of the high-seasoned dishes of the country in which he had resided.

He could not at all describe the time when the swelling of the scrotum begun, as it had been entirely free from pain, and never attracted his attention till it was

about half the size at which he shewed it to me. I explained to him that the mere letting out the water would afford only temporary relief, and advised the radical cure by injection, to which he consented.

On evacuating the water of the tunica vaginalis the testicle proved to be in a natural and healthy state, and the operation was therefore immediately completed with the usual mixture of port wine and water, and which was retained within the sacculus for seven minutes: during the first four minutes the pain was great, and darted with severity towards the loins, but from that time to the draining off of the injection the patient experienced very little uneasiness.

On visiting him on the following day the scrotum appeared swollen to about half the size it had been at, previous to the

operation, and upon placing a candle behind it was obviously transparent.

On the second day it was more increased, and excepting that it was a little tender on being handled, was in every respect the same as when I proposed the operation.

There being no necessity for the patient under these circumstances to confine himself or submit to any particular restraints, he continued to pursue his usual avocations. At the end of the third week, and not till then, the tumor became somewhat lessened; from this time he gave me frequent opportunities of examining its transparency and of watching its absorption. In about three weeks more (i. e. about six weeks from the time of the operation) it had entirely disappeared.

Previous to the operation on the hydrocele I examined the urethra; it had the membranous fence at its aperture, and the whole membrane of the canal was unnaturally tender: there was however no distinct point of derangement to lead me to expect any impression would be made on the hydrocele by a further treatment by the bougie; an opinion which was still further confirmed when I ascertained the testicle to be in a perfectly healthy state.

Cure of true chronic Hydrocele by Injection.

CASE XXVI.

Mr. ———, about forty-five years of age, consulted me on account of a hydrocele of the tunica vaginalis testis of the size of a sheep's bladder, which had been coming on, he said, about six months. The urethra was exceedingly irritable throughout its whole course, but created no actual impediment to the introduction of a moderate sized bougie. I proposed the cure of the hydrocele by injection, and performed the operation a few days afterwards in the usual manner, with two parts of port wine to one of water, retaining the injection within the sacculus for seven minutes.

The operation produced but little un-

easiness, and I left the patient to go to bed, or not, at discretion, if the part should become painful.

On calling in the evening I found him occupied in his study, and so entirely free from pain in the part that I did not think it necessary to interrupt him by the examining it. On the following day the scrotum appeared swollen, but without any external mark of inflammation; I examined it with the assistance of a lighted taper, and ascertained, by transparency, the reeffusion of fluid into the tunica vaginalis. On the third day the hydrocele was renewed to a size equal to that at which I had at first seen it.

From this time to the commencement of the fourth week it continued without any obvious alteration, during which the patient sustained the part with a common

bag-truss, and pursued his avocations and pleasures as usual. At the commencement of the fourth week the tumor begun to lessen, and before the expiration of a fortnight more was totally absorbed.

This patient had occasionally passed small calculi, one of which lodging in the urethra had brought on retention of urine, and for two days placed him under circumstances of great sufferings; this had occurred a few weeks before he first discovered an increase in the size of his scrotum.

Of Hydro-varicocele cured by Injection.

CASE XXVII.

A man of very relaxed habit and weakly stamina, about fifty-five years of age, who

had for many years carried a large hydrocele, which reached nearly half down his thigh, in getting up a ladder in the warehouse in which he was employed, had the misfortune to fall down and bruise the tumor, which immediately became blackened, and farther increased in bulk.

In this state his employers sent for me to visit him. As no time was to be lost to prevent the parts from sphacelating, by distension, I immediately introduced a trocar, and discharged considerably more than two pints of bloody fluid from the tunica vaginalis; the cellular membrane being loaded by extravasated blood, the scrotum yet remained of unnatural size, but admitted of my discovering the testicle to be in a very advanced state of varicocele; the parts were freely bathed with cold water, and such application continued as seemed to me to be most appropriate to the case.

As the tunica vaginalis did not seem to fill again within the first twenty-four hours, I flattered myself that all danger of farther hæmorrhage was passed; within a few days, however, it became obvious from the fluctuation that the hydrocele was returning, and by the time the whole of the extravasated blood was taken up by the absorbents from the cellular membrane, the tunica vaginalis was again distended to a considerable extent (as the patient described it, to about half the size the tumor was at previous to his fall); it was however totally impervious to light, a circumstance which I attributed to some remaining blood within the sacculus, having mixed with the newly effused fluid. After four weeks attendance, I took my leave; my patient being unwilling to submit to any farther operation.

In about a year from this time his em-

ployers, who had a great regard for him, seeing him burthened with his watery rupture (as he called it) desired I would again visit him, and if possible propose some measure for his permanent cure.

The hydrocele was very large and impervious to light. I observed, therefore, that the case was characterized by many circumstances which rendered it exceedingly unfavorable for the radical cure by injection, but advised my patient to take the chance of the operation; if on letting out the fluid I should find myself at liberty to proceed, and which with reference to the previous accident I considered doubtful.

He said he would be entirely advised by me. On the next day I went prepared to perform the radical cure, and evacuated nearly two pints of discoloured fluid; the varicocele was general, very large, and pen-

dulous. I then injected the sacculus with two parts of port wine and one of water, and retained the injection between seven and eight minutes; it gave him no pain whilst it was retained, but being a nervous, weakly subject, he fainted soon after he had retired to his bed.

On visiting him on the following day I found he had rested well, and had been totally free from pain; the scrotum was somewhat enlarged. In the evening I again called on him, and as he could bear the handling of the part without any uneasiness, I took an opportunity of putting the scrotum to the test of a lighted taper, and ascertained that the tunica vaginalis contained about three or four ounces of transparent fluid. The third day was passed in as much ease as the preceding one, but the tumor before the evening, had increased to a size nearly equal to that at which I had seen it imme-

diately previous to the operation. On the fourth day, as he was anxious to be in the warehouse, I complied with his wishes, to go down and superintend the people who were under his direction in the business; from this time till the expiration of the third week he continued precisely in the same state as he had been before the operation.

At the end of the third week he observed to me that the part was "more loosened from the groin;" I examined it, and found it had begun to absorb. From this time I watched its course and frequently ascertained its transparency. On the day before the fluid was entirely absorbed, I could by the assistance of the taper distinctly discern a few lines of transparency between the surface of the sacculus and the abuginea. The cure appeared to be effected about the end of the sixth week from the operation.

N. B. I consider this case to afford a very important practical fact; the natural habit of the patient, the extensive varicocele, the excessive size of the hydrocele, and the severe injury it had been exposed to by the fall, were all of them circumstances which rendered the case, *à priori*, particularly unfavorable for the operation by the method of injection, yet eventually they seemed to create no sort of obstacles to the permanent cure by such gentle means.

This patient had the membranous fence; and his urethra from the bulb to the bladder was unnaturally susceptible.

Cure of chronic or true Hydrocele by Injection.

CASE XXVIII.

A clergyman, a very intelligent man, about fifty years of age, consulted me on the propriety of his submitting to the radical cure of a hydrocele, which he considered, he said (having read much on the disease), under some peculiarities. "He had in the earlier part of life been greatly inconvenienced by periodical piles, which, after continuing for several days in a very painful state, would relieve themselves by profuse bleedings. These attacks were always attended with an unnatural excitement to make water, and a swelling of that side of the scrotum which now contained the hydrocele; but as the swelling of the

scrotum subsided soon after his recovery from these attacks, he had not at such times considered it of importance, though upon recurring to the circumstance, he believed it had laid the foundation of his present complaint."

He had not suffered from piles for the last ten years. He had discovered the hydrocele only six months before I saw him, since which the swelling had increased to double the size he first observed it. The urethra was very much more susceptible and irritable than natural, but was free from stricture, and, excepting what arose from spasm, created no impediment to the passage of the bougie into the bladder.

I agreed with my patient in believing that the excitements he described had established an irritable state of the urethra, and were therefore the remote cause of his

hydrocele, but assured him it was a circumstance which created no obstacle to the radical cure by injection.

A few days afterwards I performed the operation at my own house, as he was unwilling from motives of delicacy to let me visit him at his lodgings; the testicle was in a perfectly healthy state, and he experienced little or no pain during the retention of the injection. On the following day he again called on me, the scrotum had acquired a degree of fulness nearly equal to the original hydrocele, and appeared a little reddened; on placing a candle behind it, it was obvious that the tunica vaginalis was distended with fluid. On the next day the scrotum was quite as much enlarged as before the operation, but the redness had disappeared, and it was perfectly free from pain.

In this state I permitted my patient to return to his Living in the country, and desired him to come to town as soon as he discovered any reduction of the bulk of the scrotum; this happened in the beginning of the fourth week, from which time he gave me daily opportunity of observing the transparency of the tumor; before the expiration of the sixth week the fluid was perfectly absorbed.

Chronic or true Hydrocele under the Effects of violent Contusion.

CASE XXIX.

(N. B. This is the Case which is referred to at p. 56.)

About twelve months since a particular friend of mine, whom I knew to have a

very large hydrocele (for I had twice tapped it), drove hastily up to my door to shew me his scrotum, under circumstances which alarmed him exceedingly.

My patient was fifty-one years of age, and weighed very little short of twenty stone. He had been on a visit in the country, and in getting over a stile on the preceding evening had fallen down. For a few minutes after the fall he was unable to proceed, but afterwards walked to his friend's house, without apprehending any ill consequences from the accident.

Whilst crossing his leg on the following morning to buckle his shoe, a violent pain darted from the testicle toward the loins, and on his looking at the part by means of a mirror (for his bulk would not allow him to see it in any other way), he discovered his hydrocele to be very much enlarged and

discoloured. I found the part on examination increased to an enormous size and black, apparently from the extravasation of blood.

As it was necessary directly to unload the tumor, to prevent the skin from sphacelating, I introduced a trocar and drew off, though with some difficulty, several ounces of blood; but the distended cellular membrane preventing the instrument from reaching into the hydrocele, the size of the swelling appeared very little reduced by this operation.

When I visited my patient on the next day, I was informed that the orifice made by the trocar had spontaneously burst open during the night and discharged a farther quantity of blood. The whole of the tumor was excessively tender, and the hand-

ling of it caused severe pain towards the back.

After a few days, when the parts had in some degree recovered from the more immediate effect of the bruise, I again introduced a trocar (but of a larger size), and taking care to make it penetrate into the tunica vaginalis, evacuated nearly three pints of bloody fluid.

This discharge gave great relief, and for a while totally removed the severe pain which previously darted in the course of the spermatic chord, and which had arisen, as I suppose, from the pressure of the fluid upon the contused testicle. Within four or five days, however, the sacculus was again distended by fluid.

The case continued, after this operation,

a whole month without any particular change, but at the expiration of that period the patient was attacked with rigor, and the tumor assumed every appearance of approaching suppuration.

As soon as the fluctuation of matter under the skin became distinct, I opened the abscess by a superficial puncture, and immediately pressing my scalpel onward so as to penetrate into the tunica vaginalis, I discharged two quarts (by measure) of bloody fluid and pus.

It must be remembered that the swelling at this time was constituted of several parts, viz. of the original hydrocele, now converted into an hæmatocele, and consequently increased by the addition of blood; of the extravasated blood within the surrounding cellular membrane; of the thickening of parts always attendant on inflamma-

tion; and lastly, of the matter of the abscess: and in the aggregate they formed a tumor very much larger than the head of any full-grown fœtus.

The tumor was indeed of such magnitude that no common contrivance by bandage was competent, even whilst the patient was in bed, to prevent its weight from adding greatly to his sufferings.

Although there might probably be some renewal of fluid after the tumor had been thus emptied, yet from this period all fluctuation within the sacculus ceased to be perceptible, and as the inflammatory state subsided, the whole of the affected parts, including the spermatic chord, became blended and consolidated into one large and hardened mass.

The patient's health had hitherto held

up tolerably well, but it now begun obviously to decline, and though he suffered less pain, his bowels were irregular and his nights sleepless.

Another long interval had passed under these distressful circumstances, and without any change which would farther illustrate the case, when the part again became painful, and though unattended by any appearance of external inflammation, subjected my patient for many days to more suffering than he had endured from the commencement of his illness.

At last a small elevated point presented itself on the surface of the tumor, in which I thought I felt fluctuation. Under such conjecture, for the fluctuation was very indistinct, I made a puncture, and succeeded in discharging a cup-full of well formed pus, which appeared to have col-

lected within the very centre of the tumor. Two or three days afterwards a very small portion * of slough was projected through the aperture of the abscess.

This discharge, like the former, again rendered the local complaint more quiescent; but as the general circumstances of my friend's health created great anxiety to his family, I proposed a consultation, and an hospital surgeon of acknowledged judgment and great experience was referred to.

This gentleman having carefully examined the tumor, and heard from me the history of the case, pronounced it as his

* In a case like this it was to be expected that the whole of the tunica vaginalis would slough away, but this did not happen; the portion of slough which came away, though unquestionably part of the sacculus, was very small.

opinion that the structure of the testicle was destroyed, and recommended the extirpation of the gland as a measure absolutely necessary for the preservation of the patient; and I am convinced that any other surgeon viewing the case under the then existing appearances would have coincided in such opinion.

As I had myself however twice tapped the original hydrocele, and was consequently acquainted with the state of the testicle previous to the accident, and particularly as I had an opportunity of watching the case through all its changes and variations, I still presumed to believe the mischief, great as it was, had been confined to the cellular membrane and coverings, and that the organic structure of the testicle yet remained entire; and I ventured under such impression to encourage my patient with a hope of eventually saving it.

A few days after this consultation the aid of the family physician was proposed, and by our joints efforts the general health of the patient became much improved.

From the last time of letting out the pus from the centre of the tumor its bulk gradually lessened, and at length I had the pleasure to see my friend (after a confinement of sixteen weeks and four days) completely cured of the original hydrocele, and his testicle restored to its natural state, having no farther thickening about it than just renders it distinguishable from the gland on the opposite side. I have the farther satisfaction of adding, that he is at the writing of this paper in the enjoyment of perfect health.

Radical cure of true Hydrocele by treatment of the Urethra.

CASE XXX.

Captain ——— (formerly of the East-India service) having for two years neglected to get himself cured of a stricture which had been left after gonorrhœa, at length became alarmed on account of a tumor of the scrotum, which proved to be a hydrocele.

As the state of the urethra led me to believe that the undue accumulation of fluid within the sacculus was caused by the stricture, I recommended that every operation on the hydrocele, should be deferred until the urethra was recovered.

But as my patient said he was rendered uncomfortable by the bulk of the scrotum, and could not conveniently, at this time, remain in town; to afford him temporary relief, I drew off the contents of the tunica vaginalis, and desired he would make arrangements for coming to London at some early period to have the stricture properly attended to. The testicle seemed to be in a healthy state.

After a few weeks my patient returned to me with his hydrocele rather larger than when I had before seen it.

I now commenced the treatment by the bougie, which in about two months effected the total removal of the stricture.

At the termination of this treatment the hydrocele had undergone no visible al-

teration, but being then evacuated, it was not afterwards renewed.

Radical Cure of True Hydrocele by treatment of the Urethra.

CASE XXXI.

A gentleman about fifty years of age consulted me on account of a tumor of the scrotum under all the characters of true hydrocele, with a view of submitting to the radical cure by injection.

It appeared to contain more than a pint of fluid, and had been coming on for about six months. On questioning the patient as to the state of his urethra, I learn-

ed that he had a few years before suffered from stricture, which had been treated by caustic, and, as he supposed, entirely removed.

The introduction of the bougie, however, discovered a slight stricture immediately it reached as far as the bulb of the canal; and the whole of the membrane, between the stricture and the bladder, was unusually irritable.

Under these circumstances I advised my patient to wait the result of the treatment of the urethra before he had any thing done to the hydrocele.

When the bougie had been used about a fortnight at short intervals, it was obvious that the tumor pressed less closely against the groin and had lost part of its bulk; but from this period, during the re-

maining treatment of the urethra, no farther reduction of the hydrocele was observable.

At the expiration of six weeks, the urethra then being restored to its natural diameter, I proposed to my patient, that instead of proceeding to the radical cure of the hydrocele by injection it should be simply evacuated, telling him at the same time, if it had arisen, as I suspected, from the excitement of the stricture (the urethra being now recovered), that the effusion into the sacculus would not be reproduced: and in this I was not disappointed; for although I merely let out the fluid with a trocar, several months have passed, and the gentleman has had no return of his hydrocele.

Of Hydro-sclerocele, in which the Hydrocele was first cured by Injection, and the Sclerocele at a subsequent period by the treatment of the Urethra.

CASE XXXII.

I took an opportunity of injecting a hydrosclerocele, which I had previously ascertained by its partial transparency, and found by the test of the bougie to be dependant upon an irritable stricture in the membranous part of the urethra. On letting out the water, which consisted of not less than half a pint, I found the testicle increased to about twice its natural size, irregular, and resistent. On the day following the use of the injection the usual appearances presented themselves, the scrotum was enlarged to a considerable size, and

very tender on being handled; on the second day it had become so painful, though not reddened, as to make it necessary for the patient to keep to his bed; but on the fourth day the tenderness was sufficiently abated to admit of my again examining the part more correctly, the fluctuation was distinct, and on placing a lighted candle behind the tumor its transparency shewed me the hydrocele perfectly renewed, the same as it had appeared previous to the use of the injection. In this state it continued to nearly the end of the fourth week, when it begun gradually to subside, and before the expiration of six weeks from the time of the operation, during which period I watched its transparency, the hydrocele was entirely absorbed.

This case occurred in St. Bartholomew's hospital; I had intentionally left the sclerocele and the stricture unattended to, ex-

cepting the first examination, for the purpose of ascertaining whether the hydrocele would be reproduced, and directed the patient to call on me once every fortnight, to let me examine the parts. Three months passed without any obvious alteration, but before the expiration of the fourth it was evident that the sclerocele was progressive, and the stricture had become more troublesome, yet there was not the slightest appearance of fluid in the sacculus. I waited another month without taking any measures to control the derangement of the gland, being desirous of acquiring the best possible test of the security which is derived from the mode of operating by the injection.

The sclerocele had now so much advanced that the spermatic chord begun to partake of the induration and inequality, still there was no appearance of water

in the tunica vaginalis; at this period I commenced the treatment of the urethra by the bougie, and as the stricture retired, the sclerocele became reduced, and within a reasonable time was quite well. This patient had the membranous fence with a considerable spasmodic irritability of the whole of the membranous part of the urethra, but had never contracted gonorrhœa.

N. B. I conclude that this case must be received as an incontrovertible test of the permanent security afforded by the injection, although no inflammatory adhesion of the sacculus takes place.

The tunica vaginalis and the tunica albuginea were ascertained by the transparency to have continued separated from each other for six weeks subsequent to the operation, and notwithstanding the cause

or causes which had first occasioned the hydrocele still existed and were progressive, viz. the stricture and the sclerocele, yet they were incapable of counteracting the suppression which the injection had imposed upon the excretory vessels, and of reproducing the hydrocele.

OBSERVATION.

The process by which the injection effects the radical cure of the hydrocele appears to be as follows.

The application of the injection to the internal surface of the tunica vaginalis, in the first instance, causes an increased action of its excretory vessels (a fact which is proved by the hydrocele being repro-

duced with a rapidity far exceeding its original accumulation).

This excitement of the excretory vessels continues until the latter end of the third or fourth week *, when the excretory vessels either falling back into their natural action or being totally suppressed (I suspect the former), the undue accumulation of fluid is then removed by the natural powers of the absorbents.

N. B. It is very probable, in the collapsed state of parts, after the radical cure by injection, that the tunica vaginalis and the

* I am at a loss to explain why the excited action of the excretory vessels should, with so much seeming regularity, continue till about the end of the third or fourth week. It has however so uniformly happened in all cases which have come under my observation, that I suspect it must depend on some law in the animal economy.

tunica albuginea may sometimes become consolidated with each other in the way I have described the prepuce to become consolidated with the glans penis; and that any one discovering such an obliteration of the sacculus after death, in a subject who had at some previous time undergone the operation of radical cure of the hydrocele by injection, would be likely to attribute it to inflammatory adhesion. I therefore make this statement to guard against such an erroneous conclusion.

CASES OF ANEURYSM,

WITH

PRACTICAL REMARKS.

Of axillary Aneurysm, in which the subclavian Artery was tied behind the Clavicle.

CASE I.

THIS case did not prove ultimately successful; yet as all the more immediate objects of the operation were most satisfactorily obtained, I have thought it right to submit the following detail to the perusal of the profession, under a presumption that it contains several practical facts of considerable importance, not only with reference to this particular operation, but also to our future conduct in all cases of aneurysm.

John Townly, a tailor, aged thirty-two years, addicted to excessive intoxication, of an unhealthy and peculiarly anxious countenance, was admitted into St. Bartho-

lomew's hospital on Tuesday the 2d of November 1809, on account of an aneurysm in the axilla of his right arm, which had been coming on he said about four months. He could not trace its origin to any accident; at first he supposed the swelling to be only a common boil, and therefore paid little attention to it, until the pulsation in the tumor and a distressing tingling sensation at the ends of his fingers, deprived him of sleep and rendered him incapable of working at his trade.

When he was received into the hospital, the prominent part of the tumor in the axilla was of the size of the half of a large orange; there was also a very considerable enlargement and distension underneath the pectoral muscle and adjacent parts, which prevented the elbow from being brought, by the distance of several inches, into contact with the side.

The temperature of both arms was alike, and the pulse in the radial artery of each of them was correspondent. After the patient had been put to bed, some blood taken from the left arm, and his bowels emptied; his pulse, which on his admission had been at 130, became less frequent; his countenance appeared more tranquil; and he experienced some remission of the distressing sensations in the affected arm: this relief however was of short duration; the weight and incumbrance of his arm soon became more and more oppressive, and in resistance to every medical assistance his nights were again passed without sleep, and his countenance reassumed the anxiety which had characterized it, when he first presented himself for advice.

On the sixth day after his admission, his decline of health became so very evident,

and the progressive elevation of the clavicle, from the increasing bulk of the tumor, was so decidedly creating additional difficulties to any future operation, that I considered it necessary to convene my colleagues, and avail myself of their opinions as to the propriety of performing the operation; when it was agreed in consultation, that as "the tumor (although increasing) did not appear immediately to endanger the life of the patient, from any probability of its bursting suddenly, it would be adviseable yet to postpone the operation for the purpose of allowing the greatest possible time for the anastomosing vessels to become enlarged; and in the meanwhile that the case should be most vigilantly watched."

About this period of the case the pulsation of the radial artery of the affected arm gradually became more obscure, and

soon after either ceased entirely, or, what is more probable, was lost in the succeeding œdema of the fore-arm and hand, both of which became loaded to a great extent.

Notwithstanding the aneurysmal tumor had continued to increase, and the patient's health had proportionately declined, yet no particular alteration was observed on the integuments until I visited him in the evening of the twelfth day after his admission, when I found him complaining of more than usual weariness and weight in the affected limb, and painfully impatient from the impossibility, as he described it, "of finding a posture for the arm."

On examining the tumor a dark spot appeared on its centre, surrounded by inflammation, which threatened a more extensive destruction of the skin. Under these symptoms and appearances no farther postpone-

ment of the operation being admissible, I performed it next day in the following manner.

Of the Operation.

The patient being placed upon an operating table, with his head obliquely towards the light, and the affected arm supported by an assistant at an easy distance from the side, I made a transverse incision through the skin and platysma myoides, along and upon the upper edge of the clavicle, of about two inches and a half in length, beginning it nearest to the shoulder, and terminating its inner extremity at about half an inch within the outward edge of the sterno-cleido-mastoideus muscle. This incision divided a small superficial artery, which was directly secured. The skin above the clavicle being then pinched up between my own thumb and finger and those of an assistant, I divided it from within outwards and upwards in

the line of the outward edge of the sterno-cleido-mastoideus muscle to the extent of two inches.

My object in pinching up the skin for the second incision was to expose at once the superficial veins, and by dissecting them carefully from the cellular membrane to place them out of my way without wounding them. This provision proved to be very useful, for it rendered the flow of blood during the operation very trifling comparatively with what might otherwise have been expected; and thereby enabled me with the greatest facility to bring into view those parts which were to direct me to the artery.

My assistant having now lowered the shoulder * for the purpose of placing the

* In my first incision I intentionally cut down along and upon the clavicle, as a security against wounding any superficial vessels, a very little lowering of the shoulder

first incision above the clavicle (which I had designedly made along and upon that bone), I continued the dissection with my scalpel until I had distinctly brought into sight the edge of the anterior scalenus muscle, immediately below the angle, which is formed by the traversing-belly of omo-hyoideus and the edge of the sterno-cleido-mastoideus, and having placed my finger on the artery at the point where it presents itself between the scaleni, I found no difficulty in tracing it without touching any of the nerves to the lower edge of the upper rib, at which part I detached it with my finger nail for the purpose of applying the ligature.

Here however arose an embarrassment, which (although I was not unprepared for it) greatly exceeded my expectation. I had

therefore placed the incision in the situation I wished to have it for the purpose of proceeding with the operation.

learned from repeatedly performing this operation many years since on the dead subject, that to pass the ligature under the subclavian artery with the needle commonly used in aneurysms would be impracticable; I had therefore provided myself with instruments of various forms and curvatures to meet the difficulty, each of which most readily conveyed the ligature underneath the artery, but would serve me no farther; for being made of solid materials and fixed into handles, they would not allow of their points being brought up again at the very short curvature which the narrowness of the space between the rib and the clavicle afforded, and which in this particular case was rendered of unusual depth by the previous elevation of the shoulder, by the tumor.

After trying various means to overcome this difficulty, a probe of ductile

metal was at length handed me, which I passed under the artery, and bringing up its point with a pair of small forceps, I succeeded in passing on the ligature, and then tied the subclavian artery at the part where I had previously detached it for that purpose. The drawing of the knot was unattended with pain, the wound was closed by the dry suture, and the patient was then returned to his bed.

Copy of the Journal.

Evening visit on the day of the operation.—The distressing tingling sensation at the ends of the patient's fingers ceased from the time the ligature was applied to the artery; he already has greater facility in placing the affected arm, and is in all respects much more free from pain than he was previous to the operation; he has had some refreshing sleep; his pulse is

110; the temperature of both arms appears equal; the patient indeed says, that to his feeling he has even more warmth in the affected arm than in the other.

Morning visit second day.—The patient has passed a much more quiet night, and feels more comfortable than at any time since his admission into the hospital; he has slept five or six hours; his tongue and skin are moist, and his pulse is less frequent. The temperature of both arms is alike, and the same as last night.

Evening visit second day.—The patient has dosed a little during the afternoon, and taken light nourishment in the course of the day; his pulse is 120, yet regular; he complains somewhat of thirst, but his skin and tongue are moist; the temperature is the same in both of his arms; the tumor is less tense; the œdema of the fore-arm and

hand is considerably reduced; the inflammation of the skin in the axilla has subsided; the discoloured spot is not at all increased, and the patient is entirely free from pain.

Morning visit third day.—The patient did not go to sleep before five o'clock in the morning, but from that time until nine o'clock he has enjoyed a composed sleep, and says, that he feels himself much refreshed, and that he is perfectly relieved from all pain and uneasiness. The temperature of both arms continues equal and the same as last night.

Evening visit third day.—The patient makes frequent attempts to expectorate, and says that "he is inconvenienced by phlegm;" he has had sleep at intervals and is quite free from pain; the skin and tongue are not so moist as yesterday, and the pulse

is a little irregular. The tension of the tumor is very much abated; the œdema is nearly removed; the discoloured spot in the skin of the tumor has not increased; the temperature of both arms is equal.

Morning visit fourth day.—The patient has passed a very good night, and says that he feels much more comfortable than at any period since the commencement of his complaint; he has not any pain in the wound or affected arm; the skin and tongue are moist, his pulse is 105, and both regular and soft; the discoloured spot in the tumor is more darkened, but it has not extended; a small superficial crack is observable in its centre; there is no difference between the arms in their temperature.

Evening visit fourth day.—The patient has taken sufficient nourishment, with wine occasionally; the discoloured spot in the

axilla has extended to the size of a dollar, and there is a little oozing from the crack in its centre. The tension of the tumor is farther lessened, and the œdema of the fore-arm and hand is entirely removed. The patient complains of thirst, his tongue is dry, and the pulse increased to 130; the temperature in each arm is the same; he is yet incumbered with what he calls phlegm, and seems to suffer under oppression at his chest.

Morning visit, fifth day.—The patient has slept during the greater part of the night, his pulse is very quick, and at times very feeble; his tongue is parched, the skin dry and heated; the sloughing point on the tumor is more distinctly marked at its edge, but it has not extended; the oozing from its centre is merely superficial. The wound is now dressed for the first time; it has a favorable appearance and is quite free from

pain; the patient complains of great weariness and weight in the affected arm, and labors under considerable oppression at his chest; the temperature in both arms continues to correspond.

Visit fifth day, four o'clock P. M.—The patient about noon became restless, and betrayed symptoms of aberration of mind; he now expresses great anxiety to see his relatives, as he has something, he says, to impart to them of great importance which preys upon his mind; he has been observed during the day to place his hand frequently upon his breast; he complains of the weight of the affected arm; his pulse is very rapid and intermittent; the arms are of equal warmth; the slough in the axilla is not more separated.

Evening visit, fifth day.—The patient's wife and brother are with him; he has un-

burthened his mind to them, and appears to be more composed; his pulse however is too rapid to be reckoned, and intermits.

On being asked what causes him so frequently to place his hand upon his chest, he replies, "My pain, it is in my heart!" An attempt is made to cheer him with a hope of recovery; he becomes more tranquil, and expresses a wish to be raised in his bed; the assistants being unable to place him quite upright, he makes an exertion to raise himself; a strong convulsive action takes place about the region of the heart, his countenance changes, and in an instant —he expires.

Appearances after Death.

On examination of the body after death but few peculiarities presented themselves,

some of them however appear to me to be well deserving our attention.

The subclavian artery, excepting at the aneurysmal aperture, was in a perfectly healthy state. The arteries branching off from it, on which the limb was to be dependant for its future support, had not acquired any increase of capacity beyond that which is natural to them. The heart, and the large vessels immediately in connection with it, were perfectly sound, but on opening the vena cava superior it was found to contain a large body of coagulable lymph, firmly adherent to its internal coat, and hanging pendulous into the auricle, where it applied itself like a valve, and totally obstructed the communication between the auricle and the ventricle.

The aneurysmal tumor contained about

two pints of blood, the greater part of which was in so fluid a state that it escaped through a small puncture which I made with my scalpel. The front of the tumor was covered with a strongly connected substance, bearing some resemblance to a sac, but its posterior and other boundaries were formed merely of those parts (unaltered from their healthy state) with which the effused blood had happened to come into contact.

The subclavian artery where the ligature was applied was so very nearly separated, that it only held together by a few shreds of dead matter. Each extremity of the almost divided artery, on being laid open, was found to be already completely consolidated and impervious, and no doubt could exist of its being at this early period fully competent to resist the impetus of the blood from the heart. I had

also to remark at these extremities a small deposit of coagulable lymph, which was closely connected with the internal coat of the vessel, and seemed to be placed there as an additional means of securing its obliteration.

In considering the facts presented by this case, our attention is first attracted to those which offered themselves during the operation, and next to those which occurred immediately after the application of the ligature.

By the former we perceive that the tying of the subclavian artery behind the clavicle is not only practicable, but with the assistance of proper instruments almost as easy as many other operations in sur-

gery; from the latter we learn, that notwithstanding the circulation in the arm is intercepted in the main channel, nature in her ample provisions supplies means to support the limb through anastomosing vessels, and that too without any additional increase of their natural diameter.

This consideration is of great importance, and may guide our practice in regard to aneurysmal affections in general.

It has been a received opinion, that in every case of aneurysm it is prudent to defer the operation as long as possible, in order to allow time for the anastomosing branches to become enlarged previous to the main artery being obliterated; and that the chances of recovery to the patient are proportionate to the time which can be allowed for that purpose.

This opinion was acted upon in the present instance, so far as the immediate safety of the patient could permit. The operation was not performed until upwards of four months after the tumor was first discovered; at the end of which long period however (as appeared on dissection), no observable increase of size had taken place in any of the anastomosing vessels *, yet they proved quite equal to the support of the limb; and though the current of blood through the subclavian artery was thus cut off, the temperature of the arm did not experience even a momentary interruption.

It may farther be remarked, that the arm

* When, after death, the anastomosing vessels of a limb which has at a previous time been successfully operated upon for aneurysm are discovered to be enlarged, such enlargement is not to be viewed as a provision necessary to the preservation of the limb, but as a consequence which has taken place long after the limb has recovered its natural powers.

instead of suffering in other respects any inconvenient privation, as might have been expected, from the loss of its chief artery, not only became immediately free from pain; but so far from exhibiting any deficiency of its customary powers, was perfectly at the patient's disposal in regard to posture (though previous to the operation he could not move it at all), and had actually recovered from the whole of its œdematous appearance within forty-eight hours after the operation.

Whilst these favorable circumstances were taking place in the arm, an equal improvement was observable in the general health of the patient.

On the second day we find him representing himself "as more comfortable than at any time since his admission into the

hospital, enjoying sound sleep, his tongue moist, and his pulse less frequent."

On the third day he says he is much refreshed, is perfectly relieved from pain and uneasiness, and has to complain solely of some trifling inconvenience from phlegm.

On the fourth day in the morning he is yet farther improved, having passed a very good night, and feeling "much more comfortable than at any time since the commencement of his complaint."

Thus far, therefore, we distinctly see the system availing itself of the great relief afforded by the operation, and making every effort toward recovery. But in the evening of the fourth day the scene is materially changed.

Notwithstanding the patient had taken sufficient nourishment, we find the sloughing on the tumor extended in size; he is thirsty, his tongue is parched, and the pulse is considerably quickened; the temperature of the arms indeed still continues correspondent; but he complains more of phlegm, and obviously labors under great oppression in the region of the chest.

On the morning of the fifth day, many of these unfavorable symptoms are increased, but above all the distressing oppression at the chest, which he emphatically describes by placing his hand on the part, and by exclaiming, " Here, here is my pain, it is in my heart."

As the day advances the pulse becomes too rapid to be reckoned, and is intermittent; the circulation about the heart appears more and more laborious; and in at-

tempting in the evening to raise himself up in bed, a violent convulsive action about the chest takes place, and he instantly—expires.

I have already stated that a considerable substance of coagulable lymph was found consolidated with the inner coat of the vena cava superior, which hung pendulous into the heart, and seemed to form a complete barrier between the auricle and the ventricle. The accumulation of this substance I consider as the immediate cause of death.

I am well aware I am hazarding this opinion in opposition to that of many professional men, whose acquaintance with anatomy, and whose knowledge in physiology justly entitle their sentiments to every respectful attention; yet, on this occasion, I venture to dissent from them.

Substances of coagulable lymph found in the larger vessels of the dead subject, are very generally believed to be separations from the blood, which take place after death, and they are therefore at no time admitted as a probable or possible cause of dissolution.

But I do not think it unreasonable to suppose (under certain irregularities of the circulation, or circumstances by which it is temporarily retarded), that the coagulable lymph may be separated and become attached to the internal surface of any of the large vessels or the cavities of the heart, even during the vital course of the blood. Such a substance being pendulous and at first trifling, would accommodate itself to the passage of the blood, and for a while create no other inconvenience than occasional embarrassment about the chest; but when it has acquired greater bulk and length it

would become liable to be placed in the way of the circulation, and so prove a mechanical and immediate cause of death *.

We observe the coagulable lymph to be separated and to accumulate at that part of an artery which is rendered unequal by disease: this fact is obvious in every aneurysmal tumor: may not therefore such an occurrence take place when the free flow of blood through the large vessels is hindered by other causes?

* I do not mean to say that bodies of coagulable lymph do never separate from the blood subsequent to dissolution, yet I think that many of such substances found in the larger vessels after death, may be gravitations which have taken place during the latter hours of nearly exhausted life. I apprehend also that those substances of coagulable lymph which are usually met with in the dead subject, although they may be slightly adherent to the surface of the vessel, are never found to be so firmly consolidated with it as I have represented that substance to have been, to which I have referred in this particular case.

In the present case small consolidated bodies of coagulable lymph were found deposited within each extremity of the disunited subclavian artery, which were so firmly attached to the internal surface, and so peculiarly placed, that it is impossible they could have been deposited after death.

I have opened many children, who in apparent health had been suddenly seized with a convulsive action of the heart, and instantly expired (such cases are by no means uncommon); and I have invariably found in children who died under such circumstances, a substance of consolidated lymph, pendulous from some part of the cavities or large vessels of the heart, and like that described in the present case obstructing the channels of its circulation.

Although I consider the substance in

the vena cava of this aneurysmal patient as the immediate cause of his death (which opinion appears to me to be strengthened by the previous progress of oppression about the chest, and the peculiar manner in which he died, at the instant of attempting to raise himself in his bed, at which moment I conceive the pendulous extremity of the substance to have dropped into the auricle), I am by no means disposed to say that he would have recovered if such an occurrence had not taken place.

I am indeed persuaded that he would not, because as the integuments over the aneurysmal tumor had begun to slough, and that process was in progression, the enormous cavity of that tumor would very soon have been exposed, and constituted a description of wound, which a patient, so very much reduced as this poor man was

by the long continuance of the disease; could not possibly have survived.

Had this case however been operated upon at the commencement of the aneurysmal affection, before so severe an impression had been made on the general state of health, before the tumor had acquired such magnitude, and before the skin covering it had taken on a diseased action, every past circumstance tends to persuade me that the patient might at this time have been a living example of the utility of well-timed surgery.

As I am not aware, though the operation has been attempted, that the subclavian artery has ever before been tied in the living subject at the point where it passes over the upper rib behind the clavicle, I trust I shall be excused for having so particularly described the manner in

which I conducted the dissection, especially since the simple provision I have laid down for avoiding the superficial hæmorrhage from the veins must necessarily secure the operator from the inconvenience of having the wound constantly filled with blood. I am well aware that in the present system of operating, the pinching up the skin is not held in any estimation, but as I do not feel myself authorized for the sake of exhibiting a semblance of expertness, to do that which will prolong the sufferings of my patient, I must acknowledge I am not yet altogether a convert to its total exclusion.

At my entrance into the profession I was in the habit of seeing this practice of pinching-up the skin adopted in every operation for the strangulated hernia, and in every instance of castration by the most eminent surgeons. In the present case it

was so peculiarly useful that I am disposed to attribute to it the whole of the great facility with which the remainder of the dissection was conducted. I could not only feel the artery, but also, in consequence of the above security against superficial bleeding, could clearly discern it at the bottom of the wound. The only difficulty which arose in the operation was from the impossibility of bringing the eye of any common aneurysmal needle up again at the very short curve, which the unusual depth of the wound and the contracted space between the clavicle and the rib demanded. With a view of surmounting these difficulties in future, I have subjoined an engraving of two instruments of very simple construction, either of which I believe will effectually prevent similar embarrassment.

The instrument marked O, plate 2, consists of a small flexible silver catheter,

with a silver wire stillet and an eye at its extremity. In the application of this instrument the eye of the stillet should be drawn close up to the mouth of the cannula, and in that state the instrument should be passed underneath the artery; the eye is then to be pressed onward out of the cannula by the wire at the handle, and met either with the finger or by a pair of forceps.

The instrument marked P, plate 2, consists merely of a ductile wire or loop, to which any degree of curvature may be given by the operator. In using either of these contrivances, the ligature is not to be affixed till the eye or loop has been passed under the vessel and brought upward. The instrument having the ligature affixed is then to be drawn back again. In using the catheter, the eye of its stillet, with the ligature within it, should be drawn by the wire

close up to the mouth of the cannula before the instrument is drawn backward, *i. e.* the stillet and its cannula are to be placed precisely in the same state as they were in at the introduction of the instrument; this is necessary to be attended to, for two reasons, the small wire might possibly damage or cut the artery, but if the eye is first drawn close to the mouth of the cannula, such danger is not only provided against, but the firmness of the cannula will also give the operator the power of conducting the ligature underneath the vessel, and thereby protect the artery from that degree of friction which would necessarily be applied to it in any attempt to draw on the ligature without such depression and direction.

Upon a similar principle I thought it necessary also to contrive and be provided with the instruments marked N N, plate 2, and they proved particularly serviceable in

tying the knot at the bottom of the wound without dragging upon or elevating the artery. This part of the operation, indeed, I could not have performed with my fingers alone, on account of the narrowness and depth of the wound, without pulling away the artery from its attachments to a great extent, and thereby doing more violence to it than it would have been prudent to have hazarded.

It may be necessary to observe, that as it was impossible to present in the plate a favorable view of the aneurysmal aperture, and at the same time correctly to shew the direction in which the several smaller arteries go off from the main vessel, I have contented myself in merely pointing out the situations of the latter by simple lines; the whole engraving, however, of the artery in regard to size and proportions is a correct outline of the vessel on which I

operated, taken on the morning after the patient's decease.

I am happy in the opportunity also of subjoining a drawing in plate the 1st, of an aneurysmal needle, which is the ingenious contrivance of Mr. J. J. Watt, to whom the profession is already indebted for some valuable engravings of the larynx and fauces, &c. and for other works of equal labor and merit; and likewise of a drawing of an aneurysmal needle, the invention of Mr. Henry Earle, a gentleman who on account of his exemplary and early zeal for the improvement of surgery, may be expected at a future period to emulate the professional eminence of his grandsire—Mr. Pott.

Description of Mr. Watt's aneurysmal Needle, marked C, *Plate I.*

An instrument for conveying a needle and ligature round a deeply-seated artery, or any other remote part of the body requiring to be included in a ligature.

This instrument is composed of a crooked silver cannula of a flattened form, and about five inches in length, into the tube of which a *slider* or flat piece of steel is introduced, of the same dimensions as the tube itself. At the upper part of the cannula two small rings are fixed, the lower part being of the degree of curvature represented in the plate. There is also an opening left at the back of the cannula, about two inches long, which allows the free passage of the ligature.

The needle which may be made of a flat piece of silver, or any other metal, is somewhat thicker than a common watch-spring, and of a greater degree of curvature than the cannula already described. The dimensions and curvature of the different parts of the instrument will, however, best be understood by a reference to the plate.

Description of Mr. Earle's aneurysmal Needle, marked D, *Plate I.*

The instrument consists in a flat silver cannula, slightly curved at its lower extremity, with two small wings at its upper; at the back there is a groove for the ligature to lie in. In this cannula is fitted a spring about an inch and a half long, at the upper extremity of which there is a small handle, at the lower a eye for the ligature. When the instrument is to be used it is armed with a ligature, and drawn within the cannula, the ligature is then placed in the groove, and fastened to the wings. The cannula is to be passed under one side of the artery and held firmly by an assistant; the ligature is to be detached from the wings, and the handle depressed; the lower part of which, from its elasticity, rises on the

other side of the artery, carrying with it the ligature, the surgeon meeting it with the fore-finger of his left-hand, or the needle may be threaded after it has passed under the artery, and the spring then drawn within the cannula.

Explanation of the Plates.

Plate I.

A.—The appearance of the aneurysmal tumor previous to the operation.

B.—The form of the incision through the skin.

C.—Mr. Watt's aneurysmal needle.

D.—Mr. Earle's ditto.

Plate II.

E.—The aorta.

F.—The arteria innominata.

G.—The right carotid artery.

H.—The right subclavian.

I.—The left carotid.

K.—The left subclavian.

1.—The vertebral artery.

2.—The internal mammary.

3.—The inferior thyroid.

4.—The ascending thyroid.

5.—The transversalis colli.

6.—The transversalis humeri.

7.—The supra-scapulary.

8.—The superior thoracic.

9.—The inferior thoracic.

10.—The subscapulary.

11.—The posterior circumflex.

12.—The anterior circumflex.

13.—The profunda brachii.

14.—The aneurysmal aperture.

15.—Part of the aneurysmal sac.

L.—The artery laid open above the ligature.

M.—A small deposit of coagulable lymph.

M.—Ditto.

NN.—Mr. Ramsden's instruments, made of steel or silver, used for drawing the the knot.

O.—Mr. Ramsden's silver cannula and stillet for conducting the ligature underneath the artery.

P.—Mr. Ramsden's ductile wire or loop for ditto.

Aneurysm of the Femoral Artery, for which the Artery was tied immediately below Poupart's ligament.

CASE II.

William White, a stone-mason, aged thirty-two years, was received into St. Bartholomew's hospital on Thursday the 23d of September, 1810, on account of an aneurysm of the femoral artery of the right side. In its outward general form it had very much the appearance of a large psoas abscess descended within the fascia. The aneurysmal tumor occupied nearly the whole extent of the thigh, leaving little more than three inches between its lower extremity and the centre of the inner condyle of the os femoris, and little more than two inches between its upper extremity

and Poupart's ligament. The circumference of the thigh over the centre of the tumor was nearly double the measurement of the opposite limb at the same part. There was very little œdematous affection of the affected limb. The pulsation at the upper surface (I speak of the patient as lying on his right side) and over a large proportion of the tumor was obscure, but at the hinder part of the thigh over the flexor muscles it was characterized and distinct. The patient gave the following account of his complaint.

About nine months previous to being received into the hospital, his attention had been called to a tenderness of a small point in the middle of the inside of his thigh, which "had a strong pulse in it," but was at that time very little swelled. Soon after discovering this tender point he

accidentally received a blow immediately over the part, which made it extremely painful, and occasioned it to swell to the size of a large watch glass; in this state it remained for four months and then began to increase.

Though it was very troublesome to him, he continued at his business till about seven weeks before I saw him at the hospital. Soon after his being compelled to give over work he had consulted some person calling himself a surgeon, who directed the part to be rubbed frequently with a strong stimulating liniment, but as such treatment made the complaint worse, the patient withdrew his confidence from this adviser and applied to another, of different sex indeed, but certainly not at all inferior in skill. This new adviser was really an old woman, the former was only

practically so; she assured him that he could alone be made well through the assistance "of herb fomentations" and of "drawing poultices;" and this, worse than absurd, treatment had actually been pursued to a very considerable extent, when I was requested to receive the patient into the hospital.

The patient's countenance at this time was sickly, his pulse was quick, he had lost his appetite, and the severe pain in the affected limb had totally deprived him of sleep for twenty-three preceding nights. The poor fellow under these circumstances being willing, and indeed anxious, to submit to the operation, I performed it after the interval of a single day, on which I emptied his bowels by a brisk aperient medicine.

The space between the upper extremity of the tumor and the groin, was little more,

as I before stated, than two inches; but as I could distinctly feel the artery at this place, and had no good reason to suppose that the aneurysmal disease in the vessel bore any proportion to the extent of the tumor, I did not think myself justified in taking up the artery at any higher point, within the pelvis.

Having carefully dissected through the integuments and fascia, and distinctly laid bare the artery immediately below Poupart's ligament, I secured the vessel by two ligatures about an inch asunder, then divided it with a crooked bistory about midway between them, and afterwards brought the wound together by the dry suture. In this operation no difficulties whatever occurred, the loss of blood was most trifling, and the exposure of the naked artery so complete, that it was almost unnecessary to have used any aneurysmal

needle for passing the ligatures, the finger being fully equal to that purpose.

Although the patient had not slept for twenty-three nights preceding the operation; on the succeeding morning he informed me that "he had passed a good night and was much refreshed by sound sleep." From the time the smarting of the wound had gone off, which was within an hour or two after the operation, he had not experienced any pain, the limb bore an equal degree of temperature with the other, and was equally warm to the patient's feeling; indeed he was so much relieved that I could scarcely restrain him from moving his leg about, to convince me, he said, "how much stronger it was for the operation," before which he had no power to raise it in any degree from the bed. The skin and tongue were moist, and the pulse much more calm and natural than before the

operation. From this period the health of the patient continued so uniformly good that it requires no farther remark: it may be right however to observe, that the affected limb throughout the whole course of cure retained an equal temperature. By the fourteenth day the ligatures had come away. Before the expiration of the third week the wound had entirely healed, and within six weeks from the time of the operation the enormous aneurysmal tumor was so far absorbed (it had lost much of its tension as early as the sixth day), that I discharged the patient from the hospital to prosecute his employ as a stone-mason*.

* November 30, 1810. I had the satisfaction yesterday to see William White, the subject of this case, in good health and at work as a stone-mason, in the neighbourhood of Tottenham-court-road. His limb, in which I tied and divided the femoral artery immediately below Poupart's ligament, *is perfectly restored to all its natural powers, and retains no other vestige of the late aneurysmal affection than some degree of fulness and induration at the part of the thigh where the aneurysm was situated.* It is not quite ten weeks since the operation was performed.

Popliteal Aneurysm.

CASE III.

——— Jones, a tailor in Wych-street, near Temple Bar, of irregular habits and much addicted to excess both in living and in exercise, shewed me a popliteal aneurysm of the right side; he was unable to give any particular account of its first appearance, but supposed it to have taken place two or three weeks before I first saw him, as he recollected a degree of stiffness about the ham, though he had not examined into the cause of it until the day before he came to me.

The tumor was at this time about the size of a very small teacup inverted, and distinctly characterized by its pulsation. I

explained the nature of the case to the patient and his friends, and recommended him to submit to the operation without farther delay than such as might be necessary for the purpose of clearing his bowels, and placing him under some degree of previous quiet. I performed it, therefore, after an interval of three days, by exposing the femoral artery in the middle of the thigh, tying it with two ligatures and afterwards dividing it, and concluded the operation by bringing the lips of the wound together by the dry suture.

The tying of the artery gave no pain, neither did it occasion for a moment any change in the temperature of the limb. The ligatures came away on the eighth day, and the wound healed in the most favorable manner. At the expiration of a fortnight the patient surprised me by calling upon me at my house, when the limb on which

I had operated appeared as perfect in power as the opposite one. The tumor had at this time become less tense, and had decreased in size, and in about six weeks it completely disappeared.

More than twelve years elapsed between the time of my performing this operation and the man's death; during which time I frequently saw him, and found that he enjoyed the perfect use of his limb, having no inconvenience attaching to it to remind him of its having been operated upon, excepting a greater sensation of weariness than he perceived in the other leg whenever he took any very long walks, which he was much in the habit of doing.

This patient died suddenly about four months since of some affection of the chest, probably aneurysmal. I was sent for to him, but he had expired before I reached

his house; and his widow could not be prevailed upon to allow me to open his body. She consented however to my inspecting the limb upon which I had operated, and I contrived to take the artery away with me, which, on examination, I found was totally obliterated for an inch or two above and below the parts where the ligatures had been applied.

I attribute the rapid and complete success which attended this operation to the promptitude with which the patient complied, and to its being performed before the general health of the patient had suffered from the continuance of the aneurysm.

Aneurysm of the femoral Artery between the Ham and the centre of the Thigh.

CASE IV.

Jonathan Chappell, about thirty-four years of age, a miner by employment, and a private in the corps of Royal Cornish Miners, was admitted into St. Bartholomew's hospital on the 31st of October, 1810, on account of a large aneurysmal tumor on the inside of his left thigh. One extremity of the tumor reached a little beyond the centre of the thigh; its other extremity extended to the knee. The affected limb immediately over the most prominent part of the aneurysm, measured twice the circumference of the opposite thigh at the same part. The leg was very slightly œdematous. About fifteen weeks before the

patient came to the hospital he had felt a tingling sensation in the knee, which after three weeks was accompanied by the appearance of a small tumor, not larger than a hazel nut, over a point of the femoral artery (according to the patient's description of its situation), nearly midway between the ham and the middle of the thigh. This tumor was observed to have a strong pulse in it, and increased with such rapidity that the patient was very soon obliged to give over work at the tin mine. After remaining for some time under the care of the surgeon of his regiment, he was humanely sent by that gentleman up to London to be received into St. Bartholomew's hospital.

Whilst the patient was on his journey the aneurysm ceased to pulsate, but recovered its pulsation soon after his arrival at the hospital. When he had been in the hospital about a week, the part became on

a sudden extremely painful, and increased farther in size; within a few hours the superficies became reddened, and an extensive echymosis was observable in the surrounding integuments. During this attack of pain the tumor a second time lost its pulsation, and continued for some days under all the appearances of a common swelling about to undergo the process of suppuration; having at length, however, reassumed its aneurysmal pulsative character, the operation was decided upon, and I was desired to perform it.

I have already stated that the tumor extended beyond the middle part of the thigh (where we are accustomed to tie the femoral artery for the cure of the popliteal aneurysm), but as I had no reason to believe that the disease of the artery in this case bore any proportion to the extent of the tumor, and as it also appeared of great

importance to preserve the circulation of the arteria profunda, I determined on tying the ligature at the nearest possible point to the tumor at which I could distinguish the pulsation of the vessel, and which happened to be about an inch and a half below the point where the profunda is given off. Having exposed the femoral artery at this place and discovered it to be in a healthy state, I secured it by two ligatures about three-quarters of an inch apart, and then cut the intervening portion asunder, with a crooked bistory. The application of the ligatures produced no pain. The wound was closed by the dry suture, and the patient then returned to his bed.

Although the degree of heat in the tumor had frequently varied since the patient's admission into the hospital, yet his legs had continued of equal warmth, and, I may here observe, that this correspond-

ence between them was not interrupted, by the obliteration of the artery either immediately after the operation or at any time during his cure. The patient's general state of health, which had suffered during the painful state of the tumor, within two days after the operation seemed to be perfectly reinstated, and the limb which he had previously been unable to move, was again at his disposal with regard to posture. Before the fifth day the bulk of the tumor was obviously lessened, and the skin had lost the whole of its inflammatory appearance. About the tenth day the tumor became less resistant to the feel, and a discoloured spot about the size of a sixpence presented itself on the lower extremity, but without any surrounding inflammation or pain. On the twelfth day a fluctuation was to be felt throughout the whole of the tumor, yet the patient suffered no uneasiness in the part. On the fourteenth

day I took away the lower ligature, at which time the patient's general health was perfectly good; he could move his limb in any direction with the utmost facility; the tumor was farther flattened and the darkened spot had not increased. On the fifteenth day the patient himself took away the upper ligature; on the seventeenth, the wound had healed over, and the darkened spot proved itself to be very superficial. At this time I discontinued my visits, leaving my patient (even if any exposure of the reduced tumor should unexpectedly take place) perfectly secure in the attainment of the complete restoration of his limb.

From the number of instances in which I have seen aneurysm remedy itself by a natural process, and frequently under circumstances which afforded no reasonable hope

of so fortunate a result, I am much inclined to believe, that a large majority of such diseases if not operated upon would terminate in the same way. I nevertheless feel myself bound to say, that as the present improved state of operative surgery offers so great a security, and as a patient's life under an advanced aneurysm must be always in danger until such natural process be completely effected, it would be injudicious in any patient to trust to such an occurrence when the operation is practicable.

Aneurysm will be more or less favorable to spontaneous cure (which I consider to mean the obliteration of an artery by a gradual accumulation of coagulable lymph) according to the manner in which the morbid alteration in the arterial tube is first produced, and the part of the arterial system in which the disease is situated.

An aneurysmal dilatation of an artery may lose itself so very gradually in the healthy continuity of the vessel as to oppose no check to the course of the blood; when this is the case the coagulable lymph is not accumulated; and such a dilatation may increase to a great extent, without causing any alteration in the pulse. Although such an aneurysmal state of an artery cannot effect spontaneous cure by obliteration, yet it is capable of great self-accommodation, and will not only exist for many years without proving fatal, but frequently without its presence being suspected. In the aorta such a disease will in some instances advance until its pressure occasions absorption of the ribs, and yet the pulse will continue regular.

Many physiologists continue to disbelieve the existence of this state of artery, on a presumption, that as the aorta cannot

be made to expand by great mechanical powers, it therefore will not admit of dilatation by the more moderate impulse of the blood; but the conclusion is not warranted by such experiments.

Although the aorta of the dead subject will resist prodigious mechanical powers, such a fact by no means proves that it may not be dilated in the living subject by more gentle and gradual means. The ligaments of a joint which have become rigid under chronic affection, will, like the coats of the aorta, break asunder sooner than they will expand on the application of a strong mechanical power; but if a very moderate repeated mechanical power be exercised upon them, they will in the living subject eventually accommodate themselves to the natural extension and flexion of the limb. It is the same with the strong inelastic ligaments of the vertebræ; they would break

themselves, or rend the bones asunder sooner than yield to any immediate mechanical power; yet if these ligaments are practised in extension from an early period, they will elongate and allow the spine, in the course of years, to be placed under very considerable contortions.

The application of these examples in its fullest extent is not, however, necessary on the present occasion, because I am inclined to believe that aneurysmal dilatation of an artery seldom takes place, independantly of a predisposing state of the vessel itself.

Since veins frequently become varicose by distension, during pregnancy, and we have daily before us so many other facts to shew that the structure of the vascular system is not, in all subjects, in all its parts uniformly strong; I can discover no reasonable ground for supposing that the arterial

vessels should always be exempted of such imperfections; and if we can admit that such local imperfection of structure in the coat of an artery does occasionally exist, there will then, I think, be no difficulty in believing that aneurysmal dilatation may be produced by the continued, though natural powers of the circulation.

A second description of aneurysm consists in a more partial or abrupt dilatation of an artery; in this case the coagulable lymph collects within the aneurysmal recess or chamber, some impediment is opposed to the circulation, and the disease is therefore for the most part attended with irregularity of the pulse.

Like the former it admits of great self-accommodation, but this accommodation, when the disease is situated in the larger vessels of the trunk, is effected in a very pe-

culiar manner. Although the circulation, as I have already stated, is for the most part rendered intermittent, in consequence of the inequality of surface occasioned by the recess in the vessel, yet if the coagulable lymph collected within such recess, happens to form a new level, the circulation will continue uniform, and the disease may be carried for a great length of time without inconvenience *. I apprehend that this sort of aneurysm, as well as the more gradually dilated vessel, is chiefly confined to the large arteries of the trunk, and to those immediately exposed to the strong impetus of the heart.

* A case has lately occurred in St. Bartholomew's hospital, which affords (in the same subject) a specimen of aneurysmal dilatation of the arch of the aorta, and also of this particular state of aneurysm, situated in the aorta a little below the diaphragm. Notwithstanding the former had increased until it produced absorption of the ribs, and the latter disease existed with it, yet the presence of these aneurysms was not indicated by any irregularity in the pulse.

A third sort of aneurysm (which I suspect to be confined to the arteries of the extremities) consists, probably, in an extravasation of blood between the coats of the artery, in consequence of disease or breach * in its interior coat; when this happens, the aperture in the inner surface of the vessel, invites a farther lodgment or accumulation, which after a while causes the external coat of the artery to give way, and the effused blood to establish for itself new boundaries in surrounding parts. Cases under these circumstances very frequently effect spontaneous cure by obliteration, and afford a proof that aneurysms of the extremities possess an additional chance

* I conceive that a blow upon an artery, from a stone for instance, may cause a breach in its internal coat (similar in some respects to the effect produced on that membrane by the application of a ligature to the vessel), and, therefore, that patients who have attributed their aneurysms to such a cause have, in fact, traced them to their real origin.

of spontaneous cure, in the adventitious support which they receive from surrounding fasciæ and muscles.

When any part of the *original confines* of any description of aneurysm gives way, the disease must be expected to run into unlimited varieties, which will necessarily obscure and disguise its true pathognomonic characters, and to such fact we may attribute the many irreconcileable conjectures which are entertained as to the first formation of these diseases.

I shall avail myself of this opportunity to observe, that aneurysmal affection of the vessels of the heart is probably a much more frequent occurrence, and a much more common cause of sudden death, than is generally supposed. I can call to mind no fewer than five persons within my own neighbourhood, who, whilst living, were

supposed at different periods to suffer under angina pectoris (a disease which, independantly of organic alteration, I do not believe to exist), all of whom after dissolution I discovered to have died of the bursting of a previously dilated artery of the heart.

I have opened many others who died suddenly *in fits*, or under *supposed apoplexy*, and ascertained their death to have been occasioned by a similar cause, although whilst they were alive the pulse had never indicated aneurysmal affection, neither had such a state ever been suspected.

Though the four cases already related, and on which I operated, vary in many particulars from each other, they will be found collectively to warrant certain practical conclusions.

They prove that the tying of the main artery of the upper or lower extremity (notwithstanding the ligature shall be affixed at the point of the artery where it first presents itself without the cavity of the body), is of itself attended with no greater risk to the life of the patient than the securing of any inferior artery, which in amputation, or under accidents, may require similar assistance. They are also calculated to shew, that in aneurysmal disease *the danger chiefly arises from delay*, and therefore point out the propriety of proceeding to the operation, whenever it is admissible at all, *at a very early period.*

Whilst, however, we admit these encouragements, let us not be too sanguine in our expectations, neither let us at any time impose a more severe duty on the system than the nature of the case imperiously demands. An aneurysm is frequently in-

dicative of a diseased habit, and on such account may not allow of any remedy; and though in many subjects the temperature of a limb has experienced no alteration on the obliteration of its principal artery, even at the nearest point to the aorta, at which it could be reached by surgical dissection; yet in others where the vessel has been tied very high up, the extremity has been left defective or useless. Such operations have indeed shewn that a limb can live without those collateral channels of the circulation which were formerly believed to be absolutely necessary to its preservation, and so far they have been infinitely beneficial to mankind; but such fact being now established, they ought never to be hereafter resorted to, excepting under circumstances of absolute necessity.

It is too often supposed, that the extent of disease in an aneurysmal artery is nearly

commensurate with that of the external tumor, and as this impression has doubtless, on some occasions, induced an operator to deprive a limb very unnecessarily of the support it would otherwise have received from anastomosing vessels, it cannot be too speedily refuted.

In a very large majority of cases the disease in the artery is limited to a small point or part of the vessel, and bears no sort of proportion to the tumor, which in an advanced stage of aneurysm is formed by the accumulated coagulable lymph, or by the effusion of blood into the neighbouring parts.

In the Cases No. II. and No. IV. which I have related, I tied the femoral artery at the nearest possible point to the aneurysmal tumor, at which I could feel its pulsation, and in both instances found it in

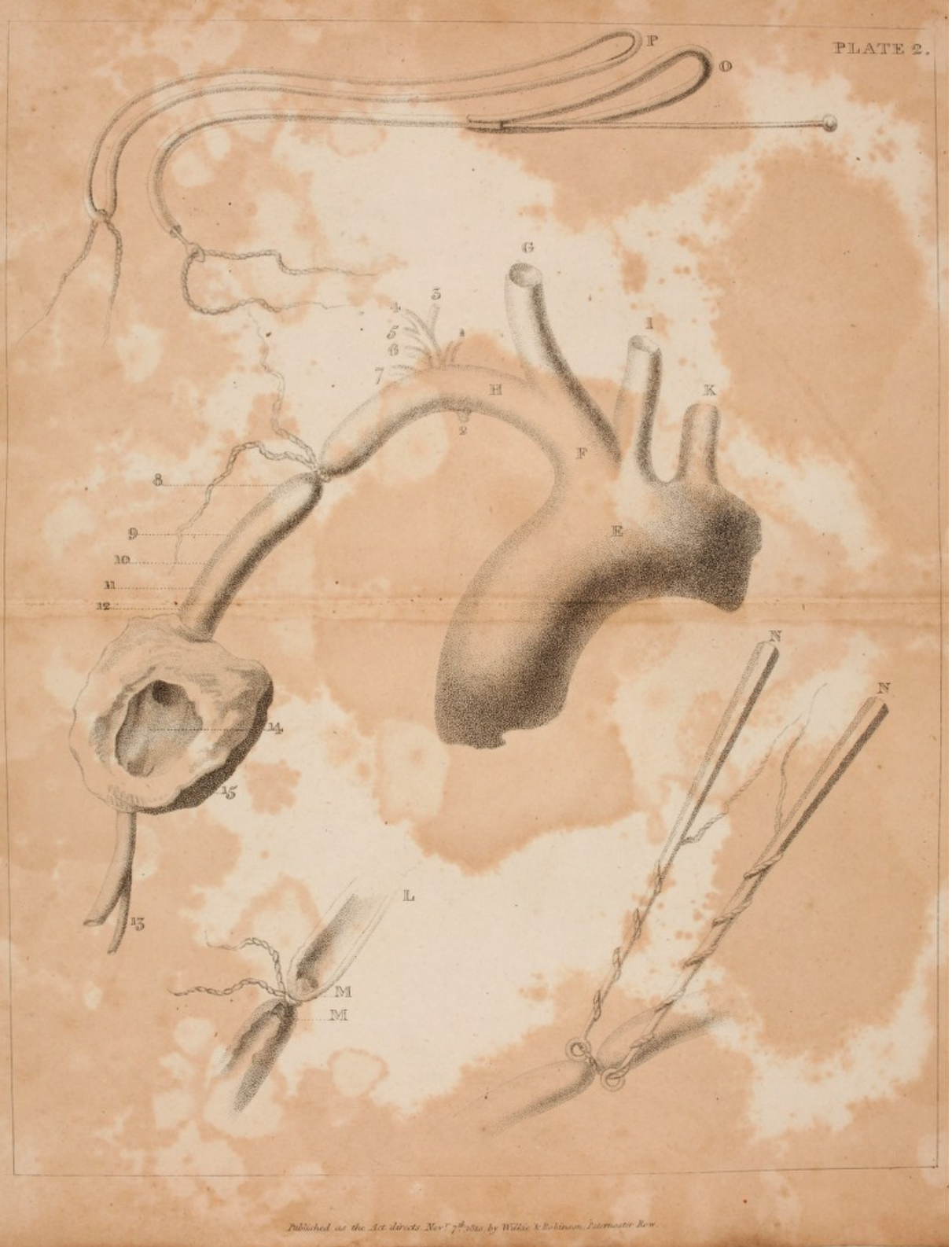
a sound state; the reasoning, therefore, which directs us in the more advanced states of aneurysmal disease to tie the artery at any great distance from the tumor, upon the presumption that the disease in the artery has proceeded to the extent of the tumor, or nearly so, and that otherwise we shall encounter a diseased state of vessel, appears to me to be extremely fallacious; and unless it be admitted with considerable reserve, is likely to urge us to an act of precaution which is not demanded, and which must, in a great degree, lessen the chances of the perfect restoration of the limb.

THE END.

T. Davison, Lombard-street,
Whitefriars, London.

PLATE I.

a
b



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