Practical observations in surgery, and morbid anatomy : illustrated by cases with dissections and engravings / by John Howship.

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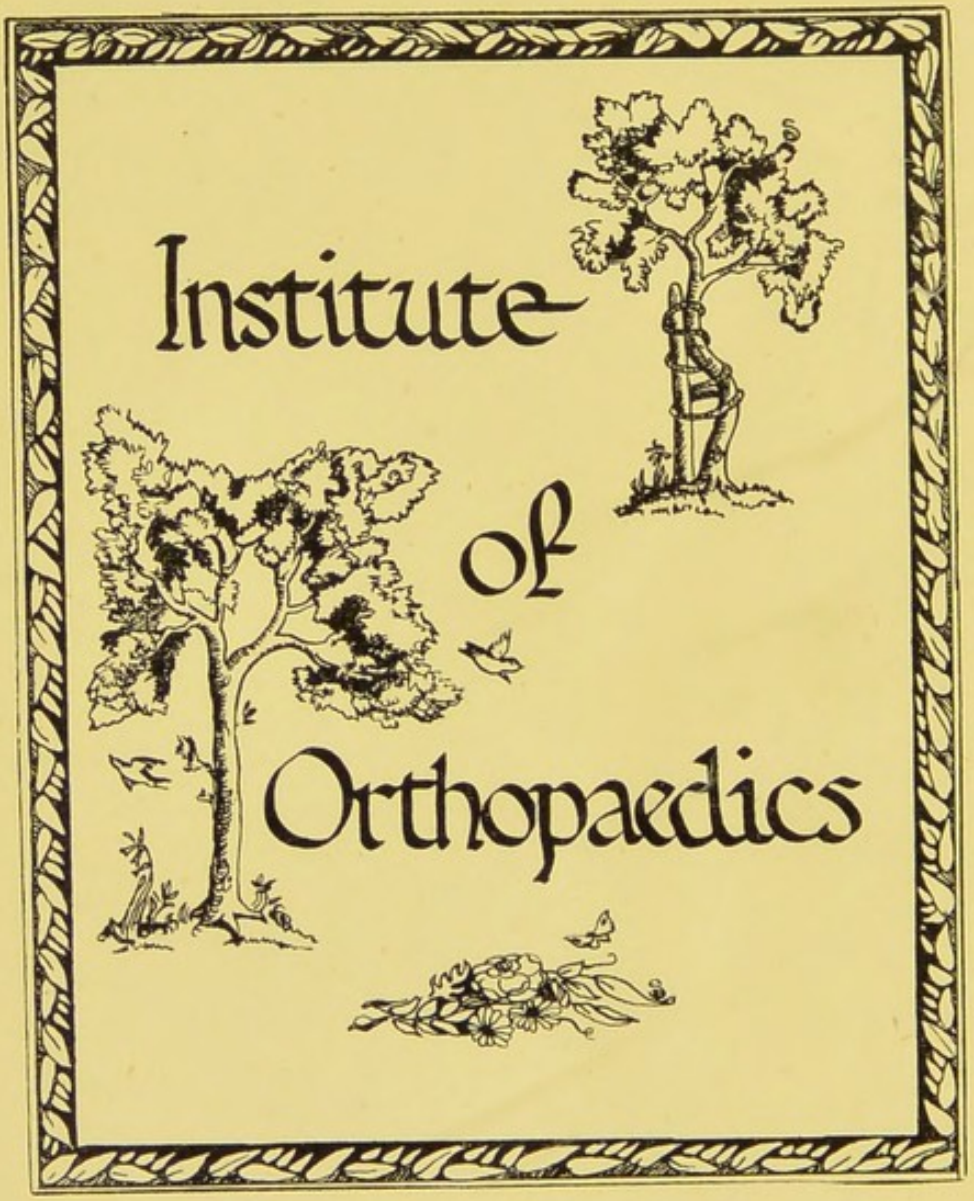
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Fig. 1.

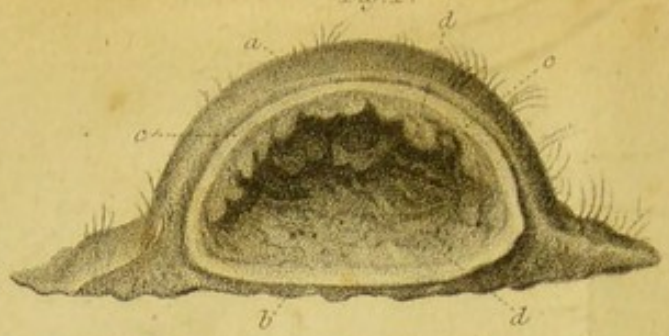


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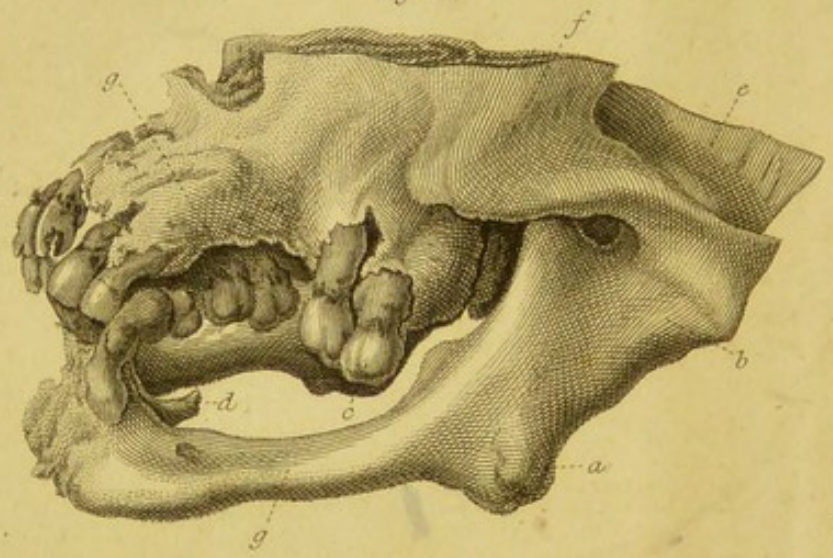
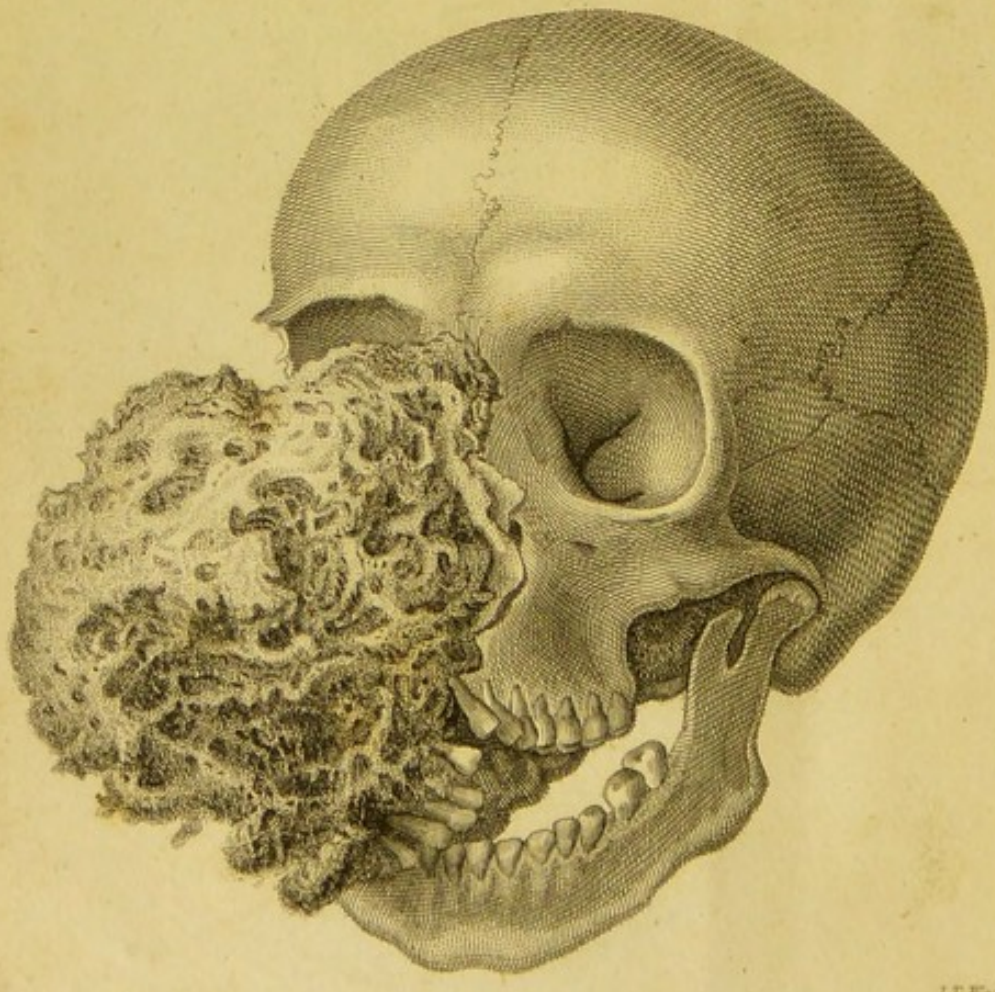


Fig. 3.



J. Hewship del.

J.F. Wedgwood sc.

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PRACTICAL

OBSERVATIONS

IN

SURGERY,

AND

MORBID ANATOMY.

ILLUSTRATED BY CASES.

WITH

DISSECTIONS AND ENGRAVINGS.

By JOHN HOWSHIP,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN LONDON,
AND OF THE MEDICO-CHIRURGICAL SOCIETY.

LONDON:

PRINTED FOR LONGMAN, HURST, REES, ORME, AND BROWN.

PATERNOSTER-ROW.

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TO

JOHN HEAVISIDE, Esq.

SURGEON EXTRAORDINARY TO THE KING,

F.R.S. F.A.S., &c.

My dear Sir,

It is with the liveliest pleasure that I acknowledge, upon every occasion, your having very early in life honoured me with your friendship. From the first commencement of my professional studies, you have most kindly patronized my exertions, and assisted me in my various pursuits. I cannot but recollect also, that to you I have for very many years been in the habit of looking up, as to one from whom I might acquire principles of right conduct and integrity, as well as those relating to knowledge in my profession.

These are obligations of no ordinary character, and as their extent forbids all hope of return, you must at least allow me thus to express some sense of their value.

Permit me Sir, to place under your protection the following work, which, if it has any merit, derives it entirely from the example you have uniformly set before me, in the most diligent and humane attention to every professional duty.

That you may long continue to live in the enjoyment of the professional confidence, and private regard, of a very numerous and distinguished circle of friends, is the sincere wish of

Dear Sir,
Your ever affectionate Friend,
and much obliged
humble Servant,
JOHN HOWSHIP.

Mill-Street, Hanover Square,
October, 15, 1816.

INTRODUCTION.

THE endless variety that may be observed in the appearances and symptoms of most of the diseases of the human body, and the very imperfect knowledge we at present possess, in many departments of pathological research, are too evident to require any illustration. They point out a necessity for continued perseverance, or rather an increased diligence in the study of the most useful of all professions. Indeed, so much yet remains to be done, that in what immediately relates to the minute phenomena and intimate actions of disease, we must still confess ourselves almost entirely ignorant. Hence we see the importance of making particular observations upon diseases, during life, and where it is practicable, following up the inquiry, by diligent examination after death, to bring as far as possible into the form of a regular series the symptoms and appearances. In this way we shall be led forward imperceptibly to regard them in the

relation of cause and effect, which is that relation in which they in truth stand mutually connected with each other.

With this view of the subject, I have for many years been in the habit of paying particular attention to cases, and watching at the bedside the changes of diseases; preserving notes of whatever seemed worthy of recollection, and constantly availing myself of every opportunity that offered, for acquiring further light by the examination of the parts after death.

These however, are by no means the only advantages I have possessed, having been permitted to avail myself of sources of information much more interesting and valuable, in the selection of such cases and appearances of disease as were most to my purpose, from the extensive collection of preparations with their histories, preserved in Mr. Heaviside's invaluable museum, with the care of which I have for many years been entrusted.

In the following selection it has been my endeavour to illustrate some of the leading principles of surgery; this however has not been regarded as the only object. The importance of the study of Morbid Anatomy is such, that it may be compared even with the Sun, which diffuses an equal and steady light over every path. The physician, the surgeon, and the anatomist, are all equally happy in being able to direct their steps by its assistance, and equally ready to acknowledge themselves indebted to this fertile source for the suggestion of most of the improvements that have ever

taken place in the practice of their respective branches of the profession.

Under this conviction, I have been induced to state the particulars of many cases, which were throughout their progress unconnected with operative surgery; but it appeared to me that they might nevertheless be considered interesting and valuable, as affording some ground, at least, for the regulation of opinion in consultation, where the precise nature, or the exact seat of the disease, may be doubtful.

Some few of the following cases were originally communicated by me to the medical and physical journals, but as they appeared capable of assisting in the establishment of important distinctions between diseases widely different from each other, they have been again brought forward.

The figures from which the plates have been engraved, are for the most part, on a reduced scale, but I have attended so closely to the engravings, as well as the drawings from which they were made, that I hope and trust they will not be found to have suffered materially, either in point of interest, or of accuracy, but that they will prove useful, in affording a more clear and adequate idea of the appearances of disease, than could have been conveyed by words alone.

There were so many apparent difficulties in the adoption of any particular kind of arrangement, that the attempt has been, to a certain degree, relinquished; the observations and histories will consequently be found placed in the order adopted

by Sandifort, in his Museum Anatomicum; which order is the same with that followed in Mr. Heaviside's Museum, where the collection is disposed according to the natural situation of parts.

My principal care has been to avoid, as much as possible, entering into matters of speculative opinion, endeavouring rather to direct the attention to those points that are more immediately practical, and I rely with confidence upon the indulgence of an enlightened and liberal public, to excuse the numerous defects that may possibly have escaped notice in the following pages, which will afford me an abundant recompence, should they be so fortunate as to be considered capable of assisting, in the smallest degree, towards the alleviation of human infirmity.

CHAP. I.

ON THE DISEASES OF THE HEAD.

SECT. 1.

ON SOME AFFECTIONS OF THE PARTS EXTERNAL TO THE BRAIN.

CASE 1.

Impaired Vision, from an encysted Tumor upon the Head.

MR. W. S. of Scarborough, in Yorkshire, a healthy middle-aged man, a ship-painter by trade, desired my opinion in the year 1808, on account of a small tumor situated upon the crown of the head. He said it was at least ten years since he had first perceived it. He supposed it might have been the consequence of some blow on the part, as those in his line of business were very subject to such accidents.

It had never been painful, but yet he thought his general health was giving way, as for the last few years he had been subject to head-ach, a complaint he never was afflicted with in his life before: the frequency of this head-ach had also much increased, of late. His sight also had become extremely weak; so much so, that for more than two years

past he had been totally unable to read the largest and clearest print.

On examination, or pressure, no pain, or even sense of feeling was excited in the tumor upon the scalp. Having very frequently seen and removed such tumors, without their being productive of any particular symptom, I merely advised its being dissected off, alleging that it would continue to grow larger, however slowly, and would consequently more readily admit of removal at the present, than at any future period. The part was removed by carrying two elliptical incisions through the integuments beyond the basis of the tumor, the portion of included scalp, with the tumor itself, being subsequently dissected away from the pericranium, with which it was in contact.

I think this mode preferable to the dissecting off the whole of the integuments from the cyst. It is quite unnecessary to save so much skin, unless the space covered by the base of the tumor is large; and by removing the whole, where it can be done with propriety, the object of the operation is more neatly, and more quickly accomplished.

Performed in this way, there is also a greater certainty of removing the cyst entire, than when the integuments have to be separated all round, particularly where the coats of the cyst are thin, and yielding.

The tumor removed, two very small vessels were tied, and the integuments brought nearly together, with adhesive plaster. In three weeks the ligatures were off, and the wound perfectly healed.

On examination the tumor proved to be a strong cartilaginous cyst, seated in the cellular membrane beneath the scalp. The cavity of the cyst was filled with a yellow purulent fluid; the thicker parts of which had formed a curdly deposit upon the sides of the cavity.*

The patient had not lost above an ounce of blood in the operation, but he rather unexpectedly felt his head better the following evening, than for many months before. He found his uneasiness and pain in the head continue to diminish from day to day, and he stated, with some degree of surprise, that he also found his sight becoming much stronger, and clearer than before.

By the time the wound was healed, he had quite lost all remains of pain in his head, and his sight was so greatly improved, that he was now again able to read the same small printed book that he had been in the habit of using ten years before; nor did either the pains in the head, or the affection of the sight afterwards return.

There needs no stronger argument in proof of the necessity for attending to cases in Surgery, than the difficulty frequently experienced in accounting for symptoms.

* Plate 1. *Fig.* 1. Represents a section of the cyst, of its natural size.

a The external surface of the scalp.

b The basis of the tumor.

c c The divided edges of the cartilaginous cyst.

d d The coagulated matter within the cyst.

Why, for example, as in the above case, should the slow growth of a small tumor in the scalp, ever be productive of severe paroxysms of pain in the head, and an almost total loss of vision? Can the increase of circulation necessary for the support of so inconsiderable a swelling, afford any satisfactory solution? Certainly not, for the vascularity is absolutely trifling. Can the nervous sensibility of such a tumor be brought forward as a plausible reason? Scarcely, for in the above case no degree of pressure produced the least sensation in the part, much less any pain.

Tumors of this description most frequently arise from some accidental violence, as a blow. The following seems to be the pathology of such cases. Where a blow has been inflicted, a serous effusion to some small extent into the cells of the cellular membrane is the first effect produced. This effusion, which in ordinary circumstances would only temporarily obstruct its own free percolation from cell to cell, cannot now make its way so readily, by reason of the adhesive inflammation having taken place, forming a boundary to the extent of the effusion; and while the accumulation of fluid continues to go on, increasing pressure, requiring increase of support, the membranous texture containing the fluid assumes new characters, and by a slow change is at length converted into a condensed and firm structure, which eventually becomes the cyst; the law by which this is provided, being one and the same, whatever variation may occur in the scale of its operation.

When however, encysted tumors make their appearance independant of external injury, the exciting cause must be sought for in the particular state of the constitution. This state would appear to consist in a peculiar disposition to local increase of vascular action, extending itself to a certain degree, and to that degree only, and determining itself to some certain point beneath the integuments, so that it may, in this respect, be considered as analogous to other local increased actions, which determine to the surface of the skin, producing various circumscribed, or pustular eruptions.

Suppose the constitution previously impaired, by hard work, hard drinking, ill treatment, or originally bad health, the successive steps of the above process will of necessity be interrupted, and other consequences will take place. The relaxed exhalents fail in the attempt to pour out coagulable lymph only, they effuse pus, and this effusion gives rise to a tumor more diffused, and much more quickly formed than the other, being attended with characters of more decidedly inflammatory action than the former case. Both kinds of tumor however seem to agree in this particular, that the disposition which gives rise to them may occasionally settle itself upon several points at the same time. Any accidental increase in vascular action, which in perfect health would have produced phlegmonous inflammation, will in this state of habit exhibit more or less distinctly the appearances of erysipelas, and require for its cure such constitutional treatment,

as would not fail to aggravate healthy inflammation.

Case 2.

Suppuration beneath the Scalp.

Ann Hearder, a charwoman, aged forty-five, applied for assistance to the St. George's Infirmary, in October 1810. She said she had been used to hard work, and had frequently carried large bundles, and baskets of linen upon her head; and she supposed that in this way she might have received a trifling injury, that was found upon the top of the head. This, however, was scarcely more than an abrasion of the cuticle.

About a fortnight after this, she was taken into the infirmary on account of a prolapsus of the uterus. A few days subsequent to her admission, she was attacked with a severe erysipelas. It began on the left side of the face and head, soon spreading to a considerable extent. On examining the scalp, the part where the cuticle had been abraded, was raised into an œdematous, puffy tumefaction. The left eyelid was closed, and the whole countenance greatly distorted. She was extremely thirsty, with a low small pulse above 120, violent head-ach, deafness, and frequently a low delirium.

Upon the presumption that there might probably be some affection of the bone, beneath the seat of the injury, the tumid scalp was freely divided; but there was no apparent disposition to form matter, nor the least trace of fracture or other

mischief upon the surface of the cranium; on the contrary, the pericranium adhered closely to the bone.

The patient remained delirious, but occasionally expressed a sense of violent pain in the head, there was also much restlessness, and appearance of alarm, with excessive general irritation of the system.

By way of treatment, a blister was applied to her neck, and she was ordered bark and wine, with an opiate at night. Under this plan, the symptoms soon gave way; in a few days she was evidently mending, and the tumefaction about the face was fast declining. On the tenth day after the division of the scalp, she was able to see a little, and about the same time complained of an occasional severe pain in her head, and about the hairy scalp; which symptoms were soon followed by a return of the swelling, with heat, and prickly pains about the top of the head.

This affection in the course of the day extended itself to the temporal spaces on each side of the face. By the following morning there was a very distinct, and rather extensive fluctuation upon each side of the frontal bone, but the two abscesses were apparently unconnected.

On the second day after matter was perceived to be forming, punctures were made at the most depending part, and from one two ounces, from the other three ounces of thick purulent matter were discharged; she still complained of lightness and swimming in the head, but the pain had sub-

sided. The remaining tumefaction also, had entirely declined.

Previous to the two first abscesses being opened, two more had made their appearance. One of these was upon the side of the left parietal, the other over the left malar-bone. These produced exactly the same symptoms that had attended the first. Three days after those had been punctured, these also were opened, and a considerable quantity of pus evacuated.

When the contents of the third and fourth were let out, she pointed out a fifth, that had just began to form. This was situated upon the aponeurotic surface of the right masseter muscle. This swelling, like the rest, increased in size for two or three days, but as it was let alone, it then became stationary, and soon after, a part of its contents were again absorbed, for the tense skin became flaccid. The expectation of this change was the reason for its having been left to itself.

The abscesses that had been opened, continued to furnish a copious discharge of healthy looking pus for some time, after which the quantity lessened, the health improved, and under the continued use of tonic medicines, they were all healed and well in about five weeks.

Case 3.

Critical Abscess upon the Face.

A healthy looking young woman, in June 1813, experienced an unusually severe attack of inflammation and swelling upon the face. The affection

commenced in the upper lip, passing thence upwards, over the whole side of the face. The degree of œdema was excessively great. In the course of two days, the swelling of the lips was on the decline, but the affection of the cheek and eyelids was still increasing. The pulse was at 120, and was small and hard, with a very hot skin. With these symptoms there was much thirst, intense pain in the head, and occasional delirium.

Warm fomentations were directed, with proper medicines; and by the following day a tendency to point was observed, just below the inner canthus of the eye. Poultices and fomentations brought the matter speedily forward; and in three days the skin gave way, when an astonishing discharge of matter took place. From the quick progress of the inflammation, and the point at which the abscess had opened, there was much reason to fear the lachrymal sac must have been involved in the mischief. For the first week there was a profuse discharge; when the inflammation having pretty well subsided, a probe was introduced, and passed only downwards, in a superficial direction, to the extent of half an inch. This was laid open, and a few threads of lint lightly introduced into the cavity.

The only apprehension I had entertained was, that from the inflammation settling so closely upon the lachrymal sac, that cavity might either have been diseased, or totally destroyed, ending in the obliteration of the duct, and the consequent passage of the tears over the cheeks; and indeed

from the early appearances, there seemed to be little chance of escape. Fortunately, however, it turned out otherwise. The poultices were laid aside, the wound was dressed daily, and she was ordered some steel medicines. Within a fortnight the cellular membrane at the bottom of the abscess, had thrown up florid granulations. These were touched with the nitrate of silver, and the wound soon healed without any perceptible scar.

I have seen several instances in which the pestilential, or yellow fever, has terminated by local inflammation and sloughing*. One of the most remarkable of these cases occurred in a private soldier, in the hospital of the 10th Regiment of Foot. The fever had run its course with great violence and rapidity. Upon its decline, swelling, heat, and pain, came upon the right side of the face. This inflammation having reached its utmost point of intensity, suddenly gave way, and a deep, and extensive slough was the consequence. On the separation of the eschar, the whole cavity of the mouth, and both jaws came into view through the opening. The patient, however, ultimately recovered; and considering the frightful aspect of the recent ulceration, it was exceedingly curious to see how neatly the circumference of so large a space was at last brought together to the same point. The diameter of the ulcerated circle was

* In the garrison of Gibraltar, in the year 1804.

from three to four inches, but that of the cicatrix was less than a sixpence. Beyond this extent the only remaining peculiarity in the appearance, was some small degree of inequality of surface, from the drawing in of the integuments.

It may probably depend upon the exposure of these parts to all the changes that occur in the state of the atmosphere, but whether it is owing to this, or to some other cause, with which we are unacquainted, we cannot avoid observing how particularly subject the head and face are to critical inflammatory action, where the state of the constitution favours this result of fever.

Case 4.

Critical Inflammation, and Gangrene of the Face.

In the year 1812, I was desired to see a child about four years old, who had just passed through the measles. He had been attended by a person in the neighbourhood. On enquiry it was stated that the eruption had gone through its usual changes and was on the decline, when the mother observed and pointed out a red spot, that was forming upon the face, saying she hoped it was of no consequence. This spot was situated between the angle of the mouth, and the right side of the nose. This appearance, however, was neglected, as a thing of no consequence, although the inflammation and pain daily increased, with much heat and external tumor.

At length the mother was alarmed by the falling out of first one, and then two more of the front

teeth from the upper jaw. The central part of the swelling upon the face now assumed the appearance of a dark spot, and this, in a few days, became a slough, equal to a crown piece. With these changes, as may be supposed, the constitutional health participated. The tongue at first white, soon changed to a black colour, with a dry burning skin, low delirium, and a pulse at 160.

Upon the establishment of the eschar upon the face, the opinion given as to the child's situation was suddenly reversed, and the parents were abruptly told it was impossible that the little boy should recover. It was in consequence of this circumstance that they desired my opinion.

Cordials, tonics, and opiates were directed, but more with a view to satisfy the anxious feelings of the parents, than from any apparent ground for expecting they could prove useful. The child languished for two days more, and then expired.

Examination.

On dissection, the mortification was found to have extended quite through into the mouth, where a corresponding extent of the periosteum was separated from the superior maxillary bone, and was pulpy, putrid, and stinking. The affected part of the bones was discoloured and black upon the surface. The three teeth that had fallen out, proved to be those most immediately in the vicinity of the putrid periosteum, which had extended its own inflammation, so as to destroy the membranous lining of the alveolar cavities.

The following case is one which is of very un-

common occurrence. Independent of other circumstances it is curious from affording an instance of a person having lived and enjoyed good health for more than half a century, without the first step, preparatory to the digestion of the food, having ever been practicable.

Case 5.

Scrofulous Inflammation of the Face, followed by Anchylosis of the Jaws.

Robert Kilveroy, fifty-six years of age, in October 1810, applied for assistance to the St. George's Infirmary, on account of a painful complaint in the knee, connected with lameness, and swelling. He had not been long in the house when it was observed that there was a peculiarity in his speech, and also in the appearance of his mouth and face; his voice reminded me of that of a person labouring under lock-jaw.

On enquiry it came out that he was totally unable to move his jaws at all, and that this had been his situation from childhood. So very singular a circumstance induced me to take down the case; the leading circumstances of which are these,

When about four years old he supposed he took a severe cold. It was in the depth of winter. He went to bed very well, but awoke in the night, in most severe pain on both sides of the face, and before morning there was much swelling and heat, as well as pain, about the angles of the lower jaw. The violence of the symptoms rapidly increased, and were soon attended with thirst and fever, and occasionally with delirium.

In a few days however, assisted by poultices and fomentations, the swelling upon the right side had burst, and discharged freely. On examination with a probe, the angle of the jaw was felt bare, and it was expected would soon exfoliate. The suppuration continued, and in a few days more a small scale of bone came away.

Three days after the abscess on the right cheek had broke, that upon the left side of the face gave way and discharged moderately, but this had been from the first less swelled, and less painful than the swelling on the opposite side. In a few days an exfoliated scale of bone came away from the left side.

Such was the rapidity of progress in this case, that in three weeks from the first of the attack, both the abscesses were healed. Ten days subsequent to this, the cicatrix on the right cheek gave way, having suffered a second attack of inflammation, as violent as the first. It now discharged freely for the space of a week, when it finally healed. The abscess that had existed upon the left cheek, did not ulcerate a second time.

These complaints were treated in the Westminster Infirmary, where, partly on account of the swelling still remaining upon the face, but principally from the weak and deficient state of his constitutional health, he remained an in-patient for more than two years afterwards.

Subsequent to this remote period he had always enjoyed good health, but had not ever been able to move his jaws, even in the least degree.

When he was old enough to be sent to service, he earned his bread as a gardener, which business he continued to follow without having experienced a day's sickness, or confinement from work, for the space of fifty years and upwards.

In eating, he was constantly in the habit of thrusting in his food with his fingers, by the left side of the mouth, where several of the teeth were deficient.*

* Plate 1. *Fig.* 2. Represents the appearance of the anchylosis of the maxillary bones, on a reduced scale.

a. The angle of the lower jaw, from which the exfoliated scale of bone was thrown off during childhood. The part is seen still impressed with the puckered appearance of a cicatrix, confirming the accuracy of the early part of the history of the case. The corresponding part of the opposite side of the jaw exhibits a similar character.

b. The anchylosed condyle of the jaw, round which the faintly depressed line marks the precise point of union. The striking features of the preparation are extremely singular. The articulating surface of the opposite condyle had lost its natural figure, but was not anchylosed.

c. The last molar tooth, the fangs of which, as well as those of the tooth next to it, had by time and disuse become consolidated, forming an ossific tumor, larger than the crown of the tooth. The same change, in a greater or less degree, had also taken place in most of the other teeth.

d. A process of bone projecting backward from the inside of the chin.

e. Part of the temporal bone.

f. The os malæ.

g g. Exhibit a curious effect of the gentle but frequently repeated pressure, incident to the constant habit of pushing in the food at one part of the mouth. It had produced an extensive absorption of the maxillary bones, above and below.

About this time he first complained of his knee, which became swelled and painful, and which in the progress of the disease, assuming all the characters of a scrofulous affection, eventually proved fatal.

Case 6.

Scrofulous Affection, with partial Necrosis of the inferior maxillary Bone.

J— C——, aged thirty-seven years, of fair complexion, and scrofulous habit, was washing his face at a pump in the year 1807, and while dashing the water up with his hands, was attacked with a violent nervous pain in the left side of the face, shooting up with extreme severity into his head. This continued for about a minute, and then left him. The same pain, however, occasionally returned. It was always excessively violent, and would sometimes remain for four, or even five minutes. It now generally brought on a severe fit of head-ach. Sometimes the return of these pains was so frequent as to confine him to bed for a month together, with the most distressing pains in the head.

In this way the complaint went on for about three years. Sometimes he was disposed to believe his teeth might be in fault, and under this idea, although they were perfectly sound, he had repeatedly had one or more of them extracted on the affected side of the head, but all to no purpose.

His general health was not deficient, neither was there any heat, pain, swelling, or tenderness, in any part of his face; but if he incautiously took any hot

thing hot into his mouth, it instantly brought on the most distracting pain, both in the face and head.

In January 1811, while in the country, he observed to a friend, he could not think what ailed his jaw. He said he rather doubted whether he had not some new teeth coming, for the gum was tender and sore; and there was certainly something just coming through, which was hard like bone. This idea was laughed at, and so passed off. In the evening however, by looking into a glass, he examined his mouth attentively, and plainly perceived a small piece of bone sticking up through the gum upon the left side of the lower jaw, from which the teeth had long since been removed.

The loosening of the piece of bone was a work of time. It was three months subsequent to its first protruding, before it was ascertained to be moveable. About this time a collection of matter formed and made its way by a sinus, discharging itself through the gum, towards the cheek. But the bone itself was still almost entirely enclosed in the gum.

The abscess continued to discharge, and the bone to loosen, while it became more and more uneasy and painful, until latterly it altogether prevented his sleeping.

About seven months subsequent to the first protrusion of the bone, the uneasiness he had at first experienced amounted to great distress. The fœtor of the discharge, and the severity of the pain were extreme. In this state, half distracted with

pain, he, one night, took fast hold of the anterior projecting portion of the bone, and with all his force tore it away from its bed, out through the gum. The shock produced by this act of violence was considerable, but he soon experienced a degree of ease to which he had been for many months a stranger.

The parts bled freely through the night, but the hæmorrhage subsided in the course of the following day.

The early stage of this disease was unattended with any settled pain in the jaw bone, until it began progressively to loosen, when pain and inflammation supervened, which was at first troublesome, then distressing, and at last almost intolerable, and distracting. When, however, the piece of dead bone was extracted, his appetite, sleep, and constitutional health presently improved.

About a month after the removal of the first piece of bone, a second portion made its appearance. This was much smaller than the former, and he observed that in making its way up, as well as in its removal, the second piece gave much less distress than the first had done.

The suppuration now decreased, and the parts soon became perfectly healed. Upon examining the state of the jaw some years afterward, it appeared that the ossific action taken up by the vessels in the periosteum, had very adequately repaired the loss of substance, as the newly formed part of the jaw, although rather awkwardly shaped, was

of very adequate strength, for all the purposes of mastication.*

Case 7.

Exfoliation from the Lower Jaw.

Edward Plumb, a robust man, a coachman, aged fifty, had for many years been occasionally subject to rheumatic gout. In one of these attacks he was confined for near five weeks, after which, having been long plagued with a decayed tooth, he determined to have it removed.

In the extraction the crown of the tooth flew off, and when the operator brought away the remaining part, the fangs were found consolidated into one compact and large mass of bone.

He was not, however, aware of having suffered any injury, neither did he experience any particular uneasiness in the parts, till six weeks

* Plate 2. *Fig.* 3. Exhibits the principal necrosed portion of the jaw, of its natural size.

a. The internal surface of the piece of bone, or that next the tongue.

b b. The canal transmitting the inferior maxillary nerve. From the appearance of the bone it appears that the sheath of the nerve had suffered from inflammation, and even suppuration, and these changes had in all probability formed the first progressive stage of the disease.

c. The point next the angle of the jaw.

d. The extremity next the chin.

e. The superior margin of the jaw, from which the alveolar processes were removed by absorption, upon the extraction of the teeth. There was no trace of inflammation upon any part of the bone, except that already noticed.

afterward, when, in biting a piece of hard crust against the gum, he suddenly felt a sensation as if the bone had given way within the gum; and a violent degree of pain was the immediate consequence.

The pain continued all that day, and by the evening there was considerable heat, redness, and inflammation upon the cheek. The inflammatory symptoms continued to increase for four days, the pain being so extreme, that he was occasionally light-headed.

He now applied for assistance to the St. George's Infirmary, but as his mouth was closed, no satisfactory examination could be made. Fomentations and poultices, however, were directed for him, and this plan was pursued for a month. The pain in the early stage more purely inflammatory, with incessant shootings, and burning heat, became latterly more tolerable; and as suppuration became established, assumed a throbbing, and pulsating character. The abscess pointed in a middle line between the chin, and the angle of the lower jaw. At the expiration of a month it broke, and discharged copiously.

When the inflammation had reached its height, he was almost constantly delirious; but upon the breaking of the abscess, his health quickly improved.

The poultices and fomentations were continued for a fortnight, by which time the swelling had much diminished. From the external opening a probe readily struck upon the bone within. A

second opening now formed within the mouth, between the cheek and jaw, affording a very free discharge for the matter.

Obliged to attend his master into the country, he laid aside the poultice, substituting a plaster of soap cerate, covered with a piece of flannel. The discharge gradually decreased, and several small fragments of carious bone worked out into the mouth.

It was several months before he returned to town, soon after which, he found a much larger piece of bone had separated, and was protruding upwards through the gum, between the cheek and the jaw. When sufficiently loosened he disengaged it, and brought it away.

From this time he improved rapidly, the abscess contracted and healed, and he entirely recovered. On examining the jaw some months afterward, the surface of the bone between the cheek and the gum was firm and smooth. On the outside of the jaw the part from which the piece had separated, was formed into a superficial convexity, from the ossific action having more than repaired the loss of bone. *

* PLATE 2. *Fig.* 4. Represents the exfoliated piece of bone, of its natural size.

a The external surface of the jaw.

b The internal surface.

Case 8.

*Large Ossific Tumor produced by Disease in the Maxillary Antrum.**

Eleanor Allway, a woman about thirty, was received into the Westminster Hospital, in 1783, with a most extraordinary swelling upon the right side of the face, producing great distortion of countenance, but not attended with any discolouration of the skin. The base of the tumour extended upwards to the eye, which was almost closed, and reached below to the chin; the adjacent angle of the mouth being consequently much depressed, and thrown out of its line, and the nose pressed aside towards the left cheek.

In the most prominent part the tumor projected about four inches beyond the general line of the bones of the face. On the inside of the mouth the affection had extended itself across the roof of the mouth, and the boney palate, nearly to the opposite teeth. It had grown very considerably, and felt very large within the mouth.

This tumor, which was confined entirely to the bones about the upper jaw, was very large, and apparently fleshy; where it extended across the roof of the mouth it was of a florid red colour. The teeth of the upper jaw, thrown out of their natural situation, formed an angle with the remaining part of the alveolar circle. All those teeth involved in the extent of the tumor, were thus

* The following case is transcribed from the original MS. in Mr. Heaviside's Museum, where the cranium is preserved.

forced into the middle of the mouth, greatly impeding deglutition.

This terrible disease had begun about five years before, with a small soft swelling in the right nostril, about the size of the end of the finger. In this state it produced no uneasiness. In its commencement she had been attended professionally, and on the presumption of its being a polypus, the tumor had been partially extracted at different times; but these operations seemed only to accelerate the progress of the disease, aggravating the degree of uneasiness and pain she now suffered, and hastening the increase of the swelling.

When the complaint had become more completely formed, there were two or three teeth, which from their horizontal position were very much in the way, and troublesome from their being loose. It was considered highly proper that these should be removed; but although this operation required no great effort, it was attended with such an hæmorrhage as brought the patient very low indeed, before it could be effectually checked.

A second violent bleeding took place about three weeks afterwards, it arose from a spontaneous breach in the softer part of the tumor. This reduced her so much, that she languished only a week longer, and then expired without any recurrence of hæmorrhage.

Examination.

On dissecting the tumor, it proved to be a large fleshy mass, or excrescence surrounding, inclosing,

and extending to all the bones attached to the upper jaw, in which the superior maxillary bone, the os malæ, os nasi, and boney palate, were all involved. This appeared more fully upon a subsequent and more careful dissection of the disease.

All these bones had from pressure suffered a separation at their respective points of union, with such a degree of extension and attenuation of their natural substance, that even the strongest parts of the bones were in many places reduced to the thickness of wafer paper.

The os malæ was detached from the rest of the bones, and lay in that part of the tumor where a fluid bloody serum was lodged, exhibiting a very curious and elegant cribriform appearance, though in its natural state a very solid bone. The other bones were rendered equally thin, and were spread out like malleable gold.*

A single instance of a disease similar to the above in its progress and termination, has been described by Sandifort.† In the one case the first appearance of the tumor was upon the palate, in the other within the cavity of the nose. In the one, the disease ran its fatal course in six years, in the other the patient lived under it for thirteen years. In both instances a strong disposition to hæmorrhage was the prevailing character; in both the patients were females; and in both the disease

* Plate 1. *Fig.* 3. Exhibits an engraving of the cranium, with the disease as it appeared subsequent to the removal of the soft parts, by maceration.

† In his Museum Anatomicum.

seemed evidently to have sprung from the cavity of the antrum maxillare.

On comparing the state in which the disease in each case was found after death, the principal difference between the two, appears to have been in the texture of the ossific tumor. In the case above related the whole tumor remained continuous and entire subsequent to maceration; while in that recorded by Sandifort, the whole fabric fell asunder in disjointed fragments of bone, upon the destruction of the soft parts.

In the above case the soft parts were clearly involved in the disease, and were probably the primary seat of the affection, as well as in the case related in the Museum Anatomicum. This circumstance as well as the tendency to bleeding, suggests the probability that the disease was of a cancerous nature, and that the bones, although very extensively affected, had most likely remained uninjured till the soft fungous vascular mass from within the cavity of the antrum began to operate, first by producing absorption of the membrane lining that cavity, and then by its peculiar and partially organized texture, not exciting regular absorption of the bone, but sufficiently loosening its general structure to admit of considerable distention in the first instance. In the progress of the disease, as might naturally be expected, the circulation in the periosteum made some effort towards repairing the mischief by the secretion of new bone, as happens in cases of necrosis, although this effort had, owing to the almost disor-

ganised condition of that membrane, proved irregular and abortive.

By viewing the disease in this light, we are enabled to explain not only the symptoms that attended during life, but the appearances found on dissection. It is clear there was no regular inflammation of bone, for in that event more than the natural proportion and weight of ossific matter would have been deposited, and the result would have been an unusually white and dense structure, which was not the case.*

I have, however, accidentally met with an instance in which the superior maxillary bones have been subjected to an affection of at least as singular a nature, although not of so formidable a tendency, as in that just related. The complaint alluded to, is a species of ossific tumor, which arose as the consequence of cold. I have never met with any written description of the disease, and only one of my professional friends has ever seen a similar affection.

Case 9.

Inflammation and Tumor of the superior Maxillary Bones, arising from Cold.

In the month of August 1811, I had first an opportunity of seeing J. C. a stout healthy looking

* Since writing the above, I have read with much interest the particulars of two cases of a similar disease in Desault's Œuvres Chirurgicales. In both these cases it was clearly ascertained that the whole of the mischief was owing to a highly vascular fungous growth springing from the cavity of the antrum, and in one by the exposure of this cavity, and the destruction of the fungus within it, he succeeded in curing the disease, and the patient recovered.

man, fifty-nine years of age, who had a most extraordinary tumor upon each side of his face, the progressive growth of which had been the means of his losing both his eyes. The following is the history of the complaint.

About fourteen years back he was apparently in perfect health, and was walking up Hampstead Hill, on a windy day. On the road he was suddenly attacked with a violent itching and heat in both his eyes. The violence of the itching induced him to rub them most vehemently. Before he could reach home the irritation had increased to that degree that he was unable to open his eyes in the light. Inflammation supervened, and a small tumor formed just below the inner angle of each eye, about the size of a hazel nut. These swellings, to use his own words, "burst inwardly," discharging afterwards freely between the eyelids. The inflammation treated by fomentations, with poppy heads, and medicines occasionally, went on for about twelve weeks. It had then so far subsided that he could open his eyes, bear the light tolerably well, and look about him. He soon after recovered, and went to his work again.

About a fortnight after this, being out, he took a fresh cold; having been exposed all night to cold and rain, in the winter season.

On this occasion he applied to an eminent oculist *, who ordered him to lay a warm poultice over each eye, as the swellings were again returning on

* Mr. Ware.

each side of the upper part of the nose. This mode of treatment was now continued for about six weeks, when the abscess at the angle of the right eye burst, evacuating its contents upon the cheek. Two weeks afterward that upon the left side broke, and a copious discharge followed.

The formation of these abscesses, particularly that upon the left side, was attended with pains in the head, the severity of which he could compare to nothing but the sensation of his head splitting asunder. These pains, when most severe, spread themselves through the bones of his face, as well as those of the cranium. During this attack he could get no rest day or night for the space of three months, and was never free from the most insupportable and horrid pains in and about his head. He was now strongly advised to go into St. Bartholomew's Hospital, where he remained six weeks, but left the house without any thing material having been done. An operation had been proposed to him, which he did not chuse to submit to, and he was consequently discharged.

At this period there was a considerable degree of projection or tumor, apparently ossific, below the inferior margin of each orbit, the eyes being rendered much more prominent than they are naturally.

His case excited much attention while in the hospital, and one day one of the young gentlemen observing the right eye thrust out from the orbit, and pressing the tumor, examined it rather hastily, when pushing back the eyelid, the globe of the eye suddenly sprung out beyond the palpebræ, and it

was with some difficulty reduced again. At this time he had some power of perceiving light with the right, but more with the left eye.

He next applied for assistance to the Finsbury Dispensary, the pains in his head and face being still so severe, that he was frequently almost distracted.

The inflammation upon the eyes was still extremely violent, that of the left particularly. He was very often delirious, and was subsequently informed that it was sometimes with extreme difficulty that he was prevented from tearing his eyes out, in the rage of pain and delirium. In the course of this attack the right eye burst, from the intensity of the inflammation. The contents of the eye-ball being effused, the excessive inflammation declined, and he became somewhat better.

The ossific tumors however, still continued to grow larger, although their increase was very slow; and as he found nothing had either arrested their progress, or as he thought much relieved his complaint, although long under treatment; and his general strength being much improved, he went home to his lodgings, where he remained.

Some time after his return home he was putting down a turn-up bed, and not being able to see what he was about, the bedstead slipped from his hand and fell, one of the feet striking him with great force immediately upon the ball of the eye, that was protruded, and lying upon the hard tumor in the cheek.

By this accident the globe of the left eye was

burst, but he suffered no particular pain at the moment, beyond the mere confusion arising from so severe a blow upon the face. A good deal of inflammation however soon came on, but subsided again spontaneously.

Subsequent to this period, he usually enjoyed very good health, and in 1815, remained well. He merely observed that whenever he took cold, it was particularly apt to affect his head with a transient return of his old inflammatory pains.

On separating the palpebræ, the tunicæ conjunctivæ still retained strong marks of the severe inflammation they had long suffered. The tumors of the maxillary bones feeling as hard and firm as ivory could have been, and not in the least painful when pressed, appeared to occupy very nearly the whole space of each orbit, as well as the cavities of the nostrils, which were almost, if not entirely obliterated. In the integuments covering the tumors, were several enlarged and varicose veins.*

From the slow and uniform growth of these swellings, and from the great pain that attended their production, as well as from other circumstances connected with the history, there is every reason

* PLATE 2. *Fig.* 1. Shews the external appearance produced by these tumors.

a a. The ossific tumors connected with the maxillary bones, between which the external parts of the cavities of the nose are seen compressed together.

b. A part of the conjunctive membrane of the right eye, which still retained the appearance of inflammation.

PLATE II.

Fig. 2.

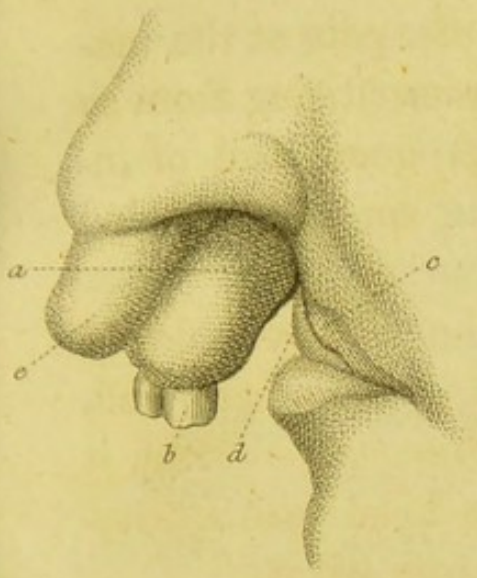


Fig. 3.

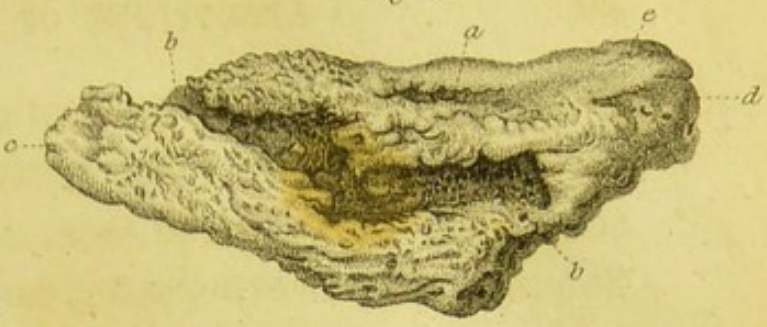


Fig. 4.

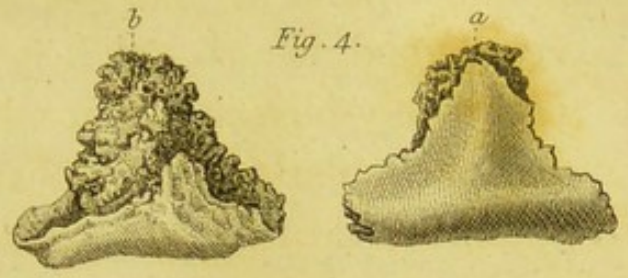
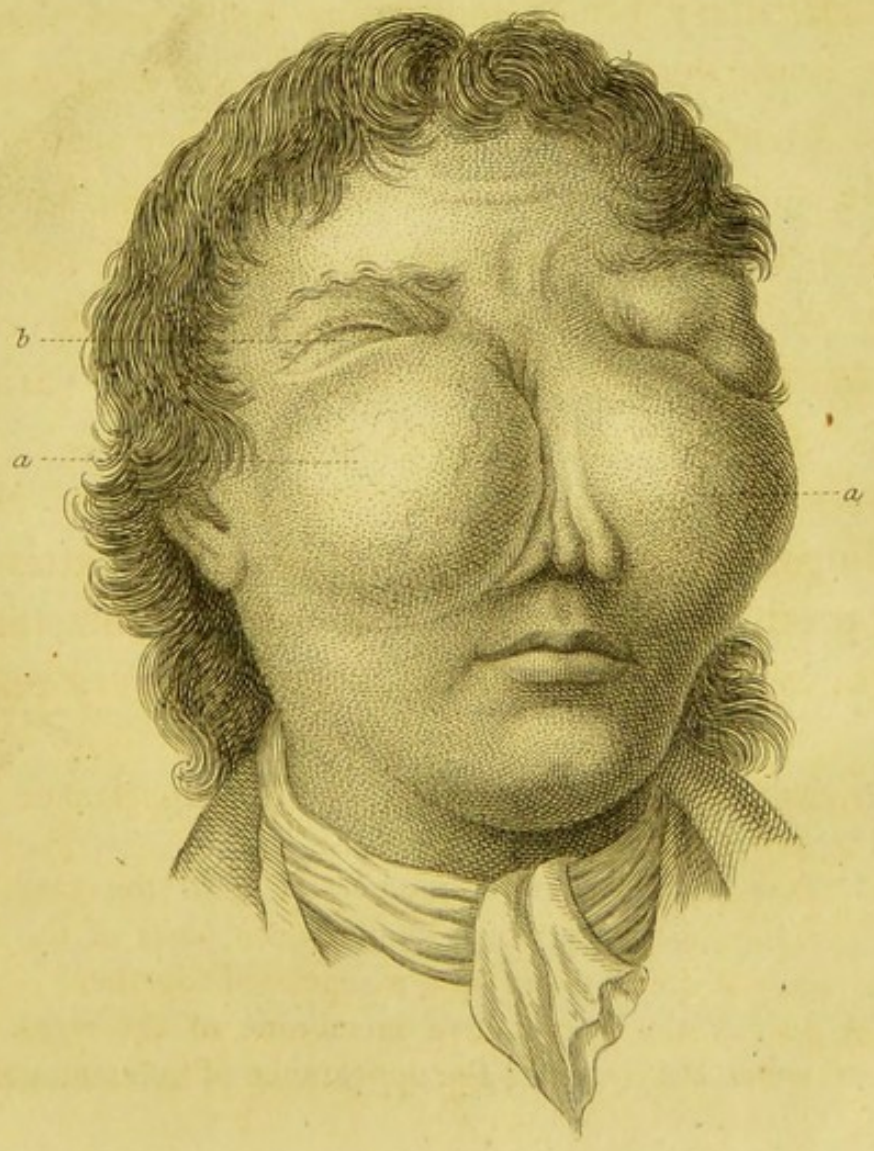


Fig. 1.



J. Howship del.

J. T. Wedgwood sc.

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to believe that the original affection was the means of exciting a copious secretion of ossific matter, forming a more dense and compact texture than is natural to these parts; a change which generally results from healthy ossific inflammation.

The absorption or removal of bone, under whatever circumstances it takes place, is a very curious process. It is one of those operations that always merits our attention, and oftentimes displays the amazing fertility of resource which the powers of the animal machine are capable of displaying.

In many cases the absorption of bone takes place under circumstances which in themselves afford an ample illustration of the successive steps or gradations of the process; sometimes, however, it is otherwise. Where the pericranium of an adult, for example, has suffered injury from external violence, and a formation of matter has been the consequence, the necessarily impaired state of the circulation through the bone, at once explains the reason why the medullary secretions in its minute structure, and probably the affinities of its elementary principles also, suffer change, inducing absorption more or less extensive of the substance of the bone. But where an injury has been received upon the head of an infant, and is followed by the absorption of a pretty extensive portion of the cranium, without any intervening inflammation, or the least tendency to suppuration, there is sufficient evidence that the formation of pus is by no means essential to this

action, as no pus is produced, neither can any change in the state of the medullary secretions in the diploe be allowed for, as in early childhood the bones of the skull are diaphanous.

Again, an injury to the head of an adult has required the application of the trephine. From the natural inequality of the internal surface, it has happened that in removing the central piece of bone, a small scale from the inner table has been split off, so as to be left projecting within the circle. Under these circumstances it has appeared unadvisable to irritate the membranes of the brain by attempting its removal, and it has been consequently let alone; and while the dura mater, vibrating with the pulsations of the brain, has preserved all the appearances of health, the almost insulated piece of bone has suffered change, it has been seen to become every day thinner and more transparent than it was before, until eventually it has completely disappeared.

In explanation of the principle upon which absorption of bone from the cranium takes place in infancy, the most rational conclusion seems to be, that external violence may now and then operate by producing a local debility of circulation, so modified as to be just equal to the preserving life in a part, although inadequate to some of the purposes of healthy action. This peculiar measure of debility probably connects itself, as in many other cases, with a correspondent increase in the local irritability, and while the former of these

circumstances arrests the further deposit of ossific matter, the latter will materially hasten the absorption of that which is already laid down.

But how can the progressive wasting of a fragment of bone, not immediately connected with any soft parts, but merely in contact with a membrane, be accounted for? — It can only be regarded as a proof that the healthy surface of such membrane may, under certain circumstances, be capable of assuming the power of absorption.

Case 10.

Partial Absorption of the Parietal Bone, arising from a Blow on the Head.

A child at the age of nine months, playing near a flight of stairs, fell down, and was taken up at the bottom in a state of insensibility.

There was no wound upon the head; but on examination, there was a broad line parallel with the coronal suture, where the right parietal bone was depressed for the length of three inches, and the breadth of one inch. At this part, from the form of the depression, it was supposed that the head had struck against the edge of one of the stairs.

The medical gentleman who attended, directed leeches to be applied to the temples, the seat of the injury being kept cool with a saturnine lotion. The infant remained insensible for a considerable length of time. Within a fortnight after the accident, the mother thought she perceived the pulsations of the brain where the blow had been

received, and this in a little time became more decidedly manifest. The child improved, but slowly; and when, after some weeks, she had partially recovered some power of motion, it was perceived that the left side was completely paralytic. The insensibility remained, and for the first six weeks there were frequent attacks of convulsion.

Almost four months passed before the child was sufficiently restored to be observant of what passed around her; and long after this she remained exceedingly weak. She was in the third year of her age before she could stand unsupported; and even then, all the weight was evidently laid upon the right leg, the left having scarcely any power. Subsequent to this period her strength and health gradually improved, but at the age of four years the left side was still deficient, both in heat and strength, while the opening in the cranium remained undiminished. Upon laying the hand on the part, the pulsations of the brain were felt strong and distinct. The feel was much the same through the integuments, as if so much of the skull had been carefully taken out with a saw. The margin of the opening did not seem thickened, but felt smooth and equal.

The defect was not at this time attended with any material inconvenience, nor productive of pain. Whenever the child coughed or cried, the part became tense, so as to form an evident swelling: but in other respects she seemed to be pretty well recovered.

Cases very much resembling the above are not extremely uncommon: neither do they in every instance arise from an external cause, at least it cannot always be ascertained that they do. They generally do well; for at some future period the nutritious artery of the bone appears to recover its action, a renewed secretion of bone commences, and the deficient part is thus eventually made good. Upon this principle, cold lotions, and astringent applications, have been generally recommended as the best practice, adding to these, occasional and moderate frictions.

The following case is an instance in which absorption of bone was connected with ulceration.

Case 11.

*Partial Absorption of the Cranium, from a Wound.**

Joseph Crotchet, a middle-aged man, was admitted into Guy's Hospital, August 15, 1765, for a wound he had given himself on the superior part of the right side of the os frontis, near the coronal suture, with the broad point of a pick-axe, in lifting it up to dig gravel.

The man seemed perfectly well in all other respects, and upon the most careful examination, Mr. Warner could not perceive any fracture, nor the least depression of the cranium; and, though he paid the most assiduous attention to the patient for seven weeks, not the least symptom of an injured brain appeared. The wound had however

* Extracted from a MS. of the late Mr. Watson's, in Mr. Heaviside's possession.

of late become somewhat larger, and more unhealthy, and now a little matter was discovered to ooze out (especially upon coughing), through a few exceedingly small openings in the skull. Upon this intimation, a pretty large circular piece of the scalp was removed by incision from around the part first affected, and the trepan was immediately applied on two contiguous portions of the cranium, through which however but little matter was discharged.

After the operation, every circumstance seemed to promise success for about three weeks, when the discharge from within the skull began to increase, and continued to do so every day. Matter likewise formed externally, and spreading, separated a good deal of scalp from the skull, both on the right and left side of the head. The matter was let out as soon as discovered, and the further progress of the suppuration it was endeavoured to obviate by pressure and bandage.

Notwithstanding these measures the suppuration went on spreading, and detached the greater part of the integuments, so as to render it fruitless to make any more openings. One abscess in particular formed near the right eye, swelling it up. This gathering was poulticed, and in a few days opened. Another upon the occiput was opened a few days afterwards.

In about ten days more he was seized with a very violent rigor, which held him full three hours, and on the third day afterward, he expired.

Examination.

Almost the whole of the scalp was found detached from the cranium. A very great part of the os frontis, and both the ossa parietalia, were deeply eroded, and in many places had large perforations through both tables, besides a multitude of pin-holes, some larger, others smaller, and some more superficial than others. Nearly the whole of the coronal suture, as well as above two inches of the sagittal, were separated, by a partial destruction of their serrated edges. The absorption upon the inside of the skull was nearly as extensive as that upon the outside, especially upon the anterior inferior part of the right side, where a considerable portion of bone was entirely gone.

The only very remarkable cases of malformation of the bones of the face that have yet fallen under my notice, are two in number. They were nearly similar in external character and appearance, although, as I believe, derived from different causes.

Case 12.

Malformation of the Bones of the Face.

A lady who had borne several healthy children, was safely delivered of an infant son, but the child was so shockingly deformed upon the face, that it was considered improper to allow of the mother's seeing him. The infant was therefore immediately taken away, and sent to nurse.

An only son, and heir to a very large fortune, the unhappy state of this child proved a source of great anxiety and distress to the parents.

When the infant was about a month old, it was determined to take the opinion of one of the most eminent surgeons in London, who was accordingly requested to go down into the country and see the child. On examination, the deformity was found to consist in a double hare-lip, a corresponding division of the palate bones along the middle line in the roof of the mouth, together with a considerable portion of bone continued from the anterior part of the septum of the nose, and projected forward far beyond the line of the alveolar processes of the superior maxillary bones. This projection of bone was covered on its superior surface with a small slip of skin, attached to the tip of the nose, which slip would have hung pendulous, but for the projection of the jaw thrusting it upward.

It was recommended that the child should wait till he was three years old; at which period he was brought up to London. The extremity of the projecting part of the jaw was now considerably broad, and had three incisor teeth growing out from it.

The first operation consisted in dissecting back the central slip of integument attached to the nose, and then removing the projected part of the jaw with the assistance of a fine saw, so as to allow the central slip of integument to fall into its more natural position, and bring the external appearance of the face into the state of a double hare-lip merely. The operation succeeded extremely well,

and was productive of very little inflammation. The next year the common hare-lip operation was performed, by which one side was united with the central slip; and the following season I assisted at the remaining operation, which succeeded perfectly.

This young gentleman has now reached the age of nineteen years. He is a very fine youth, and in company it would scarcely be observed that there ever had been any defect in the form of his mouth.

Not having yet reached his twentieth year, the setting in an artificial palate has been postponed; in consequence of which circumstance, his expression in speaking is still somewhat indistinct.

Case 13.

Malformation of the Bones of the Face.

In the year 1812, I was desired to see the infant son of a Mr. W., a child of two years old, and to state my opinion, whether any operation in surgery could be performed for the removal of a very frightful deformity of the face, which had existed from birth.

On examination, the state of this child's mouth was remarkably similar to that in the case just related. The only difference was in the number of teeth growing from the projected part of the jaw; in this there were only two, in that there were three.

The mother of the child said she had already consulted two medical gentlemen, and that one of them had given her no hope of its being capable of relief by any safe means; while the other stated that

no opinion at all could be given till the child was twenty years old.

In May, 1814, I performed the first operation. The septum narium, where it was connected with the projected piece of bone, had become firmly ossified, and possessed a thickness and strength quite unusual in its natural state*. The central slip of integument was first dissected carefully back. A fine steel saw, with a narrow well-tempered blade, was then applied above at the root of the projecting portion of jaw, and the bone was sawn through perpendicularly. The saw cut extremely well, and worked freely, but the texture of the bone was much more compact than might have been expected.

A medullary artery of the bone threw forth a very free jet of blood for some time, but it spontaneously ceased on exposure to the air.

It appeared rather desirable that the posterior part of the central slip should, if possible, be made to unite with the divided surface of the bone. With this intention, the parts were carefully brought together, and retained by narrow transverse slips of

* PLATE 2. *Fig.* 2. Shews the appearance of the profile, previous to the first operation being performed.

a. The projecting portion of the jaw, covered with an integument similar to the lining of the roof of the mouth.

b. The two incisor teeth.

c. The margin of the fissure towards the left side of the lip, continuous with the nostril of the same side.

d. A part of the corresponding line upon the right side of the lip.

e. The central slip of integument, that, upon the removal of the projecting piece of jaw *a*, became pendulous, so as to occupy the space between *c* and *d*.

adhesive plaster, covered with a light bandage. By the next day, however, the central slip of integuments had become tumid from inflammation; and as in swelling it had increased materially in breadth and thickness, it had in the same proportion decreased in length, so as to be considerably shortened. Under these circumstances, the confinement of the parts had nearly frustrated one of the principal objects of the operation. The central slip had shifted from behind the dressings, although still somewhat confined by the upper edge of the slips of adhesive plaster. In this wrong situation it had already formed an union by the first intention, in a position nearly horizontal; and had this union been allowed to become confirmed, there would have been in effect no central slip to look to for assistance in the remaining operations.

These points being sufficiently apparent, I immediately removed the bandage and plasters, and then gently pressing the central slip between my finger and thumb, gave it a sufficient degree of motion laterally to disengage it from its recent adhesions. A little bleeding followed. Merely for the sake of protecting it from external harm, a very light bandage was so adjusted round the head and face as to cover the parts, without being even in contact with the central slip, which it was very clear had better be left to itself.

For about ten days the divided end of the bone looked dark and foul, but within a fortnight it became clean, was covered with granulations, and soon after perfectly healed.

In June 1815, I performed the operation for hare-lip on the right side. Two pins were passed, and the operation succeeded perfectly. The child soon afterwards left town for the season, preparatory to the uniting the remaining fissure in the lip. In the September following I performed the operation for the remaining division of the lip, which also united extremely well.

Sect. II.

On some of the affections of the brain and its membranes.

Case 14.

Effusion of Blood upon the Surface and into the Substance of the Brain.

A. G., a young woman aged 22, had for nearly two years been a great sufferer from rheumatic complaints. Her limbs were occasionally affected, but the principal seat of the disorder was in her head. It was productive of the most violent pains in the head, and very frequently delirium. In one of these attacks the affection of the brain went on to so alarming an extent, that a temporary paralysis was the consequence. For several weeks she lost the use of her limbs. These complaints, however, were in time relieved by proper treatment, and in two months she was pretty well re-established in her powers of voluntary motion.

In January 1810 she left her friends, and walked

to London from Kensington. The weather was at the time mild, and finding her head very poorly, she loitered about the streets till the fall of evening, and when it was dark, sat down on the step of a door. About midnight a watchman spoke to her, and desired her to go away. She said she could not. Soon after this the watchman obliged her to get up, and, together with several other young women, she walked a considerable distance to the watch-house.

Here she remained for the rest of the night, sitting on a cold stone floor. Her companions repeatedly remonstrated with her, persuading her to come and sit by the fire, and take something to eat or drink, but to no purpose. She shook her head when urged to speak, and said she did not want any thing.

To those around her it appeared as if she was stupid from intoxication, although when much teased she spoke, and always gave a rational answer. During the night, when asked what ailed her, she said she had once, from a severe fit of illness, lost the use of her limbs, and that from her present feelings she feared this would now be the case again.

The morning following, with several other girls, she was taken before a magistrate, to give an account of herself. Those who then saw her could not help supposing her still under the influence of intoxication. Her companions, however, declared she had neither drank nor eat any thing the whole night through.

As nothing satisfactory could be made out, she

was brought back, and taken into the infirmary. Here she remained, much in the same state, from the Tuesday night, when she was first brought to the watch-house, to the Saturday evening following, when, notwithstanding every thing proper had been done for her relief, she expired.

From the first she had continued in a peculiarly dull, silent, stupid state, though not particularly disposed to sleep. When with much persuasion she was once prevailed on to take her medicine, she kept it on her stomach without difficulty.

She had always spoken rationally enough, but was observed to become gradually more and more dull and inattentive to what passed around her, from the hour she first came in, to that of her dissolution.

Examination.

Upon opening the head, the first appearance of disease was found within the dura mater. On raising that membrane, the pia mater appeared extremely vascular and red. The vessels, both as to number and magnitude, were amazingly increased. The most remarkable circumstance, however, in the state of the pia mater, was a degree of diffused extravasation of blood which had taken place. This appearance might be traced upon almost every part of the membrane, upon the basis as well as the lateral and superior parts of the cerebrum. The extravasated fluid had formed superficial coagula, corresponding to the sulci, between the convolutions of the brain.

This peculiar appearance of extravasation has

I believe, been very rarely observed. It had taken place very universally, and the effusion seemed not only to have arisen from the capillary arteries upon the external surface of the pia mater, but also from those processes of the membrane that dip down between the convolutions forming the tomentum cerebri. Several of these deeper-seated coagula were divided with the knife in the course of the dissection.

The particular extravasation, however, which in all probability had been the immediate cause of death, was distinct from the appearance just described. Paring away the superior portion of the right anterior lobe cerebri, a coagulum was found deposited in the central part of the medulla. Here a vessel had ruptured, and had poured out nearly an ounce of blood. The medullary coagulum was found in a gelatinous and almost fluid state, but the pia matral extravasation was in every part of a more dense, firm, and dry consistence. The apoplectic coagulum within the brain is comparatively common, but this peculiar and general affection of the capillary arteries of the pia mater, is, I believe, a very uncommon consequence of diseased action in the vessels in the brain.

Case 15.

Large Effusion of Blood into the Ventricles of the Brain.

A stout, robust man, 40 years of age, a coachman in General W.'s family, had been occasionally

subject to bleeding from the nose. In February 1811, he had a severe attack of this kind, and it was then suggested, that in all probability he might at some future period suffer more seriously, from the strong disposition that existed to fulness of blood in the head.

In January 1812, in mild dull weather, he was driving the carriage about noon, when he became suddenly ill, and would have fallen from the box, had not a fellow-servant been accidentally with him at the time, who caught him in his arms. He was taken into the nearest public house, where ten minutes afterwards I found him. He had been sick, and had thrown off the contents of his stomach. The matter vomited was watery, perfectly inoffensive, and quite free from any smell of liquor, although he had been used to drink very freely.

He remained altogether senseless; and although the pulse and breathing continued, the body had completely lost all muscular tone. His limbs were unable to support him, and his head, when the body was raised, fell down upon the breast.

The veins were uncommonly large. I opened one in the arm, and took away twenty-five ounces of blood. He was then lifted into a coach, and carried to St. George's Hospital. In the course of the afternoon he was again bled to a considerable extent. The jugular vein was first opened, but as it did not bleed sufficiently, the temporal artery was divided. A few hours afterwards the bandage was removed from the vein in the arm, which

had been opened immediately after the accident. By all these means he lost at least sixty ounces more of blood, but to no purpose.

During the first bleeding, he did once move his fingers and fore-arm a little, but subsequently he remained totally without sense or motion. At the first bleeding his pulse was at 60, in the course of a few hours it fell to 54, and 50. The following morning, 3 o'clock, he died.

Examination.

The pia matral vessels were found unusually turgid, and loaded with blood. In paring away the superior part of each hemisphere, distinct undulation, and great general distention of the lateral ventricles, were perceived, previous to these cavities being opened. A puncture was made into one of them, when fluid and coagulated blood poured out in considerable quantity. The ventricles were then laid open. The septum lucidum was so lacerated and broken up by the volume of the extravasated blood, that its remains were traced with difficulty. Both the lateral ventricles were reduced to one general cavity, all the parts of which had suffered equally by the effusion.

The grumous blood being removed, the surfaces of the corpora striata, and thalami nervi optici, were perceived to be disturbed. They were torn up, lacerated, and destroyed, to an extent that can hardly be described. From the appearance of these parts, it was very clear the arteries that had

given way were situated in the substance of the brain, immediately below the lateral ventricles.

Part of the effused blood had made its way down into the third, and even the fourth ventricle, and in both these cavities grumous and coagulated blood was found. Even beyond the fourth ventricle the blood had made its way to some distance down upon the surface of the medulla spinalis.

It is difficult to determine upon the probable quantity of blood, by which, in this instance, the brain had been overwhelmed. Those gentlemen who were present at the dissection, concurred in the opinion, that there could not have been less than from eight to ten ounces.

Case 16.*

Sanguineous Apoplexy.

A woman, about 40 years of age, and of a thin habit of body, fell down in an apoplectic fit. She was much bruised by the fall, and upon being raised up, was found to have entirely lost the use of her right side, which she never afterwards recovered.

She was soon after the accident taken to an hospital. Her eyes were very black, with extensive ecchymosis down both sides of her face, from the bruise received in falling. On examination, there was no wound upon the head. She was perfectly sensible, but had completely lost the use both of the arm and leg upon the right side. The power of directing the motions of the right eye also was much impaired.

* Extracted from a MS. in Mr. Heaviside's Museum.

She continued in this state above a fortnight, and then died, rather suddenly, upon being seized with a second fit. She had suffered much uneasiness of mind previous to her illness, and this seemed to have been the occasion of the first fit, for before this she had always been very healthy. In the treatment of her complaint, large blisters had been repeatedly applied to her head, arms, &c.

Examination.

On opening the head, the appearance of the surface of the cerebrum was natural. On making sections of the brain, a coagulum of pretty firm blood, of a black colour, was found lodged in the posterior lobe of the left hemisphere. This coagulum lay in the middle of the substance of the brain, in a cavity larger than was sufficient to contain it. This cavity seemed to have been formed in consequence of the wasting of the brain. In other parts the brain was of its usual texture and firmness, but for some depth around this cavity, the structure of the brain was remarkably soft and tender, so as to give way under the slightest impression. This cavity was equal in size to a small pullet's egg, and several little detached fragments of the brain lay loose around the coagulum, together with a serous fluid.

There was a considerable quantity of clear water in the ventricles, but nothing farther that was remarkable.

Case 17.

*Sanguineous Apoplexy.**

Mr. P. a gentleman between fifty and sixty years of age, of a corpulent habit, and sedentary employment, was attacked on the 30th of April 1814, about ten o'clock in the evening. He fell off from his chair, and was taken up senseless. On seeing him within a quarter of an hour he was still insensible. The pulse was slow, full, and hard. Twenty ounces of blood were immediately taken from the arm, and some very active purgatives given. After the bleeding, he in some degree recovered his power of speaking, and in the evening, when the purgatives had operated rather violently, he was sensible.

The repeated use of purgatives for twelve days enabled him to resume his occupation. On the 19th of the following June however he was again attacked, about the middle of the day. He was seen very soon afterward, and found completely senseless. Twenty ounces more of blood were taken from the arm, but with little apparent amendment. He was very actively purged; and in the evening a large blister was applied to the head.

On the 20th, the purging and depleting system was continued, and he lost thirty ounces more blood. On the 21st he appeared somewhat relieved, but on the 22d the stupor returned, and he was bled to the extent of twenty-four ounces, in the

* With the particulars of the following case, I was favoured by Mr. H. Fuller.

m orning, and lost twenty ounces of blood by cupping the same evening.

This seemed to afford some relief. He regained the power of speaking, and the motion of his right side. His speech getting worse, and his pulse becoming fuller, on the 23d he was again bled to eighteen ounces. By this his pulse became quiet, and he recovered his speech again. The left side however remained perfectly insensible.

On the 24th he was much the same, except that his pulse was rather weaker. Tonic purgatives were now substituted for the salines, with antimony, which had been previously given. He continued mending in a very slight degree till the 30th, when he suddenly began to get weaker. His stomach refused food, and on the 1st of July he again lost his speech. Volatile and stimulating medicines were now used to some extent. On the 4th he died.

Examination.

On opening the head there was not any particular appearance either upon the dura, or pia mater; but in the substance of the anterior lobe of the left hemisphere of the brain there was the remains of a coagulum of blood, which had been thrown out, and had probably produced the first attack. It was of a brown colour, nearly resembling rust of iron, and was in quantity equal to about five ounces. Immediately round this coagulum the brain appeared to be much firmer

than elsewhere, as if from the effect of pressure it had become more solid.

In the middle lobe of the right hemisphere a coagulum of blood was seen indistinctly shining through the substance of the brain. On opening this part a large coagulum was found, equal to at least six ounces. It was thrown out into the substance of the brain above the lateral ventricle.

On examining this coagulum, the edges, particularly at the posterior part, were beginning to assume the brown colour described above, and the brain in parts was putting on the same compressed appearance. The arteries at the base of the cranium were slightly diseased, but not ossified.

Case 18.

Repeated Effusions of Blood upon the Brain.

A labouring woman aged 56, sustained the shock of an apoplectic stroke, which deprived her of her senses for many hours. She however recovered the perfect use of her faculties, and was subsequently restored to a very good state of health. This took place in the year 1804.

In 1809 she had a second attack of the same nature, and was suddenly deprived of her senses, falling down in a state of stupefaction. From this attack also she partially recovered, but although, after some time, her memory was restored, she never again enjoyed the free and perfect use of her limbs. On the contrary, she was never after able to direct her steps with any tolerable precision, or even safety.

In December 1809, a few months after the second attack, she was afflicted a third time. She had just reached the top of a long flight of stone stairs, when she dropped, and fell from the top to the bottom. By this misfortune she received a very violent blow upon the right parietal bone, dividing the scalp, and exposing the cranium to some extent.

In a state of insensibility she was taken to an hospital, excessively restless, and constantly moaning. The head being shaved, the scalp was found very much bruised, with some degree of laceration. In order that the exact state of the bone might be more clearly ascertained, the integuments were freely divided by a crucial incision. From this examination it appeared that the skull was neither depressed, nor fractured. The pupil of each eye was observed to be in a state of contraction, which was neither altered by the approach of a bright light, nor the withdrawing it. The pulse was natural, about 76.

Sixteen ounces of blood were immediately taken from the arm, and a cathartic enema injected, as soon as it could be got ready; and thirty drops of the tincture of opium were ordered to be given in a draught in the evening. This woman's condition, during the night, was not exactly that of apoplexy, for she would frequently answer when spoken to, but spoke incoherently, and always as if impatient from pain.

The following morning the account was very

unpromising. There had been considerable hæmorrhage from the mouth, nose, and ears. The injection had returned, soon after being thrown up, without seeming to have produced much action in the bowels. In other respects she was much the same, being still quite incapable of answering any question rationally. She seemed disposed to lie quiet, as if asleep, yet would instantly open her eyes on being spoken to, but without seeming to understand what was said.

In this state she remained, without taking either medicine, or nourishment of any consequence, for five days, the pulse throughout continuing to be natural. On the expiration of the fifth day, she died.

Examination.

The scalp being turned back, the cranium was found free from fracture. Upon raising the upper part of the skull, an extensive mass of coagulated blood, of a firm, condensed, leathery consistence, was found lying within the cavity of the cranium, but upon the outside of the dura mater. This mass, in extent as well as situation, corresponded with the temporal space upon the right side of the head, extending downward quite to the basis of the cranium. This blood had nothing of the scarlet or purple colour of blood recently coagulated, but was of a reddish-brown, or chocolate colour.

The dura mater being raised, and a division made at the anterior extremity of the falciform process, in order that the membrane might be with more freedom turned back, the whole of the surface of

the left hemisphere of the brain and pia mater was discovered bathed in blood, partly fluid, and partly grumous. The hemisphere on the opposite side was entirely free from this appearance. On the surface of the right hemisphere, the pia mater was in many places separated from the arachnoid membrane by the interposition of a serous fluid, not in any considerable quantity, but sufficient to shew the tendency to lymphatic effusion.

The extravasation of blood was, on further examination, found to have universally diffused itself over every part of the cerebellum, as well as cerebrum, upon the left side. Perhaps the quantity of blood thrown out by the more recent effusion, might have been in the whole equal to three or four ounces.

On opening the lateral ventricles, the plexus choroides bore some traces of disease. Several little tumors, resembling small hydatids, were found in each plexus, towards that portion situated within the descending horn of the ventricle.

The left side of the basis of the cranium could scarcely be seen, from the quantity of effused blood that remained after the lobes of the brain were removed.

The branches of the internal carotid arteries were in several places considerably ossified. The medulla oblongata and medulla spinalis were taken out, and the only remarkable appearance found in this part, related to the left vertebral artery. This vessel, at the point where it emerges from its canal in the occipital bone, had become so enlarged as to be almost

double its natural diameter; but the alteration in its texture was more remarkable than even that of its size, the coats of the vessel being thinner than natural, and of a rigid feel, like dried parchment. The enlargement of this artery extended in some degree as far upwards as its junction with the vertebral artery on the opposite side.

It may, in this case, be reasonably considered, that although the third attack, together with the accidental fall that was connected with it, had proved fatal, by the pouring out of the large quantity of blood found in a fresh and fluid state on dissection, yet the coagulum within the right temple was the consequence of the second attack. Under these circumstances we see then, that the brain had been, from the effusion of blood in the first instance, overpowered, and its functions suspended; but that with the assistance of the measures adopted for its relief, the circulating volume of blood by slow degrees subsided into a smaller compass, so that even with this mass of blood intruding into the space occupied formerly by the brain alone, there was an almost perfect restoration of the mental faculties, although the decision and force of the voluntary powers were not fully re-established.

Case 19.

Large Effusion of Blood into the Substance of the Cerebrum.

A robust woman, about forty years of age, had been for some years cook in a private family. In the winter season she was employed in the kitchen, and, while exerting herself to lift a weight,

fell down in a state of insensibility. She was supposed to have been in that condition some time, when a person, accidentally coming in, found her. She was carried to bed, continued in the same state for some hours, and then expired. While insensible, she lay as if asleep; respiration unattended with stertor; the pulse small, beating 100. She now and then seemed to be not altogether senseless, for, when spoken to, she had made several attempts to reply, in which however she failed. She once had swallowed a little of the medicine prepared for her.

This woman had apparently been in good health for several years before; but latterly had always after dinner been prone to sleep. She was of a sedentary habit, and fond of reading.

Examination.

Upon opening the head, the vessels of the pia mater were very large, turgid, and exceedingly numerous.

In paring away the superior part of each hemisphere, the substance of the brain was found more firm in its texture than usual. The lateral ventricle upon the right side being opened, a serous fluid ran out by the puncture. This serum was tinged with blood. The plexus choroides was converted into a vesiculated structure, somewhat resembling a congeries of hydatids.

The blood was proved to have passed through an opening from the left ventricle; as a small coagulum was found arrested in its passage through

the rupture in the septum lucidum. Within the left lateral ventricle, a larger quantity of serous contents, and a larger proportion of red blood were found, than had been observed in the right. The plexus choroides had the same appearance in this, as in the other ventricle.

The fluid having been allowed to run off, the left corpus striatum appeared very tumid and much darker in its colour than natural. In two points it was lacerated, and small coagula of blood were found entangled in the openings.

The striated substance of this part of the brain was then dissected away; and beneath, very near its surface, was found a large mass of coagulated blood. The quantity of this extravasation was at least equal to four ounces, the whole of which had been effused into the medullary substance of the brain; extending itself into the anterior and posterior lobes of the left hemisphere of the cerebrum.

The internal carotid arteries were in some parts becoming opaque, although they were not found ossified.

The present state of our knowledge has ascertained, that the offices and uses of the medulla oblongata and the medulla spinalis are of so essential a nature, that although the superior parts of the brain will endure pressure to a considerable extent, the medulla oblongata, or medulla spinalis, cannot, in general, bear the least intrusion into the space set apart for them; for an extravasation of blood, even to the smallest possible extent, has

almost constantly proved fatal. The progress of the present dissection, however, afforded an unquestionable proof that sometimes the medulla oblongata will bear pressure, and that to an extent which, reasoning by comparison, must be esteemed pretty considerable.

The medulla oblongata was taken out for examination, and this led to the discovery that the vertebral arteries had become aneurismal. The dilated part of each of these vessels was altered in its texture, and to the feel was harder and less elastic than the healthy portion of the artery. These tumors were as large as full-grown grapes, and must have been productive of considerable pressure upon the medulla, and this might have been expected to have produced symptoms from pressure some months before. The woman, however, never complained of any defective power in her limbs, or any deficiency in her general state of health, till she was suddenly overwhelmed by that effusion of blood upon the brain which proved fatal.

Case 20.

Effusion of Blood into the Medulla Oblongata.

J. M. an old man 85 years of age, was apparently well in health on Sunday, February the 4th, 1810. In the night following he got out of bed to make water. A person who lay near him, being awake, enquired what he was about; to this he replied, he only wanted to find the chamber-pot. The words were no sooner out of his mouth, than he

fell suddenly over the bedstead with his head to the floor, which he struck with great violence.

Assistance being called for, he was raised up and laid in bed, in a state of insensibility, but breathing with apparent freedom, as if in a light sleep.

The next morning the pulse was full and hard, beating 92 in the minute. The respiration was rather heavy, and in some degree laborious; but there was no stertor. The eye-lids were closed, and the jaw was relaxing. On the following day, (Tuesday,) the respiration was attended with increased difficulty and labour, with some stertor. The jaw was more fallen, and the pulse slower than before, but still very full and hard. In the evening he expired.

Examination.

The head being opened, the vessels of the pia mater were found extremely turgid with blood, but did not appear to have given way at any external point. In making sections of the brain, the cortical substance was observed to be darker than usual; and on attentive examination of these sections, a peculiar appearance, certainly arising from some disease in the capillary vessels, was perceived. Wherever the brain was divided, this appearance was found, but in the cortical substance only. It resembled very much the appearance of petechiæ, or that of flea bites, upon the skin. From the apparent correspondence of these appearances, with the known situation and distribution of the ar-

teries in the cortical substance of the brain, it was concluded, that it most probably had arisen from some alteration in the structure, or action of the capillary vessels, by which a portion of the colouring matter of the blood, just sufficient to leave a stain round the circumference of the vessel, had been allowed to escape, without proceeding to any more obvious degree of extravasation.

The lateral ventricle on the right side was in its natural state, and contained only the usual quantity of fluid. On the left, however, the appearance was widely different; the quantity of lymph deposited in this ventricle was equal to an ounce and an half, or two ounces.

The cornua of the ventricle had suffered considerable distension from the accumulation of fluid, the discharge of which was not, as on the other side, followed by a collapsed state of the ventricle. The appearance, after the fluid had run off, was that of a large vaulted passage, or tube, which to the eye gave a bold and remarkable impression. The whole space retained the exact form into which the uniform pressure of the contained fluid had moulded it.

In the ventricle, on each side, the plexus choroides was pale, and contained several small soft tumors, that were extremely vascular.

Upon examining various sections of the cerebellum, its structure was in every respect perfectly natural, so that whatever might be the nature of the peculiar appearance in the cortical substance

of the cerebrum, that of the cerebellum had not undergone a similar change.

Removing that portion of the cerebellum, which forms the posterior part of the fourth ventricle, several small coagula of blood were observed, lying upon the opposite side of the ventricle, on the posterior surface of the medulla oblongata. To ascertain the precise extent of this extravasation, the medulla oblongata was removed from its situation, and divided by a vertical section, carried from behind, forward. This section exhibited several thin strata of blood, approaching to a state of coagulation.

The disposition of these extrasavations of blood was remarkable. Many circumstances in the anatomy of the brain favor the idea that the medulla oblongata is made up of a congeries of longitudinal fibres. This appears evidently the case, when some parts of its surface are observed with attention. On this supposition, however, it is not easy to understand upon what principle the blood escaping from its vessels could have disposed itself, as it was found in this case.

Where the blood is poured out into a muscular structure, it is known to separate, but very rarely if ever to rupture, the fibres, and the same rule might be expected, in some degree at least, to apply to other fibrous matter ; but should it, on the other hand, be taken for granted, that the medulla is merely a soft elastic matter, formed without any particular or essential arrangement of its particles,

even then effusion of blood into its substance should, as happens most commonly in the brain, assume the form of a mass more or less solid; but in the present instance there were several very thin strata of blood, all disposed parallel to each other, and transversely to the direction of the longitudinal fibres, supposing such to exist.

The coagula were deposited at some small distance from each other, not exactly in a line, but so that estimating the probable effect of the whole, it would be that most likely to produce a complete suspension of the functions of the medulla, considering it as the medium of connection between the brain, and the other parts of the body.

The larger arteries of the brain were all, more or less extensively ossified.

Upon laying open the cavity of the chest, the heart was found in a very diseased state. The tendinous margin round the insertion of each auricle was converted into a firm mass of bone. The two great coronary arteries of the heart were, from their origin behind the valves of the aorta, nearly down to the apex of the heart, completely ossified. The semilunar valves, at the mouth of the aorta, were much enlarged, and changed from their natural figure by the deposition of ossific matter within the margin of their attachment to the sides of the artery.

The whole extent of the arch of the aorta was enlarged to double its natural size, and completely diseased. The inner membrane was deprived of its natural smooth structure by the progress of os-

sification, which had advanced to a very considerable extent.

On a particular examination of the internal surface of the artery, many of the ossified masses were found raised into irregular projections, intruding into the cavity of the vessel. The general appearance however, was that of irregular patches of ossific matter, deposited between the middle coat of the artery, and the inner membrane. From the surface of several of those ossifications that projected into the cavity of the artery, the internal membranous lining had been removed; this had probably arisen from the irritation of the ossific deposit having produced an increased activity in the absorbents. Another obvious effect of irritation, produced by these masses of bone upon the coats of the artery, appeared on applying a gentle pressure to several of them, upon which globules of pus, some of them very large, were seen to start out from beneath. Some of the scales were found to be by this means nearly detached from their situation.

Effusion of blood either into, or upon, some part of the brain, is, I think, in about nine cases out of ten, the exciting cause of apoplexy. Effusion of lymph, or serous fluid upon the surface of the brain in adults, is, generally speaking, more apt to connect itself with violent headach, or in its more advanced stages, convulsion. Where extreme severity of pain in the head has preceded an attack

of paralysis, the case is more hopeless, than where the palsy has come on unaccompanied with that symptom. For where no pain has been felt in the head, or only a temporary sense of giddiness, the probability is that the paralytic affection may be the result of a mere effusion of blood upon the brain, an accident to which we occasionally find the brain able to acommodate itself, so that with the assistance of proper treatment, the functions of the nervous system are restored, and the patient more or less perfectly recovers. When however violent pains in the head have been the precursors of the attack, there is great reason to dread the existence of inflammation of the membranes of the brain, connecting itself with effusion either of serum, or pus, neither of which events, when dependant upon an internal cause, have ever yet been proved by subsequent dissection, to be compatible with the recovery of the patient.

One of the most extraordinary instances of what even the brain will sometimes bear in the way of injury and pressure from effused blood, is said to have occurred in the late Mr. —— the most famous comedian of his day, who two years before his death had a fit of apoplexy, in consequence of which he partially lost the use of his left side, but in a few months recovered sufficiently to return to the stage, and to command the admiration of the audience, to as unlimited an extent as ever. He continued performing until he suffered the second attack, which proved fatal.

On examination of the head, the seat of the first

injury was readily discovered. An apoplectic cyst was found extending the whole length of the right hemisphere of the brain, which measured in breadth near two inches in one direction, and one in the other. The coagulum formed by the last attack was comparatively small.

Sect. 3.

On Pain in the Head.

Pain in the head may arise from so many various causes, that it requires a close attention to the history and circumstances in order to determine, in certain cases, upon what ground, as a disease, it should be taken up.

Where these affections depend on a corporeal cause, much may be frequently done for their removal, or they may be entirely cured; but where they arise from a mental impression, very little can in general be achieved either by medicine or surgery for their relief; although, I am disposed to believe, that the principle on which they should be treated is pretty well made out.

Where general plethora operates as a cause, it will speak for itself; where local plethora exists pretty manifestly, here also the case is sufficiently clear to enable the practitioner to decide upon it at once. But where, on the other hand, this tendency is strongly disposed to hide itself as it were, within the head, it is sometimes ascertained with the greatest difficulty; notwithstanding which, it is in these very

cases that the greatest promptitude, and decision, may be required.

Congestion in the head, with its worst effects, extravasation of blood, inflammation, and effusion, are all particularly apt to arise from affections of the mind. To explain this fact we must consider that the brain is the immediate seat of mental perception and feeling, upon which account it is not at all surprising that it should be most quickly and powerfully subject to the influence of the depressing passions, and as these affections operate by diminishing the energy of the circulation through the whole body, it is natural to expect that the brain should be liable to suffer more immediately and severely, in these complaints, than other parts of the machine; and that this is the case is a truth which every day's experience tends to confirm.

Case 21.

Severe Pain in the Head.

A middle aged married lady, of robust habit of body, had been long exposed to distresses of various kinds in her family. These circumstances were of such importance, that they frequently weighed heavily upon her spirits, and slowly undermined her constitution. In the progress of time her bodily health gave way, she became weak and nervous, and extremely subject to severe pains in the back of her head. The pulse was excessively weak, and as to appetite she had none. In the violence of the attack, the pain was distractingly severe, shooting through the head, and giving her the

idea that she could not possibly live. The most moderate degree of light, or the slightest sound, increased her distress.

To relieve this complaint, a very large blister was applied to the neck, a full dose of calomel, scammony and gamboge was given, and a very spare diet enjoined. This plan almost immediately relieved the complaint, and in a few days effectually removed the disorder.

The same lady in subsequent attacks, always experienced relief, by having recourse to the above measures.

Numberless cases that occur in practice, may be fairly considered as parallel to that just related. Cases in which, from incidental circumstances, the spirits labour under more or less of permanent depression, inducing a sluggish and inactive circulation through the brain; and consequently impairing the nervous and mental energy in general. This effect soon establishes its influence as a cause, and operates by aggravating the complaint that gave it birth. The bodily health sinking, the strength of mind giving way, the patient must of necessity feel less capable of shaking off the influence of his mental distresses, than before; and while there is scarcely the least perceptible pulse at the wrist, with a circulation apparently drained, and physical powers totally exhausted, the head and brain shall be overwhelmed with blood, and the urgency of symptoms require the most

prompt and decided depletion, notwithstanding the pale skin, and already exhausted constitution; and such is the reciprocal influence of body and mind upon each other, that the most careful promptitude shall sometimes prove too late, and every possible vigilance fail in the attempt to save life, unless the mind is relieved in time from the load by which it was originally overpowered.

Case 22.

Severe Pains in the Head, followed by Serous Effusion.

Miss C. a single lady, of fair complexion, and tall stature, thirty-five years of age, always punctual and regular in her menstrual health, had for six or seven years been subject to an uneasy sense of fulness and oppression about the head, sometimes attended with pain and giddiness.

For these complaints, she was in the habit of being occasionally blooded, and for several years, had lost six or eight ounces of blood, every three, four, or six weeks, according to the severity of her head ach. This treatment always procured temporary relief, but circumstances conspired to favour the continuance of the disorder. About the period of its commencement, she was said to have suffered a disappointment, in a matter, which was of the highest concern to her future happiness in life; besides which misfortune, her family were more or less at variance with her, and her subsequent removal from her father's house only served to widen the breach, and increase the frequency of the fits

of low spirits, to which she was now obviously falling a prey.

At one period she was reduced to a state that was completely dropsical, from the frequency with which she insisted upon having blood taken away, to relieve her head. Her limbs became swelled with anasarca. By adopting a change of measures, however, these consequences of extreme debility were removed.

The necessity for this frequency of bleeding, was considered the more remarkable, because her habits were known to be constantly those of extreme temperance.

In January 1813, she had been very low, and had for some days, suffered greatly from the pain in her head. On the Sunday she attended church, but on returning home, said she was very ill, and wished very much to lose some blood. In retiring to her chamber, she told her waiting maid, that she had a severe pain at her heart, and about the shoulders, and that she was persuaded, from the strangeness of her sensations, she was struck with death. She lay down upon the bed, to compose herself; and her attendants were struck with astonishment and terror, on finding, soon afterward, that she was not asleep, but dead.

The apothecary in attendance, had been with all haste sent for, but came too late. As, however, it appeared proper to at least attempt something, he opened a vein in the arm; but no blood followed.

Examination.

Upon opening the head, all that I could observe was an excessive fulness of the vessels in general, both arteries and veins, upon the pia mater; and also a certain degree of serous effusion under the tunica arachnoidea, between the convolutions of the brain. The quantity of this serous fluid was altogether, I think, about equal to an ounce.

The whole of the brain was examined with attention, but the structure appeared to be perfectly sound.

In the ventricles there was no accumulation of fluid whatever.

In the thorax the appearances were those of health; nor were there any traces of disease to be found about the viscera of the abdomen.

CASE 23.

Severe Pain in the Head, ending in Effusion of Pus and Lymph upon the Brain.

Mrs. J., a married lady, 53 years of age, had for many years met with little else than misfortunes, in her family and circumstances. She had for years been subject to more or less pain in her head, which she believed to be of a rheumatic nature, having formerly suffered much from rheumatism. Latterly, for several months, she had a most severe pain, not confined to any one spot, but extending itself pretty equally over every part of the head. The recollection of the declining prosperity of her family had withheld her from apply-

ing for professional assistance until within a few days of her death. Her complaint at this time was an extreme and excruciating severity of pain in the head, often producing temporary confusion of mind, and sometimes low wandering delirium. The skin was hot and dry, the tongue white, and the pulse very quick, and rather hard, but small. There was no direct paralytic affection, yet the motions of the limbs were not performed with the same prompt decision, as in health. A large blister was immediately applied to the neck, and some aperient medicines given; sixteen ounces of blood also were taken from the arm.

The following day she thought the pain in her head rather better. The medicine had operated upon the bowels. In other respects the symptoms remained. The pulse being extremely small, a second bleeding was considered unadviseable till other means had failed of success. Saline, and diaphoretic medicines, therefore, were directed, for the present. She now complained of a great sense of coldness, which was compared to cold water pouring upon her head. This sensation extended itself from the crown of the head down the neck and back; and as the disease proceeded towards its close, this nervous sensation became more and more frequent and distressing to her. This poor woman continued to decline for several days more, the feverish symptoms assuming a typhoid character; she then gradually sunk into a comatose state, and expired.

Examination.

On opening the head, the vessels upon the dura mater were unusually distended with blood. The dura mater was next separated, and laid aside, when a very excessive, and general effusion between the arachnoide membrane and the pia mater was brought into view. The deposit was principally coagulable lymph, with a small proportion of serous fluid. The spaces between the convolutions of the brain, were filled up with a yellowish and curdly purulent matter.

The inflammation and effusion appeared to have been most considerable in the direction of the longitudinal sinus. The general structure of the brain was sound. In the lateral ventricles the only morbid appearance was upon the plexus choroides. The vessels of this membranous expansion had effused a considerable quantity of coagulable lymph, that was found in a flocculent state, together with the yellow puriform fluid. The same appearances were detected in the third, and the fourth ventricles. The traces of inflammation became even more obvious, as the examination was continued towards the basis of the brain. Upon tracing the medulla spinalis, where it passes down into the neck, it appeared to be completely involved in a copious secretion of the same sort of curdly purulent matter just described.

About the basis of the brain, in general, the inflammation had been more considerable, and the de-

posit of purulent and coagulable matter was more abundant than had been observed upon the superior parts of the cerebrum.

Case 24.

Severe Pains in the Head, followed by Effusion upon the Brain.

Miss M. C., a lady 22 years of age, was attacked with pain in her side, and other symptoms, attributed to an affection of the liver, in October 1810. These were treated mildly, and she seemed relieved. In January 1811, she was seized with a violent complaint in her head, while on a visit to a friend. The pain was severe beyond description, and attended with intolerance of light and sound. In the course of this attack she lost the power of moving the left leg and arm. This power, however, slowly returned again; but her arm continued to remain so extremely painful, as to be almost useless. In the course of the treatment she lost blood from the arm, was blistered, leeched, cupped, and purged, without any of these means appearing to check the severity of the distracting pain in the head, which frequently alternated with delirium.

In the beginning of April, she was removed to her own home. The pain in her head, although somewhat relieved, was still severe, and now and then connected with acute pains in the neck and back. A very large blister was applied to the neck, and a copious discharge afterwards kept up with the savine ointment. This however gave no relief

whatever to her complaints. On the twelfth of April, she first complained of difficulty, and soon after of a total inability, to pass her water. From this time the water was drawn off regularly. Her pulse was equal, and pretty good, it beat from 80 to 84 in the minute, but was neither full nor hard. She complained constantly of heat and thirst, but occasionally took light nourishment. Although generally restlesss, she even at this time got five or six hours sleep during the night.

Soon after losing the power of voiding her urine, she complained of a severe and violent throbbing pain about the back and kidnies. This proved a frequent distress to her. In the course of the third week in April, she frequently complained of an insupportable pain between her breast, and the small of the back; and also a pain between the shoulders, which felt as if they were forcibly drawn together. The blister, after being kept open a fortnight, as it seemed perfectly useless, and only appeared to increase the list of evils, was allowed to heal. During the last week of April she was in such horrible and agonizing pain in her head, neck, arms, and body, that to move either hand or foot, was insupportable pain. This lady continued to get worse every hour, till the second day of May, when she died.

Examination.

On opening the head, a considerable and general serous effusion was found, separating the tunica arachnoidea from the pia mater. On several parts of the surface of the brain coagulable lymph also

had been thrown out, forming small flocculent patches. Within the ventricles there was about an ounce of effused serum, mingled with a yellow purulent matter, and shreds of coagulable lymph. On examination, the lateral and inferior parts of the surface of the cerebrum were found to exhibit the same appearances, noticed on the superior part of the brain.

Upon raising the cerebellum and medulla oblongata, the anterior surface of the latter was so loaded with effused lymph and purulent matter, that the basillary artery, for the space of an inch, was quite enveloped and hid from the view. This effusion was in appearance, the same with that poured out upon the upper parts of the brain, and seemed to be principally deposited in the cellular space between the arachnoid membrane and pia mater.

By examining a section of the medulla spinalis, divided as low down as possible from the cavity of the cranium, the inflammation of the membranes of the medulla, and the consequent effusion were found to have taken place there to at least the same extent as higher up. From the appearances on dissection, therefore, considered with the symptoms preceding death, I have not the least doubt that the inflammation and its consequences, had extended down the principal part of the theca vertebralis, if not the whole of it. Unfortunately, however, circumstances prevented the further prosecution of this part of the dissection.

In the chest, there was no trace of disease; and

on examination of the abdomen all the viscera were sound, with the exception of the gall bladder, which appeared to have suffered inflammation. Within the cavity of the gall bladder were found several biliary calculi, one of which had reached the size of a hazel nut.

Case 25.

Long continued Pain in the Head, terminating in Effusion upon the Brain.

A middle aged married lady, whose husband had involved her own brother in very great distress by a series of misconduct, became dejected in spirits, and exceedingly unhappy, and in the course of a few months entirely lost her appetite and health. She complained principally of constant pain in her head, which complaint continued to increase upon her for many weeks. In this unfortunate state she was suddenly seized with a fit of convulsion, which, after a time, gave place to a comatose sleep.

Some hours after the first attack, a second epileptic paroxysm came on, and again left her in a comatose state. This alternation continued, without her shewing any sign of returning sensibility for the space of nine days, when she died.

Examination.

On opening the head, a considerable serous effusion was found between the tunica arachnoides and pia mater. This effusion had taken place to the extent of about two ounces. Here and there the

arachnoide membrane between the convolutions of the brain was also speckled with small spots of white opacity.

Within the ventricles there was a very small accumulation of fluid; to explain the coma and convulsion, which had latterly existed, it seemed necessary to take into account the general congestion in the vascular system of the brain.

The structure of the brain was examined throughout, without any other appearance of disease being found.

I have attended to, and dissected, one instance of pure hydrocephalus externus in an adult, that took place at the close of a tedious and distressing case of hip disease. It appeared to establish itself, on this occasion, very suddenly indeed, for the first circumstance that could lead to a suspicion of its presence, was the patient being seized with a fit of convulsion. Indeed, even after the convulsion had supervened, in the intervals of sensibility, the patient assured me that he had no pain whatever, in his head; nothing beyond a sense of lightness, and an uncomfortable feel. But as this event took place as the sequel to a disease of a different nature, the particular account of it may perhaps, with more propriety, be given with the case itself.*

Effusion upon the surface of the brain seems to me a disease of adults, while effusion into the ven-

* See Case 104.

tricles appears to belong more particularly to infancy and childhood. Exceptions however, to this rule, sometimes occur.

Hydrocephalus internus is one of the most common, among the fatal disorders of infancy. But the relation of cases of this disease is not materially important, for there is no single symptom, which can be absolutely relied upon. Even the common assemblage of symptoms frequently attend in cases, which by their mode of termination demonstrate, that they never had any thing to do with the complaint for which they were mistaken.

The quantity of pressure the brain will sometimes bear from the effusion of water, very far exceeds what we ever find it capable of enduring under an extravasation of blood. This may be explained partly by the more favorable state of the surrounding parts in infancy, for yielding to pressure from within, and partly by the more gradual increase of the pressure in aqueous, than in sanguineous effusion. In the following instance the disease had gone on to a very uncommon and even astonishing extent.

Case 26.

Hydrocephalus Internus.

John Spicer, a man twenty-five years of age, of stout make, but short, had an immense enlargement of the head. His appearance and manners were those of an ideot, but his faculties were, notwithstanding, in some respects, by no means deficient. His head, even at birth, had been observed

to be larger than natural, and before he was a twelvemonth old, it appeared too heavy for him to support.

He was extremely backward with his feet, and when between two and three years old, he fell down stairs, and from that time had been occasionally subject to fits of epileptic convulsion. At about seven years old, he had gone through the small pox, and hooping-cough, without either of these disorders appearing to affect the complaint in his head. At the age of fifteen years he was admitted into the workhouse of St. George's, Hanover Square, where he remained till his death. Subsequent to his admission, his fits became less frequent. A peculiar rotatory motion of his head, stooping it forward, and turning his face alternately from side to side, was a singular habit to which he was observed to be constantly addicted.

It is a curious circumstance, that he was perfectly conscious that there was water in his head, for he had often explained to his mother that he knew it, and that the almost continual motion in which he kept his head, prevented the water from giving him pain, which he said he frequently suffered when his head was at rest.

He used at a subsequent period of his life to say, that the reason he moved his head, was, that when he allowed it to remain still, " he found the water hurt him, and he could not see." The poor fellow had generally the power of giving a rational answer; and when asked how he did, would sometimes complain of pain in the head. When unwell, and less rational, he seemed rather

to prefer giving no answer at all, to the attempting what he was perhaps conscious he was unequal to.

His sight was generally perfect, his hearing always good, and his relish for food so sufficient, that he lived heartily, and died in good condition.

For several years before his death, he had been allowed the care of a large hand-bell, that was rung morning and noon, every day. His constant and strong attachment to this bell, frequently proved the source of much amusement to his companions.

He regularly took the bell to bed with him, and if he happened to wake rather too late in the morning, he would run down stairs in his shirt, in the coldest weather, to avoid losing the opportunity of ringing it. With a view to teaze him this bell had been repeatedly drawn away from him slily, while he was asleep. He never failed however, in discovering the real culprit, nor ever forgot the injury, as he considered it. In disposition indeed he was not without fault, being extremely vindictive, and spiteful, on the least occasion.

He died the 20th of June, 1810, without having suffered much from preceding illness. He had rung his bell as usual only two days before, and saying he was poorly, lay down, and kept his bed till he died. On the day of his death, he had several attacks of convulsion; in the last of these he expired.

Examination.

Before opening the head, it was measured with a tape; the greatest circumference was found to be 28 inches, and the distance across from the tip of the one ear to that of the other, 14 inches.

In raising the calvarium, the dura mater was so firmly adherent at the sutures that it was scarcely possible by any means to effect a separation without injury to the brain; some parts of this membrane that could not be detached, were therefore cut away with the bone.

The cranium itself was remarkably thick and heavy, although towards the vertex, it was in parts diaphanous. On the external surface the dura mater was found to be, in several places, diseased. Numerous scales of ossific matter were deposited between its external laminæ.

Upon raising, and laying back the dura mater, a thin vesicle or bladder, looking like a very large hydatid, was pressed up from between the two hemispheres of the brain. This appearance was situated exactly over where the corpus callosum is commonly found. By the unusual difficulty that had occurred in separating the upper part of the skull this vesicle had suffered injury, and a considerable quantity of watery fluid had escaped. On lightly pressing the external sides of either hemisphere, a copious stream of serum sprung forth from a large cavity within the brain.

What remained was now received in a vessel, as

it ran off; and it was afterwards measured. The quantity amounted to three full pints and an half. In proportion as the fluid was evacuated, the lateral parts, or parietes of the hemispheres collapsed, assuming the appearance of a large medullary cyst. When the whole quantity of the fluid was poured away, the cerebrum and cerebellum were carefully taken out, without experiencing any accident or injury.

The form and state of the brain had suffered so complete a change, that an accurate examination was almost impracticable, until it was immersed in proof spirit; by which means the whole of the large vaulted cavity was displayed, the sides being raised and supported by light hoops within, from which numerous silk threads, passing out through the substance of the brain, suspended the preparation.

The appearance first seen upon the brain, resembling so much the coat of an hydatid, proved to be the extenuated substance, and was all that remained of the corpus callosum. The characters still remaining upon various parts of the internal surface of this great cyst, proved evidently, that the accumulation of serum which first commenced in the natural cavities of the lateral ventricles, had by degrees made its way into the third and fourth ventricles; which cavities had been subjected to a slow change in their figure and other circumstances, as well as those parts which had primarily suffered from distention.

The ultimate result of this process was, that the

whole of the cerebrum was converted into an immense cyst, the parietes of which were in the thickest parts about three quarters, and in the thinnest three-eighths of an inch in thickness. The cerebellum was flattened by the pressure from above, and was consequently broader and thinner than natural.*

* PLATE 3. *Fig.* 1. Exhibits the exact apppearance of the brain, taken subsequent to its immersion in spirit, although represented on a very reduced scale.

a a a. The lacerated edges of the thin medullary expansion, looking like an hydatid, which, on laying back the dura mater, occupied in some measure the place of the corpus callosum, and was all that remained of that part of the brain, exceedingly expanded, and by the pressure of the subjacent fluid raised nearly to a level with the surface of the cerebrum.

b. The anterior part of the brain.

c c. The posterior lobes cerebri. The whole external surface of the brain had its convolutions exceedingly flattened, and in some parts nearly obliterated.

d d. The depressions within the general cavity, answering to the anterior horns of the lateral ventricles, or to the anterior lobes cerebri.

e e. Two other depressions, answering to the middle cornua of the lateral ventricles, or to the middle lobes cerebri; between which is seen what appears to be the remains of the third ventricle. Upon the internal surface, several ramifying veins are just perceptible from the dark blood shining through the thin medullary stratum forming the basis of the general cavity.

f f. The comparatively deep depressions answering to the posterior cornua of the lateral ventricles, or the posterior lobes cerebri.

The following case exhibits an instance, in which the functions of the brain remained perfect during the progress of a very extraordinary disease, that produced absorption of a part of the cranium, and also of a considerable quantity of the brain itself, without any correspondent affection of intellect whatever.

Case 27.

Absorption of Brain, from a Tumor external to it.

W. Robinson, a middle aged man, was admitted into St. George's Hospital, in 1815, for an affection of the left eye, the sight of which was much impaired, and eventually altogether lost. The progress of the disease was extremely painful, and as the most likely means for preventing worse consequences, he was advised to have the eye removed by an operation; to which proposal he consented.

The operation was performed April 17;* and on subsequent examination of the eye-ball, the whole of the vitreous humour was found converted into an opaque mass, in colour and consistence resembling grumous or coagulated blood. The globe of the eye was somewhat enlarged, but only in a trifling degree.

The wound went on well, and he was discharged from the hospital, to all appearance perfectly cured. Soon afterwards, however, he perceived the eyelids upon the affected side were becoming full,

* By Mr. Brodie.

and this change became every day more apparent. A similar kind of enlargement also made its appearance upon the cheek, below the orbit of the eye, and also upon the temple of the same side. In consequence of these circumstances, he obtained admission into the St. George's Infirmary.

The swellings, which were unattended with any uneasiness, except an occasional shooting or darting pain passing from the cavity of the orbit, apparently into the forehead, continued slowly to increase, so that towards the end of October, the swellings upon the face, were each of them equal in size to a large walnut; while that upon the temporal bone was as large as half an orange. Examination or pressure upon these tumors, excited no pain, they were to the feel soft and pulpy, without the least disposition to inflammation.

His complaints were productive of no constitutional disturbance of any kind, for his appetite and rest continued to be good, and he was perfectly free from fever or irritation. Little, therefore, was done. At one period the conium, combined with gentle mercurials, was recommended and tried, but it did nothing.

In this state he continued to decline, sometimes complaining that the shooting pains, in the seat of the disease, were more troublesome, and at others, saying, they were better, while the tumors continued to become larger, until the 30th of January 1816, when, after keeping his bed for a day, he died; having retained his faculties to the last, al-

though for a few days previous to his dissolution, he was observed to be less disposed to conversation than usual.

Examination.

The integuments of the face and head were first dissected off from the surface of the tumors. The swelling below the eye-lids had latterly increased so fast, that the skin in parts, had, from absorption, become extremely thin, and would soon have given way. The swelling upon the temporal bone, as had been suspected from its peculiar firm feel during life, was situated beneath the aponeurosis of the temporal muscle, the fleshy fibres of which, on subsequent examination, were to all appearance destroyed.

To ascertain the contents of the largest of the tumors, without entirely destroying its texture, a lancet was passed into it, when the tense state of the fascia expelled a part of the contents, which was pulpy, and, although in some points of a whitish colour, it was principally of the consistence and appearance of dark coagulated blood. To determine further the state of the temporal bone upon which the tumor lay, a probe was introduced, but the bone was not to be felt in any direction, for the instrument passed in for at least half its length, as if into the substance of the brain.

The superior part of the cranium next removed, the dura mater was laid aside, without any thing particular being observed; but on continuing the examination towards the basis of the cranium, a

very considerable tumor was found pressing the membrane in upon the cavity of the skull. The dura mater at this part had not lost its natural texture, but exhibited a great number of fine arterial branches, ramifying over its internal surface; this appearance, however, did not resemble that of inflammation, but a chronic increase of vascularity.

The inferior and external part of the left anterior lobe cerebri, was found to have been progressively removed by absorption, from the increasing pressure of the tumor upon its surface; and it is worthy of remark, that although a quantity equal to three or four ounces of the substance of the brain was thus taken away, the cortical structure of the cerebrum, the pia mater, with every appearance necessary to the peculiar circulation through this organ, remained entire, only it formed at this part a concave instead of a convex surface. The only structure, therefore, which had suffered from the pressure, was the medullary substance; and it is very curious, that the perfect state of intellect that was preserved during the whole progress of the complaint, warrants the opinion that the functions of the brain were scarcely, if at all, impaired.

An extensive section, passing through the bones of the face and basis of the cranium, so as to include the whole of the disease, was next removed with the saw, so as to allow of the whole being immersed in alcohol, that the contents of the tumors might be rendered sufficiently firm to admit of a more satisfactory examination.

In the course of a week they were much contracted in size, and so far consolidated as to render it practicable to complete the inquiry. The large tumor upon the temporal bone was divided horizontally, and was found filled with a pulpy matter, more resembling coagulated blood than any other substance. The tumor within the upper eye-lid was the most prominent of the two that were upon the face, and it was, therefore, cut through transversely, and the upper portion being raised, exhibited very perfectly the structure of the disease. It appeared that the whole substance of the tumor was made up of alternate concentric laminæ of coagulated blood, and a paler substance, which seemed to be an albuminous secretion. The layers were disposed so evenly, that they could only be considered as the consequence of some peculiar secretion, but whether from the capillary arteries in that part of the pericranium lining the bones within the orbit, or from any other structure, it was impossible to determine.

The increase of the tumor within the socket of the eye, had produced absorption of the floor of the orbit, so that the maxillary antrum had become filled with a part of the diseased mass, and the same process of absorption, had the patient lived, would very soon have brought the tumor down through the antrum into the mouth.

I have already stated the influence of certain affections of the mind, upon the circulation through the brain. Both the exciting and depressing passions are capable of disturbing the

just balance of action in the vascular system within the head. The first operate by increasing, the second by diminishing the action of the vessels, but in both instances the consequence is an increased determination of blood to the head.

Ambiguous cases will sometimes occur, in which, unless the principle of depletion is carefully kept in view, I am persuaded no good whatever will be done; however clearly these cases, to a superficial observer, may seem to require an opposite mode of treatment. It is only by long attention to the subject, that we can acquire the habit of justly appreciating the importance of affections of the mind, in their operation upon the brain, nervous system, and constitution in general.

The following case may be regarded as an illustration of this point.

Case 28.

Convulsion with extreme Debility, treated successfully by Depletion.

Mrs. Cowan, the wife of a soldier in the 82d Regiment of Foot, a very small, and delicate woman, twenty-eight years of age, was from a coincidence of most distressing circumstances exposed with a young infant at the breast, for several days and nights, to a very heavy snow, in the severe winter of 1808. She had to pass through Lincolnshire on foot, at a time when the inclemency of the season had covered the roads in most parts many feet deep in snow.

This poor woman had several times, during her journey, sunk so deep in the snow, that there was scarcely the least prospect of her eventually saving herself. Just before this, she had suffered shipwreck, and at the moment the vessel struck upon the rocks, she received so severe a shock from the alarm, that it was with difficulty the humane exertions of those around her, recovered her from fainting. Since that time she said she had never been perfectly well in her head. While upon the journey through the snow, her peril was so great, that she was sometimes obliged to lay down her infant for a while upon the snow, in order that her struggles might be more effectual in extricating herself.

She however reached Scarborough, in Yorkshire, the place to which she was going; and being then restored to her husband, and her family, made no particular complaint for some time. Her disorder seemed to be merely deficient energy in the circulation, and animal functions. The pulse was extremely small, low, and slow. The skin cold, and pale. The tongue clean and moist. The appetite very trifling. There was some head-ache, and she complained that she could not rest well in the night, which generally passed without any refreshing sleep.

To restore, if possible, the balance of the circulation, and assist in the re-establishment of the external heat, very minute proportions of the tartarized antimony were directed in solution, to be frequently taken; and the patient was desired to

avoid those constant personal exertions upon which the neatness of her little family depended. The injunction, however, was of little avail, for she still continued to scour, wash, and move about.

On the morning of Saturday, January 14, 1809, after great exhaustion from labour, she fell suddenly down while passing from the door of her own room. A person near her, heard the fall, ran to her assistance, and found her upon the floor, insensible. She was immediately carried to bed, where she remained the whole of the forenoon. She was tranquil, and easy, as if asleep. The respiration was particularly light, free and regular. The face was pale, sunk and cold; and there were occasional slight convulsive tremors of some of the muscles of the face.

In the evening she still remained insensible, the pulse was at 70, the tremors had returned with occasionally rather violent contractions of the muscles of the limbs, and at these moments the pulse became perceptibly harder than before. In about half an hour after I had seen her, she came to herself, opened her eyes, and complained of great and shocking darting pains in her head, attended with terrible pain, shooting through the eyeballs. She could not bear a candle brought near her face, from its aggravating the pain in her eyes.

With the above symptoms she now mentioned her having a constant roaring noise in her ears as if it thundered. Her countenance was still sunk, and her complexion paleness itself. Yet from her symptoms, it was pointed out to her, that she

must lose blood. The proposal somewhat startled her, but she acquiesced. The arm was bound up for some minutes before a vein could be perceived. It was sufficiently evident to the touch, but was so small, and so far below the surface, that it was not discernible to the eye.

This vein was opened, and about three ounces of blood drawn, which was all that would flow. A vein in the other arm was therefore opened, under the same circumstances, and with the same effect. By these means she lost six ounces of blood, to her a considerable quantity. She soon found herself materially relieved. She said she was much better, but that she was still " very bad."

An hour after she had lost blood, while lying very comfortably, and warm in bed, she was suddenly seized with a rigor and shivering, exactly resembling the first stage of an intermittent paroxysm. At this time the pulse was very small and hard, and the skin extremely pale. She was soon afterward, perfectly sensible, and again said, she was " very ill." The tremor left her in about half an hour. Her head was now directed to be shaved, and covered with a large blister. She was also ordered thirty drops of the tincture of opium in a draught, which was repeated soon afterward, and procured her some sleep.

On Sunday morning, she was something better. The tartarized infusion of senna was directed, and repeated till it procured two motions. Towards the evening of this day, she found herself much

better ; but on a sudden her eyes closed, her limbs became rigid, and she was repeatedly shaken by a convulsion, decidedly more violent than ever. Her body was for some moments raised up from the bed by the violence of the fit. At this time her pulse was 72, and small. The convulsion subsiding, she came to herself, and being questioned, said she had still the same loud noise in her ears, and the same extreme sensibility to light as before. In half an hour she was much better, spoke quite rationally, and said the pain in her head was very much relieved. Previous to the bleeding, this pain had been of a constant, dull, heavy, and oppressive kind, but it now assumed another character, being sharp, and transitory, darting occasionally, and quickly, through the brain.

The most important circumstance, however, in which she expressed herself relieved, was that in her mind and judgment, she felt more free, and more clear, than before. There was no heat about the skin, nor the least thirst. She took the saline mixture frequently, with ten drops of the tincture of opium in each dose.

On Monday morning, January 16, there was occasional tendency to light delirium ; she said she had now no pain in her head, nor the least noise in her ears, but was in every respect quite easy, and comfortable. The pulse had risen to 84. The saline medicines were continued, as before.

In the afternoon she was perfectly sensible ; but precisely at the same hour as on the preceding day, she was affected with a return of slight spasms,

during which her eyes were fixed, and the eye-lids set wide open. She was very pale while in this state, and perfectly insensible; but very soon recovered.

In the evening she was entirely sensible and clear. The pulse was soft and regular, at 75, the skin moist and perspirable. A puffy swelling of the face had come on during the day; and this was very painful, and tender. The light was no longer distressing to the eyes. The roaring sound, as of thunder, had ceased, but there was still some pain in the head. Her feet were immersed in warm water at bed-time.

Tuesday morning. She had passed a good night, and slept well; and upon the whole was much improved. At noon, the light delirium returned for a short time. Her mind wandered imperceptibly; and without any sympathetic changes in constitutional circumstances. In about an hour the delirium went off. In the course of the day, she complained much of the pain in her face.

Wednesday, January 18. very restless. Had but little sleep the night before. She described a sensation of pain very distressing about the heart. This she compared to "something gnawing it." The bowels were very regular. The saline medicines, as before, were continued; and a blister was directed to be applied to the pit of the stomach.

From this time she continued to improve, and as her appetite somewhat increased, she was enabled to take light, and appropriate nourishment.

This state of convalescence continued till the Wednesday following, January 25, when her health suddenly fell off again. On the day before, she had felt some little pain in her head, but did not consider it worth mentioning. But on this day it was much worse, indeed so severe, that she could scarcely sit up. In the evening the head-ache had increased to that degree, that she was unable to bear the least light to her eyes.

Her pulse had again sunk down as before her convalescence, from 80 to 70 in the minute. There was also some hardness in it, but not much. She complained of sickness, and several times urged without effect to relieve her stomach, by vomiting. There was no thirst, or heat upon the skin; and the bowels were perfectly regular. The saline medicines were directed to be continued; and the feet to be again immersed in warm water, at bed-time.

Thursday, she was much better, and the uneasiness and pain in the head very nearly gone. She was, however, extremely weak, and low, but it was necessary to be extremely cautious in the adoption of any measures for the improvement of her strength, for it should have been before mentioned, that during the week of her convalescence, she had been allowed to take, in very minute proportions, a light infusion of bark, and it was to this circumstance alone that her present relapse was attributed.

On Thursday evening she was ordered to take

an ounce of castor oil, to have her feet bathed, and to take her saline medicine every hour through the night.

From this time she continued to mend uniformly, till on Sunday, February 5, while busy in scouring out her room, she was seized with a most severe rigor. She compared her feelings to the chill from a stream of cold water pouring down her back. This attack was attended with a severe pain in the head and limbs.

By confinement, and a return to her former treatment for a few days, she was again relieved; and was advised to be more cautious for the future, of exposure to cold. She was still however subject to a considerable swelling of the feet and ancles on the approach of evening.

For the improvement of her appetite, which remained very deficient, an infusion of chamomile flowers was recommended, this being less objectionable than the more powerful tonics. It answered the purpose very well; she continued its use for some time, and had no relapse.

It appears to me that the above case furnishes a strong instance of congestion of blood in the head, arising principally from mental distress, and the long succession of difficulties, and dangers, to which this poor woman had been exposed.

The primary symptoms appeared to point out that while the circulation within the head was suf-

fering from oppression, every other part of the vascular system was almost literally emptied of its blood. The arteries in the brain, from continued distention, and fatigue, seemed to have lost very much of their tone. It is remarkable that they evinced no disposition whatever to increase of action, or inflammation, till they were partially emptied by the means adopted for their relief; then indeed, there were pains in the head, more decided irritability about the nerves of sense, and other marks of action, which, in my opinion, may be much more justly considered an effort of nature to re-assume her proper functions in the economy, than as evincing any disposition to disease.

It was from this view of the case that salines and opiates were called upon, to complete what depletion had begun; and the event appeared upon the whole, to establish the propriety of the principle upon which the treatment had been conducted.

The doubtful nature of the following case, as to whether the convulsion was principally derived from fulness of vessels, or especially produced from irritation; the unsatisfactory effects of the various modes of treatment adopted; the close attention I paid to the progress of the disease: and the opportunity of examining the contents of the head after death, have induced me to give a more complete detail of the progress of the symptoms tan I should otherwise have done.

CASE 29.

Circumscribed Inflammation and Adhesion, between the Brain and its Membranes, terminating fatally.

Captain F. T. of the 82d Regiment of Foot, a gentleman 28 years of age, had been for several years subject to an hæmorrhoidal complaint; and from this cause had frequently experienced loss of blood.

There were several tumors round the verge of the anus, of considerable size when distended with blood. They usually required a reclining posture for half an hour after having passed a motion, but were subsequently reduced, and gave no further trouble till the next day.

On Friday morning October 7, 1808, while the battalion lay at Scarborough, an unusual flow of blood took place on the water closet. He supposed he might have lost about half a pint of blood. He did not however feel faint, but when he left the mess-table in the afternoon, he dressed for the assembly, and danced for nearly two hours.

About one in the morning he left the company, and returned home, sat down, and was listening to a young gentleman, who was reading to him. In a moment his features became altered, and his breathing attended with a most unnatural sound. At the first glance his brother officer concluded he was joking, and continued reading, but in a few seconds more he fell into a state of universal convulsion, with which, in an instant, he was thrown from his chair. The attack however, was latterly rigid spasm, rather than violent convulsion.

In a few minutes he came to himself, and appeared to be quite recovered. He felt no pain, nor was the least aware of what had happened. Before he could be assisted up stairs to his chamber and put to bed, he had a second attack, and remained as before for some minutes, insensible, and partially convulsed. He then revived, and again recovered his senses.

When he had been about half an hour in bed, he complained of sickness, and threw off the contents of his stomach; the matter evacuated was not particularly bilious, in its appearance. The fits continued to return through the night, about every half hour. A drachm of the carbonate of ammonia was given in a draught, but seemed to do nothing. Aromatics were tried, but without any benefit. At daybreak he said he was easier, more composed, and soon after he slept without disturbance for several hours.

Saturday, October 8th, he passed the day free from convulsion, said he was better, and found his head clearer than it had been during the night; but he was very weak. This day he took the saline draught, and a grain of calomel with the same quantity of antimonial powder, repeated every three hours. It was expected the medicines would act upon the bowels, but he had no motion.

Towards evening he had pain in the head. The face became suffused, and dark, and at night the fits returned, as before, but with increased violence.

Sunday, October 9. The convulsive attacks continued to return, frequent and severe, till four

this morning, when they again subsided. Soon after, he fell asleep, and some hours of tranquil repose enabled him to pass the day to all appearance in an improving state. He said he was getting better. The pulse had never exceeded 96. It had been rather hard, but the medicines appeared to have softened it.

Towards the afternoon his countenance changed, it became puffed and full, assuming a dark, and almost livid hue, demonstrating that the head was overloaded with blood. A very large blister was therefore laid between the shoulders, and a strong cathartic given. In the evening, he had a stool. At nine, twelve ounces of blood were taken from the arm. This he said greatly relieved his head. After bleeding he became somewhat faint, and during this state experienced slight convulsive tremors. In an hour these appearances vanished. The cold perspirations did not return, and from midnight he slept well.

Monday, October 10. Much better, had rested comfortably, and was up almost the whole of the day. His only complaint was weakness, and soreness in the flesh. This morning an aperient was given, which operated. He experienced no return of his complaint, and passed the following night quiet and well.

Tuesday, October 11. Was up early, and eat a good breakfast. In the forenoon he had a motion. There was no heat, or fever. For dinner, he eat a small piece of rump steak, and drank (what had been proposed, but expressly forbidden) a large

glass of porter. He retired to his chamber at ten o'clock, just before which he had another natural motion.

About eleven o'clock he was heard to get out of bed, and move about the room, but made no particular noise or complaint. His attendants hastened up stairs to him. He had locked the door of his chamber, but they succeeded in getting into the room by another way, and found him standing opposite the door, endeavouring in vain to get the key into the lock, to open the door. He answered every question with tolerable precision, but it was evident enough that his intellect was confused. The bed-clothes were found about the room, and the whole bed so much disordered, that in all probability he had had a fit, before any one was aware of his relapse. He was laid in bed again, where he directly fell into another fit, in which the convulsion seemed to spend most of its force upon the left side of the body. The first token of its approach was in the eye-lids, which became slowly raised up, and opened wide, disclosing the eyes turned, first upward, and then towards the left side, where they remained fixed while the paroxysm continued. The mouth was violently contracted, but drawn aside to the left ear, the nose, and integuments following in the same line.

By the time these appearances had taken place, the face was slowly moved, with an irresistible force, round to the left side; and now the arms were thrown violently back, and the body and

extremities shaken alternately by a spasmodic agitation of the whole frame; in which the respiration was laborious and quick, the air rushing with an audible noise through the nostrils, the action of the heart being disturbed, and the pulse rendered harder than before.

The fits returned through the night with the interval of twenty minutes only; they ceased about four in the morning, after which he slept several hours.

Wednesday, October 12. About nine he awoke, much refreshed by his long sleep, but complained of great pain about the left shoulder and arm, down to the elbow. He said he found a proportionate degree of ease in his head, and observed that he was glad to find the complaint had passed down out of his head, into his arm. Upon examination the parts about the deltoide muscle were very tender and painful to the touch; added to which, he found he had lost all power of moving the arm. On comparing them, the affected arm was much paler, as well as colder, than the other.

In the fit, the left arm, formerly most agitated by convulsion, now lay nearly motionless, the only perceptible action being confined to the muscles bending the fingers. The left leg had undergone the same changes, but in a less degree.

Thursday, October 13. The fits came on very soon after he awoke, and continued to return at the interval of twenty minutes. This morning he had for the first time an involuntary passage of the urine. It had been proposed that Dr. Simp-

son, a physician of very deservedly high character, from New Malton, should be sent for, and about eleven he arrived. He considered the disease a modification of epilepsy, and that it must be treated on the same principle. In consultation therefore, it was determined that the only system, was that of depletion; and from the unusually small size of the external jugular vein, the opening of the temporal artery was recommended. The patient just recovered from a fit, was set in an easy chair; and as it has usually been found that where paralysis has taken possession of one side of the body, it has been consequent to some derangement in the state of the opposite side of the brain, the right temporal artery was preferred and opened.

In the operation, the blood sprung forth abundantly, but while the artery was bleeding he had no less than four fits in succession, which, notwithstanding the abstraction of a part of the circulating blood, still retained exactly their former character and appearance. In the intervals of the fits, however, he several times said, the bleeding had greatly relieved his head. More than twenty ounces of blood were allowed to flow; pressure was then so applied by a firm compress, and bandage of broad tape, as to prevent further effusion. After the operation, the fits continued unaltered. A strong drastic enema was given, which soon operated.

At three, in the afternoon, the fits subsided, and he fell into a doze; and, after this, his ideas were perceptibly less collected than heretofore. When

he spoke, he was unable to express himself coherently. It was extremely curious to mark the various degrees of excitement by which the different organs of sense were affected.

From several incidents that occurred, it was very evident that the hearing was infinitely more acute than it is ever known to be in health. The sight, on the contrary, was just as remarkably impaired. The eye had at one time been so sensible to light, that a candle in any part of the room produced uneasiness, but now the brightest light might be brought close to his eyes without his seeming to perceive it. The pupil of the eye, however, contracted as accurately as ever.

This evening, the spaces between the parts of the bandage securing the temporal artery were shaved, and a large blister laid over the top of the head. At ten, the fits came on with an interval of a quarter of an hour only. He complained much of excessive thirst.

A cathartic mixture had been given, but did not operate. The pulse, subsequent to the opening of the temporal artery, had remained softer than before the operation, but was still somewhat quickened.

Friday, October 14. The fits returned with very short intervals, and in the paroxysm the right side only was affected with spasm, the members on the opposite side having totally lost all power of action. The face was as frightfully distorted as ever. About half past three this morning, after having a fit, he lay back in the bed, stretched

himself out, and heaved a deep sigh, which was followed by a suspension of respiration that lasted several minutes; he changed colour, and it was supposed he was expiring. When, however, the breast again heaved, the fits returned, as before.

With this temporary exhaustion of power, the feverish thirst at once subsided. His power of expressing his feelings was as perfect as before, but he had now not the least desire for drink, nor would he swallow what was offered him. At noon the thirst by degrees re-appeared, and by the evening was as intense as ever.

At eight, this evening, the pulse was weak, and beat 120. The scalp above the bandage had become tumid, and of a dark colour; and there was a copious and offensive discharge from the blistered surface. Several times he felt a desire to expel his water, without having the power; during the evening, however, it flowed off involuntarily, and twice without his appearing to be conscious of it.

The scalp seemed to require some attention. It was certainly too early to remove the pressure from the artery, but yet it was necessary that so strict a ligature should not any longer be allowed to remain. It, however, seemed probable, that if the binders were carefully cut through on the opposite side of the forehead, the adherent state of the tapes would still afford sufficient support to the compress, while the general stricture would be relieved. This, therefore, was done; it answered perfectly, and he immediately felt his head much relieved.

In the course of the evening, the attacks of con-

vulsion were more frequent than ever, but diminished in duration and intensity; attended with more relaxation of skin, less congestion in the head, and less injury to the intellect than formerly. The paroxysm did not continue above a minute, when the skin fell suddenly pale, and a copious sweat broke forth. In the progress of the night, the thirst was very distressing. The forehead and face were still incommoded by transient flushes of heat. He complained of pain in the ear, by the divided artery. The early re-establishment and controul the mind now exerted over the body was truly astonishing. Even while the convulsions were still upon his limbs, and his respiration stertorous, he would reach out his hand for his handkerchief, and endeavour to wipe his lips, as I have seen in partial attacks of tetanus. He had taken medicine repeatedly, but could get no evacuation, although distressed by tenesmus. The interval between the fits was now 15,10, and once only five minutes. In the paroxysm the pulse was regular, but hard.

Saturday, October 15. This morning, the compress and bandage from the temporal artery were removed entirely. The opening was in a state of suppuration. The day passed pretty quietly. The pulse was at 100. This morning he had a stool. His mind was more tranquil and collected, than for several days before. The longest interval this day, was six hours. In the evening he fell into a very sound sleep, sometimes snoring extremely loud. The servants fancied it a sign of improvement, but it had more the appearance of coma,

than of sleep. At seven in the evening this lethargic state began to alternate with the fits, which now came on again.

Under a suspicion that water or some other mischief had formed in the brain which might possibly be relieved under the influence of so active a remedy, I had for several days felt very anxious to have mercury tried; it was this day proposed, and carried in consultation.

Five drachms of the mercurial ointment were immediately rubbed in about the limbs and body, and before midnight four more were consumed. Between seven and eight this evening, it was desirable that he should have lost more blood from the disposition to coma, and apparent fulness about the head, by which he was overpowered; however, by the time the consultation met at nine o'clock, it had gone off. About ten, the apoplectic state returned with stertorous breathing, it soon subsided again, and gave place to the fits, which returned precisely as before.

Sunday, October 16. This morning, a draught with scammony, calomel, and gamboge, of each five grains, was given. This produced a sharp action of the bowels. Several involuntary stools were passed during the day. First came offensive feculent matter, and afterwards, the limpid fluids poured by the exhalent arteries into the intestines. By the operation of so violent a medicine, it was natural to expect what happened, which was a very considerable reduction in the strength of the pulse. The fits continued their old course. An

ounce more of mercurial ointment was rubbed in, on various parts of the body. The pulse varied from 100 to 120. The bowels were greatly relaxed, and very active.

He had no pain or uneasiness in the head, but felt considerable pain in the upper part of the paralyzed arm, of which he could not move a finger. The foot and leg on the same side were becoming œdematous.

The form of the convulsive attacks was now somewhat altered. The eyes and face were still, as formerly, affected first; but the chest was fixed, and the breast did not heave till the close of the fit. This change had taken place by very slow degrees. The respiration formerly had been continued, but with labour, and foaming at the mouth, and some degree of stertor. Now, on the contrary, by an universal spasm which seized upon the whole muscular parietes of the chest, the air was at once expelled from the lungs with a sort of scream, and the thorax was compressed to the greatest possible degree. During the spasm, the face and lips assumed a dark livid colour. In about half a minute, the violence of the spasm began to abate, the breast again moved, and the air, by short starts, was drawn into the lungs, with a sort of fluttering action of the muscles; and the organs of respiration, after a few minutes, settled into a very languid state of their proper action. The vital functions generally decline together; the pulse, at the time the spasm was its height, could not now be felt for the space of several pulsations.

Monday, October 17. Much the same. The blister upon the head was removed, and the savine ointment applied, but where the bandage securing the temporal artery had passed under the chin, there was a sore and inflamed surface, from the flowing down of the discharge from the blister. From the same cause, the conjunctive membrane of the right eye was also inflamed. The mercurial frictions were still continued at the rate of two drachms every two hours.

Tuesday, October 18. Ever since the last purging draught, the bowels had remained in a very disturbed state, and the motions were fluid, frequent, and involuntary. The pulse varied between 100 and 120. He complained of severe occasional pains about the bowels, and some uneasiness in his forehead, and over the eyes. He had been persuaded to eat a very little piece of a light bread pudding, but it remained a load upon the stomach the whole afternoon. The wound on the temple appeared as if the matter had dried upon the part. The mercurial frictions were continued.

Wednesday, October 19. During the night, the fits had returned every ten minutes. The diarrhœa continued. In the evening and night of this day, the debility became extreme. The pulse, in the continuance of the spasm, was greatly oppressed, not beating above 70 or 80. But after the return of breathing, it hurried on at the rate of 160 in the minute, although before the accession of the next fit, it usually subsided to 120. The face became more and more livid upon the return of

each succeeding convulsion. In the fits there were now scarcely any perceptible vibrations in the limbs, although the body remained still as much as ever under the influence of spasm, so far was the nervous energy and muscular force exhausted.

In the course of this day, ten drachms more of mercurial ointment were rubbed in, so that the quantity actually consumed within five days was at least five or six ounces of the strong mercurial ointment. This however, from the reduced state of constitution, produced no excitement whatever.

Thursday, October 20. In the night preceding this day, the interval between the fits was lengthened to 20 minutes. At six he had a fit, and after it desired some whey. Twenty minutes after this, he had another, and again rested. Ten minutes before seven, another fit came on, and at this instant respiration ceased. Instead of the spasm that heretofore had taken place, there was not the least tremor. The countenance fell, the colour left the cheeks, and death closed the scene.

It was remarkable that at the moment of his dissolution, a sudden gush of blood ran down the side of the head, as if from the ear, and this hæmorrhage was of considerable extent.

Examination.

On opening the head, an adhesion was found between the dura mater, pia mater, and brain, upon the forepart of the right anterior lobe of the cerebrum. It was equal to a crown-piece in extent, and was principally situated on the right side of the falciform process, although it had extended

in some measure to the left side of the falx. The connexion between the brain and its membranes was at this part so very firm, that in raising the dura mater, a portion of the cortical substance of the brain was separated with it.

There was no reason, however, to suppose that the inflammation producing this adhesion was of any recent date, for, notwithstanding the great firmness of the union, there was no remaining appearance of excessive vascularity about the parts.

The vascular system of the brain in general was certainly loaded with blood, but there was no trace of extravasation found, on dissection of the cerebrum.

On the internal surface of the frontal bone, nearly opposite the anterior termination of the falx, was found a small adherent spicule of bone. It lay in a line with the sinus, and close to its margin. It was rather less than half an inch in length, and its elevation above the general surface of the cranium was only $\frac{1}{10}$th of an inch. It is, perhaps, hardly to be supposed that this very small piece of bone could have conveyed any injurious irritation, either to the brain or its membranes. There were, however, different opinions upon this point.

Whether this spicule of bone was originally a fragment broken off from the inner table of the skull by external violence, or whether produced by a growth from the bone, was a question of much uncertainty. The general idea was, that it had been detached in the first instance, and had subsequently united again to the cranium; but there was no appearance upon the outer table either of

depression, fracture, or fissure, to bear out this supposition. The spicule of bone was situated exactly against that part of the dura mater which was adherent to the brain.

The plexus choroides on each side contained a small, soft, whitish tumor, the size of a hempseed; these had the feel of scrofulous enlarged glands. The ventricles were by no means loaded with fluid; on the contrary, they contained less than is generally found.

The pineal gland contained an earthy or calcareous matter.

Every other part of the brain was examined, without any appearance of disease being found.

The contents of the chest were perfectly sound.

In the abdomen, the only peculiar appearance was an increase in the vascularity of the peritoneum lining the cavity of the pelvis. The hæmorrhoidal vessels upon the rectum were not more numerous than common, nor disposed, as they were externally, to form varicose tumors.

The lower part of the temporal artery was exposed, and being opened, a probe was passed gently up; and this, without the least obstruction, passed out through the divided opening in the vessel. The artery was next laid open, and by this means it was proved that there had been no formation of coagulum; the hæmorrhage, therefore, that appeared at his death, arose from the imperfectly adherent sides of the artery giving way.

From the above examination it appeared, that the principal, and perhaps the only peculiarity, in

the state of the brain, consisted in the adhesion opposite to the frontal bone. This had been most likely the result of inflammation, consequent to a blow, particularly as there was another appearance, going to prove that the bone had, at some former period, received a shock. The probability of this appearance being the result of an accident, was still further strengthened by the testimony of several men in the battalion, who said, that about seven years before, while the regiment was in Ireland, he had been thrown from his horse, and then received so violent a blow upon his forehead, that for some time he lay senseless, and was confined for three weeks to his bed.

It is somewhat unaccountable, and highly to be lamented, that Captain T. should have repeatedly and constantly withheld information relating to his disorder, which, if given in time, might have been the means of saving the life of a most amiable young man, and an accomplished gentleman. Every hour in the day almost, he was questioned whether he ever had had such complaints before, but he always persevered so strenuously in denying it, that although it was still suspected, yet nothing was clearly made out, till it was too late.

Letters had been dispatched to his family the day after he fell ill; but from the distance, answers by return of post unhappily did not arrive, till the day after his death. Then, and not before, a letter was received, of which the following is an extract.

" About three years ago, when the regiment was in Dublin, he was very ill with violent excru-

ciating pains in the head, attended sometimes with convulsive attacks, for which he was ordered, and took medicines for the cure of nervous and spasmodic complaints. But they increased to such a degree, that a consultation was held, and the medical gentlemen could not agree as to the cause of his complaint.

" Dr. Boyton, an eminent physician in Dublin, being of opinion that it proceeded from an old venereal complaint, recommended a trial of mercury. His advice was followed, and the consequence was, that as soon as the mercury took effect, the pain in his head, and the epileptic attacks were removed, and I believe he has ever since, till now, enjoyed uninterrupted health."

Subsequent to the decease of this gentleman, it was ascertained that for some years he had suffered from uneasiness of mind, in consequence of a disappointment, originating with the family of a young lady, with whom he was to have been united in marriage; from this shock it was believed he had never perfectly recovered, although the circumstance was known only to one of his brother officers.

Case 30.

Paralysis from Injury to the Spinal Marrow.

Master S., a fine youth, twelve years of age, was amusing himself in a play-ground with some other young gentlemen, in June 1814, by swinging in a heavy wooden swing. In play, one of his schoolfellows contrived to throw a line over his head

from behind, at the instant he was in full swing forward. The line caught him with a violent jerk under the chin ; however, as one end of the line immediately gave way, he was not thrown out, and but for the red mark that remained across the throat, he would have thought no more of it.

For some few months he felt nothing particular, but his brother frequently teazed him for having become so fond of leaning and sitting about, instead of playing, until at last he was himself persuaded that he must be really getting weaker. From this time he became sensible of a gradual decline of strength and power.

In March 1815, he was brought to town, still able to walk, although very feebly. His principal complaint at this time was of pain and stiffness in the back part of his neck, and difficulty in moving his head.

Repeated blisters were first applied, but without apparent effect. Setons were next inserted, one on each side of the spinous processes of the cervical vertebræ; and these were kept open without benefit. Medicines of various kinds were also directed, without affording the least relief.

He continued going on progressively from bad to worse ; the power in the lower extremities failing more completely, while that of the upper extremities was every day becoming more and more seriously affected.

There now also was some complaint of difficulty in getting rid of his water, and he could scarcely pass a motion without having taken some active purgative medicine.

One evening, while lying down on the sofa, he was suddenly attacked with a pain in the small of the back, which was so violent that he could not help crying out repeatedly. This pain he said was most like a burning heat in the part; it was internal, and not at all affected by external pressure. In the course of a quarter of an hour this curious sensation was completely reversed, and although it still distressed him, it was now compared to extreme cold; and this, after remaining about an hour, gradually subsided.

On the 3d of April a consultation was held, at which Dr. Baillie, Dr. Pemberton, Mr. Heaviside, and Mr. Astley Cooper, were present, and the exhibition of mercury was determined on. At first the pil. hydrarg. was given every evening, but as it disordered the bowels, it was in a few days changed for the mercurial frictions, administered in the usual manner. His complaints, however, increased every hour, although, while he was under the mercurial treatment, the pain as well as stiffness about the head and neck were evidently much relieved.

The first affection of the muscles of respiration was observed during sleep, on the 4th of April. Inspiration was performed quickly, and as if with an effort; this, however, at first disappeared upon his waking. On the 7th of April the respiration was very laborious during the day, and the difficulty increased every hour. The following morning the difficulty became extreme, the lips lost their colour, and in the course of the same afternoon he expired.

Examination.

The contents of the head were examined, and found to be perfectly sound in every part. The integuments were next dissected away from the spine, and the posterior part of each cervical vertebra removed with a saw, when a large quantity of extravasated blood was found in the cellular texture, between the bones and the theca vertebralis. This extravasation was principally of fluid blood; some part, however, was coagulated, but as the affection had obviously extended itself further down, the spinous processes of the four superior dorsal vertebræ were successively separated by the saw, and dissected out, by which operation the whole extent of the mischief was brought into view.

By the greater abundance and more perfectly fluid state of the effused blood within the 2d, 3d, and 4th vertebra of the neck, it appeared that the affection had commenced high up. Between the atlas and dentata the blood had made its way out between the bones backward, so that a small coagulum was brought into view in dissecting the muscles away from the external surface of these bones.

It appears then, that the sudden jerk of the line backward, while the head and body were in rapid motion forward, produced a violent, though momentary curvature of the cervical vertebræ; and the anterior part of the bodies of the vertebræ being nearly in the centre of motion, explains why the vessels upon the posterior surface of the spinal marrow had suffered rupture.

Case 31.*

Slight Injury to the Head, producing Symptoms, and ending fatally near Forty Years afterward.

In 1792, I was desired to examine the head of Mrs. E——n, who had died the day before, and whom I had attended with Dr. Turton and Dr. Harvey, about eight months previous to her death, having made her various setons, issues, &c. by their direction. Her case and the appearances were the following.

She was about fifty; the widow of the late Bishop of D——. When about fifteen, being at play, she received a slight tap, rather than a blow, on the right side of the head. It gave her at the moment rather severe pain; but she disregarded it, and no immediate consequences of any kind followed more than a common head-ache, commencing always in the part stricken.

For above thirty years after, she was subject to these attacks, and then began to grow heavy, and sometimes stupid and sleepy, without any known additional cause, though she was naturally one of the liveliest, and most witty women existing.

This disposition continued gradually increasing till, for the last year and a half, it was very difficult to keep her awake; but when she was awake, as I have often known, though it was but for half an hour, she had all her natural brilliancy of conversation about her; then all at once would drop

* The following history is transcribed from the original MS. in Mr. Heaviside's Museum, where the diseased part of the brain is preserved.

asleep again, not to be roused. In this way she went on till a perpetual comatose state took place, and she died convulsed.

Latterly her vision had become very much, although very gradually, impaired.

Examination.

On examining the head, as soon as I had removed the scalp over the right parietal bone, I saw a portion of the bone, about the size of a crown-piece, seemingly of a very dark colour, directly under the part where the blow had been originally received, and to which spot she invariably pointed as the seat of her pain. On removing the right parietal bone, I found that part of it which appeared discoloured was transparent, and almost wholly absorbed. It had that colour given it from the portion of the right hemisphere of the brain directly under it being perfectly black, and the colour appearing through the bone, for the dura mater at this part was altogether removed by absorption. Had she lived much longer, I am clear the bone also would have been altogether absorbed, and the brain itself protruded.

The portion of brain under the seat of the injury was indurated, and scirrhous, and this change had taken place through the whole of the middle lobe cerebri. The colour was a dark livid hue.

Every other part of the cerebrum and cerebellum were perfectly sound, nor was there any disease whatever in the contents of the thorax, or abdomen. Nothing but the disease above described,

which had so pressed on the optic nerves at their origin as to have made them as flat as a piece of tape, and thereby occasioned her loss of sight, which amounted to almost total darkness for some time before she died.

How far the tap of the cane, almost forty years before, brought on this train of symptoms, it may not be easy to decide, and yet it should seem to have had a part in it, by the pain having never varied from the spot where the blow was originally given.

Case 32.

Slight Injury to the Head, producing Internal Mischief, and ending fatally Six Years afterward.

A young gentleman, at twelve years of age, received a rap at school with the edge of a flat ruler, because he was dull at his learning. The blow was on the right side of the head, and a small wound was the consequence, which for the space of six years nothing would heal. It then healed, and he very soon afterward perceived that his sight was beginning to fail. In this respect he continued to decline, till at length he became quite blind. Added to this complaint, he now began to suffer from epileptic fits, which most frequently returned upon him every day.

In the above unfortunate state he was brought up to London to consult Dr. Lettsom and Mr. Heaviside. On examination, there was no particular appearance found in the cicatrix of the old wound, where the blow had been received.

The only thing that was considered likely to afford any prospect of real advantage, was the removal of a portion of bone by the trephine, to come at once, if possible, at the seat of the mischief. This was determined upon, and the operation performed.

On exposure, the bone was not found diseased, nor even discoloured. On removal of the piece separated by the crown of the trephine, some blood and serous fluid escaped from between the skull and dura mater. This membrane, however, did not appear to have lost its healthy colour. By the next day the pupil of each eye had recovered its natural sensibility, dilating and contracting, according to the degree of light. The blindness unfortunately remained absolute, as before the operation.

No favorable change took place from what had been done for his relief, but on the contrary his strength hourly decreased, a degree of low fever supervened, and on the third day after the application of the trephine, he was seized with an unusually severe fit, and very soon afterward expired.

Examination.

On opening the head, the cranium was to appearance every where healthy, and so was the dura mater. Below the part where the dura mater had been exposed by the trephine, and consequently opposite the seat of the original wound, the pia mater had evidently suffered from chronic

inflammation, but this appearance was circumscribed.

On cutting into the brain, it was found indurated to a considerable degree, and this induration had extended itself, as in the last mentioned case, to the whole of the middle lobe of the cerebrum. It commenced upon the surface of the hemisphere, passing through the brain, down to the basis of the cranium.

There were no other morbid appearances.*

The two last cases are calculated to convey a useful lesson to young practitioners; they shew how cautious we should be in venturing an absolute opinion as to the certainty of a person having nothing to apprehend in the future from injury to the head. In the first case particularly, it is extremely curious that a disposition to mischief should have remained, as it were, suspended over a part for so many years together, as it seems scarcely warrantable to suppose disease could have actually been going on, during the long period of years of total exemption from pain and inconvenience, which this lady enjoyed.

I have thus taken a cursory, but I hope a practical view, of some of the most common complaints in the head; commencing with the effects of blood extravasated either into, or upon, the brain, going on to those affections of mind which certainly

* The disease forming the subject of this case also, is preserved in Mr. Heaviside's Museum.

exert a powerful influence in bringing on local congestion; noticing the ambiguity which in some of these cases will puzzle and embarrass the practitioner, unless he has previously attended closely to the subject; and then passing forward to the consideration of the most common effects of inflammation, effusion, and adhesion, as affecting the functions of the brain.

It may seem curious that the hydrocephalus internus is the only species of dropsy productive of enlargement of the cranium. Water forming in the ventricles will, if the accumulation takes place slowly, go on for an immense length of time, and often produce a separation of all the bones of the skull, without its being attended with symptoms indicating any material disturbance to the functions of the brain; whereas water deposited between the membranes upon the external surface of the brain may perhaps partially separate the arachnoid membrane from the pia mater, but will rarely if ever proceed further, before it proves fatal.

But this may not be the consequence of the brain having less power to carry on its functions under an external, than an internal pressure; it may perhaps, rather be attributed to the general circulation of the blood through this organ being less extensively deranged in the one case, than it is in the other; at least so it appears to me.

The proportion of blood circulated by the vascular membranes within the ventricles of the brain, compared with that conveyed by the pia mater covering the external parts of the brain, may be estimated as one part, to fifteen or twenty; conse-

quently a disturbed state of circulation within the ventricles may be expected to operate much less extensively upon the functions of the brain, than the same kind of derangement would do, taking place upon the membranes covering the whole of that organ externally.

The membranes of the brain are frequently affected by sympathetic, or translated action. In that state of constitution productive of gouty and rheumatic complaints particularly, this is observed to take place. When for example there is not strength of constitution sufficient for the production of the regular fit of gout, the attempt will appear to fail, and symptoms of effusion upon the brain immediately follow.* This attack, according to the prevailing state of the habit, may be attended with much or little inflammatory action, or perhaps with none at all.

Rheumatic affections of the brain, on the contrary, are I believe invariably attended with the symptoms of acute inflammation, which circumstance, if the observation is correct, may sometimes lead to a diagnosis between gouty action falling upon the brain, and that dependent on rheumatism.

Beside the above affections, the brain is liable to suffer from the retrocession of any increased discharge, or any external eruptive disorder. Of this I have seen many instances, some terminating fatally, and all possessing sufficient importance to deserve attention.

* An interesting though unfortunate instance of this kind, is related in some practical observations on the diseases of the Urinary Organs, which I have lately published.

Case 33.

Paralytic Affection, connected with an imperfect Fit of Gout.

In the month of August, 1809, Mr. K—— of Welbeck Street, a man aged fifty-five years, who had enjoyed good health for many years, complained of pain and lameness in the great toe. He had been a little journey into the country, and fancied he might have taken cold. On alighting from the coach, he first experienced pain in the ball of his great toe, and as this increased he soon became perfectly lame. The following day I was requested to call upon him. On examination, there was considerable heat, redness, and swelling upon the part, and the sensibility and pain on pressure were so extreme, that he could scarcely endure any covering upon it.

On enquiry, it appeared that the gout was in the family, but that this was the first time of his suffering from it. He was directed to wrap the foot in flannel, and as his pulse and strength appeared to be below par, he was recommended to take that sort of diet most likely to improve the powers of the constitution.

Thus he went on for three days, when, after having smoked a pipe in the evening as usual, he was observed to speak thick, as if he had been drinking, which had not been the case. On this being mentioned to him, he said he also felt strange sensations about his left arm and leg, although he had still the power of feeling, and of motion, remain-

ing. The pulse was fuller and softer on the left, than on the right side. He said he had not experienced the least pain in the head, nor any sense of vertigo, but observed that he felt unusually heavy. Independent of the faultering in his speech, the angle of the mouth was now obviously drawn aside.

He had also, in consequence of this attack, a stupid unmeaning levity in his mode of expression, similar to what sometimes arises from intoxication: this circumstance was the more remarkable, because it was strikingly the reverse to his natural manner. On enquiry, he said he was now quite free from the complaint in his toe, which was perfectly well.

With a view to his relief, eighteen ounces of blood were immediately taken from the arm, a large blister was laid upon the back of the neck, and a strong cathartic directed.

The following day his speech was much more distinct, his manner more composed, and upon the whole, he was much better.

On the second day after the bleeding, he complained that the foot first affected having recovered, the ball of the great toe of the other leg was now affected in a similar manner, and had during the night been extremely painful. On examination, the integuments were red, tumid and heated, with some degree of œdema, and extreme pain upon pressure. This seemed to establish very clearly, the complaint's having been a first attack of gout.

He was therefore again allowed to take a less

abstemious diet than before, with a view to keep it in the foot, if possible; the part was well wrapped up, but the pain continued for several days, preventing him from getting sleep at night. The attack then went entirely off. He slowly improved in his power of articulation, and was left after some time in a tolerably comfortable state of health.

In March, 1810, this gentleman had by no means recovered his power of speaking distinctly, though in other respects tolerably well.

In May, 1812, during a season of mild westerly weather, he was sitting with his family, and was observed to be in better health and spirits than usual. In the course of the evening, however, on the conversation being addressed to him, he made no reply. He endeavoured to speak, but could not express a word audibly. His wife enquired why he would not answer what was said to him, when he again attempted to speak, but failed. He remained restless and watchful the whole night, without pain, but without the power either of speaking or swallowing.

Early the next morning I visited him, took away full two pints of blood from the arm, and ordered him a purging mixture. Before the blood ceased to flow, he found himself greatly relieved. It was curious, that one of the immediate effects of this second attack was a considerably increased secretion from the salivary glands.

By the next day the medicine had operated, and in every particular he was much better. In the course of a week the salivation had almost

entirely subsided, and he was again able to speak, and to swallow nearly as well as before the attack.

From this time he went on in a pretty even state of health for near two years and a half. He was generally able to walk a little in the open air, although in a feeble manner, but he did not improve either in his power of speaking, or in his intellectual faculties. With the organs of speech, those of deglutition also, remained weak. The act of swallowing was always attended with apprehension, and danger of suffocation. In its passage into the œsophagus, a part of the food frequently insinuated itself into the opening of the larynx, and the immediate consequence of this accident was always a convulsive and terrible fit of coughing, during which, his face became suffused with blood, and he totally lost all power of articulation; and this he rarely recovered again in less than an hour.

In the above interval of tolerable health, a very curious and singular circumstance took place, and that repeatedly. The usual extent of his daily walk in fine weather, was such as to occupy him about half an hour. One afternoon, he was walking at some distance from home, when he said he felt as if in danger of falling forward, which sensation induced him to quicken his steps. The conviction of the insecurity of his feet increasing, the quickness of his pace was increased also, until in the attitude, and with all the alarm of a person actually falling, he ran, and continued running, till at length he reached his own house; but, although he was running pretty quick, volition had so little direct

controul over the action of his limbs, that wishing to stop, he could not, but passed his own door, and endeavoured, with a view to save himself from falling, to lay hold of a post that was just beyond. By the time he had proceeded about a hundred yards further, he succeeded in checking himself; and as his family who had seen him, ran out to his assistance, he at length reached his house without falling, but almost breathless, and fatigued to a degree which he did not recover for several days.

The frequent effect of those diseases that produce effusion upon the brain, being that of impairing nervous sensation and power, it is not surprising that a series of muscular actions, over which the will usually exerts an absolute command, should, under the influence of these affections, sometimes prove defective; the impressions derived from volition being more or less confounded with those by which the involuntary actions are produced. Indeed, the singular circumstances of this case, bear a strong affinity to the phenomena of chorea, and are readily explicable upon the same principle.

In the beginning of October 1814, he suffered another more severe attack than either of the former. This reduced him to the most helpless state conceivable. Treatment was had recourse to without effect, and after languishing some time he died on the 12th day of the month.

It was matter of extreme regret and disappointment, that the friends could not by any means be prevailed upon to allow the examination of the body.

The above case is sufficiently well marked to shew that the brain occasionally becomes the seat of gouty action, but such instances are by no means rare. A lady about the turn of life, whom I have attended repeatedly, and who has for many years back been severely afflicted with gout, has within these three years experienced, on several occasions, most alarming pains in her head. These have never occurred but at the periods when the gout was flying about, and manifestly operating in the constitution. The disease, as usual, was in this case for many years confined entirely to the foot, but of late the immense discharges of chalk and purulent matter from the feet, have proved insufficient to allay the severity of the attack, which alternately has affected the joints of the feet and hands, the muscular parietes of the chest, the lungs, the stomach, and the brain, producing almost always the symptoms indicating inflammatory action. The pain in the head was in this instance of the tensive kind, alternating with most severe darting pains shooting through the brain with incredible force. This affection was attended with great sensibility to light and sound, and was now and then productive of delirium. The treatment that succeeded best in removing it, was blistering, and even bleeding, assisted by aperients, salines, and opiates.

Exclusive of gouty or rheumatic disease falling upon the brain, the functions of this organ are subject to be deranged by the retrocession of any eruptive complaint whatever, that may have pre-

viously existed upon the external surface of the body. Of this position the two following cases may serve as illustrations.

Case 34.

Habitual Eruptive Action, driven in upon the Brain.

Miss C. T. a young lady aged 24, had been for several years subject to an eruptive complaint upon the face, which was frequently very troublesome. Her menstrual health was frequently deficient, and when this was the case, her face usually became heated and irritable; largish pimples, of a dull red colour, made their appearance, and the irritability being hardly supportable, these pimples were sometimes scratched, and would bleed.

For so unpleasant a complaint, she was naturally anxious to find a cure. It was mentioned to me repeatedly, but as it had been ascertained by experiment, that neither bark nor steel agreed with her, I advised her to bear with it, but by no means to use any local application with a view to its removal. This opinion satisfied her for some time, but in June, 1813, she was prevailed upon by a female friend, to apply a lotion to her face, which certainly answered its purpose, for it cleared the face presently, but as the heat left the cheeks she began to feel uneasiness in the head, and by the time the eruption was pretty well removed from the skin, she complained of a tremendous sense of fulness and severe pain in her head; soon after which she became delirious. Bleeding, blistering, and much attention, were necessary to relieve the

severity of this attack, but the object, which of course, was to bring back the eruption, if possible, to the face, was not accomplished in less than three months, during which period she continued to suffer from severe head-ache.

Case 35.

A Translation of Eruptive Action to the Brain.

G. Duncombe, a strong healthy labouring man, fifty years of age, was engaged as a farmer's servant in the country. In October 1809, the weather being warm, he had, one afternoon, very imprudently drank freely both of cold water and table beer, while heated by hard work, and while a very copious perspiration was breaking forth. Almost immediately he found himself becoming ill and feverish. This indisposition continuing, in a few days a rash came out all over the body and limbs. He burned like fire to the sensations of other persons, while to his own feelings, he seemed to be shivering with intense cold.

When he was so ill as to be no longer capable of moving about, medical advice was procured, and he was several times immersed in the warm bath. The rash, after remaining upon the skin for some days, disappeared. Within a week it came out again. In this manner it returned upon him several times.

This eruptive disorder, in about six weeks from its first appearance, finally left him, and he now complained much of soreness and pain in one of his groins, which soon became hot, red, and considerably tumid. Other swellings also formed beneath the

integuments, upon various parts of the thigh and arm.

Some of these, assisted by poultices and fomentations, formed abscesses, and were opened, about a week after they had begun to inflame. Others were less disposed to suppurate, and remained in a comparatively indolent state. His ill health however continuing, he remained confined till the January following, when, after having passed through a tedious course of pain and distress, his complaints seemed disposed to leave him. The swellings that had not suppurated, tending to resolution, and those that had ulcerated, discharging less and less every day.

As soon however as these ulcers ceased to discharge at all, a remarkable disposition to doze and slumber was observed. This happened on January 15th, subsequent to his admission into the St. George's Infirmary, and from this period the tendency to sleep increased upon him daily. He became morose and impatient. When it was observed to him that he had become very sleepy of late, he answered "No, it was not to be supposed he was sleeping as often as his eyes were shut, for that he was capable both of hearing, and seeing, as well as other people."

This propensity to slumber continued to increase, although by slow degrees. On the 21st he observed to his wife, that he was convinced he should not live long. He said he was quite free from pain in the head, nor was he suffering pain any where. On the contrary he proposed having his bed made,

and was able, without inconvenience, to sit up in a chair, while this was done.

During the short time he was in the chair, he said something ailed his eyes, for every thing appeared double. The following night he was seized with convulsive catchings in all the voluntary muscles. This attack however, was only of a few minutes' duration.

The morning after this, he was found by the nurse lying in an insensible state, breathing laboriously. In the course of the same forenoon, he had a second attack of slight convulsion as before. A third fit occurred at eleven, and at three in the afternoon he expired.

The pulse, in the early part of this poor man's illness had been febrile and hard, but latterly it was weak, small and slow.

Circumstances unfortunately prevented the examination of the head, after death.

Case 36.

Suppressed Perspiration from the Feet, followed by Symptoms of Effusion upon the Brain.

J. Powell, a very healthy old man, seventy-seven years of age, had been for many years subject to an excessive perspiration from the feet, more especially upon taking any exercise. This tendency had for years past been so great an inconvenience, as to oblige him sometimes to change his stockings several times in the course of the day.

In all other respects he enjoyed excellent

health, and his constitutional strength was remarkably great, for a person of so advanced an age.

Complaining frequently of this inconvenience, he was one day advised by a neighbour to apply the fresh leaves of dock to his feet. He was told this would effectually cure his complaint. Accordingly he laid a single dock leaf to the sole of each foot, and very soon perceived they had taken effect. He felt a sensation of tingling and irritation, whereever the leaves came in contact with the skin. Within half an hour after they were applied, he experienced great uneasiness and pain in the head. This pain soon became very distressing, particularly over the eyes, which it is remarkable were so quickly affected, that before the leaves had been applied an hour, he was nearly totally blind. He found his sight impaired when the pain was merely an uneasiness, and the power of distinguishing objects around him was completely gone within the hour. For these complaints he was admitted into the St. George's Infirmary.

On being examined with regard to his power of discerning the light, it appeared that he could perceive a strong light, and could also make out the figure of an opaque object, placed between the eye and a clear light. Such objects appeared involved in a thick fog, or mist.

In this state he remained some time. During the following night, the pain in the head totally deprived him of sleep ; but he had no constitutional disturbance, or disposition to fever.

The next day he was much the same. There was no action of the iris of either eye, on exposure to various degrees of light. The pupil remained fixed, in a state of permanent contraction. He was, however, still able to perceive when he was brought near a window; but this was all he could make out.

For his relief, a blister was laid behind each ear, and others applied to the lateral parts of the feet. Small doses of calomel also were ordered at short intervals, with a view to bring his system under the mercurial influence.

As soon as the blisters began to operate and become painful, so soon he perceived the pain in the head, and affection of sight relieved. By the time they were dressed, at the usual period of twenty-four hours after their application, he was able to distinguish many objects with tolerable precision, that were before totally invisible.

The blistering plasters removed, dressings of an irritating nature were applied, as it was deemed necessary to keep up a considerable discharge for some time. In addition to the above plan, it was also directed that his feet should be immersed in warm water, morning and evening, and afterwards wrapped very warmly in flannels, to restore, if possible, the wonted freedom of perspiration.

Under this treatment, the patient was gradually restored to health, losing the distressing pain in his head, while he every day found his sight improve.

The mercurial course affected his mouth rather smartly, and under its influence he had the comfort to find himself entirely relieved from the little remaining head-ache, and very nearly the whole of the affection of his eyes.

Previous to this accident, he had enjoyed a clearness of sight very rare at his age, and after his recovery, his vision became nearly, though not quite as good as it had been previous to his making the above hazardous experiment.

On leaving the Infirmary, he was recommended to wear a piece of oiled silk, wrapped round each foot, with a view to encourage the insensible perspiration.

A soft tumor of a particular nature is occasionally observed to form upon the head, in new-born infants. Upon examination, the nature of the swelling is readily made out. This kind of tumor arises from an effusion, now and then of serum, but most usually of blood, into the cellular membrane, between the integuments and the pericranium. It is merely an accidental consequence of the pressure, during the expulsive efforts of labour, and in general requires little or no treatment. I have seen many of them do well. In a few instances where the infant has died from some other cause, I have ascertained the nature of the tumor by making a division of the scalp, and have found

the affection to be confined entirely to the cellular membrane external to the skull, while the contents of the cranium have not exhibited any particular marks of congestion.

Now and then a degree of coagulation takes place at the marginal basis of this description of tumor, the result of which is a very deceptive kind of feel. The ambiguity arising from this circumstance has, on examination, occasionally led to the opinion that a part of the cranium was deficient. The marginal line whence the tumefaction is diffused, is readily mistaken for the boundary of the ossific surface, and the softer space within, which may be apparently more depressed also, has very much the feel of the yielding membranes of the brain. *

Where, however, a part of the cranium is deficient, the pulsations of the brain will be readily distinguishable, which will not be the case in extravasated fluid lying upon the skull; and this circumstance it may be well to keep in mind, as it is always desirable to be able to give a clear and accurate opinion, although with regard to the precise distinction between defect of bone, and effusion of fluid, the diagnosis is of no serious importance, as the active hand of surgery is not required in either case; gentle frictions, and spiritous embrocations being all that is necessary in the way of treatment.

* I have repeatedly found the same deceptive sensation occur in examining an extravasation beneath the scalp, from external violence.

It has, however, occurred to me to see in one instance a very extensive internal injury to the brain, from the force with which the blood was driven into the head of the infant, during labour; the circumstances of the case are the following:

Case 37.

Extravasation of Blood within the Head, in difficult Labour.

A middle aged woman, whose pelvis was considerably deformed, after a most difficult labour of three days' continuance, was delivered of an apparently still-born infant.

The child was large, and the head, which was of full size, was exceedingly flattened, in consequence of the projection of the sacrum into the cavity of the pelvis. Every proper exertion was made to restore the infant, and by the assistance of artificial respiration the motion of the heart was re-excited, and as long as the respiration was kept up, so long the circulation was supported; but when that was discontinued, this also failed.

By these means the heart was kept going for nearly twelve hours, but on the artificial respiration being finally abandoned, the lips became blue, and the body, in which no attempt at voluntary motion had been observed, soon became cold.

Immediately the child was born, a soft tumor of some extent was observed beneath the scalp upon the vertex of the head. This had the feel of fluid, deposited between the scalp and the cranium.

In the course of the following day the head was examined.

Examination.

On dividing the integuments, a considerable effusion of blood was found deposited in the cellular membrane between the pericranium, covering the superior portions of the parietal bones, and the corresponding part of the scalp. This extravasation of blood was equal to about an ounce and an half in quantity. Within the cranium extravasation had taken place to a very considerable extent. The smaller arteries upon the pia mater had given way, and effusion of blood, over every part of the brain, had been the consequence. This appearance, however, was most remarkable about the basis of the brain.

Some small sections of the cortical and medullary substance of the brain were next made, and here also the capillary arteries had given way almost universally. The extravasation seemed to have been entirely confined to the capillary vessels, and the appearance was only found near the surfaces of the brain; the small coagula were most of them about the size of pins' heads, some few only being larger.

Within the lateral ventricles the plexus choroides was found heavy and compact, from a quantity of effused blood, which had been poured out into the cellular texture connecting the two laminæ of this membranous expansion.

CHAP. II.

ON SOME OF THE DISEASES OF THE NECK.

SECT. I.

ON THE AFFECTIONS OF THE LARYNX.

OF the affections of the neck, perhaps those in which the larynx and trachea are concerned may be considered the most immediately important; for the greatest vigilance, as well as discrimination, are necessary to enable us to ascertain the first approaches of disease in these parts; — disease which may possibly carry off the patient by suffocation almost before the medical attendants are led to consider him seriously indisposed.

The functions, as well as structure, of the parts composing the larynx, are of a complicated nature. Every modulation of voice is produced by an effort of volition, regulating the action of the various small muscles which move the parts within the larynx. In the production of the higher tones, the length of the tube is increased by the larynx being drawn upward, by which the trachea is lengthened; while to sound the lower notes the reverse takes place; and these changes are regulated by the con-

joint action of the surrounding auxiliary muscles of these organs. Again, in swallowing, a very complicated series of actions is necessary, in which the muscles of the larynx, which bring down the epiglottis, bear a part. Hence it is evident, that a very small degree of derangement may, in parts so constituted, produce much mischief; whether such derangement affects the structure, or the actions only.

The most trifling irritation about any part of the larynx will occasionally induce a convulsive action, not only of the muscles of the larynx, but of the chest also; and any irritation situated at the lower part of the trachea will, on the same principle, extend its operation, by exciting an irritation in the muscular parts of the larynx, so as to induce violent spasm, and symptoms more or less resembling asthma.

An inflammation of the mucous membrane lining the cavity of the trachea has been called croup, and from a certain peculiarity in the sound of the voice being considered a constant attendant, this symptom has been very generally pointed out, as the diagnostic sign of the disease. The inconstancy of symptoms, however, is such that it may be almost doubted whether there really are any symptoms that can be absolutely relied upon to point out the existence of particular internal disease. I have seen a case of croup in which this symptom was wanting, and on this very account the true nature of the affection was not suspected till it was too late. I have attended in another, where

from the presence of this symptom, the medical gentleman that was first in attendance was clear the complaint must be croup, and the disorder, which was not croup, was consequently aggravated by the means used for its relief.

Case 38.

Inflammation of the Trachea.

The former of these two cases was in a child about eight years old, who had been attended by a physician of high reputation and much discernment. There were the general symptoms of fever, quick pulse, head-ache, &c. with some oppression, but no pain about the chest. On the turn of the first week, some degree of redness and inflammation took place about the fauces, the tonsils became sloughy, and the tongue lost its former white colour, and became first brown, and then black. At the end of the fortnight the child was rapidly declining. Respiration then became extremely laborious, and this continued little more than twenty-four hours before the child expired, apparently suffocated.

At the commencement, the common medicines for fever were administered, and when latterly it became an object to raise the strength of the constitution, wine, bark, and opium, were prescribed.

Examination.

I was requested to be present at the opening of the body, on which occasion the fauces and ton-

sils were found inflamed. A small slough had nearly separated from the right tonsil. But the opening into the larynx seemed also inflamed, and almost choaked up with mucus. The larynx and trachea were therefore removed and laid open, when the whole extent of the membranous lining was found highly inflamed.

Upon the internal surface of the membrane lining the trachea, and very loosely connected with it, was deposited a considerable quantity of coagulable lymph. This was of a yellow colour, and pulpy consistence, which circumstances might have in some degree depended on its being mingled with a profuse secretion of viscid mucous matter. The coagulable lymph formed an irregular tube within the trachea, while the mucous matter, partly of a purulent colour, and partly clear and transparent, occupied the space within the adventitious lining. The mucous membrane itself, when exposed, was found of the brightest scarlet colour, from high inflammation.

These appearances extended themselves very far down beyond the bifurcation of the trachea; and even in the smaller branches which the purulent action seemed scarcely to have reached, there was an unusually abundant secretion of mucus, the consistence of which was so viscid and tenacious, that it must have materially hastened the fatal termination of the disease, by preventing the passage of the air, and eventually producing suffocation.

Case 39.

Spasmodic Affection of the Larynx, supposed to be Croup.

In the year 1812, I was desired to see Master H., a fine child about four years of age. Almost a twelvemonth had passed since the commencement of his complaint. The symptoms had been, extreme difficulty in breathing, with a sort of ringing or stridulous sound in the throat. The medical attendant had at first pronounced it croup, and the usual remedies for that complaint, with blistering, leeching, &c. had been adopted in vain; indeed the complaint seemed rather worse than better after them. In the course of a few days the urgency of the first attack began to abate, and the child soon got the better of it. There had been no well-marked feverish paroxysm throughout, so that the circumstances of most importance were the fullness about the vessels of the head and face, arising from the occasional temporary aggravation of the dyspnœa.

This little boy, when he had recovered, did not remain very long well; but the return of his disorder proved less severe, and less tedious than it was at first. The presence of the croupy sound in breathing, and the manifest obstruction to the transmission of air through the larynx and trachea, induced the practitioner still to maintain his first opinion of the disease.

In this way the child went on, sometimes better and sometimes worse, but occasionally altogether free from his complaint for a month together;

until accidentally the father mentioning in company, the child having had the croup for so long a time, was told it was no such thing; for that the croup was an acute disease, and always ran its course very rapidly. Soon after this, under the idea that the complaint had been misunderstood, I was requested to see the child; whom I found in every general respect healthy. There was, however, still some difficulty in breathing, dependent evidently on an obstruction about the larynx. The complaint was much better in clear and dry, than in close and moist weather; and on enquiry, I found that affections of mind, particularly anger and passion, never failed to aggravate it most materially; and that if the child was contradicted, or corrected, the dyspnœa became invariably so much worse, that he would quickly become black in the face, and frequently remained in that state for an hour, or more.

Under the impression that the affection was purely spasmodic, I prescribed a mixture with bark, opium and æther, in a light form, to be regularly given. By this plan, the complaint, in a few days became evidently better, and in the course of a fortnight was completely and permanently removed.

Where inflammation of the mucous membrane of the trachea has once established itself, the chances of recovery are small. But dissections prove that even these chances depend very

much on the state of the constitution. The slightest degree of inflammatory action in an irritable habit, will quickly extend itself, so as to reach from the larynx, down to the smallest branches of the bronchiæ in the lungs; and as the sphere of irritation weakens as it extends, an increased secretion of viscid, glairy mucus is found deposited, to a greater extent than the inflammation has reached.

From attentive observation of the secretions thrown off from this membrane when inflamed, I am led to believe, that where the irritability is extreme, and the prevailing disposition is to low fever, the coagulable matter, if coughed up, will be entirely of a yellow colour, and very much diffused in a purulent mixture, losing of its proper characters as pure coagulable lymph, and taking on a pulpy, and almost mucous appearance. In such cases, the appearances after death shew the extreme propensity in the increased action, to occupy the whole extent of the ramifications of this membrane in the lungs, and the prospect of cure, with such appearances of excreted matter, will consequently be unfavourable. The lungs are found after death so oppressed, and choaked up by the quantity of mucus secreted into the bronchiæ, that supposing all affection of trachea removed, it would have been impossible for the patient to have escaped suffocation.

This then appears to be one of the worst forms of the disease, in which the affection occurs with symptoms of low or typhoid febrile action in the system; and this variety of the complaint is not

confined to any particular age, for I have seen it take place at different periods of life.

Where, however, the state of the habit is strongly disposed to phlegmonous action, the inflammation shews less disposition to spread, but the increased action is of a more decided character. The coagulable lymph is effused in its pure state, and assumes a compact form. In this case it has a whiter colour, and is more firm and tenacious than in the other. The matter thrown up may be blended with mucus, but with little purulent fluid, and by washing, the coagulated lymph is readily separated from the purulent or mucous matter, but in the former case it is not so. The latter is the most favourable form of the disease, as from this the patient may recover. The coagulable lymph is coughed up, entangled with the mucous secretion, from the trachea. The appearance of it, in several preparations,* from young persons who did recover, is very beautifully reticulated. The favourable issue of these cases affords the best proof of the inflammation not having formed a very extended sphere of surrounding irritation passing down into the lungs, as takes place in the typhoid state of constitution.

The two following cases, which occurred in St. George's Hospital †, afford a clear and satisfactory history of the symptoms and appearances of this complaint, as it most usually takes place, in grown persons.

* Preserved in Mr. Heaviside's Museum.

† Communicated by Mr. Hamerton.

Case 40.

Inflammation of the Larynx, and Trachea.

Charles Walker, a stout looking young man, aged seventeen, was seized on Monday evening the twentieth of March, 1815, with shivering, violent vomiting and purging. On Tuesday morning he complained of sore throat, and great pain in the head, with considerable fever. He was brought to the Hospital on Wednesday morning about twelve o'clock.

He complained of great sickness, and sore throat. His pulse was small, and beat 130 in the minute. The tongue was foul, and the skin hot. The tonsils were of a dark red colour, enlarged, and ulcerated. On Thursday morning he swallowed liquids with considerable difficulty and pain, and his breathing was much affected. About the middle of the day respiration was performed with extreme difficulty. His countenance was livid, and his eyes protruding. He could not speak, or put out his tongue. His pulse could no longer be felt at the wrist; shortly after he died.

Examination.

The tonsils were found enlarged with a considerable slough on the right side. The root of the tongue and the whole of the fauces were covered with a secretion of puriform mucus, and the inner membrane lining those parts was inflamed. The epiglottis, glottis, and larynx were slightly enflamed, and much thickened from effusion behind the mucous membrane, into the cellular

substance. The trachea immediately below the larynx was slightly inflamed, but this increased in its descent towards the bifurcation, where the inflammation was very considerable. The whole of the bronchial ramifications were loaded with a purulent secretion, and the lungs were fuller of blood than natural.

The membrane lining the inside of the œsophagus (about one-third down from the pharynx) was of a dark purple colour.

Case 41.

Inflammation of the Larynx, and Trachea.

John Larking, aged sixty, had been confined to the Hospital for three months, with some diseased bone of the cranium. On Tuesday evening the twenty-first of March 1815, he was attacked with cold shivering, attended with nausea. On Wednesday morning, he complained of sore throat, which, on being examined, had very slight, if any appearance of inflammation. He had some fever.

His complaints were considered trifling, as arising probably from cold. A common gargle, with some saline medicines, were prescribed for him.

He continued to walk about the ward, the whole of Wednesday and Thursday, during the night of which he became worse. He was seen a little before two, on Friday, when the following symptoms were observed. His breathing, which was rough and hoarse, was performed with great difficulty. His voice was nearly inaudible, and his

countenance, which discovered great anxiety, was pale and livid. The pulse was small, weak, and intermitting; 140 in the minute. The skin cold, and covered with a clammy sweat. He complained of great pain about the larynx, which pain was much increased by examination externally, or upon pressure. The tongue was white, and loaded, deglutition was performed with great difficulty and pain. He had been subject to cough, and this now became more frequent. He expectorated freely a large quantity of a purulent secretion.

Upon attentive examination, no appearance of ulceration, inflammation, or enlargement about the tonsils could be perceived. But upon the posterior part of the pharynx there appeared something like small patches of lymph.

Some stimulants were given, but in this advanced stage of the disease, nothing seemed to relieve the patient. He died about four in the afternoon.

Examination.

The body was examined the day after his death.

There was a small spot of ulceration upon the right tonsil, which was rather enlarged. There was also an ulcer of considerable size towards the lateral and lower part of the pharynx. The epiglottis, glottis, and larynx, were only slightly inflamed, but considerably thickened by lymph or serum thrown out behind the mucous membrane, so as to cause a considerable narrowing of the general cavity of these parts. There was a very small ulcer on the edge of the epiglottis, another

on the rima glottidis, and a sloughy-looking spot on the side of the glottis. The trachea immediately below the larynx was very slightly inflamed. But the inflammation was greater towards the lower part, and was much more intense in the bifurcation of the trachea, the ramifications from which leading to the bronchiæ, were choaked up with a puriform and mucous secretion. The lungs were much loaded with blood, and there was effusion of a purulent nature into the cellular membrane between the trachea and œsophagus.

The dissection of those who die from inflammation of the mucous membrane within the larynx, occasionally demonstrates that it is by no means necessary that ulceration take place, or that a secretion of purulent or coagulable matter be thrown out into the cavity of the larynx, in order to suffocation being induced; as this event has taken place, when, on examination after death, the affection has proved to be merely a tumid state of these parts, from œdema produced by an effusion of serous fluid into the cellular texture.

The varieties of inflammatory affection to which the cavity of the larynx is subject, have not in general been observed with sufficient attention; of late, however, the contributions of some eminent practitioners have brought to light some few highly interesting facts, with regard to these most serious complaints.

The rapidity with which they run their course,

has, no doubt, in many instances, been the means of their escaping notice; but this circumstance, together with the general fatality of the event, should operate as the strongest inducements, to give the subject particular consideration, that we may always bear it in mind, whenever difficulty of breathing presents itself under circumstances which are at all doubtful.

It appears that the most constant symptoms of the first stage of inflammatory affection in the larynx are, a sense of pain or uneasiness about the thyroid cartilage; considerable dyspnœa, the cause of which is referred by the patient to the larynx; and symptoms of fever, the form and degree of which will be regulated by the state of constitution.

During this period of the complaint, the utmost vigilance will be required, in order that the favorable moment for preventing the complete establishment of the disease, may not be allowed to pass.

Every means by which the circulation is capable of being lowered, should be instantly had recourse to, with a view to diminish, first quantity, and then action. Bleeding, both general and local, will therefore pave the way to blisters, and the subsequent exhibition of the various diaphoretic and antispasmodic medicines.

But for want of early attention to these means of relief, or perhaps, notwithstanding their prompt application, the dyspnœa may still go on increasing every hour, producing the most distressing anxiety and risk of suffocation, with occasional delirium.

Whenever the complaint reaches this point, the operation of bronchotomy should be immediately performed; otherwise the extreme labour of respiration, and the imperfect manner in which this function is carried on, will quickly destroy the powers of the constitution, and the patient will die exhausted, notwithstanding that relief which the late performance of the operation may be capable of affording.

As to the precise mode of performing the operation, I believe it is not material. After dividing the integuments longitudinally, either a transverse opening may be made between the thyroid and cricoid cartilages, or a narrow longitudinal portion, including several of the rings of the trachea, may be removed with a pair of scissors; the latter of these two modes I think the best, as it affords the most adequate passage for the transmission of the air, while the situation of the opening is more out of the way of the inferior thyroid artery, than a puncture would be, if made more immediately below the thyroid cartilage.

The subsequent introduction of tubes of various kinds, has been recommended by some writers, but as they generally produce irritation, sometimes to the most extreme and distressing extent, and are very rarely indeed necessary, it should always be previously ascertained that the patient is unable to respire freely without such assistance.

From observation, I should say that, in all probability, spasm of the muscles of the glottis, is much less frequently concerned in the fatal event

of these complaints, than was supposed by Dr. Cullen; although, with a candour worthy of so great a man, he admits that he never succeeded in relieving the symptoms by the use of antispasmodic remedies.

We have seen that under some circumstances of constitution the most rapid extension of inflammation may take place in the mucous membrane of the larynx and trachea; and that under others, inflammation is much less disposed to diffuse itself; but so absolutely does the state of constitution regulate the disposition of these parts to take on, or to extend, inflammatory action and its consequences, that I have seen an instance in which an abscess was completely formed in the cellular substance between the inner surface of the thyroid cartilage and the membrane lining it internally, without its having produced any material change even in the colour of the parts immediately surrounding it.

Case 42.

Abscess in the Cavity of the Larynx.

This patient was a soldier, about thirty years of age. He had complained, in the first instance, of a very painful swelling upon the muscular part of the left thigh. The tumor was hard, heated, and red, much resembling a phlegmonous inflammation. Added to this, he was feverish, and could get no rest at night.

By sedative applications, and saline medicines, the inflammation was nearly dispersed by the end

of a week, when a second tumor, precisely resembling the first, arose upon the fleshy part of the left fore-arm, and was attended with severe pain. This swelling was poulticed, fomented, and opened, and about four ounces of matter discharged. The abscess suppurated copiously for a week. There now commenced a violent swelling and inflammation upon the back part of the right hand. This was fomented for three days, during which time he had not the least power of moving his fingers. The symptoms then began to abate, and by the end of a week from its commencement, this swelling was entirely dispersed.

The ulceration upon the fore-arm was evidently connected with the tendinous parts of the flexor muscles; and portions of the fascia, with sloughy fragments of tendon, were repeatedly found in the opening of the wound, and were removed. A probe readily passed upward and downward for some distance in the diseased muscular and cellular structure. When it had been open about a week, the cavity threw up florid granulations. It had discharged ten days, when it was observed that the quantity of matter formed, had suddenly diminished. In two days more the sore was absolutely dried up; so that the applications were found the next morning unsoiled. On the same day, he said he had an uncomfortable sensation about his throat. This he again mentioned a few days afterward, and said it was getting worse. Respiration was now somewhat impeded, not as if dependent on oppression in the chest, but as if from

some obstruction to the free transmission of the air into the lungs.

Towards evening his articulation became affected, his breathing difficult to the most distressing degree, and his countenance full of wild alarm. The difficulty of respiration continued to increase rapidly, in consequence of which, at midnight, a consultation was called, he was supported in bed, and took ætherial and antispasmodic medicines, and had a very large blister laid to the chest; about six in the morning he died.

Examination.

On dissection no particular secretion of mucus was found within the larynx, the trachea, or its ramifications. The whole of the mischief was confined to the thyroid cartilage, the cavity of which had become so much narrower than usual, as to have been the evident cause of suffocation.

The cartilage divided on one side, was laid open, and the parts carefully washed, when the cellular substance connecting the mucous membrane to the inner surface of the cartilage, was found inflamed, diseased, and very much increased in thickness. That portion of the membrane lining the thyroid cartilage immediately below the arytenoide cartilages, was astonishingly thickened, forming on each side the cavity, a spongy elastic cushion, projecting in such manner, that the two opposite surfaces were found as nearly as possible in perfect contact.

The surface of the diseased parts was of a firm

texture, and dull reddish colour; and when cut into and pressed, numerous globules of thick purulent matter issued forth from the diseased structure. In the colour, the feel, and the manner in which suppuration had taken place in this instance, the disease bore a striking analogy to carbuncle, only it was upon a smaller scale.

Sect. 2.

On Enlargement of the Lymphatic Glands of the Neck.

The lymphatic glands in the neck are particularly subject to enlargement, which takes place either as the consequence of cold, the excitement incident to fever, or that resulting from the long use of mercury. These affections, when arising from cold, are usually considered to indicate a disposition to scrofula; and, indeed, when they have been apparently produced by either of the other causes, it may be doubted whether they have not had a remote dependence on scrofulous tendency in the habit.

Where, from a slight degree of cold, or perhaps without any evident exciting cause whatever, the lymphatic glands form indolent, painless tumors, and subsequently burst, evincing all the characters of scrofulous action, the procuring a healthy disposition in the cavity of the abscess is generally both tedious and difficult. I have, however, in

one instance known an experiment succeed admirably. It was made with a view to restore artificially, the deficient tone of the parts affected, and induce either a truly healthy action, or one as near to it as possible. It was in a young lady, about seventeen. There had been a tumor just below the angle of the jaw, as large as a pullet's egg. This had been long troublesome, and at last bursting, continued to discharge curdy and thin matter for several months. When this healed, another gland began to enlarge in the same way. The surgeon who attended, considering how tedious the progress of the former tumor had been, determined to allow it in this instance to come forward, and when it had come very near the skin, he punctured it, and afterwards injected the cavity with a solution of the sulphas zinci, in the proportion of seven or eight grains of the salt to an ounce of water. The effect of this operation was very mild; a moderate degree of healthy inflammation, with some tumor, heat, and redness, supervened, which terminated in adhesion; and the experiment completely succeeded, as there was no return of the complaint.

I have seen several instances of very large abscesses taking place in some of the absorbent glands of the neck, attended with violent inflammatory action; as the result of scarlet fever. These only require bringing forward, and it is astonishing how quickly, not only the cavity of the abscess, but all the surrounding tumor and induration, is absorbed and got rid of.

But some of the most tedious and least manageable affections of these parts, I believe, to be such as occasionally arise in constitutions that have been long under the influence of mercurial excitement.

Case 43.

Suppuration of the Lymphatic Glands in the Neck, from Mercury.

One of the most strongly marked cases of this kind, that have yet fallen under my notice, was that of a stout young woman in the St. George's Infirmary, aged 20, who, in the course of the last five years had been six times under the process of salivation, for the cure of venereal complaints; but as the consideration of these may perhaps be resumed on some future occasion, it is only necessary here to say, that soon after her last recovery, being again about the streets, and exposed to the weather, she took cold, and several painful tumors formed below the margin of the jaw, and upon the neck.

The first of these gathered with heat, pain, and redness externally, for three weeks. It then burst, and discharged thick yellow pus, of a healthy appearance. A second swelling then came slowly forward, though attended with violent inflammation, and this broke six weeks after the first. A third formed soon after, near the others, and only gathered a week when it broke, and discharged freely. A fourth took place nearly in the situation of the third, and was opened.

Soon after this, (on April 18, 1814,) there remained a cluster of very enlarged glands below the

margin of the jaw on the left side of the face. These were in a partially indolent state, surrounded by an extensively indurated mass, from a considerable effusion of coagulable lymph having taken place into the adjacent cellular texture; yet each of these glands evidently contained matter.

The character of the affection was inflammation, decidedly more acute and painful than the truly scrofulous, with at least as much disposition to affect many glands at once, as scrofula has. Her general health was good, but she complained much of the tenderness, and constant pain, which prevented her rest at night.

The general treatment had been poultice and fomentation, which materially forwarded the breaking of the abscesses, several of which had reached the size of a hen's egg, before they burst. Cold sea water was tried for three weeks, without its appearing to do any thing.

On the 24th of April, she mentioned a swelling in the axilla, on the right side, which was, on examination, found to be one of the absorbent glands enlarged to the size of a goose egg. It felt soft and pulpy, was painless and insensible. This was left to itself, and very slowly dispersed. After six months' interval, another abscess formed with less pain than had formerly attended, in one of the glands of the neck. A considerable thickening and induration of the parts still remained from the old affection.

CASE 44.

Large Tumor in the Neck, from the Use of Mercury.

Another very remarkable instance of chronic affection of these glands, apparently derived from the long use of mercury, occurred in the case of a young man, also a venereal patient. For the last five years he had rarely been free from the mercurial excitement, either as required by the recurrence of old symptoms, or the application of new infection.

In October 1813, (about two months after he had finished the last course he had then gone through,) a swelling began to form in the right side of his neck. This was so far from giving pain, that another person first pointed it out to him, by observing that the one side of his neck was certainly larger than the other.

He paid no attention to it till December, when it had become very conspicuous. It then appeared to be an extensive soft fulness on that side of the neck, extending from below the ear, down nearly to the sternum.

The only application (out of many) which he found diminish the swelling at all, was a cold lotion, formed of a strong solution of the muriate of ammonia; but notwithstanding this, the swelling eventually continued to increase.

In July 1814 he found evident signs of venereal infection upon him, and on that account obtained admission into the St. George's Infirmary,

where the rapid increase of his complaints required, that at all risks he should use mercury, which was consequently ordered for him. The venereal complaints continued for some time to increase, and for these he used (with few intermissions) the mercurial frictions every night till the middle of October. By this means his system was kept in a state of moderate excitement for the above period, and his venereal symptoms removed.

The swelling upon the neck previous to his commencing the above course had been very considerable, so that his neck appeared twice as large as natural, his head was inclined to the opposite side, and in damp or bad weather the quantity of the tumor increased to that degree as to produce much inconvenience both in swallowing, and breathing. The feel of this swelling was that of a congeries of soft, but very large pulpy tumors, so closely compacted together, as to form one general mass; occupying the space in which the string of lymphatic glands are usually situated in the neck.

The necessity for mercury was however so clear, that however unfit the state of his constitution might be, there was no time to hesitate as to the adoption of the treatment; and it is worth observing that the result of the experiment was decidedly happier than could have been expected. Through the whole period of the exhibition of mercury, I watched this tumor in the neck with attention, but it remained altogether stationary, neither becoming at any time painful, nor gaining or losing any thing of its previous magnitude.

In May 1815, the swelling remained perfectly free from pain, but perfectly unreduced. His general health was now tolerably good, so that he returned to his business, which was that of a house-painter.

Sect. 3.

ON INFLAMMATORY AFFECTIONS OF THE THYROID GLAND.

Affections of the thyroid gland, (the soft chronic tumor excepted,) are but rarely met with. It is infinitely less subject to inflammation than any other glandular structure in the neck. I have, however, seen two instances of its being thus affected from a common cold.

Case 45.

Inflammation of the Thyroid Gland.

James Day, aged sixteen, a recruit in the 82d regiment of foot, caught a violent cold in May, 1809. He complained of pain and swelling in the neck. On examination the sub-maxillary glands were found somewhat enlarged, but not painful. The most considerable swelling, however, was upon the lateral part of the larynx, situated somewhat above it, and extending itself upward and outward. The swelling was firm and even hard, and the skin covering it was dry and hot.

This tumor was closely attached to the base of the larynx, and followed all the motions of that part, so that from its appearance and situation, it

was pretty clearly an inflammation of the left segment of the thyroid gland, the right side remaining totally unaffected.

The boy said, that in the course of the night the swelling upon the larynx had been very painful, stinging, and shooting, but that it was now much easier. The smaller swellings of the salivary glands had given no pain at all. The pulse was at 100, and rather hard. The skin was natural, but he was very thirsty, the tongue being white and dry.

He was ordered a grain of calomel three times a day; and this was continued for several days, when the pain he had felt in the swelling had completely subsided. The hardness however remained, so that it still felt like a plate of horn; a circumstance that arose partly from the firmness of the tumor, and partly from the close adhesion between it and the integuments. In the course of a week all pain and febrile action having left him, the induration the only remaining local symptom, it was considered unnecessary to keep him in hospital any longer, and he was therefore sent to his duty.

The indurated feel of the parts subsequently disappeared, but very slowly.

Case 46.

Abscess of the Thyroid Gland.

A strong healthy man, about fifty years of age, guard to one of the mail coaches, was particularly exposed to the severe frost and snow, in the winter of 1814. Subsequent to this he felt poorly, and when he reached home complained of stiffness,

and tenderness in the glands on each side of the jaw. The affection continued to increase, and the pain he now felt near the ears extended itself towards the throat and trachea, where, in the course of another week, a considerable diffused tumor had formed. This tumor continued to enlarge, with much heat and pain, for about three weeks; when, notwithstanding fomentation and poultice, it produced considerable pressure upon the larynx and trachea, materially impeding respiration, and creating much alarm for its probable consequences.

He had applied for assistance to the St. George's Infirmary, and had been directed such medicines as his feverish state required.

On examination, a diffused tumor, with much heat and redness, was found upon the upper part of the trachea and larynx, extending itself to some distance on each side. The feel of this tumor was that of a firm plate of horn; but pressure gave pain, and increased the difficulty of breathing. The inflammation was very great, the tongue was white, there was much thirst, and a very quick and hard, though a small, pulse.

From the situation and feel of this affection, it was evidently an inflammation of the thyroid gland. The poultices and fomentations were ordered to be continued; and, in the way of medicine, he was directed to take the bark at regular intervals, with an opiate at night.

This plan was in a few days followed by the bursting of the tumor externally, a circumstance which afforded the poor man great joy, and still

greater relief. Five or six ounces of purulent matter were discharged, and a free suppuration continued to pour forth. Upon the bursting of the abscess he immediately began to improve in every respect, and was restored to his appetite, spirits, and strength, with astonishing rapidity. In the course of three weeks, he had almost entirely recovered. The discharge had entirely ceased, only a degree of induration about the parts remained; to assist the absorption of which he was directed to use frictions with the camphorated mercurial ointment. This soon got rid of the complaint, and he returned to his business.

CHAP. III.

ON SOME OF THE DISEASES OF THE CHEST.

SECT. I.

ON AFFECTIONS OF THE PARIETES OF THE CHEST.

CASE 47.

Extensive Abscess upon the Side.

JAMES Sessions, a healthy-looking boy, eleven years of age, applied for relief to the St. George's Infirmary, in March 1815. He complained of a painful swelling under the arm. One of the axillary glands had inflamed, and soon after, assisted by poultice and fomentation, it formed an abscess. This discharged freely for about a week, when a very extensive redness, tumor and inflammation, came upon the whole side of the chest and abdomen, producing much pain, and some fever.

In a few days the whole extent of cellular membrane had given way, and an immense abscess had formed, in which a large quantity of matter undulated. There was, however, no affection of breathing, nor any reason to suspect its connection with deep-seated mischief. At the upper part, the matter could be pressed out by the opening from

the ulcerated gland in the axilla. A depending opening was essential, and as the parietes of the abscess were evidently much thicker below than they were above, it was most advisable to cut down upon a director. The extent of the abscess required two openings. A probe therefore was inserted above, and the point brought out by a small puncture as far down as it would reach, when the probe being again passed down by the new opening, readily found the lowest part of the abscess, where it was cut out, and a pretty free incision made just above the spine of the ilium. A full pint of matter poured out, together with several pieces of sloughy cellular membrane.

I directed the fomentations to be continued for a few days, with a view to ensure the separation of any remaining unhealthy portions of cellular membrane, before having recourse to light bandaging, and support to the parts. But in the course of three or four days, very nearly the whole of the integuments had become adherent without any assistance, and in the space of a week, the abscess was completely and soundly healed.

Case 48.

Extensive Abscess on the Breast.

William Vicars, a tall muscular man, thirty-two years of age, in January 1812, applied for relief to the St. George's Infirmary, on account of an inflammation that had taken place upon the muscular parts of the breast. He said he was a

plumber, and that in lifting a large quantity of lead, he had felt something crack or strain, in or about the left pectoral muscle.

The inflammation that followed, went on, from a violent local affection to produce fever, and delirium. The pulse was quick, full and hard. The presence of matter became evident about three weeks after the accident. In a few days more, the tumor gave way near the inferior margin of the pectoral muscle, and the discharge of a large quantity of matter followed.

The abscess suppurated freely, and the constitutional strength was evidently on the decline, when within a week after the bursting of the first abscess, a fresh attack of inflammation came upon the integuments immediately covering the false ribs. It seemed that the matter had made its way down through the cellular structure, producing a lurid red colour, with a doughy inelastic feel, very much that of erysipelas, although in the first of the two abscesses, these characters were not observable.

This abscess came forward, and in a few days gave way in a depending part, low down in the side; a considerable quantity of pus, and several masses of sloughy cellular membrane floated out, and the patient felt a second time relieved. Bandage and support to the parts were now substituted for fomentations and poultices; and bark, wine, porter, and a nourishing diet were directed, as there were evidently many chances against his being able to support the excessive discharge. A fort-

night passed in this state of uncertainty, after which he began to improve daily. The abscess, within two months, was perfectly healed, and the man well.

Case 49.

Chronic Inflammation, and very large Abscess of one of the Axillary Glands.

Sarah Molton, a poor woman, thirty-four years of age, long labouring under various affections of a scrofulous nature, complained in August 1813, of a swelling that was forming in the right armpit. She did not however mention it, as being productive of any particular pain, or inconvenience. This swelling slowly increased, with occasional shooting darts of pain. When it had attained the size of an orange, she complained more of a considerable œdema, with which the whole arm was affected, than of any pain in the tumor, which, on examination, was soft, doughy, and insensible.

As she was importunate to have something done, she was desired to poultice and foment, although there was little apparent reason to expect its being disposed to form matter. She regularly made the applications as directed, under which the tumor continued to increase. From its situation, it necessarily extended itself downward. In the course of a month, it contained a fluid, and was somewhat disposed to point.

This swelling, by the beginning of November, had formed an uncommonly large tumor, pendulous from the axilla, situated midway between the

inside of the arm, and the integuments of the abdomen, and reaching down to within an inch of a line parallel with the elbow.

On the 16th, it had begun to be painful, and as the skin was now very thin at its lower extremity, I thought it high time to make an opening, and therefore plunged a lancet into it. Near a pint and a half of thick yellow matter ran off, and the sense of tension and uneasiness was immediately relieved. Poulticing was laid aside, and dressing substituted, and in the course of a fortnight, the abscess was entirely contracted, and in a week more, healed.

In the following case a large collection of matter, probably originating in an affection of one of the absorbent glands in the breast, remained unusually long, without shewing any disposition to make its way through the integuments; a circumstance apparently dependant on a certain degree of tendency to scrofula in the system.

Case 50.

Chronic Abscess in the Breast.

S. Humphreys, a healthy woman, 55 years of age, had received a blow upon the breast, about 18 months before she applied for assistance to the St. George's Infirmary. The immediate consequence of the accident was a degree of inflammatory heat, redness, and tumor, which, after some weeks insensibly declined, leaving behind it a soft swelling upon the superior part of the breast.

This swelling, productive of no subsequent pain,

slowly increased, and when examined at the Infirmary, had extended itself from the clavicle, down to very near the inferior margin of a large and pendulous breast. It covered the whole extent of the pectoral muscle.

There was an evident fluctuation, but no apparent disposition in the skin to ulcerate. It was considered expedient to evacuate the fluid, and a lancet was therefore plunged into the tumor, where a depending opening might be preserved. Considerably more than half a pint of a thin yellow serum, mingled with purulent matter, and shreds of coagulable lymph were evacuated. The woman felt much relieved from her former uneasy sense of tension in the parts.

For the first few days the discharge continued to be thin and unhealthy, but subsequently it became thick, and of a very healthy appearance. In the course of a few weeks the abscess was completely healed.

Sect. 2.

ON INFLAMMATORY TUMOR OF THE STERNUM.

The vascularity of most of the soft parts of the body much exceeds that of the hard parts, or bones; and those bones that have most vessels, seem to approach the nearest, in their habits and affections, to soft parts; it is upon this principle we must explain certain diseases to which the soft and spongy bones are peculiarly liable.

This principle may, perhaps, give some support to an opinion I have formed with regard to the sternum, leading me to believe, that this bone is particularly subject, in certain constitutions, to feel the changes of atmosphere, and the impressions that arise from cold.

The instances, however, in which I have yet had an opportunity of making this observation, are few in number; the two first were in habits apparently inclined to scrofulous action, although without exhibiting any one distinct character of the disease; the third seemed altogether independent of this cause, and was considered as an attack of rheumatism.

Case 51.

Tumor of the Sternum.

The first case that particularly attracted my attention, occurred at Gibraltar in August, 1805. It was in a poor man, about 40 years of age, one of the privates in the 13th regiment of foot.

He made complaint with much alarm, of a pain in his breast, which he had lately been very subject to, and which was greatly aggravated by coughing or exercise. This, he said, was attended with an external swelling. On examination a tumor was found, seated upon the first bone of the sternum, and connected apparently with the cartilages of the left upper ribs. The convexity of this swelling was even and gradual. The surface of the sternum at this part, was apparently raised half an inch beyond the general surface of the bone.

The skin covering the elevated part of the bone, was somewhat inflamed, and very tender. In the way of treatment, a saturnine lotion was applied to the part, and it gave some ease, but no material relief. A blister was subsequently applied near the seat of the swelling, but did no good.

The man kept his bed for nearly three weeks, and took various medicines; at the expiration of which period he was certainly getting better, although his improvement could hardly be said to depend on any thing that had been done for him. He continued slowly to improve, and after remaining in hospital two months, was sufficiently recovered to be discharged; at which time the swelling remained, but the pain had much diminished. In the above case there had been no disturbance of the pulse or constitutional health beyond what was dependant on a degree of irritation and alarm, that prevailed throughout the attack.

There seemed to be nothing to justify a suspicion of its being at all connected with venereal complaints, for he had been perfectly free from any symptoms of that nature for many years.

It was several months after his being sent to his duty, before the swelling had entirely gone down.

Case 52.

Thickening of the Periosteum of the Sternum.

Mr. J. a gentleman, twenty-two years of age, consulted me in May 1811, on account of a pain which was confined to the breast bone, or its immediate vicinity. He said he had been occasionally subject

to it before, and observed, that he believed it arose from cold, for that whenever he took cold, he found it fly to his chest, producing the present kind of pain, and sometimes a degree of swelling externally. These attacks were rarely attended with cough. Sometimes the pain was dull and heavy; at others acute and severe, shooting inward, and about the chest, so as to render the breathing painful and difficult.

On examination, there was a manifest elevation of surface upon the upper part of the sternum. The part was so extremely tender, that he could scarcely endure its being meddled with. The affection in this instance was apparently confined to the periosteum; the skin covering the part being in its natural state. There was no constitutional affection, except that the pulse was rather quickened.

Some purgative medicines with a blister, and an abstinent diet, in the course of a week, perfectly removed the complaint.

Case 53.

Tumor of the Sternum, with violent Pain, and high symptomatic Fever.

M. A. B. Esq. an officer of rank on the medical staff of the army, fell ill, subsequent to long continued exposure to cold and wet, while on service in the peninsula, in May 1812. His first complaint was a pain seated in the upper part of the sternum, connected with occasional shooting pains extending thence inward and about his chest, with

some degree of cough. From neglect and continued exposure, these complaints increased so rapidly, that by the end of a fortnight, he was totally unable to sleep at night, the pain in the bone being extreme, with sharp stitches all over the chest, constant short, dry cough, and considerable fever.

For two or three nights particularly, his distress and pain were beyond all description. The pain was so extreme, that he again attentively examined the part, and found the external surface of the sternum was considerably elevated beyond its natural level, but was not materially tender.

The swelling increasing every day, without the least relief to his other complaints, he determined to lay on a blister. Just at this time the troops were put in motion, and with great difficulty he got upon his horse, and moved at the rate of eighteen miles a day for several stages, the weather being at the time stormy, and wet.

This journey, it is needless to observe, very much aggravated the dry cough, the oppression and pain in the chest, as well as the primary affection of the sternum, the tumor upon the surface of which still continued to increase.

A medical board was now held upon him, the result of which was, that he was prevailed on to lay on another blister, and received immediately a month's leave of absence from duty. The opinion given, was, that in all probability an abscess would form, and that he might expect to lose at least the affected part of the bone by exfoliation. He

was very near Badajos, the siege of which city, unfortunately for him, commenced during his month's leave. The sick and wounded poured into the hospitals in such numbers, that in the course of one week, between two and three thousand were brought in. There were only two serviceable medical officers upon the spot besides himself, upon which account, actuated by a highly commendable zeal for the service, he volunteered his assistance, although exceedingly ill able to afford it.

Excessively reduced in flesh, and exhausted in strength, he every day made his way to the hospitals, directing and assisting according to his power. He still found all his complaints centre in the swelling upon the sternum, which he was of opinion was certainly relieved by keeping up a free discharge from the blistered surface. In this persuasion, as soon as one blister had healed, he laid on another; maintaining the suppuration by irritating applications.

The feverish heat, thirst, and restlessness in a great measure still continued, and while the irritation and pain about the chest rather decreased, he passed many tedious weeks in a state of slow convalescence.

As to treatment, he took no medicine. In addition to the keeping up a copious discharge from the part, he applied a large and broad flannel roller tight bound about the chest and shoulders, and over that a flannel waistcoat. He found the heat of these, in addition to his other cloathing, frequently

oppressive, but they served to keep up a free and constant perspiration, which was considered useful.

The violence of the attack being over, he continued to mend, and eventually perfectly recovered; but it was near four months before the symptoms entirely left him.

I have ventured to state my opinion, that the sternum is particularly subject to affections of this kind. That they do occur, the instances just noticed, sufficiently prove; and that they occasionally connect themselves with abscess of the medulla of the bone, is fully established by an extensive series of preparations*. In one of these the patient died previous to the complete formation of abscess; from the increased activity in the secreting arteries of the medulla, and the consequent accumulation of soft contents, the two tables of the bone were separated to a considerable distance from each other, and on the external surface of the bone the tumor must, during life, have been evident on examination. In another specimen, the tables of the bone formed the parietes of a pretty large abscess of the medulla, which broke outwardly, although it was originally produced by neighbouring scrofulous disease and suppuration in the lungs.

In several other preparations the activity of the affection was principally confined to the circulation in the periosteum, the internal organization of the

* Preserved in Mr. Heaviside's Museum.

bone remaining undisturbed, or very nearly so. The result in these instances was a new secretion of ossific matter deposited upon the natural surface of the bone, between it and the periosteum.

Sect. 3.

On some of the affections of the heart.

I have seen comparatively few instances of diseases of the heart. The appearances of inflammation are common enough within the pericardium, but it may still be doubted whether there are any diagnostic signs by which the existence of this affection in its early stage can with certainty be distinguished.

The forming an accurate opinion upon the morbid affections of the heart, during life, is in every case extremely difficult. All opinion must rest upon conjecture. This conviction is not derived from my own limited experience in practice, but rather from the number of bodies that I have had an opportunity of examining after death, in some of which physicians of the highest reputation had believed the heart free from disease, and dissection proved the contrary; while in others, almost every physician of character in London had concurred in the opinion that the heart was the seat of the complaint, and it has, after death, been found perfectly healthy. One instance of this kind, was that of a lady about the turn of life; a robust woman. I was particu-

larly requested to examine the body, with a view to the preparation being preserved. But the heart was in every respect sound. The only morbid appearances were, a small calculus in the gall bladder, and an inconsiderable serous effusion into the cavity of the abdomen.

Case 54.

Inflammation and extensive Suppuration within the Pericardium. *

James Rewler, a stout man, a coachman, about thirty years of age, was suddenly attacked on the night of August 14, 1800, with excessive pain over the lower part of the chest, and part of the abdomen, attended with difficulty of breathing, great heat and thirst. The pulse was quick, hard, and full. A large bleeding, a blister, and proper medicines, gave him very considerable relief. But the pain confined to the chest returned very violently on the following day. It was now attended with great oppression, difficulty of breathing, and irregularity of pulse. Bleeding from the arm, leeches to the chest, and a blister were again directed, with great advantage, and repeated, though more sparingly, on the 21st and 24th, after which the symptoms were less violent. The pulse now became quick and small, and on the least exertion extremely irregular, at times scarcely perceptible for some minutes.

* The following history, with the preparation exhibiting the contents of the chest, are preserved in Mr. Heaviside's Mureum.

For a few days, his health seemed to improve, but this appearance was of very short duration. His strength daily diminished. The exertion of turning, sitting up, or lying down in bed, was attended with the utmost difficulty of breathing and anxiety. He now also complained of frequent flushes of heat, with profuse sweats from the head and breast. There were also frequent slight delirium and occasional hiccup. Latterly, he could lie on the left side only, and for three days previous to his death could only breathe sitting up in bed.

He had at no time more than the slightest cough, arising, as he said, from tickling in his throat, without any expectoration, nor had he any shivering previous to the probable establishment of suppuration. He died on the 16th of September.

Examination.

On opening into the chest, the inferior anterior part of the lungs on each side the chest were formed into one immense abscess, with considerable adhesions externally. The cavity of the pericardium also was distended with matter, of which it contained more than a pint. The whole quantity of pus formed in this case was nearly five pints.

CASE 55.

Enlargement of the Heart, with Adhesion to the Pericardium.

J. King, a boy twelve years old, in January, 1811, without any obvious cause, became poorly, but continued to move about as usual. He complained of pain in his back, and under his heart. He some-

times said his "heart ached," but tea, or any thing warm seemed to relieve him temporarily. Almost every day, however, on returning from school, he for some time made this same complaint.

In the course of the next month (February,) he remained much the same in general respects; when one day his mother coming into the room, found the child standing up, talking wildly in a delirium, and declaring the room was full of people. This was on a Saturday. He was got to bed, and there remained till the next day, when he was again sensible, but said he felt poorly, and not well enough to go his usual walk. Towards evening he became worse, and soon fell into a raging fever and ungovernable delirium, running about the room, and destroying every thing that came in his way.

The poor woman now applied for assistance to the St. George's Infirmary. The apothecary was good enough to see the child the same evening, and directed for him. Although light-headed, he frequently observed "his heart ached;" and when laid in bed, he requested to be supported with pillows. He passed a bad night with considerable fever, and great oppression at the chest.

He was visited early the following day, and regularly afterwards; in the course of a week, the treatment recommended, not having produced any satisfactory change in his favour, two very large blisters were directed to be laid, one upon eash side the chest. These were evidently useful, and the child felt so much better in consequence, that he was extremely impatient to have more applied.

The discharge having at length ceased, another blister was ordered, a week after the first, but it did not rise well, and did nothing. The fever, thirst, and difficulty of breathing still continued. Thus he remained through March and April, except that the breathing became so much more oppressed, that at times he could not for hours together answer a word, but was obliged to make himself understood by signs.

In the month of April, a physician visited him. The child still described his complaint as being in the chest, and about his heart. The fever at this time was variable, both in period and intensity. Sometimes he was very cool and comfortable, then, on a sudden, he would become flushed, and exceeding hot for an hour or two.

In July his legs began to swell, and this tendency to œdema gradually increased. His dyspnœa was now attended with some degree of cough. For the last month of his life he was not able to lie down at all, but always sat up supported in bed. The state of the bowels was variable, but most frequently confined. His complaints continued getting worse till the latter end of August, when he was in the evening seized with a violent cough, followed by a sort of convulsive fit, in which he expired.

Examination.

The abdomen, externally, was tense and large; but the body in general, emaciated. On opening the chest, the pericardium, externally, felt full, and

was much larger in volume than natural, filling at least three-fourths of the whole cavity of the chest. The lungs, on each side, were universally adherent to the ribs and diaphragm. In some parts there were spaces between the adhesions, and these were filled with serum. On cutting through the pericardium, it was found closely connected to the heart; and the section being carried deeper, laid open the cavity of the ventricle. In every part of its surface the heart, which was enormously enlarged, was adherent to the pericardium, which membrane was so closely united with it, that it could scarcely be pulled away; nor was the bond of union between the two surfaces made out without difficulty, so small was the quantity of effused coagulable lymph. The internal organization of the heart was perfectly natural, but it was in this instance so much enlarged, as to exceed very considerably the ordinary size of the largest adult heart.

In the abdomen the structure of the liver was found healthy, but it had suffered inflammation, and was united above to the diaphragm, by numerous elongated adhesions. Involved in these adhesions were found several thin capsules of yellowish colour, and full of serum. It seemed from the appearance of these capsules, that when the effusion took place, the coagulable lymph separated from the thinner fluid, forming an exterior pellicle, or capsule, enclosing the serum within it. This remarkable appearance corresponded very closely with what I once had an opportunity of observing

upon the surface of a peculiar disease of the lungs.* In the present case the capsules were thinner, whiter, more tough, and more opaque, than they were in the instance to which I have referred; and it seems extremely probable that this difference in appearance, was dependant upon the difference in the date of their formation previous to death; and if this be true they may, perhaps, be considered as affording an explanation of one mode in which hydatids may be generated in the various cavities, or solid structures of the body.

As to the principle on which the enlargement of the heart took place in the above case, I look upon it to be no other than that which obliges the muscular coat of the bladder to become thicker, when obstructed in the performance of its functions, it acquires additional strength. The first effect of the inflammation was probably the adhesion between the heart and its capsule; which adhesion, once established, became a perpetual hindrance to the complete relaxation, and almost totally prevented the possibility of a perfect contraction of the cavities of that organ. The action of the heart must in this state have been constantly laborious and fatiguing to itself; and the repeated expressions of the patient as to his own feelings, afford a strong argument, that, however inconsiderable the nerves of the heart may be, they nevertheless, do sometimes transmit impressions as accurately as any other nerves in the body.

* See Case 61.

Case 56.

Diseased Auricular Valve.

In February, 1813, I examined the body of a girl who died at thirteen years of age. I had accidentally seen her about a week before, sitting supported in her mother's arms. Her countenance was livid and bloated; she was perfectly sensible, but totally without power of motion or utterance; she was, however, just able to make a faint whisper. There was no pulse whatever at the wrist, but on laying the hand upon the ribs, there was a most extraordinary and violent action of the heart, the contractions of which were extremely powerful and quick, but by no means regular.

This attack was what the mother called a fit, she said it had been brought on by the exertion o walking to the Infirmary, and that the child had been more or less subject to the same kind of attack for some years past. It was near six years since the first commencement of her ill health. She had then been for a short time hot and feverish, and ever since had been subject, first in a slight degree, and very rarely, but afterwards more severely, and frequently, to attacks similar to that which I had just witnessed. The palpitation at the heart was occasionally observed in the early progress of the complaint, but it was only latterly that it had beat with extreme force. In proportion as the fits of palpitation became more frequent and violent, the change of colour during the attack became more remarkable. At

the time I saw the child, the body was nearly cold, and perfectly livid; with every character of complete strangulation, notwithstanding the extreme violence of action in the heart.

The unison between the habits of the mind and the diseases of the body, is sometimes exemplified in a very curious degree. This child was naturally susceptible of the slightest impression. If chid at school, she became low spirited and unhappy for the day, and her complaints were always the worse for it. She never seemed so happy as when silent and inactive; and would sit for many hours together by the chimney corner, when let alone. The appetite and powers of digestion, were, however, apparently unaffected.

Latterly, the least attempt to walk or move, re-produced the attack; shortly before her death, the fits used to return several times a day. The attack in which she died, might almost be said to have continued the whole of the day, for there was no decided intermission.

Examination.

On opening the chest, the pericardium was found closely adhering to the heart. There was no thickening of the pericardium, and although the adhesion was general, it was scarcely possible to ascertain the thin pellicle of coagulable lymph, which formed the bond of union, between the two surfaces.

The heart was prodigiously enlarged. This enlargment was the more remarkable, because it was

unequal; for on opening into the heart, the right ventricle and auricle appeared to be much about their natural size, and were moderately full of black blood; but the left ventricle was so enlarged as to exceed very much the size of the opposite side of the heart, while the left auricle was even larger than the ventricle. Within the left auricle and ventricle, there was at least a pound of black, grumous blood. The parietes of the left side of the heart had acquired an additional degree of thickness and power, proportioned to the necessity for increased action.

An examination of the valves led to the detection of the principal, although I believe not the primary, seat of the disease. The auricular valve of the left ventricle had become thickened in its structure, and as the thickness of the valve increased, its breadth from the floating margin towards the basis of its insertion, had become diminished, while its power of closing the opening into the auricle had also decreased, until latterly it was lost altogether, and the two cavities were consequently thrown into one.

In the early progress of this disease, a part only of the blood received from the lungs, was at each contraction of the heart driven forward into the aorta, the remaining part escaping back into the auricle. But as the disease advanced, the proportion of blood thus driven forward was diminished, while that which escaped by the imperfect action of the valve was augmented, until at length the blood within the heart was alternately driven

to and fro between the ventricle and auricle, there being no longer any power to ensure its expulsion into the arteries.

The primary cause of the disease appears to have been the slight degree of inflammation which had existed on the external surface of the heart, terminating as it did, almost before effusion could be said to have taken place. But why the disposition to a wrong action should have subsequently settled upon this particular valve, is not so easily determined. It was a chronic affection; apparently a mediate impulse, between secretion, and growth, which had been given in the first instance, by the inflammation of the pericardium having terminated, perhaps, rather abruptly, in adhesion.*

I have only dissected three instances of original mal-formation of the heart. In these the peculiar

* PLATE 3. *Fig.* 2. Exhibits the appearance of the diseased valve, represented of its natural size.

a a. The margin of attachment of the valve, to the circumference of the opening into the auricle.

b b. The carneæ columnæ.

c. The chordæ tendineæ in their natural state.

d d d. The floating margin of the diseased valve, very much thickened, and having an irregularly tubercular feel, the disease being nearly as compact in its texture as scirrhus, and forming an enlarged indurated ring between the auricle and ventricle.

e e. The parts where the disease had extended itself from the margin of the valve along the chordæ tendineæ, some of which are seen more or less thickened, and others converted into a florid fungous matter.

symptoms and appearances, during life, were very similar, allowing for the difference in the ages of the patients.

Case 57.

The Ductus Arteriosus open, and the Aorta arising from both Ventricles.

Mrs. A. was delivered of a female infant in June 1812. The child was soon observed to be of a particularly dark colour. From dark red, the skin changed to purple, and from that to the darkest blue. The action in the limbs had been very vigorous during the birth, but soon afterwards became languid. Respiration was difficult and oppressed, and as the colour changed, this oppression increased. The heat of the body varied in proportion to the complexion of the skin.

In the course of twelve hours the body was of the darkest possible colour, and the surface was cold, the chest scarcely moved, and soon after the child expired.

Examination.

On opening the chest, I found the heart full of very dark blood. A probe introduced from the right ventricle passed into the pulmonary artery; and with equal freedom into the aorta. From the left ventricle, the probe passed into the aorta, proving that this artery communicated with both sides of the heart. When the vessels were carefully dissected, the pulmonary artery was found to be con-

tinued forward of its full size into the curve of the aorta. The branches forming the right and left pulmonary arteries passed off from the back of the large trunk, and upon comparing the diameters of the vessels it appeared, that not $\frac{1}{8}$th part of the blood transmitted by the trunk of the artery, could have circulated through the lungs.

The thickness of the muscular structure was the same on both sides of the heart. The foramen ovale was open.

Case 58.

Aorta arising from both Ventricles.

Mrs. C. was delivered of an apparently healthy female infant, in January, 1812. The same change took place eventually in this infant, that were observed in the last case, but they came on later, and seemed to require more time to establish themselves. In this instance the child languished for near six months, before she died.*

Examination.

Upon raising the sternum, and opening the pericardium, the heart appeared larger than ordinary, and turgid with blood. The aorta was very conspicuous, and much larger than natural; but the pulmonary artery was not at first perceived at all.

The pericardium was therefore cautiously dissected away from about the vessels of the heart, and after some time, the pulmonary artery was dis-

* The particulars of this case are more fully related in the ninth volume of the Edinburgh Medical and Surgical Journal; where there is an Engraving, shewing the appearance of the parts, on dissection.

covered, but it was so much smaller and thinner than usual, that it was by no means easy to distinguish the coats of the vessel from the continuous surface of the pericardium.

On cutting open the ventricles, a probe was found to pass with perfect freedom from each of them, into the aorta. But although the extremity of the pulmonary artery was inserted upon the proper part of the basis of the heart, upon introducing a probe, it proved to be impervious, and had no opening from the ventricle. This fact was more clearly ascertained by laying open the artery, down to its termination in a small cul de sac, close against the membrane lining the cavity of the ventricle.

On comparing the ventricles, the structure was apparently reversed. The parietes of the right ventricle had the strength and thickness natural to the left, while the left ventricle was as thin, and comparatively weak, as the right usually is. The left auricle was so remarkably small as to confirm the opinion of its having had very little to do, in the circulation of the blood.

A probe passed freely from the aorta, by the ductus arteriosus, into the branches of the pulmonary artery, in the lungs. In this way a stream of blood almost equal to the diameter of a crow quill, might perhaps have found its way by a retrograde course through the lungs, round to the left side of the heart.*

* For the opportunity of examining the state of the heart in this and the former case, I am indebted to my friend Dr. S. Merriman, who requested me to examine the bodies; the preparations are in Mr. Heaviside's Museum.

CASE 59.

Aorta communicating with both Ventricles.

In 1803, I examined the body of a youth who died at Kensington, at the age of sixteen years. The physician who had repeatedly attended him, had from the first pronounced there was something wrong about the structure of the heart. The leading particulars of the case are the following.

From early childhood his skin had been subject to change of colour, and would, on any bodily exertion, become extremely dark. He was not deficient in growth, but was of slender make. He had gone well through the small pox and measles; and both these complaints had passed over with little disturbance to his constitutional health.

His health was in general sufficiently good to allow of his being very comfortable, provided he regulated the quantity of exercise according to his feelings. He was altogether unequal to any kind of labour or work. Walking, as an exercise, required caution. Whenever he walked briskly for ten minutes, the vascular parts of the skin assumed a dark blue, or almost black colour; and if he continued walking a quarter of an hour, instead of ten minutes, it overpowered him. He fell down, his feet failing him in a peculiar manner, which he aptly compared to a plank or board giving way under him. In this manner he fell to the ground, and for some minutes lost his recollection. His faculties, however, on these occasions, soon returned,

and in proportion as by rest he recovered his proper colour, his natural powers for exercise were restored to him. For some time previous to his decease, his constitution was evidently on the decline, without there being any further indication of particular disease or complaint. He seemed to fail, from the constitution not possessing sufficient energy to carry him forward to a state of perfect growth.

Examination.

On opening the chest, the heart was found overloaded with black, grumous blood. The coronary vessels were highly injected, but with black blood only. Upon laying open the cavities of the heart, the aorta was found inserted over both ventricles, communicating with the right, as well as left side of the heart. A part of the septum ventriculorum, of a semicircular figure, was deficient, opposite to the insertion of the basis of the aorta; the breadth of this space was equal to the diameter of the artery. The margin of the septum at this part had something of a ligamentous feel, when examined by the finger. In other respects the heart was perfectly natural.

The only defect in this instance, was in the disposition of the artery, from which defect both ventricles poured their blood into the aorta. The pulmonary vessels were perfect in every respect, but, in examining the origin of the aorta, the finger passed with equal freedom by either ventricle into the cavity of the artery; and with such a construction of heart it is obvious that only a very insuffi-

cient proportion of the blood could undergo its proper change by exposure to the air in the lungs.

The whole of the viscera of the abdomen were of healthy structure, but they were all of a preternaturally dark colour, tending to deep purple, or dark blue.

Sect. 4.

On some of the affections of the lungs.

The diseases of the lungs are very generally the result of inflammation, and the numberless varieties in the effects of that action, are attributable to the peculiar tone or state of constitution, together with other accidental circumstances at the time of the attack.

Where, from the application of some of the exciting causes, inflammation falls upon the lungs, in a habit strongly disposed to scrofula, the progress and phenomena of the disease differ widely from those that would arise in a constitution disposed to phlegmonous action; although the danger, in both cases, may be equal.

In the weak constitution, the symptoms and progress of the disease are generally more insidious and more obstinate; but in the strong, more promptitude is required to check the violence of action. In the former case it frequently happens, that with the exception of the most trifling, transitory pains about the breast, the first symptom that excites attention is a degree of shortness of breath

or difficulty of breathing, which inconveniences the patient only when in exercise. In the latter, violent pain and great oppression are at once formed, in connection with a smart feverish paroxysm. In the one case the patient requires an entire change of constitution, which medicine is but rarely able to effect, in the other, his life depends on the immediate adoption of every means that can tend to lower increased arterial action.

In the weak habit of body, the incipient stage of the disease, which frequently is painless and unheeded, is that in which the disease itself becomes established by the formation of tubercles. These by some have been considered to be the absorbent glands of the lungs, taking on disease; while others have described them as an affection of mucous follicles in the lungs. I should, however, myself, be disposed to doubt the accuracy of both these opinions; for the seat of any affection of mucous follicles would necessarily be the mucous membrane of the bronchiæ, and not the parenchyma of the lungs; while, if the disease was an affection of the lymphatic glands, the tubercles would assuredly be more numerous towards the roots of the lungs, and even there but thinly scattered, whereas, they are on the contrary found equally diffused, and infinitely numerous, in every part of the structure of the lungs.

In the strong habit of body, the inflammation is soon established, and with inconceivable rapidity runs on to some unfavorable event, generally a species of effusion, but sometimes abscess, unless

prevented by proper treatment. Where weakness is the prevailing character, the inflammatory stage runs a very uncertain and tedious course, its characters are extremely ambiguous, and the treatment that would decidedly check healthy inflammation of the lungs, generally fails in relieving this form of the complaint.

Inflammatory action in the lungs, as in other parts of the body, varies in intensity, and as it becomes less acute, or more local, its characters change, and that which was originally a general affection of the lungs, may become new modelled, assuming the characters of a local affection only, perhaps without pain, or other constitutional sympathy.

Dr. Cullen mentions an effusion of blood into the general cellular texture of the lungs, as one of the occasional consequences of acute inflammation. I have examined the lungs after death in many cases of inflammation, but have never found this appearance. In one instance only I have seen it, and that was entirely unconnected with inflammation. It was in a child who died at about four years old, of hooping-cough. I had expected, from the oppression, and other previous symptoms, to have found the trachea stuffed with mucous matter; but it proved otherwise, for the passages of the trachea, and bronchiæ, were very free. The apparent cause of suffocation was an effusion of blood into the cellular texture of the lungs. The appearance was that of large maculæ or spots of a deep red colour, shining through the membrane covering the surface of every part of the

lungs. When cut into, the extravasated blood ran freely out. It seemed to have operated by compressing the air cells, in this way preventing the blood from circulating freely through the lungs.

I have once seen violent inflammation produce an immense effusion of serous fluid into the cellular texture of the lungs, which very quickly proved fatal, the following are the particulars of the case.

Case 60.

Serous Effusion into the Lungs.

A robust man, and a very hard drinker, about thirty years of age, complained in January 1809, of having taken cold. His pulse was soft and natural, but he had some oppression and an occasional pain in the chest. A blister was ordered, and some medicines.

The following day, he said the pain was much better, and that his respiration was very free. He was therefore directed to continue the medicines that had relieved him, and put his feet into warm water at night. During the evening, however, his breathing became suddenly worse, and his complaint now rapidly increased. He said he had no pain, but an extreme oppression, and sense of suffocation about the breast.

At a late hour in the evening, he had entirely lost the power of speaking. The pulse was soft, small, and regular, at about 90. There was a cold clammy moisture upon the skin. The countenance was full of despondency. The respiration was noisy, and laborious beyond description.

The following morning he was still alive, and had coughed and spit up some thin, frothy matter. From the suddenness of his attack the preceding night, it was considered not improbable that a collection of matter had burst into the lungs, and in this view, his living through the night was more than was expected. The difficulty of breathing continued to be extreme the whole of the day, but towards the evening he was still worse, and the countenance was manifestly changing. The pulse now became extremely low and weak. He fell into a comatose state, and expired before the morning.

Examination.

On opening the chest, adhesions were found in various parts, apparently of remote date. The structure of the lungs, however, was sound; and readily yielded to pressure. On cutting into the lungs, an astonishing quantity of thin, frothy, mucous fluid poured out; this seemed to flow principally from the air cells and cellular texture of the lungs, for when the lungs were squeezed, it was seen to issue thence clearly. In some parts of the lungs, the same fluid was found in the bronchial ramifications, and was evidently the same with the matter expectorated. Wherever the substance of the lungs was cut into, that part of the section nearest the surface immediately poured out copious streams of fluid matter, apparently of a mediate consistence, between pus, mucus, and serum. It was extremely thin, and limpid; it was frothy, yet flowed out

like water, although here and there it was tinged with a streak of faint yellow, as if from the admixture of purulent matter.

The whole of the viscera of the abdomen were sound, with the exception of two or three of the lymphatic glands in the mesentery, which were diseased. A calcareous matter had been deposited within the cellular structure and membranous capsule of the gland. With the assistance of a magnifying-glass, it was ascertained that the secretion of calcareous earth had commenced at one end of each gland, the remaining part of the natural structure making up the contents of the capsule. On dissection, the healthy part of the gland was found totally unconnected with the calcareous deposit, although in contact with it, so that it seemed a secretion of new matter, rather than a conversion of the natural structure.

Case 61.

Singular Disease of the Lungs.

In August, 1803, I was desired to examine the body of a Mrs. Roberts; a lady of a delicate habit of body, who died at the age of twenty-seven years. The following were the leading circumstances of her previous history.

Some months before her death, she had been at an assembly; and after dancing till very much fatigued, had walked home, and got wet through. A cold, with cough, was the consequence. Medicine and nursing soon appeared to relieve the cold, but the cough remained, and proved exceedingly violent

and obstinate, although unconnected with any material degree of pain in the chest. The cough continuing, her respiration by degrees became difficult and oppressed, and this change became every day more urgent. She frequently mentioned to those around her a most distressing sensation, as if the action of her heart was about to cease. She sometimes also suffered from a violent palpitation, and from the repetition of these attacks, she got into the habit of laying her hand often to her breast. As her complaint continued, respiration became more oppressed, and from her own feelings she was persuaded that her heart was not situated where it used to be. She said she could not feel it beat as before, not even if she laid her hand upon her breast. Her cough was still very troublesome.

Some time after this, she thought she felt her heart beating on the right side instead of the left, and, on examination, the action of the heart was distinctly perceived high up on the right side of the chest.

This curious circumstance became more evident as the disease advanced, so that latterly the motions of the heart could be distinctly seen through the soft parts between the ribs upon the right side.

One morning after sitting up in bed, and conversing with her attendant very cheerfully on various subjects, she desired some milk. This was brought, and she drank some. The nurse soon afterward wanting something from the next room, left her a minute or two, and on returning found her dead.

Toward the latter stage of the complaint, she occasionally suffered under the greatest alarm, arising from her peculiar sensations; which at some times threatened immediate suffocation; at others, a total stoppage in the action of the heart.

Examination.

On opening into the chest, a most singular disease was discovered. A very large, heavy, and compact tumor had formed in the midst of the left lobe of the lungs, and had pressed aside the heart, pericardium, and mediastinum, to the opposite side of the chest. The commencement of this tumor had sprung apparently in the cellular parenchyma of the lungs. On cutting through the surface of the lungs, which, as the disease advanced, had formed its outer covering, the structure appeared sound, although the cavities of the air-cells must have been entirely obliterated, from the continued pressure of so large a mass of disease.

The whole of the contents of the chest were carefully removed, when a very singular and no less curious appearance was observed. Upon the external surface of the diseased lung, a great number of processes were pendulous from the surface of the pleura. These had more or less of a bulbous form at the extremity, but the point of attachment formed a narrow peduncle, or stalk. These processes were said to resemble hydatids, but they had not the tough consistence, nor the thin, but opaque white coat, of the hydatid, and although they cer-

tainly contained a fluid, it was not aqueous, but wholly coagulable by heat, or nearly so.

The form and magnitude of these appendiculæ were various; some of the largest were near two inches in length, and three-quarters of an inch in their largest diameter. The colour was more uniform, it was a semi-transparent, dull yellow. From their peculiar texture, they were unquestionably the result of an effusion of coagulable lymph, and were, when examined, partly in a fluid, and partly in a solid state. The external surface was formed by a coagulated pellicle, and this was distended with fluid lymph.

The immersion of these bodies in alcohol, rendered the external pellicle more opaque, increasing its density, as well as its thickness. The proportion of fluid contents also was diminished by the action of the spirit coagulating progressively, that part of the fluid nearest the surface.

The disease itself, unluckily, was not cut into at the time, but being immersed in spirit to macerate, by a concurrence of accidental circumstances, it was eventually lost sight of.

Its texture, however, was extremely firm to the feel, and from its weight, which was between eight and nine pounds, there was at the time no doubt entertained that the structure must be of a scirrhous nature, although I know of no other instance of such disease in the lungs.

The following case is an instance in which ef-

fusion took place from the external surface of the lungs, in sufficient quantity to prove fatal; without having been suspected during the life of the patient.

Case 62.

Serous Effusion into the Cavity of the Chest.

On November the tenth, 1813, I was desired to assist Mr. Heaviside in opening the body of Mrs. H———n, aged 27 years. This lady had been married a twelvemonth, and about two months previous to her death, had passed safely through her first confinement, and continued to do well for the first fortnight. After this, she had become first poorly, and then ill, with an unpleasant difficulty in breathing, which, with other pulmonic symptoms, induced the physician who attended her at Amersham in Buckinghamshire, to suspect she was going into a decline. This he gave as his opinion, and she was recommended to come up to town.

She arrived in London five weeks subsequent to her confinement, and was then placed under the care of two physicians, both Baronets. Her statement to these gentlemen was, that there had been some degree of cough, for two months previous to her confinement, and the same symptom still remained. The opinion given to her by the physicians, was, that her indisposition originated in a something connected with her confinement, but that there was no ground for believing there was any complaint in her chest, or any thing serious in her complaint. Medicines of course were directed for her, and she was visited daily;

and the same opinion was continued till the afternoon of the day on which she died; when a violent palpitation came on at the heart, with great irregularity in the pulse. This new symptom appeared alarming, one of the physicians was sent for, and immediately visited her. The opinion was now reversed, and it was declared she could not live 24 hours. In the course of the following night she expired.

Examination.

On opening into the chest, a considerable serous effusion was found in the right side of the chest, and some in the left, amounting in the whole to about three quarts of fluid. Within the pericardium, about half a pint of serous fluid was collected.

In the abdomen every appearance was healthy, with the exception of a natural peculiarity relating to the appendages of the uterus. There was only a single ovarium, but that was about twice as large as it usually is found. Some trace of thickening in the duplicature of the peritoneum, in the situation commonly occupied by the ovarium, was perceived on the opposite side of the uterus, but this was not larger than a millet seed.

CASE 63.

Preternatural Substance in the Cavity of the Chest.

Mrs. E. Cole, a married woman, twenty-three years of age, died in December 1809. Two years

before her death, she believed she had strained her neck, in carrying a very heavy child. She soon after perceived a small aneurismal swelling in the same situation, and this went on increasing.

In progress of time the sac gave way at its anterior part, having previously reached an immense size. The ulceration externally took place in the beginning of December, and from this time, by the frequent breaking away of large coagula, by the still more frequent bleeding, and by the extreme fætor of the putrifying mass, she was quickly reduced, and before the end of the month died.

Examination.

In the aneurism nothing peculiar appeared. But the chest being opened, some adhesions were found connecting the right lobe of the lungs to the anterior part of several of the ribs. These adhesions had existed some time, for they were elongated to the extent of an inch and more. In separating them, my finger unexpectedly came in contact with a soft and smooth substance, which, on more particularly attending to it, was found lodged in the centre of a mass of adhesions, which had formed a fine thin cyst for it. I carefully removed the whole of this new-formed substance, and then turned it out of its place, which was very readily done. It was sparingly supplied with blood vessels, but several small branches of arteries were found striking into it from the surface of the adventitious cyst in which it was deposited. This substance very much resembled the medullary part

of the brain, in structure. It was of an oblong, flattened figure, and weighed nearly six ounces. When cut into, the divided mass appeared to be of an uniform texture throughout.

The above substance was very similar in its consistence to several tumors I have seen of the fungous hæmatodes kind. But the sections of fungous hæmatodes display, here and there, extravasation of red blood from the minute vessels within the substance of the disease; but there was nothing of this kind, in the present case, neither could the present be considered a disease of any of the original structures of the body, as the deposit had taken place within a mass of elongated adhesions, the accidental result of inflammation.

Case 64.

Large Abscess, formed within an adventitious Substance in the Chest.

On September 16, 1816, I examined the body of a gentleman* who died at the age of sixty-two years. The nature of his complaint had never been at all understood. During the two last years of his life it had been observed by his family that he had become excessively nervous, and frequently subject to the most extreme agitation upon the most trivial occasion. For more than a twelvemonth previous to his decease he had been attended by a physician, but without the presence of any feverish

* In the presence of Dr. Nevinson and Mr. Heaviside.

symptoms, any local pain, or any plausible ground for forming an opinion upon the case; notwithstanding which his life was rendered miserable and wretched by an extreme state of nervous irritability; for if, with a view to his refreshment, it was only proposed to him to walk, or ride out, the idea alone threw him generally into a state of agitation and tremor which he did not recover for several hours. It was latterly almost impossible to prevail upon him to leave his house at all.

At one period, from a supposed fulness at the left side of the abdomen, his surgeon visited him in consultation, but he was not able to make out the existence of any affection of spleen, as had been presumed.

Throughout the progress of his complaints there was no decided symptom, not the least cough, no particular quickness nor want of regularity in the pulse, no distinctly marked shortness of breath, nor any pain in the chest, although he was unable, for many months before he died, to lie upon his right side; in short, the only prominent feature in his complaints was the increasing degree of nervous distress, although even with this, he was occasionally able to take gentle exercise, either on foot or in his carriage, till within a few weeks of his death.

Examination.

On laying open the cavity of the abdomen, the viscera in general were healthy. The liver somewhat contracted in size, and at one point not per-

fectly sound, was pushed over intirely to the right side of the body, by a very large, oblong, fluctuating tumor, the covering of which appeared like diaphragm, and afterwards proved to be so. This tumor, which seemed to have passed downwards, from the left cavity of the chest, reached as low down as the lower extremity of the left kidney, which consequently lay behind the swelling.

This immense tumor, at first, looked not much unlike the bag of a large aneurism, but its feel was much more like a thin cyst, full of fluid. The projecting surface of the diaphragm was highly vascular, but without any appearance of inflammatory effusion.

The cartilaginous parts of the ribs being next divided, the sternum was carefully raised, and it then appeared that a very extensive disease had formed in the cavity of the chest.

The heart was sound, but had been pressed so completely out of its natural situation, that it was with some difficulty found. It lay very high up, in the right side of the chest, close against the four superior ribs.

The lungs, within the right side of the chest were perfectly sound, but had evidently laboured under so much pressure from the increasing intrusion of disease, as to have been latterly scarcely capable of being in the least degree expanded.

Within the pericardium there was no particular collection of fluid, but a number of largish tumors of a pretty firm consistence and of a whitish colour, were seen protruding through its inner membrane

on the left side, and pressing upon the heart. These tumors formed a part of a large congeries, and were beautifully vascular upon that part of their surface covered by the pericardium.

Nearly the whole of the left side of the chest was filled with an undulating tumor, evidently connected with that which had pushed the diaphragm downwards into the cavity of the abdomen; but the whole of the contents of this side of the chest were so firmly adherent every where, that it was with difficulty that the situation of each part was made out.

A small contracted lobe of the lungs, perfectly healthy in its appearance and structure was found lying upon the anterior part of the left side of the chest, but it was so covered up in strong adhesions, that it was only perceived by its colour, in making a section through the part.

By making an opening into that part of the fluctuating tumor in the chest from which the sternum had been separated, what seemed to be only a mass of condensed membranous adhesions was cut through, when a stream of greenish yellow, thick, purulent matter, of a very offensive odour, issued forth. At first this was removed with a sponge, but as it soon appeared that this was doing nothing, the opening was freely enlarged, and with the assistance of a tumbler glass, as much as six quarts of purulent fluid were removed before the cyst could be said to be empty.

At the upper part of the chest, surrounded by adhesions, was the large mass of a tuberculated disease, a part of which, as before stated, had pressed

through the pericardium against the heart. The texture and appearance of this disease somewhat resembled brain, or even cream; it was intersected with fine, membranous fasciculi. Cutting through a part of the mass, the knife passed at once into the large purulent cyst, and on careful examination of the section, it became clearly evident that the great cyst was in immediate connection with the tuberculated disease, for the surface of contact between the solid disease and the purulent fluid was soft as pap, and evidently acted upon by the contents of the cyst.

The tuberculated disease was ascertained to reach as high as the superior margin of the chest, at the posterior part of which, most firmly adherent and closely contracted was found the large lobe of the left lung; it was situated in the angular space between the ribs and spine. The whole substance of the lung was distinct from the disease, as proved demonstrably by the appearance of the sections of the parts.

There were two small abscesses, about the size of hazel nuts, in the substance of the lung, and a third, which was as large as a chesnut; but the consistence of the matter in these abscesses, was as thick as butter, and in other respects, totally unlike to that found in the great cyst.

On examining various parts of the internal surface of the large cyst, it appeared that its immediate parietes were a flocculent cellular substance, except where it lay in contact with the tuberculated disease within the chest.

As to the mode of progression of this very extraordinary disease, there appears to me to be only one mode of explaining it, which is the following.

At some former period an attack of inflammation had produced those strong and extensive adhesions that had formed over the whole of the left side of the chest. As these adhesions became in progress of time organized, or in other words vascular, the new capillary vessels, instead of exhaling the serous moisture proper to the surfaces of the pleura, had taken up a wrong action, secreting an albuminous or solid matter into the interstitial spaces of the cellular membrane; and as the tone of constitutional power was considerable, and the preceding adhesions comparatively firm, the matter subsequently deposited in their interstices would necessarily form tumors possessing some degree of firmness.

The mass of tuberculated adventitious substance, appeared to have been deposited principally in those adhesions situated between the left lung, mediastinum, and sternum, judging from the situation in which the part of this structure that remained, was found on examination.

It is also presumeable that, from some hidden cause, the inferior portion of this newly-formed mass eventually took on the suppurative action, and that this action continued to go on for a great length of time. The result of which would necessarily be the gradual accumulation of an immense collection of fœtid purulent matter, with the gradual displacement of all the surrounding viscera, to the degree that has been described.

There was no means of estimating what the original quantity of the solid adventitious deposit might have been; the part which was found on dissection, was equal to the weight of two pounds.

It is most certain, that the lungs had nothing to do with the production of the disease in question; for the healthy structure of the lungs was at every part that was divided, as evidently distinct from the disease adherent to it externally, as any one thing could be from another.

All circumstances, therefore, considered, I cannot view these singular appearances in any other light than as exhibiting a subsequent stage of the same series of changes related in the preceding dissection. In that a preternatural secretion from newly formed vessels took place into newly formed parts; in this the same thing happened, but went on a step further, from the imperfectly organized substance receiving a new impulse, in consequence of which the suppurative action was commenced within it.

It sometimes, though not frequently happens, that a plethoric state of the system relieves itself through the medium of the lungs. A hæmorrhage has in this way burst forth, continued for an uncertain period, then ceased spontaneously, and the patient has perfectly recovered every freedom of respiration, without having suffered even the least pain in the chest.

By this means nature has now and then shewn

herself capable of regulating the balance with astonishing facility, in cases of obstructed menstruation, where, but for such an occasional resource, the constitution must have sunk under the increasing load of blood.

The following is the most remarkable instance of this kind, that I have seen.

Case 65.

Excessive Hæmorrhage from the Lungs.

Jane Ray, a stout woman, forty-four years of age, menstruated at sixteen, and regularly again to a day, until about twenty years of age. At this period she was from May to July confined to her bed, with a rheumatic fever, attended with severe pains, and loss of the use of her limbs. These complaints were productive of violent pain in the head, but no delirium.

When the fever left her, she got pretty well, and went to service. Subsequent to this illness, however, her menses never returned, and on this account she never considered herself perfectly recovered. After remaining a few months in her place, she was again attacked by the same fever, and most severe pains in her head and limbs. She was confined to her bed for some weeks, took proper medicines, and was soon after well enough to return to her place. Her health, however, was not restored, nor was she very long from home, but went on between sickness and health for the space of two years. About this time she was bustling about one Sunday, she had not been at any hard

work, but felt pretty well in health. She had no oppression, nor any kind of pain in or near the chest, but was suddenly seized with a most violent fit of coughing, and with great hazard to her life from suffocation, threw up from her lungs in the space of an hour, a quantity of blood, that both herself and her mother, estimated at two quarts. Notwithstanding the exhaustion from so severe and sudden an attack, she could not be prevailed upon to keep her bed. The immediate consequence of the hæmorrhage was great weakness, a strong beating at the heart, and a strange sense of fluttering in the breast. The cough ceased completely in the course of an hour with the bleeding. The following night she slept badly, and the next morning was extremely weak and faint, but got up. For three months after this, she was particularly well and active.

When she suffered the second attack, she was as before, engaged in cleaning the house, and was seized exactly as before, with a sudden, and most violent fit of coughing, with which she brought up a great deal of blood. The hæmorrhage continued that evening, and in the night she was several times disturbed from sleep with convulsive cough, but instantly relieved by throwing up the blood which had collected. The following day it continued, but ceased towards the evening. In this attack she supposed she lost about three pints of blood. In two days time, however, the cough and bleeding again returned in a moderate degree, continued for an hour, and then ceased for some hours. In

this manner it returned daily, for near five weeks. When the debility incident to the attack had left her, she found herself much better in health, more free, lively, and capable of work than she had almost ever been. She remained some months well, and then again suffered a return of her complaint. It is remarkable, that on this occasion, for the first time, the attack was preceded by a sense of oppression and fulness in the breast, with anxiety and sighing. She was busy in working about, when suddenly the cough seized her, and so tremendous a hæmorrhage immediately followed, that for some time there was the most imminent risk of suffocation. She had little hope of being able to clear the blood in time to recover her breath. From this attack, however, after continuing for five weeks ill, she gradually recovered.

Her complaints would sometimes continue six, or even ten weeks, but they generally left her in much better health than before. She now experienced an interval of twelve months, during which her health remained very good. She was in place, and was busy rubbing the furniture, when the uneasiness and oppression returned, succeeded by exactly the former train of symptoms. A few months afterward, she had got back to service, when a fresh attack commenced, with extreme violence. Its severity excited the greatest anxiety for her safety. The blood poured into the trachea in so large a stream, that it might be said literally to run out of her mouth. She was afraid to attempt lying down, being scarcely able to avoid

suffocation while sitting up. By the large quantity of blood lost, the sense of oppression was soon relieved, but the attack continued with diminished force for near six weeks. After this she again enjoyed twelve months good health.

In 1806, she had a very heavy attack. It followed a long interval of health. It came on as usual, but was attended with a new symptom, a violent pain in the left side, most acute in inspiration. The hæmorrhage continued on this occasion for near six weeks, but the pain in her side much longer. She was between two and three months in recovering from this attack.

About this time the intervals shortened, so that she was only two or three months, or as many weeks, free from the complaint, but the attacks were less severe.

In 1807, with cough and pain in the side, the complaint returned and continued for some weeks with great loss of blood. She was left in a very weak and low state, with great beating and throbbing about the heart and inside. For several weeks, though naturally of an active disposition, she was scarcely able to crawl about, and for most of this period the pain in her side continued.

In May 1810, she was again ill, after an interval of two or three months. Her complaint continued on this occasion, so long as fourteen weeks, during which she never was a day free from the irritation which brought on the convulsive cough, and bleeding. Several coagula were now brought up, with the fluid blood. The pain in the breast

was at the lower part of the left side, and would occasionally dart from thence upward, and across towards the right side.

At this time she was clearly of opinion, that she was never urged to cough, but by the immediate presence of blood poured into the lungs, and this produced the irritation, which ceased the instant the blood was thrown up. During the last attack, she was afraid for several nights to lie down, the frequency and violence of the hæmorrhage was such, that she was sure she must certainly have been choaked. About this time she expressed her full conviction, that she must eventually be carried off in some one of the attacks, and thought she could not endure many more. The pulse was at 92, weak, and very small.

In the latter part of August, and beginning of September, she had an attack of five weeks continuance, much more severe than any of the preceding. The complaint was now so dreadful, that many nights, the paroxysm of convulsive cough and furious bleeding continued until she fainted away upon the bed, remaining there till she gradually recovered her recollection. For some time subsequent to this attack, the pulse was scarcely to be felt, very quick, and exhausted.

In the beginning of November, she was again visited by her old disorder. She complained of a sense of fulness, flatulence and palpitation, for some days previous to the attack. She durst not lie down to sleep for fear of suffocation. On the morning of my enquiry, she had kept the blood

thrown up the preceding night, in a basin. In quantity it was somewhat more than a pint. It had a frothy appearance, characteristic of expectoration, was of a florid colour, and apparently little disposed to coagulate. The pulse was very small and soft, at 125. Her face sunk and pale, and her debility extreme.

From the above period, up to November 1816, she continued still subject to the above complaint, but in a much milder degree. Having reached the age of forty-six, it is probable that instead of this singular disorder terminating her life, she may live now to recover entirely from it, and whether this be the case or not, the above particulars place the occasional resources of the constitution in a very curious, and highly interesting point of view.

The forming an accurate opinion as to the power certain parts may possess, of bearing the irritation of foreign bodies accidentally lodged in them, is not so much an exercise of the reasoning faculties, as the result of mere comparison, and it can therefore be better determined by reference to parallel cases, than by any knowledge we yet possess in physiology.

In the following case, a flat-headed iron nail, $\frac{7}{8}$ths of an inch in length, was lodged in one of the smaller branches of the trachea, and after remaining there near four months, was thrown out by coughing, and the patient recovered.

Case 66.

*A Nail dropt into the Trachea, and subsequently rejected.**

James Butler, aged sixty-five, employed by Chippendale, of St. Martin's Lane, was working in the repair of an ornamented cieling. He had two nails in his mouth, and while looking upward at his work, a little irritation set him coughing, when one of the nails was thrown out of his mouth, and the other, in recovering his breath, to use his own words, "slipt down his wind-pipe."

Incessant irritation, pain, and cough, directly followed, and so continued till the man was worn away to a skeleton; spitting up blood, and mucous phlegm.

All the Faculty who were consulted, pronounced his case hopeless; and if rightly represented, (in themselves convinced, that had such an occurrence taken place, it must quickly have proved fatal,) assured him it went down into the stomach, and must have passed off through the bowels. They said that what he experienced arose from the irritation it produced when in the stomach, but that it was not in his lungs as he imagined, or suspected.

Dr. Pitcairn, Mr. Cruickshanks, and others saw him. Mr. K. of St. Martin's Lane, was with him directly after it happened. Prescriptions mitigated his sufferings a little, but could not remove them.

* The following account is transcribed from the original, which, together with the nail itself, is preserved in Mr. Heaviside's Museum.

PLATE III.

Fig. 1.

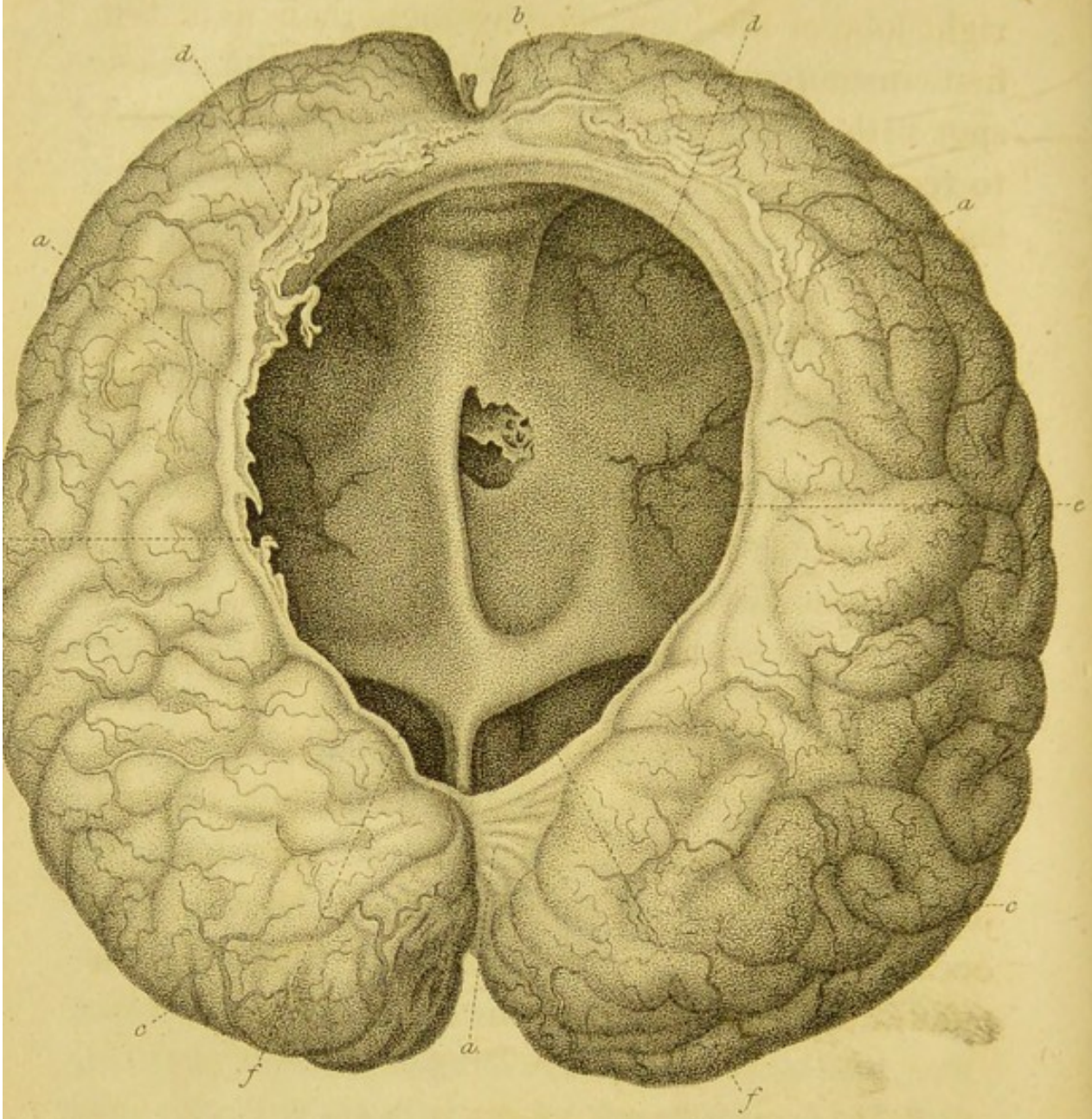


Fig. 2.

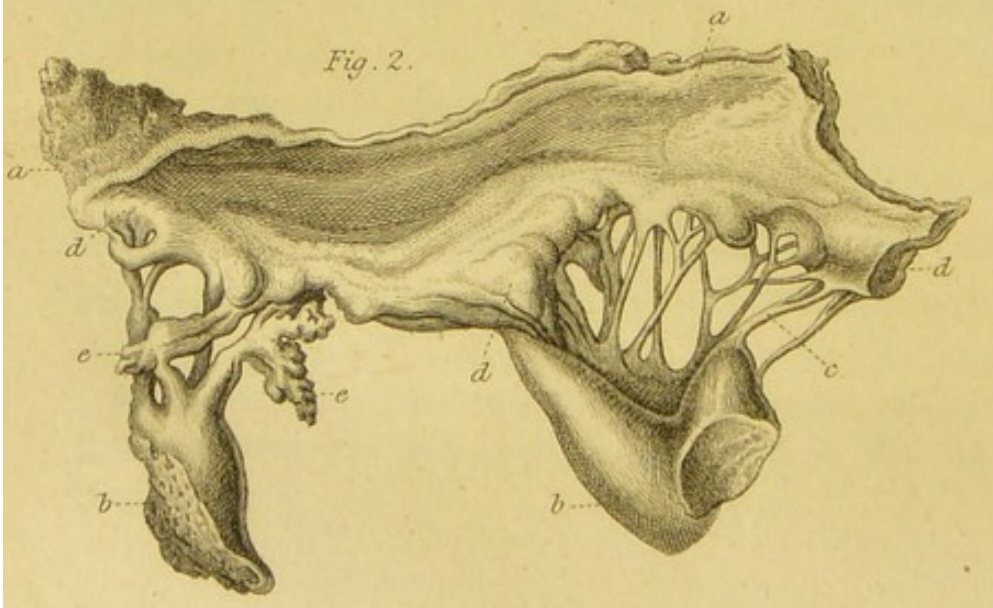


Fig. 3.



J. Howship del.

J. T. Wedgwood sc.

The pain and all his complaints were fixed in the right lobe of the lungs, and he could then, as at the first instant after the accident, cover the exact spot with his hand. Spitting of blood continued to recur, at intervals, and the poor fellow was consigned to certain death.

This lasted from the 15th of April, to the 12th of August following, when, after a copious spitting of blood, with a sudden fit of coughing, he threw up something with violence towards his teeth, against the roof of his mouth, mixed with blood. Perceiving it a hard substance, and ever having the nail in his mind, he spit into his hand, and found it to be the identical nail that had slipt down the trachea so long before. The head of the nail was rusty when thrown up.*

April, 1815. Eleven or twelve years have elapsed since this event took place, and the man has enjoyed pretty good health; subject however to occasional cough, slight spitting of blood, and a painful sensation, precisely in the old spot.

* The form of the nail is shewn in PLATE 3, *Fig.* 3.

CHAP. IV.

ON THE DISEASES OF THE CONTENTS OF THE ABDOMEN.

SECT. I.

ON SOME AFFECTIONS OF THE PERITONEUM.

CASE 67.

Singular Disease of the Peritoneum.

IN January 1815, I was requested to examine the body of a youth who had died at the age of seventeen. He had been the apprentice of a respectable tradesman in the city; and from his master's account, it appeared that his disease had never been at all understood. For the last twelvemonth, he had been always weak and complaining, so that he had been of little use in the business; and yet it was never made out satisfactorily where his disorder was seated. His constant complaint was of his "inside," but he had no cough, nor fixed pain in any particular part.

About three months before his death, he was in St. Bartholomew's Hospital, and was then considered to be in a consumptive state. While there, he was blistered, blooded, purged, and even salivated; without the least benefit to his disorder.

He had been long disposed to constipation of the bowels, and for months previous to his decease never had a motion at all, unless upon the exhibition of some cathartic medicine. Yet there was no reason to believe his stomach much deranged, for his appetite was always astonishingly great.

A few months before his death, a considerable tumor had gradually established itself within the abdomen. This had been productive of much uneasy feeling, but never of decided pain, although it continued to increase to the last hour of his life.

Examination.

The body in general, was emaciated, and the abdomen much distended by a tumor, apparently of a solid nature.

When the parietes were cut through, the peritoneum was found so diseased, and so firmly adherent to the mass of intestines, that the accurate separation or distinction of parts was almost impracticable. The whole intestinal canal was involved in one confused mass, in which the liver, part of the stomach, and the whole of the other abdominal viscera, were included. This was the consequence of a very copious effusion of coagulable lymph, which had taken place from every part of the peritoneal surface.

The peritoneum lining the anterior parietes of the abdomen, was, to a small extent, however, free from adhesion, so as to admit of the true state of this membrane being observed. It was universally

thickened, in many parts to $\frac{1}{8}$th of an inch. In structure it much resembled the appearance of the sac of an old hernia, or diseased tunica vaginalis testis; but had a portion of it been seen, removed from the body, no one could have supposed it peritoneum. Independent of the thickening of the peritoneum, the whole of its surface was studded with tubercles of various sizes. Some of these were large as grapes, but most of them much smaller. The structure of these tubercles was the same every where, and somewhat resembled the texture of the yolk of a hard boiled egg, although of a lighter colour. When cut into, the consistence and appearance was perfectly equal and similar every where, not having any specific organization. Dividing through the peritoneum, as well as the tubercle, clearly confirmed the opinion suggested by their external appearance; for they were then very evidently situated upon the surface of the membrane, and not formed between its laminæ, as might have been at first expected.

Turning the attention to the confused mass of viscera, the intestines were, after much dissection, found lying mostly near the surface of an extensive heavy mass of softish disease, somewhat moveable, upon the spine. This seemed to imply the mesentery being its principal seat. I endeavoured to separate the lateral parietes from the contents of the abdomen, intending by this means to turn the whole out; but the adhesion was so firmly established, that the only possible mode of doing this was, by cutting through the diseased perito-

neum, and then peeling it, with the whole of its contents in the cellular membrane, from the surrounding muscles of the abdomen.

The disease was thus removed, and washed. It was then divided, and examined in various ways to ascertain its structure. It appeared, that the principal part of the tumor formed between the intestines and spine, was a congeries of enlarged, and thoroughly diseased, mesenteric glands; the weight of which alone was at least, fifteen or twenty pounds.

The structure of all the viscera, when cut into, was sound.

In the chest, hydrothorax had taken place; in the right side to a great extent, but in the left, to a less considerable degree. In the anterior mediastinum, several lymphatic glands were met with, as large as chesnuts; these exactly resembled, in structure and appearance, the other parts of the general disease; of a soft even texture, easily cut through, and little vascular; had they been found alone, they might have passed for scrofulous glands.

The above examination was conducted in the presence of two physicians, both extremely well informed men, and literary characters, but neither of these gentlemen would venture an opinion upon the nature of the disease, or what it could be called. I have dissected out a very large mass of diseased mesenteric glands, affected by fungous hæmatodes, but the structure, when cut into, always exposed coagula of extravasated blood, a particular character of the disease. But as to the progressive course of the

present disease, it seems to me most probable, that the tubercular appearances upon the peritoneum were the result of the prompt coagulation of the effused lymph. For where the surfaces of the intestines were seen, the same process and the same appearances were observed.

Some time after the above dissection was made, a circumstance transpired, which may perhaps tend, at least in some measure, to explain the singular appearances of the disease. It was ascertained that the unhappy youth had been drawn into bad company, and had at length, in all probability, fallen a victim to depraved and unnatural practices.

Inflammation of the peritoneum is a frequent occurrence, and, in almost every case, a very serious one. Affections of this nature sometimes run on very quickly to purulent effusion ; and when this happens, I believe, there are exceeding few, if any, well authenticated instances of recovery. Should the inflammation, however, fall rather short of the above effect, so as to connect itself with the pouring out of coagulable lymph only, even in this case, the event must be extremely precarious, particularly when the effusion has taken place, to any extensive degree.

I have, in several instances, examined bodies after death, where, from the preceding history, it appeared, that the patient had died, worn out by a species of irritative fever only, rather than by continuing symptoms of active inflammation, in cases of effusion of purulent matter, or of coagulable

lymph: although, when the effused fluid has been principally coagulable lymph, it seems reasonable to take into the account a certain degree of inconvenience, and even difficulty, sustained by the stomach and bowels, in the performance of their functions.

I have however examined one preparation * which, together with its history, affords a very striking example of what the powers of the constitution will sometimes effect, in supporting parts labouring under difficulty. The preparation illustrates the effects of peritoneal inflammation. The effusion of coagulable lymph had been so general and so abundant, that the abdominal cavity in fact no longer existed, as the whole of the viscera were formed into one solid mass, all the parts of which were firmly connected with each other, with the peritoneum and with the parietes surrounding them. The patient notwithstanding lived for two years after this had taken place, and died eventually of mesenteric obstruction.

The most curious and interesting circumstance, in the preparation, is the result of the singular situation in which the bowels were placed. To produce the full effect of the natural peristaltic action, a progressive and perfect contraction was necessary; but this was impossible. To come near to it, must have been a work of great difficulty, requiring a continuation of preternatural efforts, the consequence of which, has been such an increase

* In Mr. Heaviside's Museum.

of muscular power, that the circular fibres of the muscular coat are all distinctly visible through the villous lining of the intestine, producing a most striking and unusual appearance. *

In the two following cases, inflammation connected with the peritoneum, went on to suppuration, and the matter was discharged externally for some time, by having made its way out from the abdomen; but in both instances the disease terminated fatally.

Case 68.

Puerperal Abscess.

Mary Halloway, aged twenty-seven, was delivered of her first child, in the St. George's Workhouse, January 22, 1813. She went on well for four days, when having the misfortune to lose her infant, by overlaying it, she became low, and distressed, and soon afterwards feverish. Her skin was constantly

* Plate 4. *Fig.* 3. Shews, on a reduced scale, the appearance produced by the increased muscular action of the bowels.

a. The divided margin of the external integuments of the abdomen.

b. The abdominal muscles.

c c c c. The sections of various parts of the small intestines, within which may be perceived the appearance of innumerable muscular fibres, taking a circular direction. Scarcely any remaining trace of the valvulæ conniventes can be perceived in the preparation, which will explain their not appearing upon the figure.

d d d. The divided surfaces of the solid mass of coagulable lymph by which the whole of the abdominal viscera were united together.

heated, she had extreme restlessness, and much thirst. There was also cough, with a pretty free expectoration.

These complaints were prescribed for, without being materially relieved. A fortnight after delivery, she first complained of soreness in the abdomen. On examining the abdomen, which gave much pain, the umbilical region was found rather tumid, and hard; but although this continued rather to increase, than diminish, she was at the month's end, well enough to be removed from the lying-in ward, into one of the wards of the infirmary.

At this period, the complaints were a painful tumefaction within, or upon the abdomen, with feverish heat, and cough. Fomentations were ordered to be assiduously applied, aided by proper medicines. This plan produced some relief to the pain, and in the course of a week, a copious flow of purulent matter took place from the umbilicus. She thought at the time, that the discharge had relieved her very much, but this was only a transitory improvement. Her strength began to decline, and from the continual flow of matter, her constitutional powers gradually sunk, and she died on the third of April.

Examination.

The body was extremely emaciated. On passing a probe by the opening at the umbilicus, a small sinus was traced, leading obliquely underneath the integuments, and through the muscles, towards the

pubes, to the extent of three inches, where it found an open way into the general cavity of the abdomen.

On laying open the cavity of the abdomen, the probe was ascertained to have entered by a small opening ulcerated through the peritoneum. The peritoneum covering the anterior parietes of the abdomen had suffered considerable inflammation, and about two pints of purulent matter, with some flocculent masses of coagulable lymph, were removed from the abdomen and pelvis.

There was no mark of disease about the uterus, or its appendages.

Case 69.

Puerperal Abscess.

Ann Skidmore, a young woman, twenty-four years of age, was delivered at the Queen's charity, Bayswater, on the tenth of February, 1813. A few days afterwards, she complained of a hardness upon the abdomen. On examination, a part was found midway between the umbilicus, and the anterior spine of the right ilium. This was becoming painful and heated, and was very soon extensively inflamed. The patient had, notwithstanding suckled her child very well for the first three weeks, after which, the infant was sent away to nurse.

The swelling upon the abdomen came forward rapidly, soon broke externally, and discharged a considerable quantity of purulent matter. When the abscess had discharged for a fortnight, a probe

was carefully introduced, and by this means it was ascertained, that the integuments were separated from the muscular parietes, for some inches round the external orifice; which circumstance seemed to favour the hope that the mischief was confined to the external parts of the abdomen.

The patient, however, insensibly declined, and was at last carried off by a colliquative diarrhæa, which terminated her existence on the twelfth of April, two months after delivery.

Examination.

Upon opening the body a sinus was discovered, leading from the diseased cellular membrane, forming the outer abscess, obliquely through the muscles and peritoneum. It passed between the umbilicus and pubes, opposite to which part the small intestines were found adherent to each other, and to the peritoneum, with a very considerable effusion of coagulable lymph. The inflammation of the peritoneum had been apparently extensive, and from the general cavity of the abdomen, near three pints of extremely offensive purulent matter, were removed. The viscera were all sound.

Sect. 2.

On some affections of the liver.

Were the diseases of the liver to be arranged into those connected with inflammation, and those that were not, the division might in some respects

be satisfactory, but certainly not so in others. It is extremely difficult to decide in what diseases inflammation may, and in what it may not, bear a part. In the acute affections, however, of this viscus, the symptoms proper to inflammation will generally point out its existence; and even in those chronic diseases, where the more evident symptoms of inflammation have never taken place, I should myself suspect, that in the first instance, the due balance of the healthy circulation must have suffered some degree of disturbance or excitement, although perhaps, for a short time only, and without assuming any well marked character.

The liver, like the other viscera of the body, having its own peculiar functions to perform, and possessing its own peculiar structure, has also a particular measure of irritability assigned to it; in which respect it differs from other parts, as much as it does in its functions.

The structure of the liver is parenchymatous, and it is sparingly furnished with nerves. It is also very frugally supplied with arterial blood. But its functions in the system require that a large proportion of the circulating fluids should be constantly flowing through the vessels of the liver, in the form of venous blood; and hence, perhaps, may be derived some explanation of its peculiar habits, under the influence of disease.

When on foreign service with the army, I have repeatedly found after death, inflammation and abscess of the liver, while the troops were under canvas; which appearances were most probably

attributable to the severe colds incident to exposure during the winter season. The same observation has been made by Sir John Pringle, from whose experience it seems, that with the exception of inflammation and suppurative action, the liver is little liable to be affected by cold and wet.

But the diseases of this viscus take a wider range, and appear in more various forms, in the circles of private life. Generally speaking, the requisitions of an army are supplied by weight and measure, so that intemperance cannot readily find a place, unless in particular instances. But in civil society, occupation and business, with the more artificial habits of life, favour the excessive use of fermented liquors. It is assuredly very much owing to this cause, that certain chronic affections of the liver occur in hard drinkers, and are scarcely ever observed in those who have lived temperately. It seems to me very probable, that one reason why the liver is more liable to be affected by intemperance, than most of the other viscera, is this, that a larger proportion of blood flows to the liver than to most other parts, and consequently it must be more subject to the influence of any peculiarity, either in the consistence, or the constituents of the circulating mass of fluids.

Case 70.

Inflammation of the Liver.

In August 1808, one of the recruits in the 82d regiment of foot, was taken ill, and reported him-

self at the hospital. He said he had been rather poorly for many days, with flying pains about the chest, stomach, and shoulder. For the last day or two, the pit of the stomach had become more severely painful, with a swelling and heat upon the skin, so that he was no longer able to attend duty. On examining the part, the integuments just below the ensiform cartilage, were found hard, swelled, and excessively painful, when pressed. The inflamed surface was firm and unyielding. It felt more like a board, or a thick plate of horn, than any thing of a softer nature. The pulse was quick and hard; the skin dry, and somewhat heated.

For his relief a saline draught was directed to be given thrice a day, and the pit of the stomach was ordered to be well fomented, every two hours.

On the following day he took one grain of the submuriate of mercury, with three of soap, in a pill, twice in the day. The fomentations were continued. The pains in the tumor were very frequent, and distressing; shooting about in various directions from the immediate seat of the inflammation, darting upward through the chest, and checking his breath whenever he attempted to take a full inspiration. His sufferings, he observed, were most severe during the night; for when he lay down in bed, the change of posture was attended with an almost intolerable aggravation to the pain in the tumor, with increased difficulty in breathing. The pulse was now 120, very small, but hard. The skin was hot and dry; the tongue

covered with a white crust. The bowels were very sufficiently relaxed.

He had remained four days in the hospital, without experiencing any relief, when he was ordered to rub in two drachms of mercurial ointment upon the inside of the thighs, and this was repeated every evening for five successive nights, when the quantity was diminished to one drachm, which was continued for six evenings more; he was then ordered to desist, as I found the mouth was becoming affected.

While the frictions were carrying on, his complaints did not give way in any remarkable degree; but immediately the constitution was brought fairly under the mercurial influence, the pain in the tumor, and every other symptom with it, began to decline.

The excitement remained upon the system for about a week, when he found himself so much relieved, that he said he felt no pain, or tenderness whatever, nor any remaining heat in the tumor. He now slept soundly through the night, all constitutional sympathy having entirely left him. The peculiar feel of hardness also was gone, and what remained of the local affection completely disappeared in the course of the following fortnight.

He was allowed to return to his duty, after remaining three weeks in the hospital.

Mercury is held to be a stimulant; its effect upon the constitution is called excitement, for it certainly rouses the actions of the body, and much increases the quickness and force of the heart's action. Every case of acute inflammation is a state of local excitement, and the use of those means known to operate by stimulating, are therefore held objectionable. Upon this principle, mercury is generally recommended in chronic affections, but not in acute inflammatory action of the liver. But in the case just related, there was not only proof of inflammatory action by the internal symptoms, but also from the local appearances, there was ground to believe, suppuration was at hand, consistent with what we learn by dissection, as to the manner in which diseased parts assist themselves. There was reason to presume, that effusion and consequent adhesion had established itself between the anterior part of the liver, and the adjacent parietes of the abdomen, and this carries the idea beyond mere inflammation, as it is a preparatory step to the transmission of the contents of an abscess, and perhaps very rarely, if ever, proceeds to the length marked above, unless where suppuration takes place.

Case 71.

Inflammation and Abscess of the Liver, bursting externally.

J. Dunn, a soldier in the 13th Foot, twenty-nine years of age, was received into the hospital, at Gibraltar, in August 1805. He complained of a short, dry cough, with occasional, slight pains

flying about his breast. He was unable to walk even about the wards, motion so greatly aggravated his pain. There was also an oppression about the breathing, but this he fancied himself relieved from, whenever the windows were thrown open.

For the relief of these complaints, expectorant remedies were directed, but the symptoms were in general so undecided, and the man's constitution so evidently deficient, that little was done till October, when the pains about the chest still remaining as bad as ever, twelve ounces of blood were taken from the arm. The operation was productive of no permanent benefit, although at first he thought he found his breathing relieved by it.

He remained much the same through the months of October and November, when orders arrived for the regiment to embark for England. About this time he felt something, which he called a "knot," or "core," forming on the inside of his breast, just at the pit of the stomach. This however, was not perceptible, upon an external examination of the part.

He said he was well enough to go with his company, and as he expressed great anxiety upon this point, he was allowed to embark on board a transport, in which there was no medical officer.

His health continued very indifferent during the passage home. The ship was nearly five weeks at sea, and he was sea-sick almost the whole of the time. Before the voyage was ended, he had

entirely lost his appetite, and the "hard substance" which he long had believed to be forming in his breast, was now becoming every day more evident externally. An indurated red tumefaction had commenced, and was making its way forward, with heat and pain.

While the regiment was under quarantine at the Motherbank, the ship was visited, and this man was upon the list of sick. On examining the part where he complained of swelling and pain, I found a considerable tumor. It was a firm, circumscribed convexity, opposite the situation of the liver, just below the cartilages of the ribs, and ensiform cartilage. He said it was now a constant source of uneasiness, but not so often productive of much pain as it had been, for he had observed, that in proportion as the external swelling increased, the internal pain diminished.

When the regiment disembarked, he moved with the baggage to Winchester, and as soon as the establishment could be formed, he was taken into the hospital. The swelling, heat, and redness, continued to increase. The central part was now perceptibly softer than the circumference, so that it was hoped it would soon burst. When received into the hospital a week after landing, his appetite had returned, and his health and strength had much improved. His pulse became soft and full; he now said he felt a throbbing sensation in the tumor, and experienced occasional light chills, but he never had any regular attack of rigor.

In the beginning of February, the integuments

covering this swelling were giving way fast towards the centre, while the circumference, where adhesion was established between the liver and external parietes, remained hard as horn.

About this time the district inspector * visited the hospital, and, after considering the case, his opinion coincided with my own, that it was better to allow the abscess to make its own way. Nothing therefore was done, in addition to the fomentations which were regularly continued. Indeed the patient's good health was such, as to leave nothing for medicine to accomplish.

In the night of February twenty-three, while in bed, and asleep, the abscess burst; he supposed while turning in his sleep. It did not, however, disturb him, and when he awoke in the morning, the contents were still flowing forth. The quantity about his linen, and the whole of the bed-clothes, might be nearly equal to two pints. He was so much weakened by the discharge, that he was obliged to keep his bed for several days.

For the first fortnight, the quantity of discharge was equal to four ounces daily. In consistence it was thin, and serous, sometimes streaked with blood.

The stomach was still in excellent order, but the pulse had become weak, and was rather too quick. The discharge lessened, and in a few weeks it was altogether trifling. At this time, he found that a full or a quick inspiration, sneezing, or coughing, produced a twitch of the old pain in his breast;

* Dr. Whitelocke.

and by the time the discharge had entirely ceased, and the opening healed, the pain in his chest had re-established itself, obstinately as ever.

His general health was too low to admit of active measures, while on the other hand he was totally incapable of any kind of duty. He was therefore allowed to remain in the hospital as a convalescent. Sometimes on a fine day, he walked out a little for the air, and seemed to enjoy it, but he was only able to move slowly. In the month of April, his pulse was very small, weak, and quick, beating 120 in the minute. His appetite was tolerably good; but the pain and oppression in his breast distressed him more than ever. His strength and spirits from this period drooped very much, for he had lost all hope of ever again being capable of doing his duty. In the course of the following month, he was recommended for his pension, which was allowed him.

Case 72.

Inflammation, and Abscess of the Liver, opening into the Intestines.

In March 1807, the 17th light dragoons were encamped before the town of Monte Video, in South America. The falls of rain were frequent, and heavy; and the weather particularly cold. At this time Stephen Hunt, a man of robust frame, but a very hard drinker, about twenty-four years of age, was brought down to the regimental hospital, with a sharp pain, principally about the right side of the chest. He had severe head-ache, a hot

and dry skin, and a quick, hard pulse. The face was flushed, and the tongue white. Eight ounces of blood were immediately taken from the arm, a large blister was laid upon the breast, and he was ordered the saline draught, with three grains of Dover's powder, every four hours.

Second day. The pains in the breast and head were still very distressing, the bleeding having afforded only a temporary relief. The drawing in a full breath much increased his pain. He was ordered three grains of ipecacuanha, and one of calomel, twice a day.

Third day. The pains in the head and breast greatly relieved, by a sudden attack of diarrhæa. This attack came on spontaneously, and was by no means such as might have been produced by the medicines, but a copious and frequent discharge from the intestines of highly offensive puriform matter, with considerable quantities of blood. He complained much of a general sense of uneasiness in the bowels, but no griping, or acute pain. In this particular it differed from dysentery, as well as in the circumstance of there being little or no tenesmus.

As the state of the skin, the pulse, and tongue, were very manifestly improved upon the accession of this attack, it was considered, that it might prove useful, as a critical evacuation. He was therefore directed to take six drachms of castor oil immediately, and ten grains of Dover's powder, at night.

Fourth day. The pain and distress in the chest

and head, quite removed. He could again breathe full and free, without pain; but the diarrhæa was worse than ever. He constantly discharged blood with his motions, which were as frequent as every hour. He complained that his medicines afforded him no relief; and was therefore directed to take four grains of Dover's powder, thrice a day.

Fifth day. Much the same. The pulse quick, but soft. He said, he felt some uneasiness about the breast, but no acute pain. Tenesmus now supervened, and when this was troublesome, as much of blood as any other kind of matter flowed from him. The four grains of Dover's powder was increased to five.

Sixth day. Excessively low and weak, and much altered for the worse. There was so remarkable a falling off, in respect to appetite, that he could not now be persuaded to take any thing whatever. The disorder in the bowels unaltered. He was ordered eight grains of the Dover's powder in the infusion of quassia, twice a day.

Seventh day. Much the same. Two grains of calomel were added to his powder.

Eighth day. The dysenteric symptoms still more distressing; three grains of ipecacuanha, and one of calomel were given, twice in the course of the day.

Ninth day. The flux of blood being constant and alarming, he was ordered half an ounce of castor oil, and when this had operated, an anodyne injection was thrown up, without avail.

Tenth day. Very much reduced by the continuance of the hæmorrhage. Half an ounce of mer-

curial ointment was now ordered to be rubbed in about the region of the liver. Forty drops of tincture of opium, in a strong mucilaginous solution, were injected into the rectum.

Eleventh day. Much the same, or rather worse; treatment continued.

Twelfth day. Upon the morning visit, he was found covered with a cold clammy sweat; with a pulse extremely weak and faultering. As the bleeding continued, it was proposed that he should take a draught very sharply acidulated with the sulphuric acid. This was given every half hour, but to no purpose; for large and numerous coagula of blood still continued to pass rapidly per anum, and the man was evidently sinking. There seemed to be but one remaining chance, and that a very slender one. It appeared to me that if the bleeding vessels happened to be situated low down in the rectum, the hæmorrhage might possibly be checked by throwing up an acid enema. With this view, a pretty strong mixture of sulphuric acid in cold water was injected; it gave no pain, nor any sense of uneasiness, but was soon followed by another most copious discharge of coagulated, grumous, and fluid blood. The same sort of discharge recurring almost every ten minutes, towards noon terminated this poor man's existence. He died completely exhausted by the hæmorrhage, and expired without a groan.

Examination.

The contents of the chest were sound, the only remarkable circumstance being an adhesion between

the inferior surface of the lungs, on the right side, and the corresponding surface of the diaphragm.

In the abdomen, the appearances were the following: the bundle of small intestines were uninflamed, and perfectly free from any trace of disease. The colon, near its curvature upon the right side, was considerably thickened, and closely connected by adhesion with the surrounding parts. On tearing asunder its adhesion to the peritoneum lining the abdominal muscles, a large ulcerated hole was detected, from which a considerable quantity of curdly purulent matter, tinged with blood, escaped among the intestines. This ulcer opened into the intestine, but could not possibly have been the source, either of the hæmorrhage, or the matter collected in the gut; for the blood-vessels on the one hand, and the extent of ulcerated surface on the other, were too inconsiderable to allow of such an opinion.

The stomach and spleen were perfectly sound. The liver, on its convex surface, near the anterior part of the suspensory ligament, was observed to be tumid. A division of this tumid part discovered a large collection of matter, lodged within the substance of a completely diseased liver. The matter was of thick consistence, and a yellowish white colour.

Passing the finger between the upper surface of the right side of the liver, and the diaphragm, it was found to be very extensively adherent to that muscular expansion, and posteriorly to the peritoneal cavity. In the attempt to separate these

adhesions, a cavity was rather unexpectedly opened, from which burst forth a very large quantity of matter and blood, at least a pint. This larger abscess was seated in the thickest part of the liver, and was perfectly unconnected with the smaller cyst, previously opened. The one contained purulent matter only; the other purulent and curdly matter, with a large proportion of dark blood. The latter, from its superior magnitude, as well as the exact similarity of its contents, was evidently the abscess that had opened into some part of the intestines; unfortunately, however, the urgency of the moment, from the large number of sick in hospital, did not admit of the particular point of adhesion between the liver and intestine being ascertained.

Case 73.

*Abscess of the Liver, with Hydatids.**

John Jones, aged seventeen, a servant to Lord E——n, came to St. George's Hospital for relief, in March 1813. He had been in Portugal with the army, and while there had had two attacks of violent pain in the right side, with jaundice, and other symptoms of hepatic affection. He said he had been relieved by bleeding, blistering, and mercurial medicines. The last of these attacks occurred five months previous to his admission into St. George's.

* For the following particulars I am indebted to Mr. Hamerton.

When he came into the hospital, he had a constant uneasiness, and a tickling cough upon him; the skin had the yellow appearance of jaundice. He complained also of constant pain about his right side. The expectoration was usually pretty free. It was certainly purulent, and frequently had the yellow colour and appearance of being mixed with bile in considerable quantity, and when this appearance prevailed, he always found the taste was extremely bitter.

For these complaints, he was blistered thrice upon the side, had expectorating medicines, and was placed under a course of calomel. The mouth was kept under the influence of these medicines for some time, till he was evidently much reduced, while the symptoms were rather aggravated than relieved; that is to say, the pain, the cough, and the quantity of expectorated bitter and yellow bilious fluid, and the yellowness upon the skin, were greater than before.

After persevering in this treatment for two months, it was changed. The mercury laid aside, light tonics were substituted, with occasional expectorants and opiates.

The patient, however, was sensibly declining into a state of extreme debility and emaciation, and had now a muttering, low delirium towards evening. His pulse had been always quick, but small.

A remarkable circumstance in this young man's complaint was an invariable constipation. His bowels were never regular since he had been ill,

without the assistance of medicine. His stools were always of a light ash, or grey colour, and procured only by very strong doses of purgative medicine. He had been in the hospital about three months, when he died.

Examination.

On opening the body, the liver was found, in point of general texture, perfectly healthy. In the superior part, however, towards the convex surface of the right lobe was an abscess, large enough to contain twelve ounces of fluid. This had burst upwards, and, assisted by previously formed adhesions on both sides the diaphragm, had opened a communication with the bronchial ramifications.

The cavity of the abscess contained a purulent matter, mixed with bilious fluid, in which were floating a considerable number of hydatids. Some of these were as small as peas, others large as hazel nuts. The gall bladder was extremely tense, and quite full of healthy bile, but unable to get rid of it, an hydatid of considerable size having made its way by the ductus hepaticus into the ductus communis, where it had so increased, as to completely block up the passage into the duodenum. The intestinal canal was loaded with pale, stiff, clay-coloured, excrements.

Case 74.

*Diseased Liver, filled with Hydatids.**

John Mackie, aged fifty-three years, died March 9, 1800. He was by trade a cabinet-maker, and had always enjoyed very good health, till about nine years before his death, when he one morning complained of a pain which he compared to something having separated, and dropt from his right side. This occurred in rising from bed, and after it he became subject to a pain in the part. Very frequently, and at various hours of the day or night, he was seized with violent shiverings, but more particularly after using exercise.

Occasionally he was so costive, as to have no motion for ten, twelve, or even fourteen days. His stools were at all times excessively offensive.

He was subject to nausea, and vomiting, discharging however, only small quantities of greenish or yellow matter. About two years subsequent to his becoming poorly, he had twice or thrice vomited something, which in smell and appearance very exactly resembled fæces.

Throughout his illness, he was extremely subject to flatulence, continually discharging wind by the mouth. Whenever this complaint was particularly distressing, his appetite was much greater, than at other times.

* The minutes of the following case, with the disease, are preserved in Mr. Heaviside's Museum.

He voided very little urine in general, and what he did pass was chiefly during the night. His sleep was generally much disturbed by sighing and groaning; he would frequently start up from bed, throwing his arms about him in a wild and confused manner.

He was unable to rest upon his right side, and for the most part lay on his back. When the pain in his liver was most violent, he frequently found relief, by sitting down and bending his body forward upon his knees. His legs became œdematous and swelled, soon after he was first seized, to that degree, that the skin covering the tibia gave way, and extensive ulcerations were formed. This happened repeatedly during the course of his tedious disease.

He was never jaundiced till May 1799, subsequent to which period his skin always retained more or less of a yellow tinge. At his death he was extremely yellow. During the last fortnight of his life, his stools were said to resemble black coagulated blood.

He never had been in the habit of drinking spirits, nor even porter, except in small quantities, but always very largely of tea and cold water.

Examination.

On opening the body, the liver was found considerably enlarged, and extremely tense. Upon various parts of the peritoneal surface, numerous elongated adhesions proved the former existence of inflammation. Upon cutting into the liver,

the whole of the natural structure of this viscus, was apparently annihilated. An immense cyst, full of hydatids occupied the whole of the right lobe, and two smaller cysts were found in the left lobe, also filled with hydatids. These vesicles were of various sizes, from the diameter of a quarter of an inch, to that of two inches and upwards. Between eight and nine hundred of them were counted and preserved.

Sect. 3.

On some of the affections of the stomach, and intestinal canal.

The diseases to which the stomach and intestinal canal are subject, are extremely various, and of such importance as to merit the attention of every medical practitioner, although they are rarely such as admit of relief from operative surgery.

The most simple mode of considering the affections of those parts which have fallen under my notice, will be to commence with the œsophagus, following the natural course of the canal downwards through the stomach and intestines, to its termination in the rectum.

The pharynx and œsophagus are subject to inflammation from accidental causes. It has been a generally received opinion, that in severe cases of small-pox, the disease extends itself more or less throughout the intestinal canal, and that the pains, the diarrhœa, the peculiarly offensive stools,

&c. are to be explained by the changes incident to the formation of the pustules internally. That the inflammation, and its specific consequence, a pustular eruption, may occasionally take place in the pharynx, and even further down, is demonstrably established by an injected preparation * from a patient who died in the small-pox, which exhibits numerous pustules distinctly formed upon the inner membrane of the pharynx, and for more than half the length of the œsophagus.

But on the other hand, while at Scarborough in December, 1808, I had an opportunity of examining the state of these parts, in an adult, one of the privates in the 82d regiment, who died of confluent small-pox. The pharynx and œsophagus were certainly much inflamed, as was the stomach, and more or less, the whole of the intestines; but after the most diligent search, no trace whatever of the pustular action was found, either in the pharynx, œsophagus, stomach, or intestines.

Of the permanent stricture of the œsophagus, I have only seen one instance. It occurred while I was pupil at St. George's Hospital, in the year 1799. The patient was a woman of spare habit of body, about sixty years of age. The contraction had been more than a twelvemonth in establishing itself. She said she had at first been able to swallow moderately-sized pieces of solid food, subsequently very small morsels, and at the time of her application for relief, she could not get

* In Mr. Heaviside's Museum.

down any thing whatever, unless in a fluid form.

The stricture was situated in the superior extremity of the œsophagus. A caustic bougie was introduced once a week, * for eight or nine times, the improvement was progressive, and the disease at length completely cured; so that the full-sized bougie passed readily through the strictured part, and the patient could swallow solid food as well as ever.

The successful event of this case may, however, be attributed as much to the favourable state of the disease for treatment, as to the propriety of the treatment adopted. For contraction of the œsophagus, when it does occur, is so generally complicated, either with scirrhous tumor, ulceration, or extended contraction, that any active mode of treatment is by no means constantly advisable.

Case 75.

Schirrus of the Cardia.

Stricture at the cardiac orifice of the stomach is an exceedingly rare disease, but I have examined the body in one instance, where it produced death. The patient was butler in a nobleman's family, and had reached the age of fifty. The complaint of which he died had been a long time coming on, attended at first with scarcely any pain, and no inconvenience. As the disease advanced, however, he became by degrees incapable of swallowing solid food, or to speak more correctly, he was un-

* By Sir E. Home.

able to keep down the morsel when swallowed. The natural action of the œsophagus carried it well enough to the seat of the disease, but as it could not pass this point, it then produced an inverted action, and the food was returned. Latterly, the disease would not even allow the passage of fluids; when he became dependent for his existence upon the frequent injection of nutritious broths and milk; by which means a miserable existence was prolonged for some few weeks.

Examination.

The whole extent of the œsophagus was removed, but no appearance of disease was found higher than the cardiac orifice of the stomach. At this part there was an irregular tumor, almost as large as a small orange. When this tumor was laid open, so as to expose the passage of the œsophagus into the stomach, and carefully examined, it appeared that the disease had taken place in the muscular coat of the œsophagus; for the mucous membrane, although somewhat inflamed, seemed in other respects sound; the external coat of cellular membrane also was apparently healthy. The feel of the disease was that of scirrhus; the circumference was externally firm, and several tubercular projections formed towards the centre, were so compressed against each other, as to effectually close up the passage into the stomach.

No other diseased appearances were found.

The stomach is subject to inflammation from a great variety of causes. About five years since, I examined the stomach of a young woman who died at seventeen years of age. In a fit of passion, she determined to destroy herself, and she effected her purpose by swallowing a quantity of boiling water. Extreme pain and inflammation immediately followed, but the increased action very quickly gave way, and gangrene supervened. She died within four days.

On examination, the stomach was found in some parts inflamed, in others mortified, and black. Within its cavity there was no accumulation of stiff, ropy secreted fluid, neither did the internal surface exhibit any trace of effusion of coagulable lymph. So that, however, much in this particular species of injury the activity of circulation may be increased, the tone of the circulating vessels, judging from the appearances upon dissection, must be very low.

Case 76.

Inflammation of the Stomach, from swallowing Muriatic Acid.

In the year 1811, I was desired to see Mr. T. a respectable young man, just settled in business, who, it was supposed, had become melancholy, from over anxiety. He had risen very early in the morning to let in his men, previous to doing which, by his own subsequent account, he drank half a tea-

cupful of a solution of tin in muriatic acid, a preparation in constant use with the dyers.

It was five hours subsequent to the act, when he was first visited. He complained of terrible pain in the stomach, severe beyond description. There was a restless anxiety, and expression of despair about the countenance, with thirst, and frequent copious vomiting of stiff glairy mucus. The pulse was at 100, very small, but rather hard.

It seemed much too late, to expect any thing from alkaline medicines; as full a bleeding therefore as could be borne was taken from the arm, the patient was requested to drink freely of diluent liquids, and the friends were recommended to consult a physician immediately.

The same afternoon, a large blister was ordered and laid upon the pit of the stomach, and some aperient medicines also were directed, together with an emollient injection, to be occasionally repeated.

The following day, he had had a relaxed motion, although from his constantly vomiting after every attempt to swallow, it was supposed, it could not have been the effect of the medicines he had taken. The symptoms were considerably worse, the pain in the stomach more excruciating, the constant restlessness, the astonishing quantity of ropy mucus rejected from the stomach, and the quickness and lowness of pulse, all much increased. In the evening he was still getting worse. During the next day the pulse was extremely rapid, and so small as hardly to be distinguished. The intolerable pain at the stomach, and the copious vomiting

of glairy mucus continued, but his strength was declining fast, and he was a little less collected before. In the evening he became delirious, and in the course of the night expired.

Examination.

On dissection, the œsophagus was found somewhat affected by inflammation. The whole of the stomach was violently inflamed, and when opened, was found thickened and pulpy in its texture; it was immensely vascular, and full of stiff ropy mucus similar to that which had been rejected during life. Only a few inches of the duodenum were inflamed; but there was no appearance of spasmodic contraction at this part when the body was examined, although it may be presumed to have existed in the first instance so as to prevent the irritating contents of the bowels passing lower down.

The omentum was very extensively inflamed.

Within a month after attending this case, I was called up at three in the morning to go and see an unfortunate man, who, oppressed by a severe asthma, as well as by extreme poverty, had first made an attempt to murder his wife, and had afterwards swallowed about two ounces of nitrous acid, with a view to terminate his own existence. This had happened late in the evening, and at the time of my seeing him, he was nearly insensible, but had acknowledged what he had done, complaining of dreadful pain in the stomach, with frequent vomiting of stiff, mucous matter. The pulse was small, soft, and rapid. Proper medicines

were directed, although he was to appearance already nearly dying. I promised to see him again in three hours, at which time he was just expiring.

It was not possible to propose the examination of the body in this case, from the extreme distress of the family, and the anxiety that was naturally expressed to avoid the additional pain that must have arisen from the exposure of the circumstances of his death.

The most strongly marked case I ever met with of scirrhous affection of the pylorus, occurred in a poor man, who died from a stricture in the rectum, with irritable bladder.*

Inflammation of the intestines, where it arises from cold, or any of the other causes that usually produce it in civil society, is considered to be one of the most generally fatal of all local inflammations. But judging from observation and dissection, it is far otherwise in military life, for the increased vascularity, the thickening, the effusion, and even extensive ulceration, often prove the previous existence of inflammation of the bowels, in cases where the disease producing death has been totally distinct from it.

If however we recollect, that in soldiers on ser-

* This case, from the irritability of bladder having been the earliest and most prominent symptom, is related in the Practical Observations, on the Diseases of the Urinary Organs.

vice, a great quantity of unwholesome food is eaten, which in general proves the exciting cause of the disease, the reason is obvious enough. The increased discharges always poured into the bowels where excitement proceeds from the acrimony of contents, powerfully tend to keep in check the violence of the inflammatory action. In the one case the inflammation may be considered idiopathic, in the other symptomatic; in the former, the bowels are generally quiet, in the latter almost constantly more or less disturbed, with copious evacuations by stool.

In cases of dysenteric affection, where the intestines have suffered extensively from inflammation and ulceration of the villous coat, the patient may be very long distressed by an obstinate irritability of the bowels, so that there shall be a constant diarrhæa, or the strongest propensity to it. This arises from the excessive irritability of the recently cicatrized parts of the general surface. But dysenteric complaints are productive of other evils more serious. The animal machine, in order to be kept up, requires a certain quantity of support, and if this is not supplied, it fails, sooner or later. It signifies nothing to the general œconomy, whether the fault is in the stomach, or in the intestines, or any where else.

The following case will, in some measure, illustrate these observations.

CASE 77.

Dysentery, with extensive Ulceration of the Bowels.

In the year 1801, while in charge of the general military hospital at Mahon in Minorca, I had a patient who was considered as convalescent from old dysenteric complaints. There were no pains in the bowels, no tenesmus, nor the least tendency to fever; but on the contrary he had an excellent appetite. His only remaining complaint was diarrhæa. He was ordered three, and sometimes took four or five grains of opium in the day. From not being able to stand upon his feet, by this plan, aided by a full, nourishing diet, he was enabled, in six weeks, to walk about for an hour in the day, and seemed in every respect much improved.

Having, for a fortnight persevered in this treatment, by which his diarrhæa was greatly relieved, the daily quantity of opium was diminished, first to three, and then to two grains. By regulating his diet, the old complaint did not materially increase, but a new one sprung up. This was a distressing pain, extending down from the groin by the inner part of the thigh towards the knee. This painful affection increasing, soon prevented him from sleeping at night. The quantity of opium was again increased to five and six grains in the twenty-four hours. This treatment, in a week's time, had certainly abated the pain, but as the pain lessened, the lower extremities became œdematous.

In spite of his medicines, diarrhæa returned, the swelling of the legs increased, and he gradually

sunk into a hectic state. His complaints were once more arrested in their progress by the liberal use of opiates, warm tonics, and the sulphuric acid; and he for some weeks seemed to be rather mending than otherwise. He eat every day as much as several strong men, but, although the bowels were not in the least degree relaxed, he was, notwithstanding, losing ground, both in flesh and strength. The inconvenience he felt from the swelling of the legs, was for a time relieved, by puncturing the skin, and allowing the water to drain off. Blisters were applied, but they succeeded very partially. The anasarca became more extended, till at length water accumulated in the abdomen; he now fell into a low, muttering delirium, in which he expired.

Examination.

In the chest, the lungs were found extensively adherent to the ribs. A considerable number of small tubercles were dispersed throughout the substance of the lungs, the general structure of which, was more firm than natural.

In the cavity of the abdomen, there were about three pints of serous fluid. The whole of the intestinal canal was highly vascular, but more particularly the small intestines.

The canal of the small intestines was next laid open, and washed, but no appearance was perceived of the inflammation having gone on to ulceration. When the large intestines, however, were examined in the same way, the appearances were very different.

The whole extent of this part of the canal was almost completely changed by ulceration, which had taken place universally, in large irregular patches. The period at which this change occurred, must have been remote, for the ulcerated parts of the surface were completely covered by cicatrices, which were of a finer, and smoother texture, than the surrounding natural structure.

The above appearances, to a certain degree, explain the symptoms which attended in the latter part of this poor man's life. It is not the least curious circumstance, that for the last six weeks, his appetite and digestion should have been remarkably vigorous, and that his bowels, regulated by opium, were kept in excellent order. He generally had from three to five copious and healthy-looking stools in the course of the day.

The uncommon strength of his digestive powers led me more than once to hope he would recover, not then aware of the diseased state of the great intestines, in which, by the extensive change of surface, the important function of absorption from that part of the bowels was totally destroyed. From reference to the date of the early symptoms, it appeared that, for the last five months of his life, he must have been supported by the absorption from the stomach and small intestines only.

It had often been observed as singular, that not only the lightest preparation of bark, but even the mildest kind of food, if opium was omitted, always produced an immediate attack of diarrhæa. This circumstance, however, was very readily explained,

by considering the preternatural sensibility of so large an extent of newly-formed surface as was found upon laying open the cavity of the intestines.

When inflammatory action of the bowels has terminated in ulceration, the mischief may extend itself beyond the villous surface, by destroying the muscular, and peritoneal coats of the intestine. The probability of this event can be judged of only by an attentive consideration of past symptoms and present circumstances. Where this accident has taken place, the immediate consequence is the escape of the contents of the bowels, and consequent peritoneal inflammation, the immediate forerunner of a fatal event.

Case 78.

Inflammation and Ulceration of the Intestines.

Master M. a child of three years old, was at school in good health till January, 1810, when he became poorly, and was supposed to have taken cold. His appetite was impaired, and his bowels were relaxed. This, however, was scarcely noticed for some time. He enjoyed his usual amusements, and it was expected his complaint would wear off again.

After some weeks, however, the child was sent home with a severe diarrhæa; the abdomen much swelled, and at times very painful. When sent to

school, he was a very hearty and strong child, but on his return was much altered, weak and emaciated. As the disorder continued to increase, he became heated upon the skin.

The medical attendant at first attributed his complaints to teething; said he must be strengthened by nourishing diet, mutton chops, beef steaks, and porter, to be given as often as the child could be persuaded to swallow them. The trial of this plan, however, proved it was not likely to answer, for whenever the child had been fed heartily as proposed, the heat and fever, restlessness, pain, and fretfulness, were all aggravated; notwithstanding which, the parents having confidence in the judgement of the apothecary, still followed his directions.

In this way a month passed, every alteration apparently for the worse. This was so obvious, that the friends were soon convinced the child was certainly very ill, and this conviction was so strongly supported by the child's appearance, that the medical gentleman attending him, changed his opinion, and said at once, that he saw no chance of his recovery. He still continued to grow thinner, and the fever, which was at first occasional, now became constant. The diarrhæa, however, was apparently on the decline, and this seemed to afford a ray of hope. The motions were on some days not more frequent than natural, but every now and then violent fits of restlessness and crying came on, and he complained of the "belly ache."

The abdomen was exceedingly tumid and hard,

and excessively painful when even in the slightest degree pressed. His water was observed to be becoming high coloured, it was also rendered in diminished quantity. The appearance of his stools had changed, they were of a light clay colour, as usually observed in disorders where the bile is prevented from flowing into the intestine. He had once about this period a sickness at stomach, with vomiting, on which occasion, the matter thrown up was found to resemble in smell and appearance, exactly that which was passed by stool.

At this time I was first desired to see the child. The body was reduced almost to a shadow, the belly much swoln, very tense, and extremely painful. There was an obscure feel of fluctuation in the abdomen. The motions were at this time less frequent than in health. The child was perfectly sensible, and always called for his chair, when necessary. The pulse was pretty good, and beat 120 in the minute, but the little remaining appetite had now failed, so that he took nothing.

An ointment, with an eighth part of tartarised antimony, was directed to be rubbed frequently upon the abdomen, and a saline mixture was ordered. By the evening of the following day the child was apparently better. The rubefacient effect of the ointment had been pretty considerable, the pulse was softer, and the heat of the skin much reduced; and he passed a more tranquil night than usual.

On the following day half a grain of calomel, with five of aromatic powder, were given re-

peatedly; but this seemed to be productive of increased heat and pain. It was, therefore, discontinued. Subsequent to the exhibition of the calomel, the stools were not observed to be of a more natural colour than before.

By continuing the saline medicines for a week, the febrile heat, and hardness of the pulse, were relieved. The bowels were now very inactive, and as there had been no motion for two days, the lower intestines were partially cleared by an emollient injection.

The remarkable quickness of the pulse still remained, and this circumstance, as well as the peculiar state of the bowels, led to the friends being apprized that there was most probably a formidable disease of some kind about the intestines. The treatment had lessened the general bulk of the abdomen, and had allayed the fever, but it did no more. In this uncertain state he continued to live for some few days, taking occasionally a little jelly, broth, or gruel. He became fond of his saline medicine, and several times took full doses of castor oil, but without its producing any apparent effect. His pulse now lost its little remaining strength, and the constitutional powers sunk with it, and in the course of the evening he expired.

Examination.

The body was inconceivably emaciated. On laying open the abdomen, the peritoneum was found in many parts adherent to the viscera. The omentum was considerably thickened by inflamma-

tion and disease. The whole bundle of intestines was found involved in one confused mass of adhesions. This had been consequent to a very extensive effusion of coagulable lymph into the cavity of the abdomen, in which was also a quantity of serous fluid, that was removed in the course of the examination.

This mass of coagulable lymph was next cut into, when a quantity of brownish red fluid gushed forth, and with it the skins of some raisins. This circumstance proved that some part of the coats of the intestines had given way. The incision was then extended, so as to expose more perfectly the cavity of this preternatural cyst; by this means a circular hole, about a quarter of an inch in diameter, was discovered in the side of the small intestine. From this, the contents of the bowels had in the first instance escaped, and by it the fluids still ran freely out.

The prevailing character, on the external surface of this mass of coagulable lymph, and indeed the general appearance of the bowels also, was that of approaching mortification, and the whole of the contents of the abdomen were excessively offensive.

Several of the mesenteric glands were enlarged and pulpy. In one of these, there was a small quantity of thick purulent matter. On closer examination, the villous coat of the small intestines was in several places found to be destroyed by ulceration, but in no part, except where the opening had been already detected, was the ul-

ceration deeper than the muscular coat of the bowel.

The mass of coagulable lymph, which had united nearly all the viscera of the abdomen together, was in some places nearly a quarter of an inch in thickness. In the immediate neighbourhood of the ulcerated opening, this lymph had formed an irregular kind of cavity or cyst, a process by the assistance of which, the natural powers had succeeded in some degree, in confining the effused fluid matter from the general cavity of the abdomen. But the same fluid matter, which, on first bursting forth, had produced so extensive an effusion of lymph, had also, by its permanent stimulus operating upon those portions of viscera within its reach, (but which had nevertheless assisted in setting boundaries to its influence,) latterly induced excitement, that parts previously exhausted, were incapable of supporting; and hence arose the rapid advances to a state of general mortification observed in the examination of the body.

The above case exhibits an instance of what the energies of the constitution are capable of, in warding off the ill effects consequent to disease. These apparent efforts, however, are readily traced, as the natural results of those perfect laws, according to which the animal machine was first constituted; and which, agreeable to the original design, are adequate to the regulating and reco-

vering it, in numberless cases of extreme exigency, under circumstances in which the fruitless exertions of human ingenuity can do nothing for its relief.

But although in youth there are frequent demonstrations of this power in the living body, the resources of the constitution decline towards middle age; and late in life, seem in many instances, to fail altogether.

Case 79.

Inflammation and Ulceration of the Intestines.

A middle-aged man, had been for some time subject to diarrhæa. He supposed it was owing to accidental cold, that the complaint became suddenly worse, and was attended with a great accession of pain and fever. In this state, he desired assistance, and was taken into the St. George's Infirmary, where medicines were directed for him, and he was for a considerable time rather getting better than otherwise, although the pains in the bowels, and the feverish symptoms never entirely left him. The diarrhæa continued, and his constitution sunk under the fatigue of low fever. The heat of the skin was uniform; but the pulse though quick, was small. During the day he had several motions, and commonly several more in the night. In this way he went on for about a week, eating scarcely any thing. He then fell into a delirium, accompanied with great excitement, much restlessness, and disposition to anger and violence; indeed to prevent mischief, it was

judged necessary to confine him by a strait waistcoat.

The diarrhæa continued, and the delirium remained, but he made no complaint whatever of pain, either in the region of the bowels, or elsewhere. After two days he became more calm. From this time he hourly declined in strength, for the space of a week, at the end of which period, he died.

Examination.

On laying open the abdomen, the appearances of disease were principally confined to the intestines. On many parts of the small intestines there were narrow longitudinal lines, or streaks of a bright red colour. There were generally two of these lines; but in some parts three, or even four. On closer examination this appearance was found to be owing to the colour assumed by the small arteries, as in other examples of inflamed surface. But in the more usual cases of such appearance, the small vessels are overloaded, and bright to some distance round the immediate seat of the affection; while in this particular instance, every vessel retained its natural appearance, or rather was scarcely visible, till it reached a certain line, in crossing which, it took on at once the bright scarlet colour of inflammation, for the extent of a fourth of an inch, when it again suddenly disappeared, and was lost.

Each of these red longitudinal lines, therefore, were made up of the bright parts of as many arterial branches as crossed the line in their way round

the tube of the intestine, previous to their inosculation with the vessels from the opposite side of the gut.

On tracing the course of the bowel downwards, many parts of the small intestines were found thickened, from inflammation. It was also ascertained, that a considerable quantity of fœcal matter was flowing loose in the general cavity. This circumstance sufficiently explained the curious appearance from increased action, just observed, upon the bowels.

The contents of the intestines were found to have escaped from an opening, ulcerated through the peritoneal coat of the ilium, near the colon. This opening was nearly circular, and almost half an inch in diameter. The thin membrane or valve of peritoneum was found still attached to one part of the margin of the opening.

On examining the cavity at this part of the intestine, it appeared that the inflammatory and ulcerative action had gradually destroyed the villous surface and muscular coats of the bowels, until the remaining film was too weak to resist the impression of the peristaltic action in passing forward the contents, and it had consequently given way.

On several parts of the peritoneum lining the parietes of the abdomen, appearances of inflammation were observed, corresponding to those upon the bowels.

From the symptoms and appearances, in this case, it seems pretty clear, that for a certain time

the superficial ulceration in the bowels was the only complaint; and that the delirium supervened upon the rupture taking place in the intestine, in consequence of which the bilious and fæcal contents escaped into the general peritoneal cavity, producing an extensive, though not exactly a continuous inflammatory affection of that membrane.

Case 80.

*Chronic Disease of the Intestines, with external Tumor.**

A woman, aged thirty-two, the mother of many children, was received into the Westminster Hospital in July, 1752. Two years before this, she had had a severe fit of colic, after which she first observed a small swelling on the right side of the abdomen. This swelling gradually increased, and her colic pains continued occasionally to return with increased severity till the April previous to her being taken into the hospital, when the tumor apparently made a stand, and did not again increase to the time of her coming into the house. From her account, it appeared that the origin of the complaint could not be traced to any former lying-in, neither did she recollect having ever received contusion, or other injury, upon the part. Since the commencement of the swelling she had borne no children.

Upon examination, an indolent tumor was found, evidently extended within the abdomen, and appa-

* The particulars of the following case are extracted from a MS. of Mr. Watson's, in Mr. Heaviside's possession.

rently within the cavity of the pelvis. A degree of fluctuation was perceptible, towards the central part of the mass, which was surrounded by a considerable degree of circumscribed hardness. This tumor had always been of an indolent nature till latterly, when, from its becoming more uneasy than usual, she was induced to seek relief. The apparent extent of this affection was very considerable, and marked out an oblique line, running across from the anterior spine of the ileum, near to the linea alba, and thence descending again obliquely till it was lost under the os pubis. The projection of the tumor below had so pressed forward the integuments, that the processes of the ileum and pubis were with some difficulty brought into view.

The fluctuation and the apparent seat of the tumor rendered it probable, that it was some complicated disease of the ovarium. As an external application, a warm gum plaster was laid upon the part. It was worn for a few days, in which time the swelling became exceedingly painful, and in about a week more broke of itself. From the opening, half a pint of limpid serum escaped, followed by a little bloody fluid. On the next day there appeared a thin fæculent discharge, which evidently enough came from the intestines. The discharge now continued generally thin and fæculent, but sometimes purulent. She never observed that the discharge from the ulcer was sensibly increased on going to stool, but was frequently apprized of something collecting within the swelling, by the pain it gave her, till at length, discharging itself by

the opening in the integuments, she became easier. In this way, fæcal matter collected and discharged three or four times a day. The stools per anum were in general relaxed, for she preferred a light and almost liquid diet.

She experienced no pain in going to stool, nor any particular uneasiness from the passage of the matter by the ulcerated opening. Her water passed freely, and without pain.

As soon as the tumor broke, a poultice of bread and milk was applied, and the second day afterward a long round worm came away with the applications. Before it broke, she was sensible of the wind being pent up, and rumbling about within the tumor, but she never felt any sensation of this nature after it had opened. The discharge continued to flow till the middle of the following August, during which time her diet was various. The dressings were merely those most convenient for keeping her sweet and clean. Her stomach, however, at last grew very weak, and her general strength declining with it, she went off by degrees, and on the twenty-ninth of the month she died, completely worn out by debility.

Examination.

On examination of the body, the integuments round the external opening of the ulcer were found separated from the parts beneath, to some distance. The cellular membrane was destroyed by ulceration, and the fibres of the abdominal muscles were as clean as if prepared by dissection.

The external wound was very near the anterior spine of the ileum, and this opening led on to a small fistulous passage through the abdominal parietes, into a large depending cavity. The parietes of the abdomen were next divided from the orifice, upward and downward; the adhesions being separated, they were turned aside. By these means a large tumor was brought into view.

This tumor was a considerably thickened and indurated mass, connected extensively by adhesion to all the neighbouring parts. It proved to be the cæcum, with the ileum passing into it and the colon. The whole of this diseased bag was dissected out, and being removed from the body, was laid open from the small orifice by which it had burst through the parietes of the abdomen. A large diseased cavity was now exposed, full of ulcerations; in many parts intersected by membranous septa, or bridles, and every where greatly indurated. Within the cyst was found a considerable quantity of common plum and cherry-stones, a large handful at least.

Upon more careful examination it appeared that the sac was chiefly made up of the bulbous extremity of the colon, denominated cæcum, and here the extraneous bodies had collected themselves. The extremity of the colon next the disease was greatly contracted and thickened. The extremity of the ileum was ulcerated, but considerably dilated, and remarkably thin in many places. The valve of the colon was very much thickened and diseased. Its lower margin or lip was eroded by ulceration.

Just opposite the insertion of the ileum, the colon, where it begins to form the cæcum, was excessively thickened and contracted. Under this thickening a passage was eroded through from the cæcum into the colon. This contracted part formed a bridge over a cavity, which, on cutting through this bridge, was found to contain three or four fruit stones, such as were in the cæcum.

From a consideration of the above case, together with the appearances on dissection, it seems more than a probability, that the extraneous substances had lodged at first in the cæcum, having afterward made a way under, and between the villous and the cellular coats of the colon, or rather, the fruit stones had accumulated behind, or on the cæcal side of the inferior segment of the valve of the colon; and as the number increased, this part of the valve had been pushed out into a sort of bag, which had at last burst into the great intestine.

An extremely rare case now and then occurs, in which the bowels are subjected to the whole extent of evil that commonly arises from hernia, without this infirmity having in reality taken place. The two following cases will set the matter in a more clear point of view. In the first, some old adhesions, which had become organized, were so situated as to form in effect a continuous band, encircling a part of the intestines; and having become vascular, they acquired a degree of strength

and tone which enabled them to resist the occasional distension of the gut by the passage of its contents. The consequence was, strangulation and death.

In the second, I had an opportunity of seeing and preserving the exact appearance of the mesentery, in which several preternatural openings had spontaneously formed during life, which allowed a part of the small intestine to pass through; and in this way strangulation, with its usual symptoms, had been brought on, ending fatally.

Case 81.

Intestine strangulated by adventitious Adhesions. *

Eleanor Burton, aged thirty-five, was seized, April 9th, with sickness and vomiting, attended with a most violent pain, extending itself to a small distance about the region of the stomach, and occasionally from thence over the whole of the abdomen; with a total constipation of the bowels, that terminated in death April 15th. A day or two before her death, she threw up from her stomach a quantity of matter, which had the appearance and smell of being mingled with fæces.

Her husband observed, that the only mark of ill health to which she had been subject, was a bad digestion of her food, with costiveness. The body was opened upon the 16th.

* From a MS. of Mr. Watson's, in Mr. Heaviside's Museum.

Examination.

The abdomen externally was tense and livid. Within, the omentum was perfectly sound, but somewhat thickened from inflammation, and adherent very firmly to the left side of the cavity of the abdomen. These adhesions it was necessary to divide by the knife. Part of the intestine jejunum was found tied up in a heap, as with a cord. The band was formed by what appeared to be most like muscular or fleshy fibres, compleatly surrounding that portion of the bowels, and preventing the passage either of solids or fluids, downwards. The part obstructed formed a portion of the alimentary canal of very considerable extent.

The intestine, from the obstruction upward, was quite livid, and greatly distended with a brown fæcal liquid matter, by which the stomach also was filled. The coats of this part of the intestine were so tender and pulpy, as to readily burst in handling. That part of the intestinal canal below the obstruction was in a sound state.

The stomach was large, and very flaccid. Several livid spots appeared on various parts of its internal surface. All the other viscera were sound.

Case 82.

*Mesenteric Strangulation of the Bowels.**

Martha Lindow, aged forty-four, a patient in St. George's Hospital, was awoke out of her

* With the particulars of the following case, I was favoured by Mr. Hamerton.

sleep on Tuesday morning the 23d of March, 1813, by a violent pain at the pit of the stomach, extending itself more or less over the whole of the abdomen. This pain increased, and in the course of the following day became constant, and excessively severe. On the morning of her attack, she made her complaints known, and was immediately seen. She was directed a purgative draught, a saline mixture, and some cathartic pills. But these, and whatever else she attempted to swallow, were thrown off the stomach. She had a natural motion two hours after the commencement of the attack.

Besides the medicines above-mentioned, warm fomentations were ordered to the pit of the stomach, and a purging enema, which was repeatedly had recourse to without any effect. The injection always returned immediately, without bringing away any fæcal matter.

The violence of the pain at the stomach continued to increase. Tuesday night she passed in a state of constant restlessness, and great pain. She had no sleep, and the next morning complained of great difficulty in breathing; this was somewhat relieved by taking ten ounces of blood from the arm. The operation had no perceptible effect in easing the pain at the pit of the stomach. The pulse was 110, and not very hard; the tongue was dry and brown; the thirst considerable.

Whatever she now took, whether medicine, broth, or food, staid on the stomach. But the tenderness of the abdomen was such, that she could

not endure even the bed-cloaths to remain upon her.

In the course of Wednesday she was twice immersed in the warm bath, and had many purgative enemas, without any relief whatever. In the evening the pulse was 130; and the tongue very dry. She was again bled to faintness. Upon the blood there was no appearance of buffiness, or cupping. At first she seemed a little relieved by it, but soon appeared to be evidently sinking. Occasional faintness, and cold perspirations came on, and she lingered only till three in the morning, when she expired.

Examination.

On laying open the cavity of the abdomen, great inflammation was found upon the stomach and bowels; and the cause of all the mischief was of the following singular nature. About nine inches in length of the ileum near the caput coli was found strangulated, by having passed through a preternatural opening in the mesentery. The strangulation was so complete, that it was found impracticable to insinuate even the point of the little finger within the circle of the ligature.

The intestine could not be pulled out in the least degree from its confined situation, until the strangulated portion was punctured, so as to allow the flatus to escape, when it was withdrawn.

The opening within which the intestine had suffered strangulation was near the margin of the mesentery, by which it is connected to the bowels.

The appearance of the mesentery was altogether singular. There were as many as three of these preternatural openings through its substance. The two largest are seen in the engraving, and the third was situated very near the root of the mesentery; it resembled the others, except in size, but could not be brought distinctly into view with the rest. The whole of the mesentery, but more particularly those parts near the preternatural openings, were very remarkably thin, in many places as thin and transparent as paper, as if from having been exposed to long continued pressure.*

This curious state of mesentery can upon this principle only be explained by the supposition that habitual confinement of bowels, and the pressure of the contents, had produced the appearances of absorption or wasting of the mesentery that were found after death. Judging, however, from the state of the parts when examined, there was no evidence of the injury having arisen either from full bowels, or hardened fæces, for nothing was found

* Plate 4. *Fig.* 1. Exhibits these appearances of the preternatural openings; on a reduced scale.

a. The root of the mesentery, where the structure remained in its natural state, while the other parts of that expansion were rendered extremely thin, in many places being as transparent and nearly as thin as silver paper.

b. A part of that portion of the intestine which was found strangulated, laid open.

c. The opening which effected the fatal strangulation of the intestine.

d. The largest of the three openings found upon the mesentery: the opening not seen in the engraving, was much smaller than either of the others.

in the intestines but the fluids that had been lately taken, without any fæcal matter of consequence.

It is not the least curious circumstance in the above case, that during her illness, this woman stated she had experienced two exactly similar attacks in time past. The latter of these occurred seven years previous to that of which she died, and subsequent to it she said she had in general been very attentive to keeping her bowels cool and regular.

The peculiar and important duties which the intestines have to perform in the economy requiring peculiarity of organization, render them subject to singular varieties of disease. Hæmorrhage for example may occur from these parts, without ulceration, as well as with it. The most ordinary cause, perhaps, is inflammation and ulceration of the villous coat, as happens in dysenteric complaints; but the too violent excitement from the action of drastic purgatives, will now and then induce the exhalent arteries to pour out red blood, without previous ulceration; and in the scorbutic diathesis also, the debility of the muscular fibre is so extreme, that not only is the red blood effused copiously from the capillary vessels into all parts of the cellular membrane, beneath the common integuments of the body, but it is even, in some instances, poured out in quantity, by the relaxed exhalent arteries into the canal of the intestines.

I have also, in one instance, seen a continued bleeding from the intestines, which at last termi-

nated fatally, where, upon examination of the body, the appearances were such as to lead me to believe the complaint had been derived from a scorbutic debility in the circulating vessels of the intestines, although the patient, during her last illness, had not any other unquestionable character of scurvy.

Case 83.

Hæmorrhage from the Villous Coat of the Intestines.

Mary Robinson, the wife of a sailor, aged forty-two, was attacked June the 1st, 1811, with a severe vomiting of blood, which had been produced by a sudden fright. She had been at sea for several voyages, and some time previous to the present attack, had been affected with jaundice and pain in the side. When she came into the St. George's Infirmary, on the 4th of June, the bleeding had entirely disappeared; but she had frequent cough, with sickness and vomiting. Her nights were restless and painful. She sometimes even screamed out from the violence of pain down the sides of the abdomen, and about the navel. When received into the house, there was also a dropsical enlargement of the abdomen, and this continued to increase till Saturday, August the 10th, when she was seized with a fit of coughing, and threw up a considerable quantity of blood. She had made no bodily exertion to explain the occurrence, but thought she might have been hurried in her spirits, by the expectation that she was probably to be tapped on that day. She expressed the clearest conviction that she should not survive the attack.

The vomiting commenced at three o'clock at noon, and in three hours, the quantity of pure fluid and clotted blood thrown up, was at least equal to a quart. Her state was that of universal tremor and great faintness. When the vomiting had continued for about two hours, she told the nurse she was sure she had soiled the bed. On looking, the nurse found about half a pint of pure blood, with some black-coloured stool, and small pieces of fæcal matter, which had passed involuntarily.

The sickness at stomach left her, and she remained in a very restless moaning state, with hot and dry skin, insatiable thirst, and great pain about the abdomen, till half past ten at night, when the vomiting returned, as it did again early on Sunday morning, and repeatedly during the day. The pure blood thrown up during this day and the preceding night, measured two quarts. The general depression and exhaustion were now extreme, there was great anxiety about the præcordia, and a very low small pulse. The vomiting and purging of blood were both abated. The retching was as frequent as before, but less blood appeared, although always a little. Her stools continued to pass involuntarily.

She remained much the same till eight o'clock on Monday evening, when sitting up in bed to change her linen, she threw up a full pint of pure, thin, and florid blood. She had drank nothing of any consequence for several hours before. This left her more reduced than ever. She threw nothing more up, but died about five o'clock on

Tuesday morning. The medicines directed, had been principally tonics and astringents.

Examination.

The lower extremities were exceedingly loaded with anasarca. The abdomen was very tumid, and evidently contained fluid. On dividing the parietes, about a gallon of serous fluid was found in the peritoneal cavity. The stomach was healthy. The small intestines were apparently in a natural state. But the great intestines looked as if stained through and through with blood; they were also rather thicker, more soft and flaccid to the feel, than natural.

To ascertain the source from whence the hæmorrhage had sprung, the whole extent of the alimentary canal was laid open. The internal surface of the stomach and duodenum were found clean and white, covered with their natural mucous secretion. But the jejunum, and more particularly the ileum, were smeared over with a dark chocolate-coloured matter, which was apparently blood mixed with a bilious fluid. The colon and the rectum were half full of a pure blood, grumous, yet fluid. The quantity of this blood was very considerable. The great intestine was carefully removed and washed, and again examined with attention. The villous coat was perfect, but was of a bright red, or deep scarlet colour. In no part of the intestinal canal, small or great, was any trace of disease found, with the exception of the apparently relaxed state of the whole villous coat, and its change of colour. This appa-

rent relaxation of the inner membrane was most remarkable in the rectum.

The structure of the liver was finely granulated, certainly not healthy; and the adhesions by which it was connected to the diaphragm, proved its having suffered pretty extensively from inflammation. The gall-bladder was contracted, and empty, with the exception of several dark yellow and black fragments of biliary calculi.

The kidnies were soft and pulpy, and peeled out from their peritoneal covering, as readily as if prepared by long maceration. The spleen was very flaccid, and enlarged to the weight of three pounds.

On considering the appearances observed in this dissection, the joint opinion was, that the hæmorrhage had not proceeded from any one particular vessel, but evidently from the whole series of capillary arterial extremities opening upon the internal surface of the intestines.

Mentioning in conversation the particulars of the above case to one of my medical friends, he observed, that he had seen one case, he believed, of a similar nature. He was called up in the middle of the night to see a gentleman, who was to all appearance just dying, from a pouring out of pure blood by the rectum. There was no external appearance of hæmorrhoidal disease. There were another physician and an apothecary present. There was no pulse, but a pale insensible death-

like cast of countenance. It was determined to throw up a copious injection of cold water, which had the happiest effect. The bowels, which previously were constantly rumbling with the discharge of blood, became completely quiet. The complaint gave way, the young gentleman recovered, and it appeared, that the means used for checking the hæmorrhage had saved his life.

The following uncommon case fell under my observation in the year 1809.

Case 84.

Peculiar Secretion from the Intestines.

An elderly lady of Scarborough, in Yorkshire, had been for years occasionally subject to bilious disorders. These came on at uncertain intervals, were attended with pain in the hepatic region, feverish heat and thirst, high-coloured urine, and a jaundiced tinge upon the skin. The attack usually continued in violence for several days, and then gradually went off.

Towards the decline of these attacks, she had sometimes, by aperient medicines, got rid of a quantity of a very singular kind of matter. This she described to be of a soft, greasy nature, formed into small masses. This matter had frequently been detected in unsuccessful searches for gall-stones, which she had been told she might expect to find upon these occasions.

At the above mentioned period of time, she found her old complaint coming on again, with uneasiness about the præcordia, anxiety, restless

ness, severe pains and feverish heat. This soon amounted to the most excruciating agony.

The professional gentleman who was called in, found her extremely feverish, with a dreadful pain, shooting backward from the præcordia. From the known circumstances of the case, he concluded that gall-stones were probably then passing, in facilitating which, emetics were the means most likely to be useful.

She took an emetic, and the efforts to vomit were extremely violent; they were, however, only productive of increasing agony, and unspeakable torment.

Just at this time, a physician of high reputation * was attending a consultation in the town. The gentleman in attendance mentioned this lady's case, and this led to the doctor's recommending the exhibition of large quantities of olive oil. He said he had seen it remove, in one instance, complaints very similar to those described. As much as a pint of this fluid was immediately proposed as a dose, and taken. The consequences were many unusually copious evacuations, containing an astonishing quantity of this peculiar matter. The patient was greatly relieved, and soon recovered her health.

Upon inspection, this matter appeared to be unequally granulated. The masses of it, however, varied; the largest being equal in bulk to a full-sized grape. This substance appeared to be quite dis-

* Dr. Simpson, of New Malton.

tinct from the proper fæcal matter, and was readily separated by washing. It was nearly transparent, of a faint greenish colour, greasy to the feel, and burning quickly away with a flame, when exposed to the heat of a candle.

A young gentleman, of promising talents as a chemist, * then lately settled in the town, made some experiments upon this substance, the general result of which was, his ascertaining that it very closely resembled spermaceti, or sebacious matter.

The clear opinion of the professional gentlemen who saw the case, was, that the peculiar matter in question, so considerable in volume, and so uniform as well as singular in its qualities, must assuredly be independent of the food taken, and must have been a product, or secretion from the intestines.

Some may doubt the probability of this supposition, but the enquiry is not devoid of interest, as well from the singularity of the appearance, as from its having lately attracted the attention of one of the first physiologists of the present age.

Sect. 4.

on hernia.

Among the very numerous cases of hernia which occur every day, it but rarely happens that circumstances arise, sufficiently singular, to deserve particular notice.

* Mr. W. Harland.

The inflammation which generally occurs sooner or later, in the contents of a hernial sac, supposing it not to prove immediately fatal, most frequently ends in effusion of coagulable lymph, and subsequent adhesion; this event gives rise to most of the complications that are observed in the symptoms and history of ruptures.

The unsuccessful attempts to reduce an adherent rupture, are in some cases productive of no pain, either in the contents of the hernia, or in the abdomen. In other cases they produce a general sense of uneasiness about the region of the bowels; and sometimes an immediate pain in the stomach only, with sickness, and vomiting. Observation leads me to consider this latter symptom, a clear indication of the omentum forming at least a part, of the contents of the hernial sac.

It sometimes happens, that a hernia of many years standing shall be to all appearance free from adhesion, and perfectly capable of being returned, but if the rupture is reduced, and retained in the abdomen by a truss, however accurately applied, the patient becomes more and more uneasy; the feelings are those of extreme inquietude, or severe pain, and to avoid worse consequences the surgeon is obliged to recommend the removal of the instrument. This kind of case has been explained, by supposing that the abdomen, after so long a time as the hernia may have subsisted, bears with inconvenience the return of its original quantity of contents into the general cavity, and that hence symptoms are produced. Seeing however that the mere quantity

of contents in the abdomen is so subject to continual variation, this explanation appears to be unsatisfactory. It seems more rational to conclude, that in such a state of parts, old and organized adhesions may have existed; adhesions sufficiently elongated to admit of the complete return of the hernia, but at the same time sufficiently sensible to impart a sympathetic feel of uneasiness to the neighbouring viscera, when placed upon the stretch. Seen in this point of view, the folly of persisting obstinately in keeping up a rupture, merely because, so circumstanced, the reduction is practicable, will be evident; for by so doing, peritoneal inflammation and death may as readily follow, as from the more common circumstances attendant upon strangulated hernia, and in point of fact, it has sometimes taken place. Adhesions in the course of time are known to elongate, in other situations; and in the examination of old herniæ after death, I have repeatedly found them so far capable of relaxation as to allow the rupture to be partly or even completely returned into the abdomen, although such attempts, during the patient's life, had uniformly brought on uneasiness and pain, confined to the precise seat of the adherent parts of the hernia.

One of the following cases of rupture affords a strong illustration of the inconstancy of symptoms, even under circumstances in which we must be directed by symptoms alone, and where the event turned out most serious.

CASE 85.

Scrotal Hernia, with Adhesions, and Disease.

On Saturday morning, May 29, 1813, I was sent for to see a stout man, forty years of age, who was said to be in great pain, from a large irreducible hernia. On visiting him, he was suffering from severe uneasiness rather than acute pain, about the seat of the rupture, which was upon the left side. It was equal in size to a small melon. He acquainted me that it was an old rupture, and that eighteen months before, it was easily kept up by a truss, but that latterly he had neglected to wear the instrument, and his rupture consequently could not now be got up at all.

He complained of a good deal of uneasiness and pain about the lower part of the abdomen. He had passed a motion easily on the preceding evening, and his bowels had been regular before that time. There was no sickness at the stomach. Handling the tumor produced no increase of his pain in the abdomen, nor any pain at all in the part. With a view to its reduction, the scrotum was carefully and steadily supported in the one hand, while with the other, parts occupying the neck of the hernial sac, were successively pressed on in the proper line of the abdominal opening; but after some perseverance, the attempt was relinquished, as not likely to succeed, although the gurgling feel of intestine was very evident in the tumor. He was ordered a purgative medicine, and directed to be brought into the Infirmary, where he continued to sink, and the same evening died.

Examination.

The following day the parts were examined. The hernial sac, when laid open, was found to be of considerable thickness. The contents of the sac, (which was almost gangrenous,) were some fluid fæcal matter, a considerable mass of inflamed, consolidated omentum, and portions of intestine, so entirely adherent, and so involved in effused coagulable lymph, that it was with difficulty the parts were made out. The contents were so strongly adherent round the neck of the sac, that no endeavour could ever have succeeded in returning the protruded parts into the abdomen.

On opening the cavity of the abdomen, the termination of the intestine ileum, the cæcum with the appendix cæci, and the caput coli, were ascertained to have passed out from the abdomen into the hernial sac, together with a large proportion of the omentum, which had dragged the tranverse arch of the colon down from its natural situation towards the neck of the sac.

But it was not yet ascertained by what means the fæcal matter had escaped from the cavity of the intestine into that of the hernial sac. To clear up this point, a quantity of spirits was injected into the arch of the colon, and it was found to issue forth from behind the cæcum, between it and the sac. The adhesion at this part was therefore cautiously peeled asunder, when a small circular hole, not larger than the head of a pin, ulcerated through the peritoneal coat of the bowel, was detected, in

the midst of an extensive patch of adherent lymph. The dissection, therefore, ascertained, that in the attempt to reduce the diseased intestine, a part of the adherent portion of the gut had been loosened from the corresponding surface of the hernial sac, and in this way a part of the contents of the intestine had escaped into the sac by the previously ulcerated opening.

Case 86.

Ventral Hernia, with preternatural Openings.

Jane Pester, a woman of spare habit of body, fifty-one years of age, strained herself in lifting a weight when only eighteen years old. She suffered much from pain in the loins, but paid no attention to it. Her employ was carrying earthen ware to sell. In a week she was obliged to give up, and keep quiet. Her complaints were severe pains in and about her inside. She took medicines, but remained ill for more than twelve months; towards the latter part of which period the pains in her bowels were most severe, and connected with diarrhæa and tenesmus. When the latter symptoms were most urgent, she passed considerable quantities of matter with her motions, which had the colour and appearance of pus. The whole abdomen was very tense, and painful when pressed. She was told it was necessary to draw away the complaint by producing a sore, and with this view was persuaded to apply the bruised root of white lilly to the right groin. It succeeded. The swelling became soft, and burst, and a quantity

of extremely offensive matter with blood came away. The discharge continuing, on the following day fæces were found to have escaped by the ulcer. For six months after this she was confined to her bed.

When the opening took place in the groin, the left labium and thigh were swelled, but this in a few weeks went down. Seven months after the groin had ulcerated, a dark purple or crimson-coloured spot, the size of a shilling, made its appearance in the front of the abdomen, just below the navel. This, after many weeks, it was judged proper to open. A lancet was pushed into it, but a little blood only escaped. To ascertain the extent of the cavity a probe was introduced. It passed as far as six or seven inches, and the point was felt very near the former opening at the groin.

After the first week, the new wound discharged fæcal matter, and continued to do so for about three years, when both wounds healed up. They remained well, and in the course of a twelvemonth, she was in pretty good health. Her strength and stomach were re-established, she continued to improve in health, and menstruated regularly.

For the time that the above-mentioned ulcerated openings remained, she never found her bowels less regular than before; their action was uniform, without pain, looseness, or confinement. The matter discharged by the openings was fæcal, but always in very small quantities at a time.

At thirty-five, she was for some time confined by fever and jaundice. Upon her recovery, she observed a small shining spot on the skin, where

the opening near the umbilicus had formerly existed. It seemed transparent, and so thin, that she expected it would soon break; this, however, did not happen.

Six months now passed on quietly, when she perceived, that towards evening there was occasionally a small degree of tumor upon this spot, but that it was always gone by the morning. This appearance of tumor very slowly increased, without producing pain, or material inconvenience, till she was forty-nine, which happened in 1810. The cicatrix upon the surface of the tumor then gave way, and discharged for a few days matter, and then fæces. In a fortnight the ulcer healed. It remained well for a few weeks, and then broke again. The cicatrix in the groin also swelled, with heat, and pain; and in about a week discharged profusely of matter and blood. In a day or two, the excrementitious matter, as before, came away by the wound.

The ulcers were in this way sometimes healed, and sometimes not, when a swelling with inflammation appeared in the integuments, just over the symphysis pubes. In the course of a week, this like the rest, had suppurated, and discharged fæcal matter.

When all these ulcers were open, she observed, that the discharge of fæces was most considerable and distressing during the night.

Upon examination, the swelling upon the abdomen was as large as an apple, and very evidently contained a part of the small intestine, for the

motions of the bowels could be frequently seen. While the tumor was in its early state, she said she had applied to a very excellent anatomist, Mr. C. who directed her to wear a piece of strong linen, bound tight round her body, with a hole large enough to allow the tumor to pass through it. She did so, until the margin of the cloth, by irritating the basis of the tumor, had produced an extensive excoriation, when she laid it aside.

In February 1812, I first examined it, and found the tumor below the navel, evidently a ventral hernia; several attempts were carefully made, to reduce it, but without success. The experiment induced a state of distressing nervous irritability, and much pain and disturbance about the stomach.

In June, she came into the St. George's Infirmary, deplorably emaciated. For six months before, all passage of fæces by the anus, had ceased. Previous to her admission also, she had been very poorly, with constant and violent pain in her back and stomach, accompanied with frequent chills and flushes of heat.

For these complaints she was ordered some aperient powders, and with great difficulty was prevailed on to take them. When they operated, an additional source of distress presented itself, for now the fæcal discharges took place from the vagina, and fæces continued to escape generally by this new opening, but occasionally also by that in the groin.

The poor woman continued to exist till the third

of July, when she died, completely exhausted by her accumulated infirmities, rather than by any severity of pain.

Examination.

The body was literally reduced to a skin covering a skeleton. On opening the cavity of the abdomen, the stomach was found dragged as far down as it could be towards the sac of the hernia, by the omentum, attached to its greater curvature, the omentum itself passing into the sac. The omentum was much contracted, both in breadth and length, by the continual irritation, and repeated inflammation, to which it had been exposed.

A part of the transverse arch of the colon was found in the sac. It was very firmly adherent by a portion of its circumference to the neck of the sac, at that particular spot where the second opening had formed, during the progress of the case. These circumstances explained on the one hand the rupture not being reducible; and on the other, the sympathy that had been observed to exist between the stomach and the protruded intestine, wherever pressure was applied.

The intestine rectum had formed adhesions, and subsequent abscess by the parietes of the abdomen, opposite the right groin, about ten inches above the anus. From this point, the gut still adherent to the peritoneum, passed across the anterior margin of the pelvis, and had formed the third opening just over the crest of the pubes, and nearly on the opposite

point of its diameter, the gut had ultimately ulcerated through into the superior part of the vagina. Below this situation, the seven or eight remaining inches of intestine, was much contracted, but otherwise exhibited no appearance of disease.

Case 87.

Hernia, with Prolapsus and Inversion of Intestine.

Ann Pierce, a woman aged seventy-six, of a costive habit of body, was attacked with a pain at the pit of the stomach, April 14, 1813, she was, however, well enough to walk some distance, to spend the day. During the afternoon, the pain continued. She went backward, and used considerable effort and straining, but could pass nothing. Fearing she might be worse, she returned home early, but on her way was seized with so violent a pain in the left side of the abdomen, that she was scarcely able either to walk or breathe. With difficulty she got home, went to bed, was seized with vomiting, and threw off the contents of her stomach. The pain in the back and stomach continued for a week, the sickness returning frequently. For several days she had also had a looseness and purging. She now applied for assistance to the St. George's Infirmary, complaining of pain in the stomach, vomiting, and purging. She was regularly visited by the apothecary* for several days, before she mentioned a swelling she had in the left groin,

* Mr. T. Leigh.

produced as she supposed, by the straining to vomit. At this time, I was desired to see her, and found a small, soft, inelastic, painless tumor, just below Poupart's ligament. Examination gave no uneasiness, nor had compression the least visible effect in reducing the swelling. She said it was at first no larger than a hazel-nut, and that it had reached its present size, without ever having been in the least degree painful. Her stools, she said, were free enough, and the sickness at the stomach had gone off some days. The pulse was slow; but perfectly equal, and good. The tumor felt like an omental rupture. Presuming it to be an hernia, there appeared to be no sufficient ground for proposing any operation. She was therefore directed some medicine, with fomentations and poultice.

In two or three days it broke, and discharged, first matter, and the following morning, soft fæces and flatus, with occasional increase of pain at the stomach. She remained in this state for some time; the stomach painful, the appetite trifling, and most of the fæces passing off by the ulcerated opening. On the second of May, she complained of her stomach and back being much worse. Towards evening, she was raised up in bed to try what change of posture would do towards relieving her, when her daughter accidentally perceived a part of the bowel apparently forced down through the opening of the ulcer at the groin. Full of alarm at so shocking an appearance, she immediately made it known, and I very soon afterward visited her, and found the intestine prolapsed and inverted, to the

extent of seven or eight inches. The numerous valvulæ conniventes upon the surface of the villous coat, demonstrated it to be small intestine. Repeated endeavours were made to reduce it, but in vain. These attempts, however, were neither productive of pain, or uneasiness. The prolapsed part, upon exposure to the cold air, was always excited into the most lively state of peristaltic action. She was directed to keep a soft oiled rag to it, and apply warm fomentations. The following morning, two surgeons saw it, but reduction was still impracticable. Towards the evening, violent pain came on in the abdomen, she rapidly sunk, and in a few hours died.

Examination.

The body was emaciated. The prolapsed intestine was much shrunk, and fallen. Upon opening the abdomen and examining its contents, the jejunum and ileum were found included in the rupture. It was a femoral hernia, and the extremities of the prolapsed intestinal tube were very closely adherent to the margin of the opening beneath the femoral ligament. The superior part of the intestine, or that next the stomach, had formed the inverted portion of the gut.

The remaining particulars of this singular dissection, may, perhaps, be better understood, by reference to the figure. *

* PLATE 4. *Fig.* 2. Exhibits, on a reduced scale, the state of the parts, when examined after death.

PLATE IV.

Fig. 2.

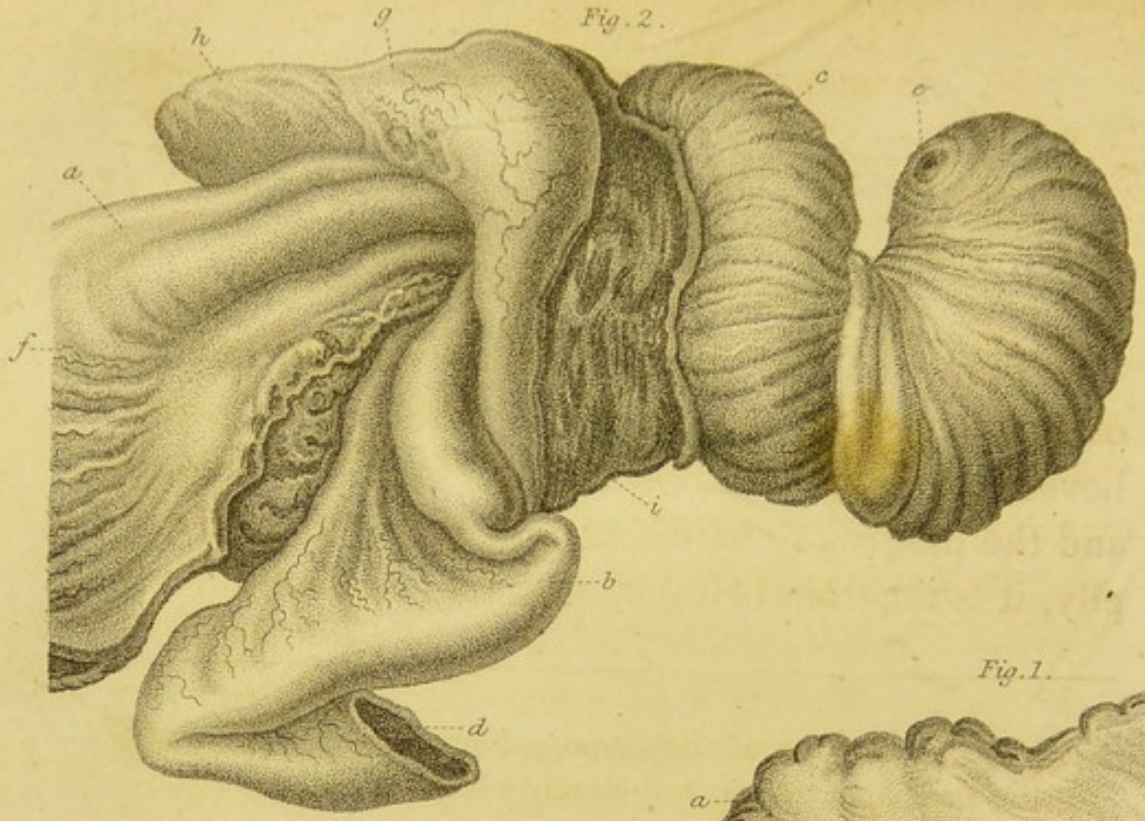


Fig. 1.

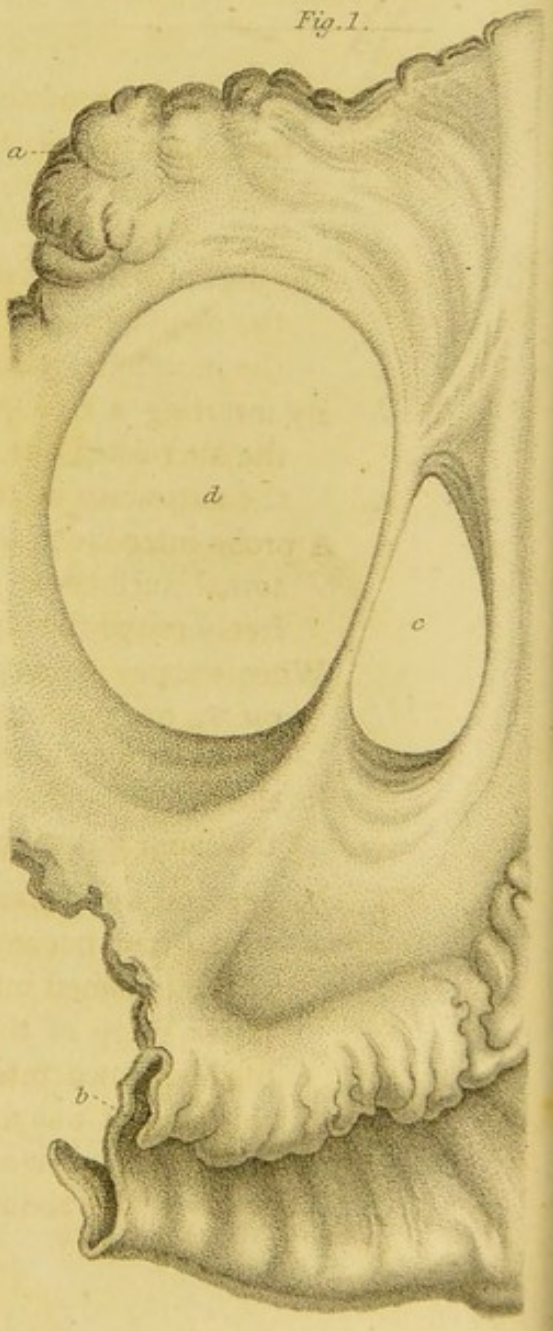
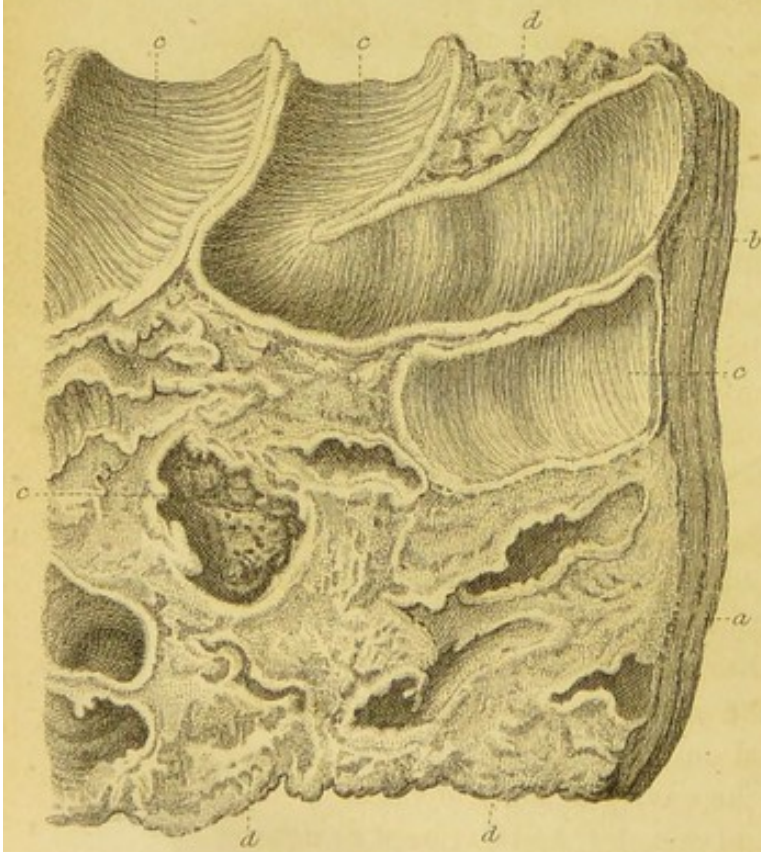


Fig. 3.



J. Howship del.

J. T. Wedgwood sc.

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Sect. 5.

ON STRICTURE IN THE RECTUM.

Stricture of the rectum, like stricture in the œsophagus, is more or less capable of being relieved, according to the situation of the affection, and the nature of the disease producing it. Happily, it is far from being a common complaint.

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a. The upper part of the ileum, which was of a gangrenous appearance, and closely adherent by its circumference, to the peritoneal margin of the opening at the groin.

b. The descending part of the jejunum passing down through the opening under Poupart's ligament, into

c. the inverted portion of the prolapsed gut.

d. By inserting a blow-pipe into this part of the intestine, the air rushed out in a stream at,

e. the extremity of the prolapsed intestine.

f. A probe introduced at this part passed out upon the external surface at the groin, and might be brought freely round the circumference of the opening.

When the probe was passed down through Poupart's ligament, on the outside of the intestine marked *b*, it found its way between the continuation of that part of the bowel, and the more external inverted portion of the same gut towards *e*.

g. A part of the external surface of the urinary bladder, which had become adherent to the adjacent surface of the inflamed intestine, which, when inverted in the latter stage of the disease, dragged that part of the bladder down into the mouth of the opening, and in this state it was found on dissection.

h. The peritoneum lining the cavity of the abdomen.

i. Section of the abdominal muscles, and external parietes.

Case 88.

Stricture in the Rectum.

In November 1811, I performed the operation for fistula in ano upon Miss D. aged twenty-eight years. The wound healed readily and the disease did not return. In the February following this lady consulted me again, on account of a difficulty which for some time past had occasionally existed, in passing her motions. This inconvenience was most considerable, whenever the motion was in a solid state, but most distressingly painful, if her bowels happened to be at all confined.

On examination the intestine was found contracted; but so high up, that the part where the stricture was greatest, was rather beyond the reach of the finger. The gut was not apparently much thickened, nor did it seem to be at all confined laterally, but was freely moveable. These circumstances were favourable. The strictured part was extremely irritable. The examination produced much pain, and great nervous agitation. She was advised to allow a bougie to be introduced, and two days afterward this was done. The instrument used was the common wax bougie, about half an inch in diameter. A curve was given to it, answering to that of the pelvis. It was with some difficulty, and excruciating pain, that the bougie passed the contraction. When allowed to remain, the pain of the operation became rather more tolerable, but was renewed with increased violence the moment it was attempted to be withdrawn. The

stricture embraced the instrument so closely, that it required a power equal to the weight of at least three or four pounds to remove it. It was found necessary to give a composing draught immediately after the operation. The same instrument was passed twice a week, which was as frequently as it could be borne, for six weeks; when the symptoms were so materially relieved, the bougie passed with so much less resistance, and the motions with so much more freedom than before, that it was proposed to introduce a bougie of larger size, but the patient finding herself so nearly well of the symptoms to which the stricture had given rise, requested the treatment might be suspended, to see if the symptoms would return.

Three years and a half have since passed without any return whatever of the complaint.

Case 90.

Stricture in the Rectum.

Laura Rutherford, aged thirty, from long confinement to needlework, and habitual costiveness, had inflammation and abscess form, at the side of the rectum. The abscess broke externally, and continued to discharge constantly, for ten months. This happened in 1809. She was then admitted into St. George's Hospital, and went through the operation for fistula. She remained in the hospital three months, and was then sent out for change of air. She next spent a twelvemonth with her friends in Oxfordshire, but had very bad health; and afterward returned to town, and was again operated on

for fistula at St. George's. The parts however, were not disposed to heal. Her health was bad, and the discharge continued. Her appetite was extremely deficient, she complained of pain in the loins, and latterly of irritation and bearing down in making water. About three weeks after the performance of the second operation, she began to feel more pain than usual in going to stool. The figure also of the motions was perceptibly changed; they were altered in form, the diameter being considerably diminished. The bearing down brought on a discharge from the vagina, and an increased excretion of mucus from the rectum. Of these complaints she was much relieved by medicine, in the course of a month, and was next attacked with violent pain, sense of beating, and confusion in the head, with fever. These symptoms were removed by repeated blistering, and cupping. From having laid aside the use of the medicines by which the discharges had been relieved, these, in the space of a week, returned upon her, with increased violence. She remained in the hospital for two months, and then again left it for the country for six months. While there, an eruption of small boils came out upon the skin. These formed in succession for about two months, when they disappeared altogether. A week after this she was attacked with pain in the side, and great difficulty of breathing. In the space of two days she could scarcely breathe at all, even sitting up. Violent sore throat followed, but she was again relieved by depletion and blistering. The affection in the rectum and about the

bladder still remained. With a view to the relief of these complaints an issue was opened in the thigh; in three weeks however, it appeared to have effected nothing, and was therefore allowed to dry up.

Her general health gradually improved, but her local complaints did not. She therefore applied for admission into the St. George's Infirmary in December 1811. The complaints now existing were considered to arise more from constitutional, than local circumstances, and upon this principle medicines were directed. On examination, a contraction was found in the rectum; situated about two inches within the sphinctor ani. It was apparently a narrow membranous circle, not materially, if at all, connected with disease or contraction of the muscular coat of the intestine. It felt more like an affection of the mucous membrane alone. The finger was without difficulty passed through the stricture, but the examination produced great distress, with symptoms of hysteria. This seemed to be a very fair case for the trial of caustic, and I have no doubt the plan would have cured her, but she would not submit to its application. Repeated experiment proved the irritability of the parts was much too high to admit of her deriving any advantage from the use of the unarmed bougie. She therefore, in a few weeks, left the Infirmary, without being materially relieved.

Sect. 6.

ON HÆMORRHOIDAL DISEASES.

Bleeding from the hæmorrhoidal veins has been considered to depend on a præternatural relaxation of the coats of these vessels. With this view of the subject, I had supposed that these veins would have been found enlarged in the examination of the body, in a case where hæmorrhoidal complaints had formerly existed to a considerable extent *. But a moment's reflection would have shewn that this was hardly to be expected, for although the hæmorrhoidal vessels above the sphinctor of the anus are, in point of situation, below the other contents of the abdomen, they are yet adequately supported by the surrounding parts. And upon this account, I believe, it seldom if ever happens, that vessels of any consequence give way from mere distention, fairly within the rectum. Where hæmorrhage occurs within the sphinctor it seems, in general, more correct to attribute it to some diseased state of the mucous membrane of the gut, than to relaxation of the coats of any particular vessel.

In 1808, I had an opportunity of removing, after death, some tumors from around the verge of the anus, where they had been stationary for years. The man, who was a sailor, had been for many years before subject to confined bowels and hæmorrhoidal complaints. This description of tumor has been generally said to arise from a varicose

* See Case 29.

state of the veins, but although these swellings possessed all the common characters, they were by no means varicose veins. With a view to ascertain exactly the structure of these tumors, they were allowed to steep in alcohol for a month, by which means the contained blood was very firmly coagulated. A section was then made through the centre of each, and the appearances were found to be very uniform and satisfactory. The tumor was certainly produced by blood, but it was neither a varicose vein, nor an effusion from a varicose vein. Had it been the former, the blood within the vein, or at least the cavity of such vein, must have been visible; if the latter, the effusion would have been single and considerable. The hæmorrhage had clearly enough taken place from the capillary vessels distributed in the cellular membrane, about the extremity of the rectum and external margin of the sphinctor. The blood had evidently been effused at different periods, forming to itself as many little cysts, in the surrounding cellular substance. The very various tints in the colour of the coagula proved that some had been more recently deposited than others. In some instances, the same vessel had repeatedly given way, which was evinced by the section exposing several concentric lamina, the external having the brightest and freshest colour, while those within were by gradations darker. The aggregate number of coagula contained within one hæmorrhoidal tumor must have been considerable, for upon the surface of the section, which could only have exposed a

small proportion of them, I counted eighteen. The diameter of the largest of these was equal to a pea, but most of them were much smaller.

Sometimes one of the hæmorrhoidal vessels will give way, and effuse into the cellular membrane a more considerable quantity of blood, producing pain, heat, and irritation, until the extravasated fluid is evacuated. In July 1813, a man applied for relief to the St. George's Infirmary. He said that nine days before his bowels were much confined, and that in straining to pass a motion he perceived a pain come on near the left side of the anus, and this had continued ever since, with heat and extreme tenderness. On examination a fluid was felt under the skin near the verge of the anus, which, from his account, it appeared, was most probably blood. It was extremely painful, so much so, that he could scarcely be persuaded to allow it to be meddled with. It was however opened with a lancet, and near an ounce of blood let out from a single cyst. He felt immediate and perfect relief. The cavity suppurated, granulated, and was healed in the course of three weeks.

In July 1815, a middle-aged woman in the St. George's Infirmary complained of a painful swelling at the verge of the anus. On examination this proved to be a single tumor; the thin skin covering it was irritable, shining, and livid. She said it had been apparently produced by a costive stool, four days before. It was opened by a lancet, and the distended skin collapsing, the little coagulum of blood, equal to about a drachm, was readily

turned out, and the parts were immediately relieved.

The hæmorrhoidal tumor above described, I apprehend to be the most common form of the disease. Where, from other circumstances, the health becomes permanently impaired, these swellings may remain for many years, perfectly indolent, and productive of no inconvenience. But in general it is otherwise, and whenever a certain state of plethora is established, the capillary hæmorrhoidal vessels pour out more blood into the cellular texture; the pain and irritation of the attack are proportioned to the distention from the effused fluid, and the swelling may, dependent on the constitution and management of the patient, either cease to increase after a time, or go on enlarging till the skin at length gives way, and with the bleeding the pain and other symptoms subside.

There are two methods of removing this kind of tumor, the one is by the knife, the other by ligature. There seems to be good ground for preferring the latter mode of operating. Many patients are not able to overcome the alarm they feel at the idea of cutting, none of which attaches to the mere tying of a tumor. As relates to the surgeon, a stronger reason presents itself, in the superior safety of the ligature, compared with the knife. The hæmorrhage, after excision, is sometimes very alarming, and has repeatedly proved fatal. In both modes of operating the removal of the disease is effected with equal certainty, provided the operation is properly performed.

The ligature should be sufficiently strong to admit of its being drawn tight as possible; for if the degree of constriction falls short of this, the tumor will be only partially destroyed, the circulation still subsisting in the remaining portion. In one instance, however, where, in a lady, I had tied three hæmorrhoidal tumors, one of them, on the third day, appeared to be red and plump, as if the blood was circulating through it; and when touched in the lightest manner, the patient was perfectly sensible of it. I could not help feeling some uneasiness, under the impression that the constriction would prove inadequate. Fortunately it gave way just afterwards, mortified, and the ligature came away with it on the seventh day, which is however rather later than usual.

A strong circumstance in favor of the ligature, I consider to be the following. By the ligature a certain degree of inflammation is sure to take place, with considerable tumefaction about the parts, and consequent effusion of lymph into the surrounding cellular texture. The tumors mortify, and the inflammation and swelling subside, but a permanent consolidation of structure is the result. The effused lymph is only partially re-absorbed, and the parts in which the disease naturally forms itself, are thus rendered less liable to give way, than they were originally.

Where, on the contrary, the knife has been employed, scarcely any inflammation follows. The disturbance to the parts by excision, is comparatively trifling, and the hæmorrhage being always

considerable, must in proportion diminish any tendency to inflame. The parts cannot, therefore, by this, as by the other mode of operating, be left in a state of greater security than they were originally.

A tumor of a description very different from the above, is sometimes found near the verge of the anus. This is properly an excrescence. It is a growth of diseased skin, and not a part of the sound skin covering a tumor. It is generally irritable, and extremely subject to excoriate and inflame; and where it occurs to those who are negligent of their person, it is found to secrete an offensive purulent matter, in considerable quantity.

From its most frequently being more or less remotely connected with venereal complaints, this affection of skin has been believed to be produced originally by the venereal disease, like the venereal wart, to which, in several points, it bears a strong resemblance.

Case 91.

Hæmorrhoidal Excrescences.

A tall stout young man, private in the 82d regiment, complained in May 1808, of some swellings, which he said distressed him very much. On examination, the verge of the anus was found surrounded, and nearly concealed, by a number of large fleshy excrescences. Whether at rest, or in motion, they produced much uneasiness. He could not sit without suffering pain, nor stand up without inconvenience. These excrescences were

tender to the touch, and constantly involved in a copious purulent discharge, so offensive as to almost prevent others from being able to sleep in the same room with him.

This man had been confined the preceding winter, with venereal chancres. He had just recovered from this illness, when he volunteered into the 82d, and commenced his march from Liverpool to Scarborough. He said, he had felt something of his present disease before he began his march, but that the bulk of the mass had been formed subsequent to that period.

There were in this case, many very small excrescences situated anteriorly to the sphinctor, and two considerably large ones, one on each side the anus. To ensure my seeing what I was about, the smaller of these were first snipt off one by one, with a pair of scissors. The two larger ones were then removed by the scalpel. The wounds bled pretty freely, but by an horizontal posture, and cold applications, the hæmorrhage subsided. All discharge ceased with the disease, and the parts were perfectly healed in a week.

The operation for the removal of hæmorrhoidal tumors almost constantly puts an end to the occasional discharges of blood, to which the patient was previously subject; but experience shews that the checking of such discharges has been in some instances followed by the most serious consequences, although it is still on a right principle, that the removal of such tumors has been recommended. The habitual discharge of blood, where

these diseases are left to themselves, never fails eventually to wear out the patient; and where the operation is had recourse to, particularly when performed by the ligature, and where the patient is paid proper attention to subsequently, it is unattended with those risks, which almost always follow the imprudent use of empirical applications. The operation performed, inflammation and suppuration follow. The quantity of pus formed diminishes gradually, but suppuration does not cease altogether, till several weeks have past. This then is the extent of that period employed in giving the habit a new turn, and by the time the parts are quite healed, the constitution usually becomes very sufficiently reconciled to the change. Not so, however, is it, when, upon the recommendation of some person who has no character to lose, an indiscriminate and powerful sedative, or astringent lotion, or ointment is applied, which suddenly arrests all hæmorrhage or other discharge from these parts, and as suddenly transfers that same disposition to some other parts less capable of bearing it, in this way, very commonly producing a fatal termination of the complaint, as happened in the following instance.

Case 92.

Hæmorrhoidal Tumors.

A gentleman of a gouty habit of body, lost blood in quantity from some hæmorrhoidal swellings; and what is remarkable, the discharge returned periodically, recurring every month with the punctual

regularity of the menstrual discharge in women, and continued so to do, for about a twelvemonth.

He determined to submit no longer to the necessity for going "clouted," like a woman, and with this view, consulted his surgeon *, who cautioned him strongly against making any application that might suddenly check the discharge. At Bath, however, he found a man that was a dealer in surgery, who complied with his wish, and said, he was sure he could cure him. He ordered a strong vitriolic wash, and this certainly did cure him, at least of the discharge; but he died within three days, from some gouty affection having suddenly seized him in the stomach.

The imperforate anus is not a very unfrequent species of mal-formation, and the operation for its relief, where the external integuments only require division, is simple, and generally successful, as relates to setting free the contents of the bowels; but should the intestine itself be deficient at its lower part, the success of the operation becomes extremely precarious.

The most favorable state of parts is that requiring the least assistance; that in which the skin only requires to be divided; and even here it may be worth recollecting, that when surgery steps forward professedly to remedy a defective formation of parts, it is very natural for the friends to expect that the operation, if it succeeds, will leave the infant in all respects perfect. To pre-

* Mr. Heaviside.

vent misconception therefore upon this point, it should be previously explained, that the operation may afford an opening certainly, but that such opening, not being formed for the specific purpose by nature, cannot be expected to possess all the powers, or perform all the functions, of which the natural opening would have been capable. It will neither on occasion relax to so adequate a degree, nor can it in the least contract itself with the powers of a sphinctor muscle. The contents of the bowel, if soft and fluid, will be always ouzing forth; and if solid, will be very apt to remain permanently within the intestines.

Case 93.

Imperforate Anus, with Enlargement of Rectum.

S. P. a woman aged twenty-six, was frightened in the 8th month of pregnancy by a rat leaping repeatedly at her. Her alarm was considerable, but she recovered, and went her full time. In the birth, the infant was observed to have a large belly.

On the second day after the child was born, the nurse observing there had been no appearance of stool, examined more particularly, and found there was no passage. The infant was therefore taken to a medical person in the neighbourhood, who, with a lancet divided the integument that covered the end of the intestine. Meconium immediately appeared, and in due time fæcal matter.

The evacuations from the bowels were always very thin, nearly black, and extremely offensive. The discharge did not appear at intervals, as in

common, but continually ouzed out upon the napkins, shewing there was no power of retention in the parts.

In six months, the child was again taken to the person who had punctured the intestine. The mother said, she was sure the passage was not yet sufficiently free. The surgeon, however, was of a different opinion, insisted upon it, "that every thing was right," and giving a powder for the infant, sent her away.

When the child was able to run alone, it was still necessary to keep a napkin constantly upon him. The stools passed without his knowledge, he was well enough aware of it afterwards, but although naturally a sharp boy, he never was conscious of it at the moment of its taking place.

His belly continued to enlarge, and when a year and a half old, it had formed a very large tumor, but unattended with any apparent inconvenience. The appetite was so excessive, that it amounted to a constant and unnatural craving for food. He was perpetually observed to pick up, and eat, whatever might be lying near him upon the ground, small bits of stick, or broom, straws, plum, or fruit-stones, &c. He seemed never to be satisfied, but would eat heartily, every hour through the day, nor did any thing appear to disagree with him.

He had been seen by several medical gentlemen, none of whom were satisfied as to the particular nature of his complaint. There was, indeed, a very large tumor in the abdomen, but no sensation

like that conveyed by a collection of water; nor any hardness, or particular sensibility about the region of the liver, to warrant any suspicion of hepatic disease.

When two years old, the child was still suckling. The mother, from his peculiar state of health, considered that he was not strong enough to be weaned. About this time he had been out, and made some complaint of uneasiness and pain in his belly, and on returning home, lay down in the cradle, still uneasy. The following day he was worse, with a hot and dry skin, white tongue, thirst, and extreme restlessness. There was now a constant and most distressing sense of uneasiness in the belly. In the night he would creep to the edge of the cradle, and partly out, he would hang over resting his hands on the floor, while the abdomen was pressed by the edge of the cradle. This posture appeared to give him partial relief.

The fever and general irritation continued to increase daily till his death, which took place six days subsequent to the commencement of the attack.

Examination.

The abdomen was exceedingly enlarged. On cutting into the cavity, a soft, white, elastic tumor was found. This tumor, traced by its connections, proved to be the lower part of the intestine rectum. The stomach and small intestines were healthy, but the whole of the great intestine was enlarged to at least double its natural size.

Just where the rectum commences, the coats of the intestine were suddenly expanded, forming a great oval pouch, or bag, sufficiently large to contain three pints of fluid. The structure of this bag was more dense and strong than that of the intestine, in its natural state.

The contents of this bag were a very large quantity of fruit stones, with bits of stick, straws, and dirt; together with a large collected mass of fluid, dark fæcal matter, with which the whole of the colon was more or less filled, as well as the large sac that contained the stones.

The enlargement of the rectum had extended itself quite down to the anus, so that to remove the tumor entire, it became necessary to dissect out part of the integuments which formed the artificial anus. The latter opening was found to be so confined, that it was with difficulty a bougie of middle size could be pushed through it. This opening consequently could give passage only to the thinnest kind of fæcal matter.

A medical friend *, to whom I mentioned the above case, acquainted me, that he had seen an instance, which he believed to be of a very similar nature with the above. A child was born with imperforate anus, and an enlarged abdomen. The integuments were punctured with a trocar, the meconium first appeared, and fæcal matter subse-

* Dr. Samuel Merriman.

quently. It was intended, in this instance, to have formed an enlarged and adequate orifice by the use of bougies, or such other means as might have been necessary; but the mother, both ignorant and obstinate, was not to be prevailed upon to allow any thing more being done on the child's behalf. The infant went on tolerably well for about six months, although the enlargement of the abdomen continued to increase. He subsequently became poorly, and died. The body was not examined.

In 1815, I was requested * to examine the body of a young woman, aged seventeen, who had died from scrofulous disease, and who from birth had evacuated her stools by the vagina; although there was in this case no want of power of retention.

On examination, there was an external mark in the natural situation of the anus, but no opening. Upon laying open the abdomen, the intestine rectum was traced down to the posterior part of the vagina, to which it was adherent.

The vagina being removed and laid open, the intestine was found to open upon its surface, by a very vascular and prominent sort of papilla, situated within the vagina, near the os externum.

* By Dr. Merriman.

CHAP. V.

ON SOME OF THE AFFECTIONS OF THE TESTICLE AND ITS COVERINGS.

SECT. I.

ON THE PASSAGE OF THE TESTICLE INTO THE SCROTUM.

THE affections to which the testicle is subject, are extremely various, and even the process by which this gland, passing out from the abdomen to its ultimate destination in the scrotum, occasionally proves a source of tedious anxiety, both to patient and surgeon.

In October, 1814, an infant child was brought by his mother to the St. George's Infirmary, on account of what she supposed a rupture. To the eye there was an evident degree of fulness in the right groin, compared with the left; the penis also was somewhat thrown towards the opposite side, as in rupture. Upon examining the scrotum the case was explained, the testicle upon the left side had reached its proper situation, and was low down in the scrotum; but that upon the right side had not long left the abdomen, and was distinctly felt under the integuments, high up in the groin, producing the above-mentioned appearances. There

was no appearance of protrusion, either of intestine or omentum, in this instance.

In the month of August, 1814, I was desired to examine a fine boy nine years of age, who had one of the testicles in its proper situation, and the other high up in the groin. The nature of the case was explained to the father, who was acquainted, that the defect was dependent on a process which could only be completed by the powers of the constitution; and that the boy had better be sent to school again, to be attended to whenever it might be necessary.

In July, 1815, he was again brought to me, and it was presumable, that by this time the testicle might be sufficiently low down to admit of the application of a truss, should it be required. But on examination, intestine was felt, and that was all that could be distinguished; it was reducible in the horizontal position, but on standing up, or on coughing, it pushed out again. The testicle itself was no longer distinct, either when the intestine was protruded, or reduced. He complained of no pain, however, and was therefore sent back to school.

In the examination of recruits, I once found in a young man, aged twenty, one of the testicles in the scrotum, and the other in the groin, without any appearance of its being connected with rupture. In the same way, I have met with a single instance, at the age of twenty-three, where one of the testicles had descended into the scrotum, while the other remained altogether within the abdomen,

the scrotum and groin on the affected side feeling of course perfectly empty.

Sect. 2.

On Fungus Hæmatodes of the Testicle.

The fungus hæmatodes, or soft cancer, occasionally affects the testicle. The only case I have seen of this disease, was as distressing in its progress, as it was unhappy in its event, notwithstanding every thing was done, which the best opinions were able to suggest on the behalf of the patient.

Case 94.

Fungus Hæmatodes of the Testicle.

Mr. K., a middle aged gentleman, of weak and irritable habit, perceived an enlargement taking place in his right testicle, about the beginning of May, 1803. This he attributed to a supposed strain received the preceding March in lifting a heavy weight. On the 11th of May, after much fatigue in walking, it gave him considerable pain, and he applied to his apothecary. On examination the testicle was found to be enlarged to double its natural size. He was, therefore, directed to suspend it, and was ordered an aperient mixture.

Notwithstanding these precautions, the swelling continued to increase, and the apothecary in attendance, judging from the soft yielding feel of the tumor, could not persuade himself the case was any thing more than a common hydrocele.

He, therefore, advised the patient to allow him to push a lancet into it, to ascertain whether it really was so. It was punctured July 9. A drop or two of blood only followed, and the wound apparently healed. It was now stated to be a collection of coagulated blood, to which it would be right to apply poultices and fomentation. A fortnight after the first puncture, a second was made nearly at the same part, but more freely, and with an abscess lancet. Nothing, however, appeared but a little blood.

Much pain in the testicle and scrotum shooting along the spermatic cord round to the loins, followed, and brought on a considerable degree of irritative fever, generally towards night amounting to delirium. The scrotum, in two points, now began to inflame, and this was followed by two little gatherings, which broke, and discharged a few drops of matter.

In the first week of August, Mr. Heaviside was consulted, who, on examining the disease, found one part of the scrotum more tumid than the rest, as when an inflamed part points. On passing a probe through one of the little openings in the discoloured skin, the instrument was seen shining through the cutis at some distance from the point at which it was introduced, so much had the integuments already suffered by absorption, most probably from the constant and increasing pressure of the contents of the scrotum.

With a view to relieve the tension, the opening was enlarged, when the edges of the wound flew

asunder, and exposed a large quantity of dark-coloured, soft, pulpy, and highly offensive fungus.

The contained fungous substance being now allowed to expand with freedom, its growth was accelerated, and it began to shoot out apace, not only by the division made upon the probe, but through another part of the scrotum, where the second small opening had previously formed.

This fungous tumor, which was in fact the whole substance of a completely diseased testicle, continued to increase daily, and on the 27th of August Sir J. Earle was called in to a consultation, the result of which was, that in the present state of the spermatic cord which was much thickened, an operation was deemed unadvisable, but that with a view to diminish tumefaction about the parts, fomentations and poultices should be had recourse to. This plan, in some measure, succeeded, and it also seemed to lessen the volume of the diseased mass, but it was certainly attended with more considerable hæmorrhage from the parts, than had occurred before.

Previous to poulticing, the bleedings, comparatively trifling, were generally produced by the passing of a motion, but never came on when he was at rest in bed. After the poulticing however, they were more profuse and frequent, producing so rapid a declension both in pulse and strength, that in forty-eight hours he was almost totally exhausted, and extremely faint and low.

The new applications had been so evidently instrumental in increasing the bleedings, that they

were given up, and linen cloths soaked in tincture of galls were laid over the bleeding surface of the diseased parts.

To arrest, if possible, the extreme disposition to hæmorrhage, a styptic powder also was prepared, and occasionally sprinkled about the diseased surface. This powder composed of zinc, sulph. ʒi. pulv. gum. myrrh ʒiij. pulv. cort. per. ℥i, appeared at first to have in some degree the desired effect.

Sir James Earle was to have been present at a second consultation on the 1st of September, but was prevented; Sir W. Blizard was therefore requested to attend, to consider with Mr. Heaviside whether, in the present state of the disease, an operation was advisable. The result of the consultation was, that the removal of the diseased parts appeared to be practicable, and that certainly the operation would afford him the only chance that remained for saving his life. He immediately assented, and the operation was performed.

On examination previous to operating, the diseased mass was of a flattened figure, its breadth was equal to that of a large saucer, so that it almost concealed the parts surrounding its basis. The texture of the disease very much resembled the structure of the brain. It exhaled a diffusive and a putrescent odour, offensive beyond all description. The colour was a dark livid purple, intermingled with a grumous appearance.

The operation was performed under unfavourable circumstances, as the extent of the circum-

ference of the disease rendered it difficult for the eye accurately to follow the knife in dissecting out the basis of the tumor.

The spermatic cord was first exposed, by a longitudinal incision, two ligatures were passed round it, and each securely tied. The cord was then divided below the ligatures, and the separated part of the cord being traced down to the disease, the whole was removed by dissecting out the testicle included within its tunica vaginalis.

The disease being removed, the scrotum was very carefully examined, and as the edges had an unhealthy appearance, they were freely and completely removed. Every part was again examined with attention, but as all that remained appeared perfectly healthy, the hæmorrhage being trifling, the wound was brought together, and the patient carried to bed.

On subsequent examination of the disease, the only remaining vestige of the natural structure of the testicle was a small part of the tunica albuginea, upon the posterior surface of the basis of the tumor.

The wound for some time continued to look well, and the patient was gaining strength, being now free from those alarming losses of blood which he had experienced previous to the operation. The ligatures came away upon the 11th day; and digestion was established without any considerable degree of inflammation.

In the course of a fortnight however, a little excrescence began to push forth between the lips of

the wound, the edges of which, by degrees, assumed a callous, unhealthy aspect. There was also an indurated feel perceived about the parts, directly below the seat of the fungous tubercle. The disease had not, however, yet become painful, nor did it seem to be particularly sensible; but it continued to increase so fast, that in the course of a fortnight it had attained the size of a walnut.

From this time the characters of the tumor underwent a slow change, by which, from being a mere indurated tubercle, it gradually took on all the peculiarities of the original disease. It was proposed to try as an application to the parts, a concentrated solution of the lunar caustic, with a view to reduce the volume of the fungus, or at least to prevent its increase. Cloths, wetted with the solution, were laid over the whole surface of the tumor, but it had no effect.

The hæmorrhages now came on exactly as before, and they soon became formidable.

On October 20, Mr. Heaviside, and Sir W. Blizard, urged by the entreaty of the patient, as well as by the evidently alarming tendency of the disease, performed a second operation, by which the whole of the diseased parts were to appearance again completely extirpated. In separating the basis of the disease from its attachments, it became necessary to dissect it off from the side of the corpus spongiosum urethræ.

Considerable inflammation and tumor followed, the suppuration proving infinitely greater than after the first operation. This may be partly explained

by the constitution having been much less reduced by previous losses of blood on this, than on the former occasion.

The continuance of heat and tumor required poultice and fomentation for near a fortnight, when suppuration being established, they were laid aside, and dressings of cerat. lap. calam. substituted. They seemed to agree with it very well, and by November 20th, the wound was almost healed. Still however the disease returned; for only a fortnight after the last operation, two small tubercles had been felt no larger than peas, forming within the lower part of the remaining portion of the scrotum, and still more recently a tumor had made its appearance in the cellular membrane under the integuments of the crest of the pubes; the latter of these swellings occupying a situation as distinct as possible from the original seat of the disease.

These tumors continued to enlarge till they had reached the size of hen's eggs, when they became stationary, but from their general progress, and particularly from the appearance of that over the pubes, which was assuming a livid colour peculiar to the disease, preparatory to its ulcerating and throwing up fungus, it was pretty clear these changes would have followed, but for the other parts of the disease now taking the lead. The whole ulcerated surface of the scrotum became foul, throwing up a large mass of fungous matter, from which frequent hæmorrhages broke forth, which soon reduced his little remaining strength, and sunk the pulse in proportion.

In this hopeless state, his sufferings were protracted till the latter end of December, when he died, less reduced by pain, than exhausted by the long course of repeated bleedings.

Examination.

On removing the tumors situated in the neighbourhood of the scrotum, they were found to have formed in the cellular membrane, so that this disease, although it arose, in the first instance, in the glandular structure of the testicle, was evidently capable of establishing itself with equal facility in cellular texture. The muscular parietes of the abdomen upon which the tumor above the pubes was seated, remained unaffected, except by a remarkable paleness, partly resulting perhaps from the drained state of constitution.

Upon opening the cavity of the abdomen, a number of small, pale indurated tumors were found, situated apparently in the cellular substance, behind the peritoneum. The diameter of the largest of these was about half an inch; they were found scattered about the peritoneal surface lining the cavity of the abdomen, and were most numerous towards the pelvis.

That part of the peritoneum reflected over the surface of the liver, exhibited the same tubercular appearance, and the inferior as well as superior surface of this viscus was studded similar to the above, except that the tubercles upon the liver had a yellow tinge, which the others had not. On cut-

ting into the liver at various parts, its internal structure was found perfectly healthy.

Sect. 3.

On injury of the testicle from external violence.

The testicle, from its exposed situation, as well as from its peculiar organization, is particularly subject to enlargement from bruise, or other accidental violence. The ordinary effect of such accident is considerable inflammation and tumor of the substance of the testicle and epidydimis, occasionally proceeding on to suppuration and abscess within the body of the gland. A much less frequent result of external violence, is abscess produced by the establishment of the suppurative action in some part of the cellular membrane, between the vaginal coat, and the more external coverings of the testicle. The latter consequence arises now and then, and whenever it does occur, a variation in the mode of treatment becomes necessary; but the distinction between this and the more common result of injury to the testicle, will not in general be difficult to determine. In the one case, the tumor will be evidently an enlargement of testicle, extremely sensible to pressure, and of considerable weight, the scrotum being un-engaged in the affection; in the other there will be redness, heat and tumor of the scro-

tum, with a softer, and perhaps a fluctuating feel in its contents, the swelling on examination being found entirely destitute of that peculiar sensibility which belongs to inflammation of the testicle.

An example of this kind of affection occurred in a soldier belonging to the 82d regiment, whom I attended in May 1809, while in charge of the battalion at Scarborough; and the following particulars will afford an adequate contrast between the tumor from suppuration external to the vaginal coat, and the common swelling of the testicle from external violence.

Case 95.

Suppuration within the Scrotum.

W. Norton, aged thirty-two, of the light company, was out on a field day in 1804. In getting over a wall, he slipt, and fell across it, striking the perinæum and one of his testicles with great violence upon the top of the wall. He was carried off from the field into the hospital, in extreme pain. A considerable swelling and inflammation followed, which increased to an alarming extent, in spite of fomentations and other proper means. The inflammation continued with extreme violence for five days, the swelling, pain, and burning heat of the parts being intolerably severe. At length, suppuration came forward, and an abscess lancet was passed through the lower part of the scrotum. By this opening, seven or eight ounces of purulent matter escaped,

and the patient was very much relieved. The puncture was kept open as long as was necessary, to prevent further accumulation of matter. The urethra also had suffered from the accident, for retention of urine immediately took place, and the regular introduction of the catheter was found necessary for three weeks afterward. Subsequent to this period, the daily use of a bougie was required for several months. While the suppuration was taking place, he had considerable fever and extreme pain, the skin was burning hot, and the thirst insatiable. When, however, the matter was let out, the violence of these symptoms immediately gave way, and he slept well the following night. He was soon able to leave his bed, and move about the ward. In five weeks, the discharge had nearly ceased from the opening in the scrotum, and he was made an out-patient.

He continued to do well, after leaving the hospital, for near three months, and was much improved in strength and flesh, when the discharge, which had not yet quite disappeared, suddenly stopped, and a fresh attack of pain and inflammation was the immediate consequence.

He now complained much of pain, shooting upward to the loins. Fomentations and poultice brought the abscess forward; in a fortnight it was opened, and several ounces of offensive matter were discharged.

His recovery from the effects of this second attack was slow; the discharge lessened by de-

grees, but he was not entirely recovered from it, till seven months after the original accident, when he went to his duty.

About three months of good health had intervened, when a third collection of matter formed; this was let out, and the abscess again healed. His stomach was not so much weakened, nor his general health so much impaired by the violence of the pain in this, as in the former attacks.

A fourth collection of matter took place about five months after the third, the matter was again let out, and the parts healed as before. In the summer of 1807, inflammation again attacked the scrotum, and ran on to suppuration. He had taken a short sea voyage from Ireland to England, and supposed that having previously marched seven miles on a very hot day, and laid down for some hours on the ground after it, while the regiment awaited its embarkation, might have given him cold. He thought this had been the case, for as soon as he got on board, he found himself ill, the scrotum began to swell, and soon became both large and painful. On landing, he was sent to the general hospital at Deal, where in a week from its first appearance, the tumor was lanced, and the man again recovered.

In May 1809, the sixth collection of matter formed, and on this occasion I first attended him. The swelling had commenced only the day previous to his being examined, but there then seemed to be four ounces at least of fluid contained within within the tunica vaginalis testis.

A week before this he had complained of cold in his limbs, for which some antimonial medicines had been directed. These had succeeded in curing the cold, but the swelling about the testicle immediately followed. The medicines had excited vomiting, but this produced no uneasiness locally; when, however, the swelling commenced, he felt severe shooting pains in the testicle and along the spermatic cord. The tongue was white, and there was considerable thirst, with a pulse very small and weak, at 110. The inflammation upon the skin was considerable, and had produced a peculiar œdematous state of scrotum and penis. Fomentations were diligently applied for two days, the general tumor and pain increasing rapidly. The fever also increased, and from the violence of the symptoms, he became delirious towards night. The scrotum now felt considerably, but not equally, thickened. The surface was dry and red, and the cuticle seemed disposed to desquamate. Some enlarged veins appeared shining through the integuments. The most projecting point fortunately, was at the most dependent part of the tumor, where the integuments were very thin.

From the history it was evident there had at first been a collection of matter within the scrotum; and that subsequent to his apparent recovery, abscesses had repeatedly formed in the same situation, from the slightest occasional causes; and the feel as well as the appearance of the tumor, made it probable the matter was contained

in the tunica vaginalis. With this opinion of the case, I determined to let out the matter, but the past progress of the disease proved that this alone was not enough, on which account it was intended to lay open the cavity so freely as to admit of the abscess being dressed from the bottom with lint, until a healthy surface was produced, in the hope of effecting a permanent cure. An opening was therefore made at the lower part of the tumor, and several ounces of most offensive, purulent matter escaped. A probe was then introduced, and the incision extended upward through the scrotum, making a pretty free division of the parietes. As the incision was extended, the thickness of the divided mass was observed to increase, and at the termination of the line, the peculiar feel of the parts suggested the idea of the testicle being very near; especially as the extending the incision had been more painful than the first opening.

By introducing the finger, the cavity was now carefully examined, but the testicle could not any where be found on the posterior part of the cavity, nor in the cavity at all. There was, however, a perceptible thickening extending from the groin downwards, and this was traced to the point where h e testicle was suspected to lie in the front of the abscess. By further examination, it was ascertained that the spermatic cord and testicle were actually concealed in the anterior parietes of the abscess, where the body of the gland had become adherent to its vaginal coat consequent to the

neighbouring inflammation, in a situation entirely unexpected, and where, but for the cautious manner in which the incision was enlarged, it must necessarily have been either partially or entirely divided. The real seat of the abscess consequently was the cellular membrane of the scrotum, posterior to the vaginal coat, where the cellular substance was found foul and sloughy, from the irritation and disease produced by the repeated collections of matter.

The violence of the preceding attacks of inflammation, the quantity of effused lymph, and the general consolidation of structure had produced an obscurity in the feel of the parts, of which it is difficult to give an idea. The abscess was lightly dressed from the bottom, as was originally proposed, and in the course of a few weeks the cavity was not only much cleaner, but was much contracted. He recovered his health as the discharge lessened, and in four months, the whole space was soundly healed by granulation.

Case 95.

Mortification of the Scrotum.

W. Keys, aged fifty-three, one of the watchmen, was brought into the St. George's Infirmary, in December 1812. A week previous to his admission, he had had shiverings and violent pains in his back, loins and bones. This was in the evening, and by the next morning he found himself better; but his complaints returned at the same time the following evening. He was so ill,

as to be unable to go to his duty. The pains and shiverings were extremely severe, and he presently found his scrotum uneasy, painful, and beginning to swell.

In the course of the night, he became feverish and thirsty, the swelling and pain in the scrotum increasing fast. These symptoms continued to increase until he was admitted into the Infirmary, when the inflammatory tumor was very considerable, it had involved the whole integuments of the scrotum, and seemed to threaten mortification.

Fomentations were continually applied, and his strength was supported with bark, opium, and proper diet. The pulse was quickened and unequal. In a few days, the whole of the integuments of the scrotum had fallen into a state of putrefaction, and it was very doubtful whether the mortification would not extend itself much further. Fortunately, however, this did not happen, the line of separation formed, the putrid mass came away with the fomentations, and the sloughy cellular membrane below it soon became clean and purulent, so that on the tenth day after he came into the house, most of the ulcerated surface exhibited a healthy appearance.

The integuments of the scrotum having cast off, exposed the whole of the vaginal coat of each testicle; these surfaces however assumed the healthy aspect, while the surrounding integuments and septum scroti were putting forth granulations. The pulse about this time much improved, it became soft and full at 64.

He now continued to mend, his strength increasing, and cicatrization making rapid advances. The new skin was formed principally from the surrounding parts, but some also was produced from the septum of the scrotum.

In the course of two months, the whole was completely healed, and he was discharged.

CHAP. VI.

ON SOME OF THE AFFECTIONS OF THE UTERUS, AND ITS APPENDAGES.

SECT. I.

On Ovarian Dropsy.

THE peculiar susceptibility to disease that exists in the ovarium can only be explained by reference to the peculiar office and curious structure assigned to this part of the animal economy.

The ovarium is made up of a spongy or cellular structure, in which are concealed a certain number of small rounded bodies, or ova, which possess a distinct organization of their own. These ova, destined to await individually the stimulus of impregnation, are necessarily endued with so strong a disposition to action within themselves, that any common cause which operates by producing local determination of blood to the part, will occasionally rouse the latent disposition to activity, and when this has once taken place, from any accidental cause, as a cold, fever, passions of the mind, &c. disease is the consequence.

In the process of conception the excitement is very local, and confined to that particular point

upon the ovarium from which the impregnated ovum is to be expelled, and over which the fimbriæ of the Fallopian tube expand themselves. Upon the expulsion of the ovum, it is carried along the tube into the uterus, and the excitement that first existed upon the surface of the ovarium, and corresponding extremity of the Fallopian tube, is by concurrent circumstances securely diverted from thence, by necessarily passing with the ovum along the Fallopian tube, and at last resting with it in the cavity of the uterus, is there productive of all the interesting and beautiful phenomena of new vascularity and hourly increasing magnitude, with the subsequent curious succession of developement of parts, till the full period of gestation is completed, by which time the original excitement produced upon the ovarium has entirely subsided. If we pass forward, and consider the succeeding links of the same chain, the principal circumstances attendant upon delivery, the considerable loss, first of blood, and then of the thinner excretions from the cavity of the uterus subside so gradually as to afford additional bonds of security as relate to the state of the ovarium. Hence also may be derived the strongest reasons in favour of a parent suckling her own child. But when, on the other hand, the excitement of the ovary is derived from any accidental cause, the impression not conveyed and directed by the Fallopian tube to one point only, diffuses itself over all the parts of the ovarium, and instead of being confined to a single ovum, the whole contents of the ovarium are more or less

affected. This action, however, although more diffused, is less complete than the former; it is preternaturally extended, but I have made a great number of dissections of this kind of affection without finding any attempt made towards the disengagement of any one ovum, notwithstanding the secretions are poured abundantly into the cavities within the affected ovarium, producing ultimately the various appearances of the disease.

Affections of the ovarium are almost constantly of a dropsical nature, they occur in young women, but are not less frequent towards the decline of life, or about the period when menstruation ceases. We know pretty well how to distinguish an encysted or ovarian dropsy, from that of the general abdominal cavity, or ascites. The former constantly commencing as a circumscribed tumor, moveable or fixed, but at any rate beginning evidently in a particular part, and attended with little or no disturbance to the constitutional health; while the latter is generally accompanied, in some stage of its progress, with certain symptoms indicating either an affection of liver, or of some of the other abdominal viscera.

The course of an ovarian disease is, generally speaking pretty uniform, the patient is usually relieved from present distress by the operation of tapping, by which the accumulated load of fluid is removed, and some chance perhaps is thus given for obtaining relief by the aid of the physician. The number of times that a person will bear tapping is extremely various; some go through the

operation five, ten, or twelve times; or rather the constitution will support the expence and fatigue of secreting so many gallons of fluid as may, by these operations be drawn off from the general mass of circulating fluids, before the disease ends fatally. In some rare instances the constitution will bear much more than this, for I have frequently assisted* in tapping a young lady a Miss R——, upon whom the operation was performed as often as forty-eight times. In this case too, an incident occurred which deserves notice, as it serves to shew the inconstancy of symptoms. The ovarian being an encysted dropsy, is usually productive of certain mechanical inconveniences to the circulation, arising from the weight and situation of the tumor. The large vessels passing up from the pelvis are pressed upon, the return of blood is retarded, and swelling of the lower extremities towards evening consequently takes place, and is looked for as a regular symptom in ovarian disease. In this lady's case however, these circumstances were for several weeks exactly reversed, for her legs were found every morning loaded with œdema, and as often as she was well enough to spend the day up, this swelling invariably disappeared towards evening.

With regard to the propriety of the operation, there seems to me a necessity for establishing a distinction which, as far as I know, has not been hitherto pointed out by any of the writers on surgery.

In the performance of any operation, it is not sufficient that the mind be prepared for the

* With Mr. Heaviside.

common occurrences only, it is necessary that the surgeon be also prepared for whatever can arise in the way of accident, or miscarriage. Should every thing go on smoothly, it is all very well, but should it prove otherwise, he must meet any exigency with a clear apprehension, and prompt decision at the moment. His previous stock of professional knowledge must direct him how to steer readily through any difficulties that may arise, and should this prove deficient, he can neither do his duty to his patient, nor avoid betraying his indecision and embarrassment to those about him.

In the case of ovarian disease, provided we are clear the dropsy is encysted, with a fluctuation tolerably distinct, it is considered warrantable and right to proceed to the operation whenever the patient's increasing oppression may require it. But should the operation be determined upon, and the surgeon proceed to its performance, it is right he should be aware, that with all the above circumstances to sanction his endeavours on the patient's behalf, they may be eventually frustrated; and that when in operating, the trocar is passed into the body of the tumor, and the stilet withdrawn, it may happen that no fluid shall follow. This is certainly a case that seldom occurs, but it is one, with the possibility of which, every practitioner should be made acquainted; for we well know how frequently our professional exertions are regarded with an illiberal eye, where unhappily they are not eventually attended with success.

I know those who have seen several instances

of this kind, and I have myself witnessed one. The formation of the disease was attended with a great deal more pain than in any others of many instances that I have attended and dissected, of ovarian disease. The pain was from the first so severe, as to keep up a considerable degree of fever. When the tumor was, from its magnitude and pain no longer tolerable, the patient earnestly entreated for the operation to be performed. On examining the disease, the fluctuation was tolerably distinct, but there was a peculiar dullness in the feel of the undulation, which led the operator, a surgeon of great eminence, and most acute discernment, to observe beforehand that he believed there was something singular in the case, and that he was sure the contents would be found extremely thick.

When the trocar was introduced, nothing followed, but a little transparent and tremulous gelatinous matter, of a yellowish colour, which was expressed through the canula. All endeavours to find fluid were fruitless, and the operation consequently proved entirely useless.

The patient, however, found her sufferings rather increase, and she only survived the operation ten days. The symptoms indicated peritoneal inflammation, for which she was treated, though unsuccessfully.

On opening the body, the disease was found to have extended its influence to the whole of the abdominal viscera. Between the liver and the diaphragm, as well as about the stomach and

among the intestines, were innumerable masses of the same gelatinous substance that had appeared in the operation during the life of the patient. These fragments were readily traced downwards to more connected masses which were attached to the source of the disease in the ovarium, where the accumulation of this peculiar secretion had in several of the cysts taken place with so much rapidity, as to have produced a partial absorption and subsequent rupture of the peritoneal covering of the ovarium, with the consequent escape of a large quantity of the gelatinous contents into the cavity of the abdomen, exciting extensive peritoneal inflammation.

On removing the ovarium, and cutting into its various parts, the contents of all the cysts were found to be precisely the same. The general state of a diseased ovarium is, that one cyst shall contain a thin, clear, serous fluid, another a thick, albuminous matter, a third, a brown, thick, opake fluid, and so on; but in the present instance, although the disease was evidently in different stages of its progress, in different parts of the ovarium, as proved by the difference in the size of the various cysts, the contained matter notwithstanding, was the same in all of them.

The following is another of those cases that I have attended of diseased ovarium, which, from several circumstances connected with it, seems deserving of notice.

Case 96.

Dropsy of the Ovarium.

In December 1812, I was desired to call upon Mrs. C. aged thirty; it was stated she had dropsy, and required tapping. The following are the particulars of her history. In 1810 she was pregnant, and as she considered about three months gone, when, from being abruptly told of the sudden death of a relation, she felt herself extremely discomposed for some time, but subsequently recovered, went her full period, and was safely delivered. When, however, she had got through her labour, it was observed that she still seemed as large as if three or four months advanced in pregnancy.

Shortly after her recovery, she again became pregnant, and in the third month was a second time startled by something that was told her, when she experienced a repetition of the same peculiar sensation that had occurred before. At the proper time she passed safely through her labour, but was astonished to find herself remain in her own opinion, very nearly as large as before her delivery.

The tumor of the abdomen appeared to remain stationary, and ten weeks subsequent to her confinement, I was first desired to see her.

On examination there was a very considerable and distinctly fluctuating tumor within the abdomen, apparently unconnected with disease of any of the abdominal viscera. There was, however,

so much laxity of the parietes, as to render a firm lateral support necessary to produce the tension required in passing the trocar into the tumor. Ten pints only, of a brown, limpid, uncoagulable fluid ran off, although there was evidently the feel of fluid still in the abdomen, and this circumstance was an additional reason for considering the disease ovarian. In withdrawing the canula, the slit in the extremity of the tube was found to have pinched the adjacent margin of a membranous expansion, a small part of which was unavoidably drawn out with the canula, before it could be perceived, and when the end of the tube was disengaged, in the moment of turning round to lay down the canula, a considerable extent of this substance was protruded. The occurrence was new, and it was proper to conceal it from the patient, while at the instant, a doubt passed through my mind, what should be done with it, provided it could not be returned. On unfolding, it appeared so moderately vascular, that I determined if its removal should appear necessary, to cut it off with a pair of scissors, in the meantime endeavouring to pass a part of it back, and fortunately the attempt succeeded; for although the opening bore a very small proportion to the size of the protruded mass, it was returned with the greatest facility. This incident was neither attended nor followed by the least sensation of pain, or uneasiness, to the patient.

The quantity of this prolapsed membranous substance was equal to a small pear. It was at first suspected it might have been part of a large

hydatid, but a near examination of its structure, its vascularity and general appearance, argued its being a part of a thin ovarian cyst. An hydatid possesses a uniform and dull colour, and is entirely destitute of red vessels; but this substance had many small vessels ramifying upon it, having also the bright and variable hue which sometimes is observed in an ovarian cyst.

The common bandage being applied, the patient was put to bed. In the course of the afternoon, while turning herself in bed, a fresh effusion of fluid took place, pouring through the bedding very abundantly. By the evening this effusion had ceased. There was probably as much fluid lost on this occasion as had flowed out at the time of the operation. Six pints of it had been allowed to run into basins, the rest having passed through the bedding and floor of the room. This fluid was of a bright, amber colour, and perfectly transparent; it must therefore have escaped in consequence of a second cyst having accidentally burst into that which was opened in the operation, a circumstance that not unfrequently occurs in the ovarian dropsy.

In the course of a few days the puncture healed, and the patient was perfectly well. On examining the abdomen there was no longer the feel of fluctuation, or tumour of any kind. She remained well, and was again pregnant in September 1813. She became very large, and was convinced that her old complaint was returning. When confined, her abdomen, as before, remained very much enlarged.

She, however, recovered tolerably well, but com-

plained much of irregularity in the state of the bowels. Her stomach was irritable, and she rejected almost every thing she took in the way of food; added to which, one of her legs swelled considerably towards evening; all of these complaints she, as well as her apothecary, attributed to the tumour in the abdomen. She said that she had been so completely relieved by the first operation, that she earnestly entreated that it might be performed again, but I advised her to wait a little, till her stomach was in a quieter state. She soon afterwards, however, sent for me again, said her stomach and bowels were certainly no better, and she was sure they would not be till she was relieved of her load of water; she again urged me to perform the operation, saying that if I still declined it, she should apply to some other surgeon.

On examination, there was a distinct fluctuation, and I, therefore, on the following day, performed the operation, just three weeks subsequent to her delivery.

Ten pints of a clear limpid fluid were evacuated on this occasion, and the tumour was found to have entirely subsided. She went through the operation pretty well, her mind was greatly relieved, and she went to bed in good spirits. The irritability of stomach, however, did not subside; but, on the contrary, rather increased. The pulse, which before the operation was soft, small, and frequent, still remained so.

Two days after the operation, there was not the least pain or tenderness about any part of the ab-

domen; but the irritable state of stomach still continued, and she could not retain any thing, either solid or fluid. She lost her rest at night, and the retching became so much more urgent, that it repeatedly came upon her without having been excited by the attempt to take any thing. Medicines of various kinds,—the combinations of bark with acids, opiates, and antispasmodics, were all tried, but without the least effect. Worn out with the incessant fatigue and pain of vomiting, as well as the want of support, she would allow nothing more to be attempted for her relief, and expired on the morning of the sixth day after the operation.

Examination.

There was no objection made to the request that the body should be examined; but her husband expressed an anxious desire to be present, that he might know and see whether the opinion that had been given as to the seat of the disease, as well as to the manner of its termination, had been correct. He also, for the same reasons, requested permission for a professional friend of his to be allowed to see the examination. I told him I should be very glad to avail myself of his friend's assistance.

On laying open the cavity of the abdomen, the viscera in general were found healthy; neither was there the least trace of peritoneal inflammation. The intestines were in their usual situation, but there was no appearance of diseased ovarium. I therefore passed my hand down into the pelvis, and found a large cyst, which felt so thin and equal in

texture as to exactly resemble a large collapsed hydatid. When, however, this cyst was brought into view, it was found to be connected with the uterus.

The parts were therefore dissected out, and the cyst turned out to be the right ovarium, which was dropsical, and, what is not very commonly observed, it had in this case formed a single cavity, capable of containing many pints of fluid. The external surface of the diseased ovarium was like the other expansions of the peritoneum, perfectly free from inflammation.

Upon the inner membrane of the stomach, particularly about the superior orifice, the colour was dark and livid, from a chronic inflammatory action going on in the part; but whether this had been the cause of the slowly increasing and obstinate irritability of the stomach, or the mere effect of violent straining to vomit, it was not easy to determine. The remote cause of the above state of stomach might perhaps be derived in some measure from the general habits of the patient, who was certainly somewhat addicted to the free use of spirituous liquors.

Sect. 2.

ON THE AFFECTIONS OF THE UTERUS.

The various diseases of the womb have been treated with so much clear discrimination in a late work, that I shall only notice the particulars of

one case, the singularity of which will be a sufficient apology for its insertion.

Case 97.

*Menstrual Effusion into the Substance of the Uterus.**

M. Hinde, aged 24, was admitted into the St. George's Infirmary, December 23d, 1795, with a large tumour in the right hypogastrium, attended with excruciating pains, symptomatic fever, and a periodical discharge of menstrual blood. The pain and fever were mitigated by salines and antispasmodic fomentations, &c.; after which the infus. querci: was given, which restrained the menstrual discharge, and she recovered strength.

On a more minute inquiry into the cause, duration, &c. of her complaints, she gave the following particulars. Three years before, she had become pregnant, went her full time, and was delivered of a male child. She recovered well, but a short time after, having words with a man she cohabited with, he gave her a violent blow with his foot on the lower part of the belly, just above the pubes. In consequence of this she fell ill, complaining of a violent pain in the part bruised, attended with a slight fever.

Some medical person was called in, and in a few days, by proper medicines, the symptoms were removed, and she got perfectly well, so as to go about her usual employments as before.

She continued well near twelve months, and was

* Extracted from a MS. in Mr. Heaviside's Museum, where the Uterus itself is preserved.

then seized with violent shivering, and severe pain in the right hypogastric region. In a day or two she perceived an enlargement in the above-mentioned place, which continued to increase in size, as well as in pain. She now obtained admission into St. George's Hospital. The tumor at this time put on the appearance of early pregnancy, but she said it was not so, for that she had her menses regularly, and was at that time out of order.

The pain, and other symptoms, were again removed by proper medicines, and in the course of two or three months the tumor had entirely subsided, and she was discharged as well.

She remained apparently well till December 23, 1793, when she was again seized with her old complaint, only in a more violent degree than before, with slight fever, quick and small pulse, and a white tongue. The tumor had returned, and was much enlarged, occupying the whole of the right hypochondrium, and very much resembling pregnancy of the fifth month.

She was seen by the physician, and when examined per vaginam, as there was some reason to believe she might be pregnant, (except for the violent pain and discharge of her menses at the regular periods,) the os uteri was readily felt, and was gently dilated. This gave discharge to a small quantity of menstrual blood, from which she found immediate ease.

Of course, she was deemed not pregnant. Medicines were ordered, and in a few weeks she was better; but the tumor did not totally disappear,

She continued tolerably well till the return of the usual period of menstruation, when she was seized with pain, &c. She had a similar relapse every returning period, and during three periods the tumor increased, and gave much pain, but not in the intervals of time. She lingered on in this state, growing weaker, till March the 7th, 1795, when a violent attack of pain in the tumor, attended with fever and severe vomiting, came on, with which she very quickly sunk and died.

Examination.

On opening the abdomen, the whole of the omentum was found greatly thickened from inflammation. A quantity of pus was found among the viscera, the matter, when collected, amounted to near a pint. There was universal adhesion of the intestines to each other, and to the parietes of the abdomen.

A large tumor in the right hypochondrium, resembled very much in appearance the impregnated uterus of five months. The ovaria were both found, that on the right side perfectly healthy, and that upon the left perfectly diseased, and scirrhous.

Considering the tumor as belonging to the uterus, a longitudinal incision was made at the fundus, where a fluctuation was perceptible, and the section gave discharge to three pounds of menstrual blood. The cyst being emptied, it was examined internally, and found to be a detached cavity, formed by the external membrane of the fundus

of the uterus, and having no communication with the cavity of the womb.

There still remained a part of the tumor formed by the uterus, which was very tense, and evidently contained a fluid. A longitudinal incision was, therefore, next made along the whole course of the uterus, extending through the os uteri and vagina. This gave discharge to one pound more of menstrual blood. The uterus, now quite flaccid and empty, the internal part was examined, to see if there was any communication with the aforesaid cavity, but none was discovered.

The uterus was slightly scirrhous in its texture, and tuberculated. In the inside of the uterus there were many blind pouches, formed by duplicatures of the internal membrane.

The openings of the Fallopian tubes into the uterus were much enlarged.

The bladder was very much contracted, and adherent from inflammation to the uterus, but this circumstance had not been productive of any retention of urine. *

* Plate 5. *Fig.* 1. Exhibits, on a reduced scale, the appearance of the uterus, and its appendages.

a. a. The natural cavity of the uterus, laid open.

b. The vagina.

c. The meatus urinarius, into which a quill is inserted.

d. The urinary bladder.

e. A quill introduced into the os uteri.

f. The smaller of the two preternatural cavities, within which a collection of menstrual blood was found.

g. A small opening produced in making the section of the substance of the tumor, through into the larger of the two preternatural cavities, which was found at the posterior part of the fundus uteri.

Sect. 3.

On some of the affections of the vagina.

The external opening of the vagina is occasionally found partially closed, and under these circumstances, may require an operation to bring it into its natural state; but this apparent defect in structure, is, I believe, generally the result of accidental circumstances only, and not the consequences of any original mal-formation, except in those rare instances in which the vagina is altogether wanting.

Case 98.

Imperforate Vagina.

On November 28, 1802, I assisted Mr. Heaviside in performing an operation upon a young woman, aged twenty-four. She was on the eve of being married, and was for that reason obliged to disclose a circumstance of peculiarity, which she seemed to consider it was high time should be removed. From her account, it appeared there was some defect about the parts of generation, and on examination no external opening of the vagina was found, except a very small orifice, barely sufficient to admit a probe, situated as far back in the perinæum as the inferior commissure of the vagina usually is. In the line where the labiæ pudendi lie naturally in contact, the skin was of a whiter colour, and finer texture than at the lateral parts, but apparently firm and strong. A bent probe introduced by the small orifice into the vagina, moved

freely, and was readily brought forward, so that its point could be obscurely felt through the preternatural integuments. On inquiry it appeared, that the urine, and the menstrual discharges were regularly passed by this small external opening, and that when she was out of order, a swelling generally took place from the accumulation of contents in the vagina, which sometimes made its escape with difficulty.

The operation consisted in passing a curved bistoury into the orifice below, bringing the point as high up forwards as possible, and then making the instrument cut its own way out.

When laid open, the parts within the vagina were examined, and the structure was found in every respect perfect. The hæmorrhage was not very considerable. The divided parts were kept asunder by some narrow slips of lint, and fomentations were directed for a few days, till suppuration was established, after which the parts were dressed every day with dry lint, and in the course of five weeks the wound was perfectly healed, and the parts left in their natural state.

That the above state of parts was owing to an adhesion accidentally produced, there is every reason to believe, having since that time had an opportunity of tracing, in various instances, the several progressive steps which must eventually have led to precisely the same appearances.

It is not uncommon to find excoriation take place between the labiæ pudendi, at a very early age; and the irritation about these parts is occasionally so considerable as to cause effusion of coagulable lymph upon the inflamed surface, producing an appearance somewhat resembling apthæ. In a child two months old, whom I was desired to see, coagulable lymph had been thrown out, and it had become organized and vascular. The only opening that remained for the passage of the urine, was in this instance, as in that above described, at the inferior angle of the vagina. In the present instance, the adhesion had taken place while the infant was at wet nurse, and might readily have been prevented by a due attention to cleanliness. The separation of the parts only required the introduction of a strong probe by the little opening, the instrument being brought out by effecting a gradual separation of the recently formed adhesions. Some pain and a little bleeding attended the operation. The parts were subsequently kept separate, as long as necessary, by inserting a narrow slip of lint, wetted with a saturnine lotion.

Instances have occurred, although very rarely, in which the vagina, from an original defect of structure, has been altogether wanting. The greatest evil arising from this state of parts, as it must ultimately involve, not only the health, but the life of the patient, is the total prevention of the evacuation of the menstrual discharge.

The determining the proper treatment in such

cases, will require all the light which our knowledge in anatomy, physiology, and pathology, is capable of bestowing; and no consideration can place the importance and dignity of surgery in a more conspicuous point of view, than the reflection, that the judicious and well-directed efforts of our art may afford relief, even under these most unhappy circumstances.

Case 99.

Mal-conformation. *

November 25, 1765, a girl about sixteen, was admitted into the Bristol Infirmary, who for twelve-months before, had been subject to violent pains in her bowels and back, which frequently occasioned the strongest convulsions, and oftentimes nearly deprived her of reason.

She had, during her illness, employed several of the Faculty, who never gave her the least relief; on the contrary she was much worse, for as she had never any appearance of the catamenia, and none suspected any preternatural conformation, about the uterus or vagina, the strongest emmenagogues usually given in menstrual obstructions, were exhibited.

On examination, it appeared that there was no vagina, for on introducing one finger by the rec-

* The original MS. of the following curious history, is preserved in Mr. Heaviside's Museum, and from a memorandum attached to it, also in Mr. Watson's hand-writing, it appears, that the case was sent him by Mr. Perkins, Surgeon to the Bristol Infirmary, who had been formerly one of Mr. Watson's pupils.

tum, and another by the meatus urinarius, (which was of so uncommon a size, as to admit of it with little or no distention,) nothing was found to intervene but the proper coats of each, connected by the cellular membrane. The uncommon dilatation of the urethra was attributed to her mother's forcibly introducing her finger, as she imagined, into the vagina, when she laboured under a violent paroxysm; the outer extremity of the meatus was jagged, turgid, and bled freely, from the smallest violence consequent to introducing the finger.

When the finger was in the anus, the uterus was plainly felt, and seemed as if by some cause pushed low down. In size, it was considerably enlarged, equal to a pregnant uterus far advanced; it might easily, during the pains, be felt as high as the navel, where, as well as from within the rectum, its vessels felt very turgid, and as if disposed to burst.

After many fruitless attempts to discover the os tincæ, it was evident it was no-where to be found. In this emergency, an immediate puncture into the uterus was judged expedient. Accordingly, the external parts being held aside by an assistant, a finger was introduced into the rectum, and a trocar was then cautiously directed, so as to wound neither rectum nor urethra, into the uterus, and immediately discharged nearly two pounds of menstrual blood, after which the orifice was considerably enlarged, and a large armed tent introduced into the new passage to the uterus.

From the time of the operation, which was performed on November 30, she continued gradually

to mend, and on January 6, 1766, she had her menstrual flux in proper quantity, without any inconvenience. The discharge of pus from the wound gradually decreased, and by the end of the following month, she had entirely recovered her health, and had no subsequent return of her fits, or other complaints.

CHAP. VII.

ON LUMBAR ABSCESS.

THE symptoms and appearances that occasionally attend the formation of matter in consequence of injury to the loins, are so exceedingly various, that it is scarcely possible to include the whole of them in any definition of lumbar abscess. Sometimes the appearances presented are of so extraordinary, and at the same time of so ambiguous a character, as to puzzle the oldest surgeons, in deciding upon the nature of the affection.

Where those accidents have occurred, which usually lead on to this disease, and have been attended to in time, it is not uncommon to find that the mischief is averted, and this is solely attributable on the one hand, to the proper surgical and medical treatment having been recommended, and on the other, to the patient's having chosen to be duly observant of the rules laid down for him, with regard to the regulation of himself.

I am sure, that in many instances, I have attended patients whose constitutions, judging by comparison, were in the most favorable state of predisposition to this disease, and who, upon the receipt of accidental injury to the loins, have been brought through it clear of any ill consequences,

by a prompt attention to the means necessary for lowering the force of arterial action in the system, aided by the strict observance of abstinence and rest, for a certain time.

There is perhaps no set of muscles in the body, so exposed to occasional disadvantageous action, in a mechanical point of view, as are the muscles supporting the loins, and upon this account they are in fact more subject to the various consequences of strain, than most other muscular parts of the body. But in this case as in most others, the prevailing state of the constitution very much regulates the effect produced. We often see those who are totally careless and negligent, expose themselves to the most dangerous accidents, then neglect every precaution, and still avoid any ill consequence; while others labour under a long and wearisome course of ill health arising spontaneously as to any external agency, and consequently attributable to constitution alone.

Case 100.

Lumbar Abscess, with carious Spine.

T. Murphy, aged fifty-two, applied for relief at the St. George's Infirmary, in 1813. He had in walking slipped down and struck his short ribs on the left side with great violence against the edge of the pavement. This accident happened in October 1811, and he had ever since that time been subject to pain, and sometimes very pungent and severe stitches in and about that side, which he neglected till June 1812, when he procured assistance.

There was then no swelling, or appearance of external mischief about the parts; but the left side of the loins was tender when pressed, and in coughing or taking a deep inspiration, he complained of sharp, stitching pains. For these symptoms he had, in the course of three months, as many as six blisters applied, and they each afforded him a temporary relief. As he then supposed himself better, he did nothing more till April 1813, when he first observed some degree of hardness upon the seat of the injury, with a central spot more tender than the rest, but there was still no discolouration.

Poultices were now directed, and matter came slowly forward, so that in about seven weeks time it was opened with a lancet, and seven ounces of healthy pus were discharged. The wound was kept open, and the fomentations were continued. Subsequent to this period, preparations of bark and of steel were at various times directed for him, but in vain; for at length his constitutional health being entirely exhausted, he was attacked with an obstinate diarrhæa, and reduced almost to a skeleton, when he expired September 27, 1813.

Examination.

On the 28th, the body was examined. The external opening upon the loins was already black and putrid. Upon laying open the abdomen, the whole of the viscera were found healthy. An abscess however was opened into, it was situated in the midst of the muscular fibres of the psoas magnus. This abscess had formed to itself an ulcerated

channel extending within the muscle down as low as the groin, and upwards to the vertebræ of the loins. On enlarging the external opening of the abscess at the loins, and following thence the course of the cavity upwards and backwards, the finger came at once against the carious body of one of the lumbar vertebræ; and when the parts were fairly exposed by dissecting within the abdomen, the bodies of the second and third lumbar vertebræ were found almost entirely destroyed by caries, but the ulceration had not in the least acted upon the intervertebral substance, which I particularly observed remained perfectly sound between the carious bodies of the vertebræ, although this ligamentous structure must have been for months bathed in purulent matter.

The whole extent of the muscle in which the abscess had formed, was reduced almost to a putrescent, pulpy state, having in most parts lost its natural colour, and become nearly black.

In many instances of diseased spine however, the appearances afford a strong contrast with those above-mentioned. In this instance external violence was certainly the principal, if not the sole cause of all the mischief. The abscess formed within the belly of a muscle, the matter destroying the bone, after having disorganized the periosteum, without evincing any power of producing disease in the intervertebral substance. But in other cases,

and particularly in one that I have related elsewhere*, the disease of the spine commenced and ran its course with little dependence on any external cause; the suppuration demonstrably began in the centre of each intervertebral substance, passing from thence outwards, towards the muscles, but primarily destroying the ligamentous structure, which peculiar tendency must be attributable to constitution, and I believe belongs exclusively to scrofulous action in the system.

Case 101.

Lumbar Abscess, with carious Sacrum.

Edward Campbell, a soldier, aged twenty-three, was wounded at Albuhera in Spain, in 1811. A musket ball passed through the anterior part of the left thigh, traversed across the limb, broke the upper part of the femur upon the right side, and was subsequently cut out from beneath the skin near the seat of the fracture.

He was sent into hospital, the bone united, he was on crutches at the usual time, and recovered from his wound very well in every respect, except that his right leg was somewhat shortened.

When he had recovered, he was recommended for his discharge, sent home, and went to his friends down into the country.

About twelve months after this, he first perceived a small tumid spot near the right hip, which

* See a paper on the Diseases of Joints, by Mr. Brodie; in the 4th vol. of the Medico-Chirurgical Transactions.

sometimes was a little painful, although occasionally he did not feel it for a month together. The tumor however continued to increase for more than a year, during the latter part of which period he found it, to use his own words, "swelling more inwardly than outwardly." He observed that posture materially affected its apparent size, for when he sat down the tumor was pressed out, so as to be much larger than at other times. This swelling was situated behind the right hip. In this state he was admitted into St. George's Hospital, where the tumor was opened, and a pint of thin, dark-coloured fluid, let out. The opening was healed, but as in a week's time the abscess was again full, it became necessary to puncture it a second time. The wound was now kept open, and continued to discharge to the time of his death. Shortly after the second opening having been made, he was sent out from the Hospital; and was admitted the same day into the St. George's Infirmary, November, 1814. Here he continued to decline till the beginning of the following month, when his legs became swelled with œdema, and he died on the 12th instant.

Examination.

The viscera of the thorax and abdomen were healthy, with the exception of the mesenteric glands, most of which were enlarged, some to the size of a chesnut. They were soft when cut into, the appearance resembled that of scrofula.

The external opening of the abscess above the

hip, was situated in a middle line between the great trochanter and the sacrum. The integuments were gangrenous to some distance round, and were separated from the parts beneath. A probe was passed through an opening in the fascia near the bottom of the sacro-lumbal muscle, and cutting freely upon the probe, the knife struck against a carious bone, which proved to be the back of the sacrum. It was very extensively carious, and in several parts entirely destroyed. By the margin of this carious portion of bone towards the right side, the finger readily passed round to its concave anterior surface completely separated from the diseased and thickened periosteum, which was as a thick integument spread loosely over it. The whole of the concave surface of the sacrum was in a carious state.

The original seat of the abscess appeared to have been the concave part of the sacrum, between the bone and the periosteum, from which situation the matter had passed round the bone, insinuating itself between the interstices of the muscles upon the lower part of the loins, so as at length to reach the surface. This was the most probable progress of the case; but in prosecuting the dissection, to ascertain whether the bones of the spine were sound, the right psoas muscle was laid open, and a quantity of bright-yellow purulent fluid, mingled with shreds of curdly matter, poured out. This pus was without the least unpleasant smell, whereas the matter found in the other cavities of the disease, and which resembled what

had been discharged during life, was of a dark-brown colour, and highly offensive.

The purulent cavity within the psoas magnus was as long as the muscle itself, and in fact occupied nearly the whole of the space within the membranous sheath of the muscle, most of the muscular structure having been absorbed or converted into pus. The inner surface of this cavity was covered with a thick layer of coagulable lymph, which had a scrofulous appearance, as well as the contained matter.

The sacrum, and three lower lumbar vertebræ were removed, macerated and cleaned; and in the last part of this process a very curious circumstance came to light. On washing and clearing off the soft parts, I unexpectedly found the two inferior oblique, together with the spinous process of the last lumbar vertebræ, separated from the body of the bone. This was evidently a fracture, from the bone having been struck by the musket-ball, when he first received his wound. The curious circumstance, however, was this; there had been no secretion of ossific matter, and of course no union, but there had been an obvious attempt, and a very successful one too, to form an artificial joint. The corresponding surfaces were smooth, compact, and played readily and accurately upon each other.

The thigh bone, where it had been fractured into many pieces was examined, but no peculiar appearance was noticed.

The above particulars serve to shew how readily

an abscess may take place in a part, merely from irritation in its neighbourhood. Here was abscess followed by disease and caries of the sacrum, inducing a consequent suppurative action in the midst of a large muscle that was totally unconnected with the original affection, except by the circumstance of its vicinity.

Authors have in some instances spoken rather too positively of the formidable mischief that must in every instance be expected to take place, whenever a collection of matter is allowed to remain beneath a fascia, involving destruction of the muscles and periosteum, and caries in the bone. That these evils may generally be apprehended in such circumstances, is most true, but where either the fears of the patient, or an obviously bad state of constitution, offer objections to the evacuation of the contents of a large abscess, it is very right the surgeon should be aware that it does not necessarily follow that the patient is to lose his life, or even his limb. I have seen one instance strongly illustrative of this fact. The same poor woman, some circumstances of whose case have been already mentioned*, had enjoyed pretty good health till January 1810, when she was exposed to the wet and fatigue of a very heavy wash, within a fortnight after a severe lying in. She took a violent cold, first affecting her limbs and joints with severe pains and swelling. These complaints connected with the most acute pains in her back, had

* See Case 49.

not ceased to distress her a month after their commencement, at which time she perceived her belly was becoming enlarged.

These complaints having continued for near four months, she applied to a surgeon, who found distinct fluctuation and a considerable quantity of water in the abdomen. Proper medicines were directed, and the swelling by degrees diminished, but the pains in her back remained so severe, that when she sat down, she could with difficulty raise herself from the chair.

In the November following, very poorly and extremely weak, though suffering less from pain than before, she was carrying home a basket of linen on her head, and on her way, thought she felt something crack or give way, in the upper part of the left thigh. She felt a little pain at the time, and on examining the part soon afterward, perceived some degree of swelling. She concluded it was only a strain, but observed she could not afterward lie on that side. The swelling gradually increased, and any excessive fatigue, or much walking, generally produced shooting pains and an unpleasant sense of weight, which indeed she sometimes complained of even when at rest.

In March 1811, she applied for assistance to the St. George's Infirmary, and the limb was examined. There was an evident fluctuation, with considerable tumor, situated on the external part of the middle of the thigh. The probable quantity of contained fluid was estimated at three pints. Its seat was clearly beneath the fascia.

When the effusion into the cavity of the abdomen took place, other circumstances evinced that her complaints were connected with scrofula. Several tumors formed on various parts, evidently of a scrofulous nature; while the thumb of the one hand, and the palm of the other, were affected with swellings of a similar description.

In May, the tumour of the thigh was observed to be moving by degrees towards the knee, but was still painless. At the time when the tension of the limb was productive of uneasiness, she expressed a wish to be relieved from it, and was desirous that the fluid should be let out; but it was considered, that while she experienced only inconvenience from it, the swelling, in her state of constitution, had better be let alone, and she was therefore advised to have nothing done.

The diseased thumb ulcerated at the joint, and the bones became carious. She, however, declined being taken into the house, as she preferred continuing to work on account of her family: she was directed the preparations of bark and steel.

Towards the end of June she was suddenly attacked with a most violent pain in the back and loins, preventing her from leaving her bed; and this pain soon settled itself opposite the lowest of the lumbar vertebræ. She complained principally of a throbbing and burning heat and pain, "as if a gathering was taking place." In the course of a fortnight the violence of the attack began to abate; but on the 20th of July she was yet very poorly, and extremely low and weak. About this

time, an indolent tumor, as large as a hen's egg, formed just above the inner condyle of the humerus. It was painless, elastic, and felt like a thin tendinous or ligamentous cyst full of fluid. The late attack of pain, and probably suppurative action, in the loins, was not followed by any fresh deposit of fluid in the thigh; on the contrary, the tumor became comparatively flaccid. It gave no pain, nor any further trouble during the remainder of her life. She died in November 1814, about four years subsequent to the first appearance of the swelling: unfortunately the body was not allowed to be examined.

In the following case, from the absence of particular symptoms, and from the general appearance of the limb, there was so much obscurity as to the nature of the disease, that the surgeons who attended had much difficulty in making up their mind upon the treatment.

Case 102.

*Lumbar Abscess.**

In August 1764, I examined with Mr P., a man between forty and fifty, of a stout make, married, and of regular habits. He had a large tumor, possessing chiefly the internal part of the right thigh. It extended from the groin to within a handbreadth of the knee. It was obliquely divided, from top to bottom, by a broad and hard band,

* Transcribed from a MS. of Mr Watson's, in Mr Heaviside's Museum; where, annexed to the history, there are two drawings (by Rymsdyk), shewing the extremely distorted appearance of the limb.

just in the direction of the Sartorius muscle, which it afterwards proved to be. This gave the appearance of two tumors; the upper one large and round, lying but little of it forward, and the principal part on the inside of the thigh; the other, of a more oblong or oval form, lying forwarder, and most of it on the lower and anterior part of the thigh, extending somewhat towards the inside of the limb.

These tumors both contained a fluid, the undulation of which was very distinct upon striking the tumor on one side, while the hand was laid flat upon the other. The fluid, also, was easily pressed from the upper to the lower, or from the lower to the upper tumor, so that it was clear they had free communication with each other. I think the man said the disease had been of nine months' standing, and no more. He could give no clear account of its commencement, but said, that at first the swelling was upon the inside of the thigh only, a little below the groin; and that it very gradually increased. He supposed, at first, it might have arisen from a strain, although he did not recollect having received any.

When it was small in comparison to its size when I saw it, he went into St. George's Hospital, where it was fomented, and subsequently grew a great deal larger. The greatest inconvenience he ever felt arose from its weight, for it never gave him any pain. He said, that some time previous to my seeing him, he had experienced an attack of ague, of which, however, he got very well; but he never

had any pain in his back or loins previous to the formation of this swelling, nor in any part of his abdomen, nor indeed any illness at all that he could recollect, that could have given rise to his present complaint.

Upon coughing or straining there was no particular alteration to be observed in the size or form of the swelling, nor any undulation more readily to be felt then, than at any other time.

The skin was greatly upon the stretch, and rather thin upon the lower tumor, but not at all discoloured, and quite free from any mark of inflammation. The superficial veins seemed fuller than usual, and were even in some parts varicose; which appearance is explained by the continued pressure and stretching of the parts. The limb was strong and firm.

Some were of opinion that the disease arose from blood, and was aneurismal, but there was no good ground for thinking it so. Others supposed it an encysted tumor, and so far it was, as that its contents lay under the fascia, which made a partial cyst or covering for the fluid forwards. But the great question was, whether it communicated with the abdomen or not? For my own part, having examined it with great attention, and inquired diligently of the patient, I could not suppose it did.

At St. George's they would have opened it, had he then consented, and I was quite of the same opinion. The more so, as it had become much larger, and the skin much thinner; nor could it have remained much longer without opening of

itself. I was the rather for its being opened, as the man could move the limb in any directior without pain; and, indeed, his never having suffered any from the first, induced me to believe the bones were not yet affected. But, as I was sensible the contents lay very deep, I could not say how long he might be secure from this evil.

The contents of the tumor, it was agreed on all hands, were fluid; I therefore persuaded him to have it opened, and to have the fluid drained off gradually.

I think it was two or three days after this, that the most depending part of the anterior and smaller tumor was punctured with a common trocar, and about two pints of a wheyish fluid drawn off; after which, the canula was stopped with a cork, and secured with some cross slips of plaster, compress, and roller. The man bore the evacuation very well, and suffered neither pain nor uneasiness from the canula being left in. The next day (September 2), I visited the man with Mr. P. He complained of great chilliness, and said, his ague was come again, but that it would soon go off, as it always had done before. The dressings were removed, and three pint basins-full more were taken off, the fluid being thin and turbid. As the man complained of sickness at the stomach, he was dressed up as before, but rolled tighter, and so put to bed.

The tumor, however, was not half emptied, but both cavities were rendered equally lax, which plainly shewed that they communicated.

Some of the wheyish fluid, held in a spoon over a candle, coagulated as serum commonly does.

The man from this time grew worse and worse. Warm stomachic medicines were given, and he was blistered, but all to no purpose; he became very restless, his pulse sunk, intermitted, he was convulsed, and died on the morning of the next day, the 3d of September.

Examination.

September 4. We got a hasty view of the parts, in doing which, we were much interrupted by the terror of the poor woman, and people about her. In this situation we were obliged to be content with such a sight as we could get, in the greatest hurry.

Mr. P. cut into the tumors, and emptied out a great deal more of the fluid contents, which now had an offensive smell. It was also changed to a brownish colour. Several sloughy filaments were discharged, now that there was a free opening. We found a very large cavity, extending deep, almost to the thigh bone, underneath the great blood vessels, which we plainly distinguished, very much elevated and thrown forwards and outwards. The hand was passed under the Sartorius, from the lower and smaller cavity, into the upper and larger, so free and extensive was the communication; and it was evident that the Sartorius muscle and fascia raised up by the fluid matter, had made the broad band and oblique separation between

the two swellings, that was so remarkable before an opening was made.

Upon dividing the Sartorius, we saw the fascia smooth, shining, and united with the skin, for it was that part of the fascia that lies on the inside of the thigh, which is the thinnest. Upon tracing further we found the cavity extended upwards to the loins, under the Psoas, in the course of the great blood vessels, and there was matter all the way up; but the higher we went, the more purulent and fœtid it was. What lay on the loins was of a grey colour. No bone could be felt bare in any part. The muscles on the inside and fore part of the thigh, were all flabby, and dissected from one another by the fluid having insinuated itself between them; some having lost their healthy colour, and assumed a livid hue. Further examination was prevented.

CHAP. VIII.

ON HIP DISEASE.

THE affections of the hip joint are among the most tedious of all the diseases that fall within the province of surgery. Many weeks, or even months, will sometimes intervene between the application of the cause, and the subsequent production of pain or inconvenience to the patient; and even when symptoms do arise, they frequently creep forward in so insidious a manner as to deceive the patient into a false security, till the most favourable moment for averting ill consequences has past by, and is not to be recalled.

The parts about the hip are unfortunately situated for recovering from the effects of accidental violence. They may be regarded as placed, to a certain degree, in the centre of motion between the body and limbs; and when either the bones or the soft parts covering them have been accidentally injured, a natural aversion to submit to the adoption of painful and tedious measures for security, where there is no apparent external mischief to require them, prevent the majority of patients from attending to themselves, while such attention might really serve them. They are induced to wait the issue of the first abscess, or the first inflammation,

when a new deposit of coagulable lymph upon the inside of the cavity, the new vessels, and the newly produced granulated matter, (by which the injury in the best event, must be repaired,) generally prove too weak for the future support of healthy action; so that when the patient fatigued with rest and quietness, thinks he has already done wonders by his forbearance, and returns again to his former habits of bodily activity, fresh mischief with inflammation and suppuration, is the consequence, while the matter probably finds its way into some new situation, burrowing among the muscles, in the cellular membrane.

Here then we see a very principal cause of insecurity, with regard to future health; for supposing the suppuration declines, and that the sinus as well as the abscess, heals up as at first, still the parts are sure of being left in a more unsound state than before. Under these circumstances there will be increased difficulty in preventing future formations of matter, dependant perhaps, at a very distant date, upon the most trivial accident, the least cold, or the slightest bruise, or over fatigue, neither of which circumstances, had there been no weak point in the constitutional powers, would have excited any attention, or brought on any unpleasant consequence.

In the first of the three following cases the cavity of the hip joint was diseased, although from the progress of the disease, as well as from the appearance upon dissection, it was most probably not the seat of the primary affection; in the second,

the cavity of the joint was found after death in a perfectly healthy state; and in the third it was anchylosed.

Case 103.

Diseased Hip.

Joseph Collis, aged thirty-six, at the age of fourteen, fell from a cart, and bruised his hip. Considerable pain and swelling was the consequence, for which, during a month, he staid at home, and fomented with hot vinegar. He was then taken into St. George's Hospital, where he was directed to poultice and foment. Suppuration took place, and the matter pointed below the ischium. Subsequent to this abscess being opened, the part was poulticed for three weeks, when he had so far recovered as to be able to move about with crutches, and was made an out-patient.

He had attended the hospital as out-patient only a few weeks, when a fresh inflammation commenced upon the hip, higher up than the first, and situated above the trochanter; for this he was again made an in-patient. The inflammation was violent, attended with much fever, and occasional severe rigors. In the course of a month the abscess broke, while it was being examined. He was now told that the bones of the joint were affected, but that he must continue poulticing. In the course of a few weeks, the suppuration continuing, the swelling had nearly subsided. His appetite returned, he took his bark regularly, and eat heartily. With a view to his greater security, he was now allowed

to remain in the hospital for nearly three months, and when the parts were healed, he was sent home.

He remained well for between three and four months, when, after playing about carelessly, he was seized in the night with violent pain, total numbness in the limb from the knee downwards, with most severe shooting pains through and about the hip joint. He was treated as before. The upper abscess slowly filled with matter, which, after five weeks suffering and fever, made its escape by the old opening, and discharged copiously for more than four months, during which period he was confined to his bed, but by degrees he then improved. Eighteen months now passed before the parts became perfectly healed and sound.

Finding that from these ill consequences of the original accident, he was never likely to be able to earn his bread by any active employment, he learned the shoemaking business, at which, aided by his own attention to himself, he now passed so long a period as eleven years without any fresh mischief. He still found, however, that the slightest slip, sudden movement, or jerk to the parts, invariably re-produced pricking or shooting pains, with stiffness, about the hip.

At the termination of this period, a fresh attack of inflammation came on suddenly in the night, as it had done before. He remained at home, and poulticed for three weeks, when a gathering having formed, it burst at the old place above the trochanter. The discharge continued for five months,

during which he was able to move about tolerably well, although he felt stiff and sore when in motion.

Two years of good health now intervened, and he went on very well till one unlucky Saturday night, when having sacrificed rather too freely to Bacchus, the road home proved so uncommonly slippery, that do what he could he was not able to prevent his crutch flying from under him, and the poor fellow fell again upon his unsound hip. Considerable inflammation and abscess took place, and in the course of a month a large discharge of matter, mingled with blood, escaped by the former opening, and he found relief. Within a week he was so much better that he was able to leave his bed, and shift about, assisted by his crutch. On this occasion the abscess continued to discharge for more than a twelvemonth. A circumstance which produced him no inquietude, as he observed, that while suppuration continued, he generally found his hip less stiff and weak than when all discharge had ceased.

From the frequent recurrence of inflammation and ulceration in the same parts, the cavity of the abscess at length nearly lost all power of healing, so that even when it did appear to be well, if by accident the scale that covered the orifice was detached, a slight oozing of serous fluid generally followed.

The last attack of inflammation took place in 1812. It was produced by a slip in coming down stairs. Suppuration followed, and the contents of the abscess escaped by the old orifice. Soon after

this, being too weak to work at his business, he applied for relief to the St. George's Infirmary, and was admitted. By proper medicines, and a nourishing diet, he was supported for a long time under a constant and considerable discharge; but towards the latter part of 1814, he began to decline in his health, and died in December.

Examination.

On examining the abscess, nothing particular was observed. Within the hip-joint the round ligament was so far destroyed by ulceration, that scarcely a vestige of it remained. The cartilaginous surfaces of the bones had ulcerated away, and the apposed surfaces of the bones themselves were in some points becoming carious. The cartilaginous margin of the acetabulum remained, but it was rendered uneven, by the unequal growth of ossific matter, in several parts from the surface of contact between the cartilage and bone.*

* PLATE 5. *Fig.* 2. Shews, upon a reduced scale, the state of the bones, subsequent to maceration.

a. The anterior part of the spine of the ilium.

b. The tuber ischii.

c. Part of the os pubis.

d. The cavity of the acetabulum, much enlarged in size, very extensively affected by a process much resembling caries of the bone, and towards the circumference rendered exceedingly irregular by the deposition of ossific matter.

e. The anterior view of the upper part of the femur, upon which it may be perceived that the principal part of the head of the bone is removed by absorption, the remaining portion being rendered uneven, in conformity with the depressions in that part of the acetabulum against which it was pressed by the action of the muscles.

CASE 104.

Diseased Hip.

Charles Robinson, aged fifty, was at sea in January 1807, and in a very heavy gale of wind, received a severe bruise upon the projecting part of the trochanter. He was coming up through the hatchway, with a basket full of corn for the poultry, when a heavy lurch of the ship threw him suddenly and with great force down to leeward, and he narrowly escaped going overboard. By this accident his hip was struck violently against the corner of the iron heel of a spare topmast, which was upon deck. He felt lame and sore upon the hip, but rubbed the part with something from the medicine-chest, and continued at his duty for the rest of the voyage.

He never thought himself well however, because he almost constantly experienced shooting or aching pains about the seat of the injury, and even believed that they got worse by time. Nothing however was done, and as long as eighteen months afterward he engaged himself as captain's cook on board a store ship, for though still very poorly and lame, he yet considered he was able to do something.

In a few weeks after going to sea, he got worse, and became so exceeding lame and ill, that he was confined to his hammock. He complained of feverish heat and thirst, and his appetite failed him entirely; although there was only the violence of the internal pain to explain his illness, for on the part nothing amiss could be seen.

After some weeks' confinement, a small red spot appeared near the hip, which soon became tender and painful. This remained nearly stationary for six weeks, and then broke, discharging a small quantity of healthy-looking pus. A fistulous orifice, with continuing discharge, was the consequence. The first abscess was soon followed by a second, and this by a third, each discharging their contents externally, and leaving fistulous openings.

He remained in a helpless state near four months, before reaching Woolwich, where he was put ashore. He came immediately to London, and attended for two months as an out-patient at St. George's Hospital; he found himself so much benefited by what was done for his relief, that he was enabled to walk pretty well with a stick, leaning some weight upon the limb, without pain.

He then obtained admission into St. Thomas's Hospital, under Mr. Cline, and after remaining there six months, was so far recovered, that he engaged himself to go to sea again. There was still some little discharge, but he was well enough to be able to walk down to visit his ship, at Deptford, and back the same day, without inconvenience.

This however was an act of imprudence, and he suffered for it. A few days subsequent to this walk he was sitting in the piazza of the Hospital, when he was attacked with a violent rigor, and this was the prelude to a fresh suppuration in all the former wounds, by which he was again confined to his bed. His first admission into the Hospital was in January, and his treatment for the first fortnight

was poultice and fomentation, after which a mercurial plaster was applied to the hip, and changed occasionally. This plan agreed so well that it was continued till June, when probably, from too free exercise of the limb, fresh inflammation and abscess took place.

He now remained in Hospital till October, when he was discharged much relieved, but very lame. In this state he got on board a West Indiaman, lying in the river; a duty which required no exercise, as he had only to remain on board, and look after the property.

In the December following he left the ship, made his way up to London, and was admitted into the St. George's Infirmary. Fresh inflammation and suppuration had taken place at the hip, added to which, he now, for the first time, complained of excruciating pains in the knee of the affected limb. These pains, almost incessant, he sometimes felt shooting down the leg from the knee to the ancle, with such severity, as to completely prevent his getting any sleep at night, without the assistance of opiates.

As all the fistulous openings about the hip-joint discharged more or less, fomentations were found to give him the greatest ease and comfort; they were therefore continued. He remained much the same till July 1812, when the pains down the leg were so extremely severe, and the whole limb so tender, that the slightest pressure of the bedclothes became intolerable.

His appetite was variable, sometimes he could

retain nothing upon his stomach, but in July, he was better in this respect, and was able to eat heartily. His bowels, however, were extremely weak, and irritable, for he was frequently harassed with diarrhæa, in spite of aromatics and other medicines directed for his relief. The pulse was at this time small, at 112.

In the beginning of August, he repeatedly complained of a peculiar sensation of heat within the hip-joint, which he compared to a glowing fire in the part. This sensation of heat connected itself with sudden pains shooting about the joint, alternating with intervals of comparative ease.

August 8. Just after taking his dinner, he suddenly fell into a state of insensibility, his body and limbs becoming rigid and stiff. There was tremor of the limbs, the eyes were open and fixed, and the respiration laborious. From this attack, he by degrees recovered in the space of half an hour, and then remained pretty well.

On the following day, he was extremely languid, generally sensible, but sometimes incoherent. His speech, since the fit, had become thick, and very indistinct; but he clearly and repeatedly assured me, he was in no pain whatsoever in his head, nor any where else, except about his hip, and knee. He afterward said, his head felt somewhat light and uncomfortable, particularly about the forehead, although still without the least pain.

There was much apparent restlessness, a constant picking of his hands, fingers and bed-clothes. The respiration was laborious, and the pulse was

reduced to 90, and was even, but very small. On the 11th he became totally insensible, and the night following expired.

Examination.

On opening the head, the brain was perfectly sound, but the membranes were loaded with a pretty extensive effusion of serous fluid. This effusion had taken place between the tunica arachnoides, and pia mater. The ventricles contained only their usual quantity of fluid.

In the cavity of the thorax, adhesions had formed between the lungs and parietes of the chest, there was also in each cavity a considerable quantity of effused serum.

The whole of the abominal viscera were examined, but they were all healthy.

In the diseased limb, the common integuments were closely and firmly united to the surface of the great trochanter. An extensive abscess was found directly under the skin, in the cellular membrane, external to the great glutæus muscle; and this abscess was connected by a sinus, with a carious part of the trochanter.

Opening through the skin, near the anus, three sinuses were found, connected with each other; and in these sinuses were several fragments of carious bone, separated from the tuberosity of the ischium, the surface of which had become unsound, from the fistulous passage having formed close to it. The surrounding mass of cellular

membrane was rendered, by inflammation, so indurated, as to resemble gizzard in its consistence.

An abscess of considerable extent was found in the cellular membrane between the glutæal muscles; which abscess was connected by a fistulous passage with the carious trochanter, and also with an external opening upon the hip.

Within the hip-joint there was no material appearance of disease. The perichondrium and cartilage exhibited a dull, lurid appearance; and the ligamentum teres resembled a membranous expansion folded longitudinally, having entirely lost its natural characters, both as to figure and strength. These changes, however, were probably little more than the necessary consequence of a long season of confinement, with a disease going forward in the immediate vicinity of the joint.

In the muscular structure of the tensor vaginæ femoris anterior to the joint, was a small capsule of condensed cellular membrane full of a soft cretaceous matter; and in the carious cavity that had formed just below the great trochanter, there were several small masses about the size of grains of sago, of a similar secretion. The periosteum was detached for some distance round the carious part of the trochanter, and a purulent matter was lodged between it and the bone.

The parts about the knee-joint were examined, but were, to appearance, perfectly sound within the joint; the crucial ligaments, however, were reduced to the state of membranous webs, while the cap-

sular ligament was so extremely wasted, as not to be distinguished without difficulty. *

Case 105.

Diseased Hip, terminating in Anchylosis.

M. C. died August 13, 1816, in the twenty-second year of her age. The following is the outline of her history.

In June 1809, she was attacked with a severe and constant tensive pain in her head, which she attributed principally to the irregular and defective state of her menstrual health. The complaint in her head was attended with constant sickness at stomach, intolerance of light, and a sense of weariness and fatigue in the limbs. To the sense of weariness, occasional catchings and startings of the limbs soon succeeded, and these spasms by degrees increased, although she remained for several months, able to just crawl about.

In addition to her other complaints, in August, a pain in the side with vomiting of blood came on, and this was soon followed by a state of jaundice, which remained for some weeks. She was still, however, able to walk short distances, although the catchings in her legs and thighs would in a moment come on, and she then invariably fell. This obliged her first to go with a stick, then sup-

* Plate 5. *Fig.* 3. Represents the appearance of the carious trochanter, at the part upon which the original injury was received.

a. The head of the femur.

b. The carious part of the trochanter, in the cavity of which, several small fragments of bone were found.

ported by two persons, and soon after to keep her bed entirely.

She was now distressed with the most severe pains in both legs and thighs, but particularly in the left. The increased severity of pain in the head was such as to excite high fever; at times attended with furious delirium, with cries and screams. The apothecary who then attended, attributed her complaints to rheumatic fever.

In this state, she remained taking medicine without any apparent benefit for five weeks, her left thigh being all the time highly inflamed and painful; feeling, to use her own words, "like burning brass." When somewhat relieved, she was taken into the Westminster Hospital, where she remained without much benefit for a month, and then returned home. In the course of a few months, she found her health slowly improve.

April 12, 1810. Her head was tolerably well, her habitual sickness at stomach was much relieved, and her fever quite gone. The totally helpless state of her lower extremities, however, induced her to go into St. Bartholomew's Hospital, where she tried electricity and various medicines without finding herself relieved. On the twenty-eighth of the month, she returned home again, and remained much the same till February 1, 1811, when her menses suddenly appeared, after three months' severe pains about the loins. She found herself much relieved, and supposing this to be the favourable moment for attempting any thing that might be practicable for her cure, she applied to St.

George's Hospital, where she was admitted and attended by a physician *, under whose care she said she felt more confidence, and derived more benefit, than from all that had been before done.

Large blisters, applied in succession along the line of the spine, discharged copiously, and with the medicines that she was directed, procured her astonishing relief; rendering her much more free from the pains she had suffered, as well as from the catchings in her limbs.

The muscles of her limbs became so relaxed, that with the assistance of the nurse, she was able, not only to sit up every day, but in the course of three months, was strong enough to walk a little about the ward.

Galvanism was now had recourse to, but the left thigh, which continued to be her principal distress, did not appear to improve under its influence. On the contrary, in the course of a week, she had increased pain in the limb, with occasional shiverings, and profuse perspirations. The galvanic influence was therefore discontinued, as it was suspected that matter was forming, and poultices and fomentations were constantly applied for two months, when an inflammatory tumor, the size of half an orange, had formed upon the outside of the thigh, below the great trochanter; there was, however, no distinct feel of matter. The application of caustic was next tried; but not being followed by any satisfactory discharge, it was subsequently repeated several times, and on

* Dr. Nevinson.

the last occasion, the eschar separated at a considerable depth, and when dressed, fourteen peas were laid in it. Excessive inflammation and fever, with a cessation of discharge, was the consequence of this irritation. The following day the peas were removed, the parts examined with a probe, and the bone felt exposed; the wound was dressed lightly with lint only.

The limb was directed to be diligently poulticed and fomented, notwithstanding which, she remained for a week extremely ill. After this, however, suppuration recommenced, and soon became immense, with which change her constitutional health improved. She was well enough to admit of her being removed on January 3, 1811, when she returned home. Her thigh had now become so hard and firm in its texture, particularly at its upper part, as to feel almost like horn, and was less capable of motion than ever.

The wound upon the thigh continued to discharge, but in a small degree, till September 15, 1814, when she was first admitted into the St. George's Infirmary. Several abscesses now formed in succession, and were poulticed and fomented. They evacuated their contents by the old opening, and gave no further trouble. Between the period of her admission, and that of her discharge, which was on the 20th of June 1815, many persevering attempts were made, in those intervals when she was most free from pain, to bring the knee joints into action, with a view to the eventual extension and restoration of power in the contracted lower

extremities, but without any material success. In addition to this plan, every attention was paid to the supporting her strength, by proper diet, with bark and steel medicines.

Subsequent to this period, she had occasional returns of pain, with fresh formations of matter, after which she was always for the time relieved.

In June 1816, she suffered severe pain from a gathering that formed high up under the fascia, on the outside of the thigh. It was poulticed and fomented for a fortnight, when there was a distinct feel of matter, although deep seated, and as she was unable to get any sleep from extreme pain, I persuaded her to let me make an opening in it, which being done, about eight ounces of thick, purulent fluid was discharged. The relief she experienced was great beyond description. Her rest, her appetite, and her health now at once returned, and she remained comparatively well for some time.

In the beginning of August, she had an attack of diarrhæa, with pain in the head, and thirst, which was supposed to have arisen from cold. On the 6th, to allay her thirst, she unthinkingly drank some cold table-beer, and immediately afterward, felt a most severe fit of violent shivering, which lasted for an hour, and then settled into the most extreme pain in the loins, which continued for several days.

On the 9th, I was requested to see her; she had just recovered from a convulsion fit, and appeared to be extremely weak and reduced. On

examining the left thigh, it was found in an irritable state, and exceedingly painful on the slightest contact; there was still, however, some discharge.

On the 11th, she fell into a state of comatose stupor, in which she remained till the 13th, when she expired.

Examination.

The contents of the head were examined, and found to be perfectly healthy.

The viscera of the thorax and abdomen also, were entirely sound.

On laying open the left thigh, the integuments, the cellular substance, and what remained of muscular and tendinous structure, were all so consolidated into one firm mass by repeated inflammation and long disease, that it was next to impossible to ascertain the precise situation of the fistulous passages, several of which were found passing through the upper part of the limb.

The very unusual degree of firmness, and indeed hardness of the parts about the groin and inside of the thigh, had been remarked for several years previous to the death of this young woman, but on finding the impracticability of separating or distinguishing one structure from another in these parts of the limb after death, it was no longer matter of surprise, that they should, during life, have felt as hard as a plate of horn.

On exposing the femur, opposite the seat of the abscesses, it did not appear to have been affected. When it was intended to dissect down

to the hip joint, I found it to be impossible; for the soft parts covering the affected side of the pelvis were extremely hard, and so consolidated, that, when divided, there was no remaining trace whatever of muscular fibre, the whole resembling gizzard in texture and firmness.

A part of the margin of the acetabulum was at last exposed, and it was then found that the disease had so involved the joint, as to have terminated in a complete anchylosis of the bones.

The above were all the circumstances that appeared worthy of notice.

CHAP. IX.

ON DISEASE IN THE BONES OF THE SUPERIOR EXTREMITY.

HAVING proceeded thus far, it remains for me to make a few observations upon some of the most interesting cases I have yet seen of affections in the limbs; and, first, of those of the upper extremity.

CASE 106.

Disease, followed by Anchylosis, of the Shoulder Joint.

Anthony Murray, aged 50, was thrown from the top of a coach, in March 1811; in falling, he pitched with his left shoulder against the edge of the pavement, but otherwise escaped without apparent injury. He was awoke, the night after the accident, with a most severe pain in the shoulder; and, applying for advice, was recommended an embrocation, which was all that was done for the first fortnight. The increasing severity of pain soon deprived him of all sleep, and he then applied for relief at the Bath Infirmary, and was admitted. Strong sedative lotions, principally the Goulard's extract, were applied locally.

In the course of two months, a large abscess formed upon the fore-part of the shoulder, reaching thence downwards, almost to the elbow. It burst externally during the night, and discharged

a large quantity of matter. The opening, however, not being in a depending point, it was enlarged with a bistoury passed into the orifice, and run down to the bend of the arm, a distance of five inches.

Previous to the breaking of the abscess, the severity of pain obliged him to take opiates every night, which, although they failed in procuring sleep, certainly alleviated his pain.

The discharge of matter for the first three weeks, was very considerable. About this time, a second opening from the cavity of the abscess appeared, situated higher up than the first had been, and more towards the outside of the arm. This was soon succeeded by a third, which formed at the back of the scapula, opposite the infra spinatus muscle. A continued drain, of such an extent, materially impaired the constitutional powers; so that, in the course of a month, he was reduced to a state of the most extreme debility. He was therefore ordered the bark, and continued to take it regularly for four months, by which time, the discharge had become trifling, as the abscess was nearly healed.

During the continuance of the above suppurative action, any attempt to move the limb was so extremely painful, that he was obliged to keep his arm constantly in a sling. The shoulder joint, in the progress of the disease, became less painful than at first; but he was still occasionally distressed with a sensation of throbbing, and extreme uneasiness in the joint, as well as by a degree of

numbness, extending from the shoulder downwards, and affecting the whole limb.

At length the abscess quite healed, his constitutional strength exhausted, and his limb useless, he was carried in a chair down to the warm springs, and bathed regularly. When the painful and irritable state of the shoulder had become sufficiently quiet to admit of examination, the disease was ascertained to have terminated in anchylosis. The elbow joint also was found to be nearly as immoveable as the shoulder; but the rigidity of the muscles, it was hoped, might by degrees be removed, and he was therefore very judiciously put upon a regular course of action for the fore-arm, by which he eventually recovered its use. The baths were continued every second day for many weeks, and these he found very instrumental in relieving him from the remaining pains about the shoulder, and in forwarding the improvement of his health.

Subsequent to his recovery, the arm remained extremely emaciated, particularly about the shoulder; it appeared, in fact, completely stripped of its muscular coverings. The fore-arm, on the contrary, had entirely recovered its flesh and strength, so that those motions the scapula could not perform for the humerus, were the only ones in which the limb remained ultimately deficient.

In the above case, and in the history immediately preceding it, the cavity of the joint was probably affected by what Mr. Hunter would have denominated, contiguous sympathy,—an irritation resulting from disease carrying on in the vicinity of the

articulation. It appears that the most general effects of this irritation, are the various appearances produced by absorption of parts, although effusion also sometimes occurs, either giving rise to a collection of a serous fluid, a purulent fluid, or a new secretion of ossific matter, the consequence of which is anchylosis.

In Robinson's case, the appearances observed in the knee were referable to irritation alone, although it had operated to the complete removal of the natural structure of the crucial ligaments of the joint.

In the joint of the hip, which was nearer to the seat of the disease, not only was the round ligament absorbed, but the cartilage had lost its natural colour; and, from its striking resemblance to cartilages in other diseased joints, where I have seen commencing absorption, there can be no doubt that absorption was in this case also, on the eve of taking place. In Murray's case, the excitement went on, not only to the absorption of the cartilages, but also to the effusion of ossific matter; which effusion most probably takes place from the capillary arteries that carry on the circulation within the medullary cavities of the bones, behind the surfaces that form the articulation, as it is these arteries that furnish the ossific matter, in completing the figure of the bone, during its growth.*

The following case exemplifies the effects of in-

* This, and several other circumstances hitherto unnoticed, relating to the process of ossification, are demonstrated in some experiments and observations that I have laid before the Medico-Chirurgical Society, and which are published in the sixth Volume of their Transactions.

flammation and disease of soft parts in destroying the vitality of the subjacent bone.

Case 107.

Exfoliation from the Ulna.

C. Heavens, a healthy boy, aged nine years, in October 1810, fell down stairs, and bruised his elbow and fore-arm. The parts were painful, but the child, for several days, made no complaint, untill considerable heat and swelling came on. He was at this time brought to the St. George's Infirmary, and the arm was poulticed and fomented. The whole fore-arm was the seat of this inflammation, and an extensive abscess took place, the contents undulating between the integuments and muscles, from the elbow down to the wrist. In a month from the accident, the matter was let out. The puncture was made where the skin was thinnest, just opposite the middle of the ulna. The discharge of the matter, which was healthy pus, gave great relief. The state of the arm was now examined, and in following with the finger the line of the ulna, an unequal tumefaction of the bone was ascertained, extending nearly the whole length of the fore-arm. This enlargement of the bone was, in most parts, not sensible to pressure; in certain parts, however, a tenderness was manifest.

He went on comparatively well; but as the abscess did not granulate, it was judged necessary, about five weeks subsequent to the puncture, to enlarge the opening, with a view to prevent the possibility of the matter continuing to burrow along

the cellular membrane of the arm and wrist. Examination was, at this period of the complaint, attended with extreme pain. When the upper end of the ulna was held firmly, and the lower end gently moved to and fro, a peculiar grating sensation, as well as a degree of looseness in the affected part of the bone, were so clearly perceptible, as to lead to a suspicion that the two ends of the bone were either nearly, or totally disunited. The ulna, just below its middle, evidently diseased, the sharp spiculæ of bone producing, on the least pressure, a sensation like the prickling of needles, while the bare surface of the exposed bone was readily detected with a probe.

The discharge of matter was abundant; and fomentations were constantly applied till the end of the third month after the accident, when the external opening from the abscess was again enlarged, by extending it down to the wrist. This little operation gave much present pain, but so much subsequent relief, that he slept better the following night, than he had done for two months before. A few days after this, two small fragments of carious bone were found in the wound, and removed, and this relieved him from considerable irritation.

The arm now remained in a cool, quiet state for some weeks. The heat, tenderness, and swelling nearly gone; the extent of remaining ulceration trifling. On examination, the sensation of disunion in the bone was still perceptible, but less distinct than before. A considerable tumefaction of bone, along the inferior margin of the ulna, still remained.

Every thing went on quietly till the fifteenth week, when the arm suddenly inflamed, with great pain. Poultice and fomentation was again had recourse to, and in forty-eight hours the arm was deluged with matter. This attack, with much fever, distress, and watchfulness, had in three days formed three fistulous openings along the old line. The irritation had rendered the integuments thin as paper, and from the constant pricking pain there was evidently more bone to come away. The hand and wrist were pale, œdematous, and cold. He had scarcely any appetite, and a small pulse at 136.

From this low state he very slowly recovered, and while the suppuration still continued, near seven months after the accident, two more small fragments of bone came away; they gave little pain in their passage, but the florid and irritable appearance of the granulations arising from the wound, afforded a strong indication of further disturbance within.

Two months after this, several small fragments of bone came away without pain, and were soon followed by the appearance of a slender spicula of bone, that was gradually projected out from the orifice, near the elbow. On examination this was found to be the extremity of a large piece of bone of considerable length, which, after many careful attempts, was loosened and drawn out in a line parallel to the direction of the ulna.

From the feel, it was evident that the medium of connection between the living bone that re-

mained, and the smaller part, which was separated, was a bed of soft granulations; for although it was not very easily detached, it was supported only by an elastic yielding structure bearing it up, and admitting of some degree of lateral motion. Considerable bleeding followed the extraction of the separated piece.

From this time the arm improved, and in three months more all the wounds were perfectly healed; but there was still a degree of tumefaction upon several parts of the surface of the ulna; and the deep depression where the separated piece of bone had been thrown off, was very perceptible.

The integuments about the cicatrices were very thin, and closely adherent to the bone, which was firm and healthy, and no longer gave uneasiness on examination, or pressure. This tumid state of the ulna I examined two years subsequent to the healing of the last opening; but so slow are most of the operations of life, when connected with bone, that at this distant period, although sensibly declining, it was far from being restored to its natural smoothness of surface. *

From the progress and appearances observed in the following case, I am led to believe the affection commenced within the medullary cavity of the bone.

* Plate 5. *Fig.* 4. Exhibits the appearance of the external surface of the separated portion of the ulna, represented of its natural size.

a. The superior extremity, or that next the elbow.

b. The inferior extremity of the bone.

Case 108.

Inflammation of the Ulna, terminating in Anchylosis.

Mrs. Alstern, a middle-aged woman, of spare habit, supposed she had hurt her left wrist in correcting a little boy, in the beginning of August, 1812. The accident occurred on a Sunday, but she admitted that on the preceding Friday, some back premises being suddenly inundated by a heavy rain, she had been exposed to the wet and cold with her legs in the water for several hours while out of order. She did not herself, however, attribute any thing to this circumstance, because so far from its operating as a check, she remained unwell for three days longer than her usual time.

On the Monday following she found the two small fingers of the left hand were becoming numbed, and by the next day they had lost all feeling and heat, although some power of motion in them yet remained. On the Wednesday she experienced a considerable degree of pain in the bone, just above the wrist, and by Thursday morning there was some degree of œdema about the wrist, and back of the hand, with exceedingly acute pain. This swelling soon became red, and parched with heat; and the pain she described as being deep-seated, as "an aching in the bones." These symptoms increased, and by the following Monday had excited fever, thirst, and watchfulness.

In this state she applied to the St. George's Infirmary. On examination a considerable degree of inflammation and tumor was found, extending

over the whole of the hand and wrist, with severe, deep-seated pain. She was directed to apply a warm poultice of linseed meal and fresh water twice a day, which at the end of a week she thought had afforded her some relief. The application was then changed to linseed meal mixed with cold sea water, changed twice a day for a fortnight longer, when a little purulent matter appeared, by a small opening just over the situation of the radial artery of the wrist; the quantity, however, was so trifling that it afforded no relief.

On comparing the effects of the two applications, it appeared, that the warm poultice always produced some degree of immediate, but temporary relief; but that when the cold sea water poultice was wrapped round the parts, they became numbed and deprived of all feeling for the space of ten minutes, after which they always recovered, acquiring a genial glow of heat, and this usually became so considerable, that previous to the removal of the poultice, the steam might be seen to fly off from the surface of the poultice, which felt warm to the hand.

As often as the sea water poultice was applied, it gave a sensation of binding, or tightness to the parts, as if the skin had been drawn tight round the wrist. But although there was some ground for considering this poultice a stimulating application, the feelings of the parts were perfectly natural, the skin continuing to look clear and well.

Subsequent to the small opening taking place, the real state of the parts still remained obscure.

There was a hard, painful tumor upon the lower part of the fore-arm, but it was difficult to determine, from the feel and situation of the swelling, whether the radius or ulna, or both, were concerned in the disease. The swelling above the wrist was still considerable, but the hand was no longer affected with œdema. From the great pain that attended the least attempt at motion, it could not be ascertained whether the prone and supine actions of the bones were practicable. Flexion of the hand was, for the same reason, attended with difficulty. The tumefaction was pretty equally hard to the touch, but she could scarcely endure the slightest examination of it. Upon applying the thumb or finger to that part of the tumor which was upon the back of the radius, and then very gently bending the hand to and fro, there was a perceptible snap, or catch, felt within the tumor, a circumstance which confirmed the idea of the bones being affected most probably with enlargement, perhaps spina ventosa.

The whole of the mischief was in this case most probably attributable to exposure to wet and cold, during menstruation, as that discharge did not return for seven weeks afterwards; and as, when it did re-appear, the wrist was extremely painful, but from that moment the pains declined, and the parts soon began to improve rapidly.

She continued the cold poultices for five weeks subsequent to the turn of the affection, during the whole of which period she continued to mend,

although latterly, but slowly. After this she substituted the emplast. saponis.

In February, 1813, (six months after the accident,) the wrist was still improving. The tumor had entirely gone down, but there was still some appearance of fulness, but no pain whatever on handling, every thing now being perfectly cool and quiet.

A complete anchylosis had taken place between all the metacarpal bones (the third excepted) and those of the wrist, radius, and ulna. The permanent inconveniences, therefore, resulting from the disease, was the loss of the power of bending or straightening the hand, or performing the prone or supine actions of the fore-arm, as the motions of the fingers and thumb, with that of the elbow-joint, remained perfect.

The following case affords an instance of mischief produced by the inoculation of unhealthy matter, upon an irritable habit, in which the first effects were of so threatening a character, that it was not easy to foresee the event of the disease. But in the midst of inflammation, the natural energies of the parts were actively employed in preserving life. Where there was every reasonable ground for expecting destruction of parts, they recovered; where bone was destroyed, separated, and rejected, it was regenerated; and even in the bone which was separated, that part of it was still retained, which was most essential to the future powers of motion in the part, as well as most dif-

ficult, if not altogether incapable, of reproduction.

Case 109.

Diseased Finger.

M. Waterhouse aged fifty, was washing some foul linen, stained with the discharge from an unhealthy abscess, on the fifth of April 1815. Unfortunately she pricked her finger with a pin that lay concealed in the dirty clothes. The following morning, the finger, (the second on the left hand,) and the hand also, felt very stiff and painful; and towards night began to inflame. She applied to the St. George's Infirmary, and was directed to poultice and foment. The inflammation and swelling were violent, extending nearly to the elbow, and the glands in the axilla also became extremely painful.

On the tenth day from the accident, an abscess had formed and discharged copiously by an opening upon the back of the diseased finger, opposite the middle of the first phalanx. Soon after this, a second opening took place on the palm of the hand. The ulcerated opening on the back of the finger, extremely irritable and painful, enlarged rapidly. Part of the periosteum sloughed out, and nearly the whole of the first bone of the finger was exposed. About this time the feverish symptoms, the rapid, but weak pulse, and the general state of irritability began to diminish, assisted by opiates and bark; she soon found her strength manifestly improving. All the fingers of the affected hand

were more or less swelled, as well as the hand itself, but the disease appeared to be confined to the finger, by which the poison had been inserted.

By the eighteenth of May, the extremity of the finger had ulcerated into a deep hole, at the bottom of which lay the diseased, and sloughing periosteum. A probe gently passed into the ulcerated opening at the back of the first joint, found its way backward within the soft parts, and between the metacarpal bones, coming out by the ulcer upon the palm of the hand. From this examination it seemed very doubtful whether the metacarpal bone, in part at least, would not share the fate of the first phalanx, which was now evidently dead, and appeared to be almost separated from the surrounding parts.

The pain towards the base of the diseased finger continued to be extreme, although, with the exception of this part, every thing now looked favourably. It appeared that her distress and pain arose principally from the irritation produced by the separated piece of bone, upon the soft parts surrounding it.

On the sixth of June, a bent probe was passed under the first phalanx, but although, to appearance, perfectly detached, it required a very considerable force to move it; it was, however, loosened, and I then succeeded in raising it with ease from its vascular bed of granulations. The cavity bled freely, but for a few minutes only.

On examining the bone that had been extracted, it was found to be entire, except towards the extremity forming the joint with the metacarpal

bone, where it was separated, and the articulating end left behind; the object of this provision however did not then appear.

The immediate relief she experienced by the removal of what proved to be the only remaining cause of irritation, was greater than could have been expected. No longer in need of opiates, she slept much better the night following without laudanum, than she had been ever able to do by its assistance.

During the progress of the disease, a piece of sloughy tendon had made its appearance at the back of the finger, and had been cut off with scissars; but from the confused and swoln state of the diseased parts, it was not easy to determine the particular muscle to which it belonged. Indeed, there was at one time every reason to believe, that the whole of the affected finger at least, if not some part of the hand, would certainly be destroyed; the event of the case, however, proved favourable beyond expectation.

On the removal of the bone, the whole of the ulcerated parts quickly changed their appearance, and the abscess at the end of the finger healed up. The ulcerated opening at the back of the finger soon contracted itself, and the general tumefaction subsided almost as rapidly, as it had at first taken place.

When the bone was removed, the finger previously bent at an acute angle, might be laid straight out, but it was somewhat shortened.

On the removal of the bone, and the declension

of the symptoms, poultice was laid aside, and the parts were dressed.

Some care was taken to support the finger in a proper position, with little splints fitted to the parts. The ulcerated cavity on the back of the finger filled with granulations, and all remaining tumefaction having subsided, it was healed within two months. The attention paid to the supporting the finger, was found eventually useful, although it would have more perfectly answered its purpose, had the woman herself been more careful.

The parts gradually acquired firmness, and after some months, admitted of free and satisfactory examination, and it now appeared why the extremity of the bone had been saved, and what the constitution had been able to effect toward the eventual restoration of the natural powers. The finger was shortened nearly an inch, but the motion of the first joint upon the metacarpal bone was preserved, although the action of the third, upon the second phalanx, was nearly, and that of the second upon the first, was totally lost. From the feel and appearance of the mass of new bone, it had probably been secreted by the vessels of the remaining part of the periosteum, and I fancy the space occupied by the original bone, was permanently filled with soft substance, the ossific matter being deposited in the cellular interstices of the thickened and pulpy periosteum. The strength of the new fabric appeared to be very adequate to every useful purpose, but the injury sustained by the ligamentous, and tendinous parts around, neces-

sarily rendered the actions of the finger very imperfect; added to which, the junction between the new bone and the old articulating surface, ended in anchylosis. *

The various actions of the animal machine are so constituted in mutual dependance upon each other, that in disease as well as in health, new resources still appear, the aptitude and ingenuity of which it is impossible to consider without admiration; and indeed, when we reflect on these matters, with due attention, it is difficult to reject the idea of some invisible agency ever attending us, for the express purpose of regulating the movements of so complicated a system as that of the animal economy, although were our researches in this branch of philosophy sufficiently advanced, we should most probably perceive that the important functions assigned by an eminent German physiologist† to a Spiritus Archæus, necessarily result from a regular series of

* Plate 5. *Fig. 5.* Is an engraving made from the separated phalanx, represented of its natural size.

a. The body of the bone, the figure of which is changed by the general pressure from within the medullary cavity having induced a certain degree of expansion, or enlargement in the bone.

b. The extremity articulated with the second phalanx.

c. The opening formed by the irregular progress of absorption, with a view to the removal of the bone. This action had, in most points, reduced the bone to the state of a mere transparent shell.

d. The uneven line of separation, between the body of the bone, and the articulating extremity which formed the joint with the metacarpal bone.

† Stahl.

laws, some of which are common to all matter, and others peculiar to vitality.

In the animal economy it is invariably observed, that the more remote from the heart, the more weak is the impulse of the circulation, which ensures the observance of the following important rule, that whenever the actions and powers of the machine are called forth to any preternatural exertion, the most effective energy is evinced nearest the heart; in other words that where mortification in a soft part, or necrosis in a bone, require removal, the operation by which this removal is effected, ulceration in the one case, absorption in the other, are sure of taking place at that point where alone separation cuts them off at once from every connection with the source of life.

In the case just related we see this law productive of a consequence strongly illustrative of the harmony that pervades all the operations of nature. The inflammatory action of the soft parts of the finger, extending itself to the cavity within the bone, the soft medullary contents converted into a highly vascular granulating structure, commenced an active absorption of the internal parts of the bone; and as this action was progressive, a considerable part of the cylinder of the bone was actually removed by absorption before the rest was extracted; and the absorbing power of the granulating surface having been most actively engaged where the circulation received the most lively impulse, the articulated end next the hand was thus separated from the rest of the bone; the final re-

sult of which provision was, that the motion of the finger upon the metacarpal bone was preserved, although the joint between the first and second phalanx was lost, as one of the two bones forming the articulation was gone, and the secretion of ossific matter by the vessels of the periosteum connected with absorption of the cartilaginous end of the adjoining bone, terminated in anchylosis.*

* For a more particular consideration of the actions of bone in health and in disease, see the commencement of a series of observations upon this subject in the Med. Chir. Transactions, vol. vi. and vii.

CHAP. X.

ON SOME OF THE AFFECTIONS OF THE INFERIOR EXTREMITY.

Sect. I.

On Affections of the Femoral Artery.

THE situation of the femoral artery is such as to expose it but very rarely to injury from external violence, although I lately assisted in the operation for a diffused aneurism, in consequence of an accidental wound of that artery where the patient recovered. I have however seen another case not of frequent occurrence, where the same vessel formed a very large aneurismal tumor, and by the subsequent pressure of the disease, was obliterated; in consequence of which happy circumstance the patient's life was eventually preserved.

The first of these cases will probably be related by the surgeon who performed the operation*; the second case is the following,

Case 110.

Spontaneous Cure of an Inguinal Aneurism.

Stephen Lewis, aged fifty, perceived a small swelling at the left groin in September 1811. His

* Mr. Robert Keate.

attention was first drawn to the part by a throbbing sensation in it, particularly when standing up, which sensation he compared to a "beating like a heart." It was then not larger than a pidgeon's egg.

It increased slowly till March 1812, when it had attained the size of a large orange. About this time the parts covering the tumor were attacked with erysipelatous inflammation; and although this attack was, by proper treatment soon relieved, he found the aneurismal tumor more frequently painful afterward than it had been before. Its pulsations were much aggravated in severity, and he also complained of more or less uneasiness and pain throughout the whole limb.

His general health however, being tolerably good, he was still able to move about the house, notwithstanding the swelling in the groin continuing to increase, was in September 1812, equal in size to a large melon, and was frequently productive of paroxyms of extreme pain and irritation.

As the winter approached, these pains connected themselves with others of a spasmodic nature, shooting downwards through the muscles of the thigh and leg.

In the early part of February 1813, he was upon the water-closet, and in straining to pass a confined motion, he distinctly felt something give way within the tumor; and immediately afterward found that the scrotum, the upper part of the thigh, and the lower part of the abdomen, were swelling very extensively, while the projection of the original

tumor apparently diminished in the same proportion.

By the following day the extent and quantity of the diffused swelling was enormous, and the pain, both in the aneurismal tumor, and in the surrounding parts, was almost intolerable; added to which a considerable œdematous enlargement of the whole leg and thigh now served to increase his general distress.

The extreme severity of pain and irritation was from day to day relieved by the frequent administration of opiates, the effects of which were occasionally assisted by fomentations to the parts.

After some weeks' confinement to bed, the severity of his sufferings began to diminish, and by degrees he recovered so far as to be again capable of moving about the house.

In November 1813, he took a violent cold and cough, with which, and an increased pain in the extended seat of the disease, he was confined to his bed for near three weeks, almost without sleep.

During this attack he was seized with an unusually severe fit of coughing; when in a moment he felt something burst within the tumor, and turning aside the bed-clothes, found the bed first, and immediately afterward the floor of the room inundated with a discharge of excessively offensive, grumous and putrid blood, which poured out from a part of the integuments that had given way.

Mr. Heaviside, who had attended him regularly, visited him accidentally within a few minutes after

the swelling had given way. The quantity of discharge was at least equal to several quarts, and it appeared very doubtful whether he could survive the first effects of so tremendous a crisis.

For the space of three weeks after this event, the putrid contents of the aneurismal cavity continued to come away in such quantity that it was found necessary to change his bed-linen every day. In the course of this period several new openings formed in the integuments, while the general parietes of the tumor became thinner and more flaccid from the frequent evacuation of large masses of grumous blood and lymph.

By the end of the third week a quantity of sloughy membranous matter made its appearance at the largest opening, and this with care was by degrees separated and brought away, and proved to be a very large mass of thickened, sloughy, and putrid, cellular membrane.

The removal of this substance was productive of so much irritation and exhaustion, that notwithstanding every assistance, it was scarcely expected that he could live through the night; from that time, however, he began to mend.

On the evacuation of the contents of this immense tumor, the principal object, of course, was to support his strength, so as to enable him, if possible, to bear up against so great a discharge of putrid matter. With this view warm jellies, soups, wine, &c. were exhibited in small quantities every half hour, with the most unremitting attention.

Fortunately his appetite rapidly increased, and soon enabled him to gain strength, particularly subsequent to the removal of the large mass of slough. In the course of a month he was so much recovered as to be able, with the assistance of his nurse and his crutches, to move slowly about the room.

The progress of his improvement was now pretty uniform. The extent of the original abscess continued to diminish by the successive adhesion of the various parts of the parietes, until at length there was scarcely any remaining discharge.

The seat of the disease, however, has been occasionally subject to returns of ulcerative inflammation from the slightest causes, up to the present time, (December 1816,) although not to such extent as materially to reduce his strength.

He is able to stand upon the limb with tolerable security, and can walk pretty well with a stick, but the muscles on the anterior part of the thigh, which extend the leg, have so far lost their power, that when sitting on a chair he is unable to raise his leg and foot from the ground without assistance.

Sect. 2.

On Disease in the Bones of the Limb.

Case 111.

*Diseased Femur.**

J. Middleton, a healthy looking man, aged thirty-nine, was admitted into St. George's Hospital early in 1813. The following is the account he gave me of the progress of his complaints.

When about twelve years of age, he strained his knee in jumping. He said he fell suddenly on the knee, and found a pain as if it had been struck violently against a stone, which, however, had not been the case. In a little time the pain went off, and he thought no more of it till six months afterwards, when it again became troublesome with sharp pains shooting through it, as if pins were running into the joint. The pains were principally confined to a point rather above the inner condyle of the femur. The continuance of these pains soon produced a small swelling upon the part, with some degree of heat and redness, but no particular tenderness, except when pressed.

In this state he was sent to the Chester Infirmary, and was poulticed and fomented for three months, without any benefit. In fact it did nothing, for the swelling remained exactly as it was before,

* For the opportunity of learning the particulars, and observing the progress of the following case, I am indebted to Mr. Robert Keate, who kindly gave me permission to attend to the patient, while under his care in the Hospital.

and he, therefore, left the house. Subsequent to this period, the swelling slowly extended itself round the joint, becoming so much larger, that the lower part of the thigh was nearly as large as the upper, but the pain and redness was still confined to the original spot. The degree of stiffness and pain were such, that the limb was totally useless, and when he moved he was obliged to be carried.

In this state it remained for about twelve months, during which he was sometimes able to work a little at his business as a tailor. At times, however, he was unable to sleep for weeks together, from the sharp pains and sense of heat, which he described as situated in the bone. He was now again sent into the Chester Infirmary, where the surgeon considered it right to apply a caustic upon the integuments covering the original swelling, for the length of two inches. The caustic, confined by adhesive plaster, was allowed to remain on till a pretty deep eschar separated, and brought the periosteum into view. By this means an exfoliation from the bone, about two inches long, was soon afterwards liberated, and removed.

The wound was occasionally washed out with a syringe and some soap and water; the dressing was lint, and light bandage. By this plan the ulcer, in the course of a month, was brought into a clean state. He found his health much improved, for on removing the exfoliation, the pains left the limb, and the swelling declined, so that he was soon well enough to admit of being removed to

the salt water at Holywell. It was summer time, and he bathed every day, first in a pool left at low water among the rocks, and subsequently in the open sea.

The bathing agreed with him, and greatly improved his general health, as well as the ailing limb. He became capable, not only of moving the knee joint, but of bearing a considerable weight upon it, and after some time he was able to walk without the least assistance, or the least pain.

The sea-bathing was continued for six weeks, after which he for the first time came to London. He followed his business as a tailor for some time, and did very well; but he now chose to alter his mode of life, and went into the coach-making line. This change, he thought, eventually did him harm, for whenever he was engaged in lifting weights, and shifting or raising carriage frames, he was reminded of his old complaint, by feeling uneasiness in the bone, which felt as if strained, and ached for days afterwards.

He remained at the first manufactory at which he was employed, for nine years, when he got work at another shop, and continued there for four years more. During the last two years, however, he found his thigh very troublesome, and sometimes exceedingly painful. The pains about his knee occasionally extended down the leg, and up to the hip, and even round the loins.

By the severity and frequency of these attacks, he was at last prevented making any further exertion to work. He therefore applied to a medical

gentleman, who, from the account he gave, considered his complaint rheumatic. On this supposition, he gave him some pills that made him perspire copiously; they were very useful to him, for he immediately found relief, and was soon well enough to go to work again, and remained at his business for another year. His complaints, however, were relieved, but not removed. He then went to another coach-maker, in whose employ he had continued for the last seven years previous to his admission into St. George's Hospital. In the early part of this period he remained pretty well, and was always at his work; but, from being much exposed to draughts of cold air, while wet through, he took a violent cold, although he only felt it in the increase of pain in the affected limb.

From this time the pains never left him. They were most severe above the knee, for some distance up the thigh, but they frequently extended up to the hip, and down even to the toes: the severity of pain was sometimes productive of a degree of external swelling.

In 1808, he thought, that from the benefit he had formerly experienced by an open wound, he might perhaps be able to relieve himself by the same means. With this view, he laid on a piece of caustic, so as to produce an ulcer, upon the cicatrix of the former wound, and he found the experiment answer his expectation, for the severity of his suffering was much diminished, and his pains again became occasional only.

When the granulations were too abundant, he

cleaned the surface by applying caustic; and by varying the applications, he succeeded in keeping up a permanent drain, until the time he came into the Hospital.

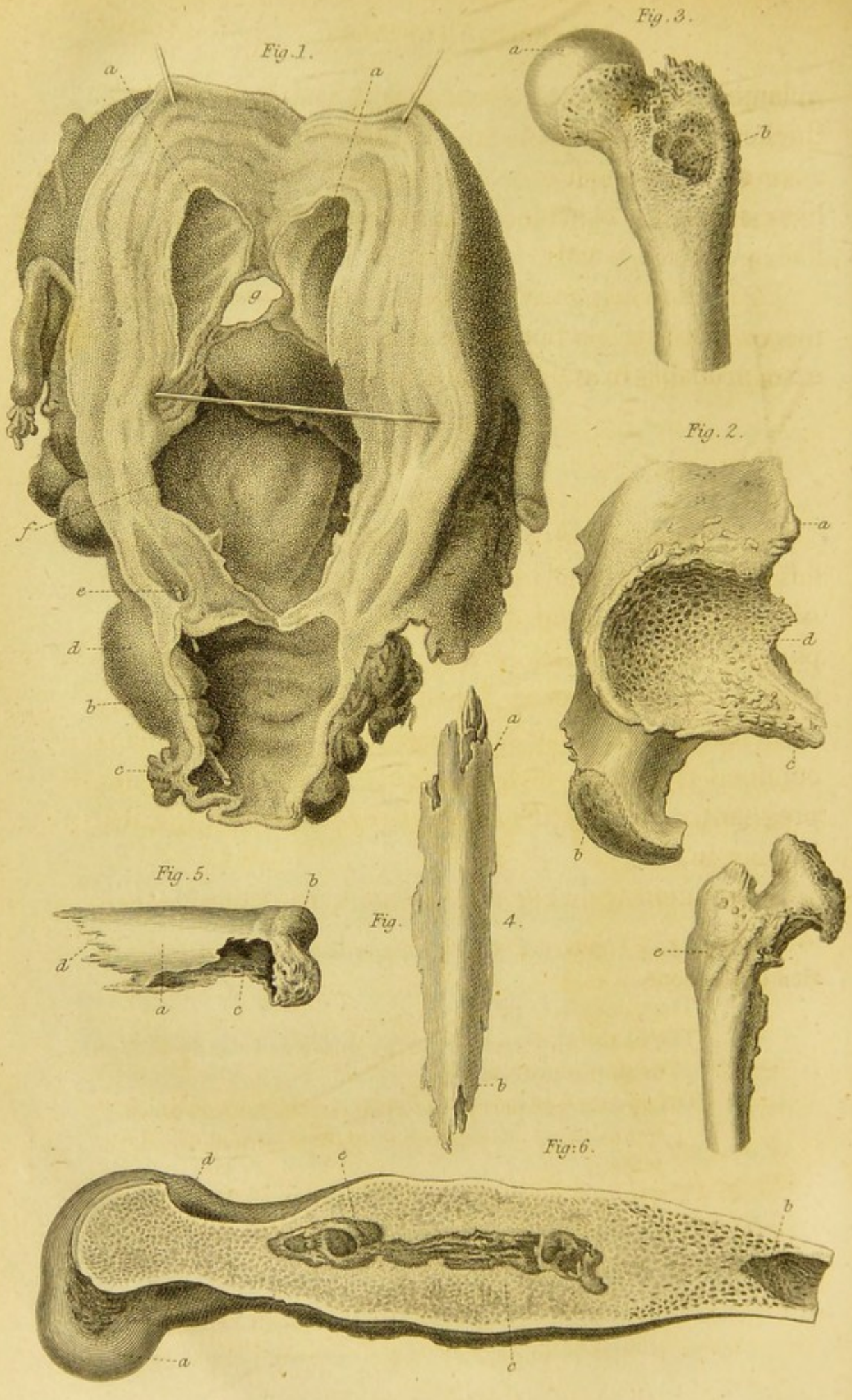
About three months previous to his admission at St. George's, a swelling rather suddenly appeared above the outside of the joint of the knee. From the heat and redness of this tumor, he was led to poultice and foment it for a week, when it was punctured, and a very free discharge kept up till the limb was amputated, April the 4th, 1813. The operation was performed high up, on account of the enlarged state of the bone.

On subsequent examination of the limb, several sinuses were found, leading outwards in various directions from the bone, with which they all communicated. The femur had suffered a very considerable degree of enlargement; which, however, was confined to the lower and middle parts of the cylinder, allowing of the bones being divided, in the operation, where it was perfectly sound.

From the appearance of the external surface of the bone, it seemed that the original inflammation had been productive of tumor, with abscess of the medullary cavity, from which there were two fistulous passages through the substance of the inflamed bone, answering to the situation of the fistulæ in the soft parts.

In order to expose the internal structure, the bone was divided by a longitudinal section, when the fine membranous lining of the general medullary cavity, which had been probably for many years in an

PLATE V.



J. Howship del.

J. T. Wedgwood sc.

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inflamed and diseased state, was found excessively thickened in its substance, exhibiting the appearance of a greenish or grey, purulent and sloughy, ligamentous substance, without any trace of the fine, pellucid, natural structure of the membrane.*

The following case affords an instance of disunion of the thigh bone, consequent to scrofulous disease, probably originating in abscess of the medulla.

Case 112.

Diseased Femur.

C. W. aged 36 years, felt a sudden pain in the left knee in going up stairs, on July 12, 1811; but it was not produced by any slip or fall upon the part. The sensation was that of a dull, aching pain, which prevented her from walking so freely as before; and, as it increased, she soon became confined entirely to her bed. She was at this time pregnant, and kept her bed for several months, till she lay in.

Subsequent to her confinement, her knee appear-

* Plate 5. *Fig.* 6. Exhibits, on a reduced scale, the section of the bone.

a. The condyle of the femur.

b. The healthy part of the bone, divided nearly as high as the trochanter.

c. The enlarged part of the cylinder, the texture of which however, is inadequately represented npon the plate.

d. The point at which a probe might be made to pass through the principal fistulous opening into the medullary cavity of the bone.

e. The appearance of the general medullary cavity, within which lay the sloughy and purulent remains of the membranes.

ed to mend. She got about, first on crutches, and afterward with a stick only. Her appetite improved, and she was able, not only to bear upon the limb, but also to move about the neighbourhood occasionally.

In January 1813, a degree of redness, with heat and increased pain, attacked the external part of the knee, just above the joint. It was poulticed and fomented for several weeks, when matter appeared, and the skin gave way: the discharge was trifling, but the abscess continued open. She thought herself better able to move about on her leg now than before.

All the following summer she remained tolerably well, and was able to walk two or three miles a day comfortably, with a stick only. On the approach of winter, however, she found her leg worse; the stiffness in the limb being greater, and the power of motion less. It became tender, heated, and painful, just above the little opening that remained, consequent to the first gathering; and after two months poulticing matter came forward, and two more openings formed rather above the first.

A fresh inflammation now commenced, as high up as the middle of the thigh, upon the posterior part of the limb, and this continued increasing till March 1814 when it broke, and discharged much more in quantity, and was attended with more relief than either of the former abscesses. Previous to this abscess bursting, she had been confined to her bed, but on its opening she had improved, and was able to move about the house tolerably well.

During the summer she was poorly, but continued to move about to a certain degree; but on the return of winter she found her pains increase, with which she became so helpless as to leave her bed with difficulty. About three weeks before Christmas, she had been, for several days, in more severe pain than usual, and was sure, from her own feelings, that fresh matter was forming, and also that the pain was now confined entirely to the bone.

Whenever it was necessary for her to move from the bed, she was now obliged to be assisted; and on one of these occasions, while being helped from a chair into bed, her hand slipped, she was near falling, and at that instant felt something snap, or slip, in the bone of the affected part of the thigh. Immediately after this accident, more severe pains, aching and shooting in the bone came on, producing loss of appetite and watchfulness.

Although now confined entirely to her bed, she still occasionally sought some refreshment, by endeavouring to shift into a new part of the bed; but in these attempts she never succeeded to her mind; extreme increase of pain always prevented her, as she found she could never allow the ailing limb to be moved in the least possible degree.

Soon after these events, she observed that the limb was gradually assuming a new position, the external part of the thigh, (as it lay on its outside) projecting so as to form an obtuse angle about the middle of the bone; and before long it

became sufficiently evident that the upper and lower parts of the bone had become dis-united. The suppuration within the limb continued, and there was now a constant oozing of matter from all the external openings.

In March 1815, a little pustule made its appearance about the middle of the thigh. A drop of matter found its way through the skin, and in wiping it away she observed that the cloth caught a small point, which on feeling it, she concluded was a needle that had somehow or other, got into her thigh. It turned out, however, to be a small spicula, connected with the diseased femur, which on examination, was ascertained to be separated rather below its middle.

The deformity in the figure of the limb became every day more obvious, until at length the irritable state of the parts exciting frequent spasmodic action in the muscles, the two parts of the thigh were brought to lay at right angles with each other. The small opening through which the spicula of bone had appeared, soon formed a very extensive ulcerated cavity, in the bottom of which lay the extremities of the diseased femur.

In the course of a few weeks the lower point of the upper end of the bone was elevated, so as to project through the external opening of the ulcer, of a black colour, and in a state of necrosis. The situation of the sinuses, the general state of the soft parts of the limb, the evident condition of the bone, but especially the large suppuration and evidently scrofulous habit of the patient, were so many

proofs that there was no justifiable ground for proposing any operation; for amputation required the soft parts to be sound above the disease, and the removal of the ends of the bones, with any prospect of their subsequent union, appeared to me to require the bone to be in a healthy state, instead of which it was evidently necrosed.

In September, she remained much the same, except that the suppuration was becoming more considerable, while the increasing extent of the ulcerated cavities among the muscles in the upper part of the thigh, and the extensively diseased state of the bone, entirely set aside any idea of removing the limb.

Subsequent to this period, however, she was induced to submit to an operation. The ends of the bones were exposed, and removed with a saw. The piece removed from the superior portion of the femur was, on examination, found to be necrosed at its internal part, connected with the medullary cavity, and was going through the process of separation from the external part of the cylinder, which was sound.

It appears that no effort was anticipated on the part of the constitution towards the union of the divided extremities of the bone; the limb eventually remained of the same distorted figure as before the operation. She continued to live in this helpless state for many months, till the end of September or beginning of October 1816, when she died from an attack of inflammation in the bowels.

In the following case, a comparatively trifling

accident was the means of exciting an extensive inflammation upon the tibia, connected with much constitutional disturbance.

Case 113.

Exfoliation from the Tibia.

In September 1808, W. Simpson, a strong country lad, a recruit in the 82d Regiment, struck his shins against the edge of a wooden bedstead. He paid no attention to so slight an accident, nor felt much pain till three weeks afterward, when the slight graze upon the right leg suddenly inflamed, and quickly became a spreading irritable sore; while on the injured part towards the outside of the left leg, a tumor arose with inflammation, and this breaking as a boil, soon formed a painful wound, nearly as bad as the other. When his legs began to inflame, he was reported, and taken into hospital.

The appearance of the ulcers, at first healthy, became in a few days foul and sloughy. The ulceration extended itself rapidly upon an angry and irritable basis, all purulent secretion ceased, giving place to an oozing of offensive, serous ichor.

With these local changes, the constitution sympathized. The pain was constant, and severe beyond description. The skin was parched with heat; the tongue, at first white and dry, soon assumed a brown cast, and in the progress of the affection was covered with a black fur. The pulse was at 120, and extremely small.

The severity of the pain entirely prevented him

from sleeping, and in a few days he fell into a confused kind of stupor, alternating through the night with low delirium.

With a view to diminish the extreme irritation, he had at first taken opiates at short intervals, and this plan was pushed until, in a week, he took every day five grains of solid opium. This remedy, however, gave him no relief whatever, and was consequently laid aside, and in its stead I now directed the digitalis; and he took thirty drops of the tincture every three hours. This remedy, like the former, was soon laid aside. It was continued for three days, but as it neither diminished the frequency of the pulse, nor the intolerable severity of the pain, it was given up.

The ulcerated parts had been fomented, and under this treatment, they were now throwing off repeated sloughs, and were spreading very fast.

October 12th. The intensity both of pain and fever being extreme, and the event appearing to be every hour more doubtful, I thought it right to make trial of some vegetable applications locally, and began with the fresh root of carrot, prepared by rubbing it through a large tin grater. The mass was laid as a thick poultice, and applied to each leg, the ulcers being previously covered with lint spread with the urguent. ceræ.

The astonishing change produced by this application, was as sudden, as it was unexpected. In two hours, the intense pain in the parts, was for the first time greatly relieved, and the same night he had several hours natural sleep. The following day he experienced a degree of ease he had not

enjoyed since his illness. The carrot poultice was changed three times a day. In three days a large slough had separated from each leg, leaving a clean surface.

On the right leg, the tibia, for the extent of more than two inches, was now exposed. But on the left, the periosteum remained, and appeared healthy.

On the day of his favourable change, he began taking bark, and was ordered porter, with as nutritious a diet as his stomach would bear. As the feverish symptoms declined, being no longer kept up by the intense pain in the leg, his natural sleep and appetite improved daily.

On close examination, the central part of the exposed bone, which was found to retain its natural appearance, was surrounded by a rough and somewhat elevated surface. He still complained of occasional shooting pains darting longitudinally through the tibia, and whenever these returned, they left a sense of numbness behind them, extending through the limb.

November 6. The exposed part of the bone was again examined; it had been observed a few days before, that on making some degree of pressure at the upper end of the exfoliating piece where the bone was pressing upwards beyond the general surface of the tibia, that the piece retired, and sprung up again. This experiment had been attended with some pain, but trifling in comparison with the least of his former sufferings.

He found his strength so greatly improved, that he made an attempt to get up, but the exertion was more than he was equal to support. The pulse

had fallen to 90, and was becoming full again, though soft. The purulent discharge from the ulcers was very abundant, particularly round the margin of the exfoliating piece of bone.

The pain in the leg continued to decrease, and the general health continued to improve till November 24, when he took a violent cold, and complained of severe pains in his limbs. This attack fortunately, was not the means of increasing, in the least degree, his local uneasiness. He was directed to take the compound powder of ipecacuanha every evening, and this presently removed his cold.

A few days after this he observed that the pains in his leg had much increased since he had left off taking the bark, upon which account, his cold being removed, the cinchona was again ordered, and his limb, in a day or two, became easy again.

The exfoliation was observed to be gradually rising, and at the upper end was advancing with the quickest pace; the granulations that had previously covered that part of the bone were progressively removed by absorption, and the extremity of the exfoliating piece was raised to a level with the external surface of the leg.

The appearance of the absorption of the granulations was as if the mass became every day narrower than the day before, by which the margin next the centre of the exfoliation was as it were drawn insensibly back towards the external circumference of the ulcer. This process was completed on November 30, on which day the edge of the separated piece of bone was completely exposed.

The disengaged margin of the bone was now very gently elevated with a probe passed under it, and separated from its soft vascular bed; in this way it was separated without the least pain, and almost without shedding a drop of blood. The surface from which the bone had been raised was a very vascular, tender, granulated mass, which formed the only remaining medium of connection between the exfoliated portion of bone, and the body of the tibia.

The exfoliated piece was cleared by maceration, and then examined with a microscope. The central part, as above noticed, retained its natural appearance, but the surrounding surface appeared raised up into the finest open texture, which, on subsequent examination, was found to be produced, not by any disturbance of the natural structure of the bone, but as the result of a new deposit of ossific matter between the surface of the periosteum, and that of the bone; dependent on that peculiar increase of activity in the circulation, which Mr. Hunter styled the ossific adhesive inflammation.*

In this view of the appearances the central surface of the bone pointed out the extent of periosteum which had perished from the primary effect of the blow, so that upon this spot the surface of the bone

* PLATE 6. *Fig.* 1. Exhibits the exfoliated piece, of its natural size.

a. The central part of the exfoliation where the appearance of the natural surface of the bone was unchanged.

b. The surrounding part of the surface, upon which may be observed the traces of the increased vascular action which took place in the periosteum preparatory to the process of separation in the bone.

could not inflame, although the injury sustained by the membrane covering it soon excited inflammation, and its consequences, on the surrounding surface.

December 2. With a view to ascertain how far a continuance of the same local treatment was necessary, the carrot poultice was laid aside, and the ulcer dressed with lint, spread with the calamine cerate. Under this treatment the ulcerated surface lost in two days every character of health, the circumference became larger, the surface oozed out an ichorous sanies, instead of secreting pus, and the granulations appeared here and there streaked with threads of coagulated blood; with these changes, the limb had also become extremely painful. The carrot poultice therefore was replaced, and in the course of a day or two, it brought every thing round again, and the margin of the ulcer had begun to form new skin as actively as ever.

December 10. He requested to be allowed to take the bark more frequently, for the pain in his leg was troublesome, and he said he always found great relief by taking more of the medicine than ordinary. There being some reason to believe the carrot poultice did not agree so perfectly as at first, the root was directed to be boiled before it was grated. This change was for the worse, as evinced by the more frequent darting and severe pains through the bone and limb, which were so troublesome that in a few days the fresh root was again applied.

From this time the ulcers went on favourably;

that upon the left leg healed very rapidly, and that upon the right improved as fast as the nature of the injury would admit; but as he subsequently obtained leave to go home to see his friends, he left the hospital, and I heard no more of him.

Case 114.

*Diseased Tibia.**

Thomas Ivis, a strong country lad, aged seventeen, was at plough the first week in December 1811, and from being wet the whole day, caught a severe cold; it did not however prevent his sleeping well the following night. The next morning he thought he had got the cramp in his leg, it felt so stiff and painful, but he was again at plough all day, wet and cold. In this way he went on, becoming every hour worse with pains extending through his leg and knee, till on the fifth day he was no longer able to leave his bed.

His leg had now become much swelled; it was hot, very red, and exceedingly painful. Added to this, he was feverish, with great thirst, and extreme restlessness.

He lay without advice for a week, at the end of which period the swelling upon the leg had much increased, and the integuments covering the tibia, near the knee, gave way from excessive distention, and a watery lymph oozed out from the fissure, but without any appearance of matter.

* For the opportunity of observing the progress and event of the following case, I am indebted to Mr. Brodie, whose kind attentions to me on various occasions, I feel much pleasure in acknowledging.

A medical gentleman in the neighbourhood was now sent sent for, and directed the application of a saturnine lotion, which was continued for a week, when an abscess had formed, and burst externally, by a small opening over the tibia; a considerable quantity of matter escaped, and the discharge continued for some time to be abundant.

A second abscess formed soon after the first, but higher up on the leg; and this also broke externally. He was then told that the bone was affected, and was desired to poultice and foment. This plan was followed for three weeks, when he was brought up to London, and carried into St. Thomas's Hospital.

The opinion given by the surgeon was, that the mischief was situated in the tibia, and that it was inflamed. For twelve weeks poultice and fomentation formed his treatment, the pains in the bone continuing to be constant and distressing. The constant pain was of a dull, aching kind, but this alternated with occasional shooting pains, most violently acute.

The small openings upon the leg still discharged very freely. They were, therefore, examined with a probe, and being found to communicate, they were laid into one.

His general health about this time was excellent, all his feverish symptoms having entirely left him. The poultices were, therefore, laid aside, some light dressings applied, and retained by adhesive plaster.

He left the hospital December 15, 1812, the swelling, as well as the pain in his leg, very much

diminished, and his strength so far restored, that he was able to walk with crutches. He returned into the country by the waggon, and was carried to his own house at Wickham, in Kent, where he remained till November 11, when he again came to town, and was admitted into St. George's Hospital. At this time about an inch of the anterior surface of the tibia was exposed, having been dressed regularly for some weeks with lint moistened with the tincture of myrrh.

Soon after his admission into the hospital, the granulations became so abundant, that it became necessary to lay open the wound. With this view some caustic was applied, and the parts subsequently poulticed.

From the circumstances of the case, it appeared probable that some dead bone might be confined within the cavity of the inflamed tibia, and this suspicion was rather strengthened by the examination of the cavity with a probe passed in through the fistulous openings in the bone; but on removing a part of the external covering, so as to expose the medullary cavity with the saw described by Ambrose Parey, and since recommended by Mr. Hey, no appearance of necrosis was found.

The limb was amputated January 14, 1813, and the boy did well.

On dissecting the leg, the whole of the tibia, with the exception of its lower extremity, was enlarged to four times its natural size. The bone was divided longitudinally with a saw; and the cancellated structure, as well as the solid sides of

the cylinder of the bone, were in some parts of a compact, but in others of a more open texture. The fistulous openings, on the external part of the bone, were found to be connected with the general medullary cavity, the natural contents of which were, for the most part, reduced by inflammation and suppuration, to a thickened and sloughy state, exhibiting membranous shreds and purulent matter.

It was a remarkable circumstance, that the fistulous channels of the bone were filled with a glairy transparent, gelatinous matter, although the cavities within the bone exhibited nothing of that kind, containing purulent fluid only.

The following case may be considered as an instance of one of the most painful diseases to which the human body is liable. I watched its progress with attention, and it seemed in its external characters to resemble a spina ventosa; on dissection, however, it proved otherwise. It was unfortunate that the patient could not be persuaded in time to allow amputation to be performed, as there is every reason to believe that, in the early progress of the affection, the operation might have saved her life.

Case 115.

Ossific Tumor upon the Tibia.

Mrs. O., a robust, heavy woman, aged forty-eight years, in April 1814, first perceived a degree of tenderness, and some pain, upon the upper part of the tibia of the right leg. This she attributed to her having struck that part of the bone rather

smartly against the edge of a drawer, in shutting it, but could not suppose she had materially injured her leg by so trifling an accident. A small tumor, however, appeared soon afterwards, not painful when let alone, but extremely irritable when meddled with.

This tumor slowly increased. Its situation was just below the tubercle for the insertion of the ligament of the patella.

January 26, 1815, she applied for assistance as an out-patient to the St. George's Infirmary. The swelling had at this time reached the size of a large orange, having a very broad base. In some parts it was extremely tender, but in others less so. There was not the least discolouration of the skin, and she was still sufficiently well in her health to move about on crutches, with her leg supported in a sling.

February 24. She was in constant, and severe pain. The continual pain was a dull and aching kind, but this was frequently aggravated by the most severe lancinating pains, shooting in every direction through the tumor. Various applications had been made to the swelling, but to no purpose. Warm poultices and fomentations were, therefore, applied, and she fancied they were productive of some relief.

From the extreme irritation and pain, a degree of œdema was taking place, particularly about the basis of the tumor, so that the firm and almost hard feel of the swelling, heretofore one of its most striking characters, was almost lost. The quantity of lauda-

num she took every night was two drachms, and it only served to lull the violence of the pain, without procuring sleep. At one point there was a part that projected beyond the general surface of the swelling, and this was so much softer than the rest of the tumor, that it was doubtful whether it did not contain a fluid. This projection, however, became in the course of a fortnight, less observable.

In March, a small opening took place in the skin covering the soft part of the tumor, and a little purulent matter escaped, but the quantity was so inconsiderable that it afforded her no relief from the violence of pain.

About the middle of April several hæmorrhages took place, the blood flowing out by the external opening. On one of these occasions the blood was allowed to run off into a basin, and about a pint and a half was set aside till the next day. Its texture was loose and poor, and the weak crassamentum bore too small a proportion to the serum. The bleedings, however, afforded her no relief whatever from the severity of pain.

April 29. The tumor had attained the size of a small melon, and was continuing to increase daily. In some parts the surface was uneven, and in others the integuments were becoming livid. The small opening now very soon fretted out into an extensive sloughing ulcer, and as the sloughs separated, it exhibited a firm, fungous, or fleshy granulating surface.

From the repeated and severe losses of blood,

as well as from the constant pain, she was reduced to a state of great weakness and exhaustion.

May 9. The general tumor exceedingly increased. Several of the tubercular projections had ulcerated through the skin, and from the extreme irritation had extended themselves so rapidly, that in a few days they had all run into one, with the original ulceration, which still continued sloughing. The whole mass of the tumor, in fact, appeared strongly disposed to fall into a state of gangrene.

May 10. On removing the warm poultice, the whole of the disease was subsiding very fast into a mortification. A thin ichorous fluid poured down abundantly from the gangrenous parts, whenever they were exposed. The violence of the pain was now on the decline, and she said she was easier than she had been for many months; but the pulse was so weak that it could scarcely be distinguished at the wrist. In the course of the following night she expired.

Examination.

In the obtaining leave to examine the state of the disease, many difficulties occurred, but they were by various expedients, fortunately overcome, although permission was at last granted only on condition that five female friends should be present; however, the intolerable fætor of the parts, when partially dissected, aided by a few remarks upon the causes of putrid fever, succeeded in driving them very quietly, one by one, out of the room.

A circular incision was first carried through the

integuments round the basis of the tumor, and the dissection from this line was extended upwards and downwards, so as to expose the muscles and bones above and below the joint of the knee. The knee-joint was sound, and the femur perfectly healthy. On examining the parts behind the knee, a considerable tumor made up of smaller masses, was found pressing out the solæus muscle, and proceeding from the tibia. This mass, when cut into, or pressed, was found to be of a pulpy white structure, resembling that of the brain; in several parts it contained small putrid cavities, partially filled with blood.

The tibia was separated at the joint, and the upper parts both of tibia and fibula were then divided with a saw about the middle of the leg, to admit of a more accurate subsequent examination of the disease.

The anterior parts of the sloughing and bleeding tumor, when the integuments that yet remained were dissected away, exhibited a fungous or granulated mass of red flesh, resembling very much the appearance of a cancerous ulcer. To the feel it was particularly firm, and what appeared curious was, that wherever a small part of the surface of these granulations, one eighth of an inch thick, was shaved off with a scalpel, it cut nearly as firm and as even as cartilage; it was subsequently ascertained that it derived this firmness from a fine reticulated or honeycomb ossific structure, of which, on further enquiry, it appeared the whole of the large anterior tumor was composed. But

as I am at present engaged in rather an extensive practical enquiry into the healthy organization and diseased appearances of the bones, the more particular circumstances and minute appearances observed in the present case, will probably be reverted to, upon some future occasion.*

The articulation of the ancle, considering its importance in sustaining the weight of the body, and the form of the joint itself, appears to be rather inadequately supported; and referring to observation, we see that in weak habits, where the relaxed state of the muscles and ligaments add to the insecurity of the joint, the least inequality of ground is sometimes capable of oversetting the foot, the consequence of which accident is strain or laceration of the ligaments of the articulation, sometimes connected with fracture.

The general observations that relate to affections of the hip, will apply to injuries of the ancle joint. The situation of the part is unfavourable to its recovery from the effects of external violence; but the greatest difficulty exists in the very nature of the parts injured. Ligamentous parts in general enjoy a very small measure of vitality, and consequently remain so long in a state of weakness, after having suffered injury, that it almost always happens that they are

* PLATE 6. *Fig.* 2. Exhibits, upon a reduced scale, the appearance of the disease, when set together, subsequent to maceration.

called into action again before they have recovered themselves, which cannot fail to aggravate the consequences of the original mischief; and when the irritability of ligamentous parts is once roused, the affection, although slow in its progress, generally proves obstinate, and very frequently altogether unmanageable.

Case 116.

Strained Ancle terminating in Disease of the Tarsal Bones.

Susan Evans, a servant woman, aged thirty-seven, in October 1810, strained the outer ancle of the right foot, by the ring of her patten giving way. She was near falling, and the joint was thrice turned aside with considerable force before she was able to recover her feet. A swelling formed upon the outer ancle, which in the course of a week became very painful towards evening, and through the night. The sensation was that of great heat and sharp pain shooting through the joint. The severity of the pain prevented her sleeping, but there was no redness or heat externally.

About a fortnight after the accident, Dr. Denman, who happened to be attending in the family, was kind enough to look at it for her, and ordered leeches, cold lotions, and an opiate at night. These means, however, proved unavailing, and finding herself worse, she obtained a letter for St. George's Hospital, and was admitted January 23, 1811. The swelling, pain, and consequent

want of sleep, were still the only symptoms, there being no appearance of external inflammation.

She was at first sent into a physician's ward, where her complaints were treated as rheumatism. She took a variety of saline and other medicines, which succeeded in preventing the return of the evening exacerbation of fever. The pain and swelling were also much "soothed" by the constant use of warm fomentations.

The above treatment had been continued for about six weeks, when the nurse accidentally laid on a fomenting flannel so much too hot, as to scald her violently. The whole foot immediately inflamed, and a swelling formed upon the inner ancle. This swelling soon threatened to form abscess, to prevent which a large blister was applied, extending round the instep, and the fomentations were laid aside. This change seemed only to increase her former sufferings. The swelling, the violence of pain and of irritation about the joint increased, and the blistered surface excreted a gelatinous matter instead of serous fluid.

She was now removed into a surgeon's ward, where the joint was first wrapped up in the cerat. sapon. and a close bandage. This plan disagreed with it, the pain increased towards evening to so violent a degree, that in the night she was at times delirious. Early the next morning the bandage was relaxed, and she then became easier. On examining the joint, poultices and fomentations were again directed; under this treatment

the swelling on the inner ancle soon burst, and discharged freely. That on the outer ancle broke about three weeks afterward.

The abscess on the external ancle appeared to be for some time disposed to heal, and occasionally discharged but little. When, however, it seemed to have healed up, there was still an oozing of a serous moisture, which escaped by several minute openings in the integuments; so that these abscesses in point of fact, remained unsound, to the time of her leaving the hospital, on the 14th of May.

The discharge from the wounds was trifling, and she had very little pain. She was not, however, able to bear upon her leg in the least degree, nor could she even allow it to hang down, for in that position the pain invariably increased. From the hospital she was carried down to the Margate packet, where she had a bed laid for her upon the deck. On reaching Margate, she was received into the Sea-Bathing Infirmary.

Six days subsequent to her arrival, she was placed in a warm sea-water bath at 96°. The instant of her immersion, she felt her foot and ancle become tight and full, as if, to use her own words, it was "clenched, or bound in iron," and this sense of tension had not entirely left the parts when she bathed the second time, four days afterward. The second immersion much increased the sense of tightness, and indeed brought on some degree of inflammatory action. On the fourteenth day after her admission, she had the third and last

warm bath; it seemed to aggravate the inflammatory disposition, and a third abscess formed above the inner ancle, which opened through one of the old wounds.

The discharge from the outer ancle, was also much increased by this fresh attack, and she found herself more seriously ill upon this, than any former occasion, but with the assistance of warm bread and milk poultices, and rest, she was in the course of a month, very materially relieved.

With a degree of patience, reflecting infinite credit upon the managers of that useful Institution, she was allowed three months to recruit her health, and in September, she commenced bathing in the open sea. The immersion was repeated three times a week, and in general respects, agreed very well. She still, however, felt the same peculiar sense of fulness and tension about the ancle-joint on the bathing days, as before; but it was not followed by inflammation. The cold bath, almost completely succeeded in restoring her constitutional health. During the use of the cold bath, the dressings were simple ointment, and occasionally a fomentation with warm sea water, from which she said, she found great comfort.

The bathing was continued up to November, when she returned to town.

Increased uneasiness and pain were the first consequences of the fatigue of her journey up to London, where she was again admitted into St. George's Hospital. She was first directed some saturnine lotion, with the ung. hydr. nitrat. rub. for a dressing.

But a renewed swelling and inflammation coming on about the ancle and foot, these applications were in three weeks laid aside, and a Goulard poultice was ordered instead. Her constitution had been so much impaired by this last attack of inflammation, that from the constant pain and watchfulness, she was frequently delirious, and but rarely free from a degree of confusion.

In December she left the hospital, and went into lodgings, where she yielded to the persuasion of a friend, who advised her to apply some advertised remedies. She had a black ointment to lay upon the ulcerated parts, and some pills to take every night. The pills made her violently sick at the stomach, and the ointment created her so much extreme pain, that her sufferings exceeded all she had before gone through.

She was, notwithstanding, prevailed on to continue her remedies for the space of six weeks; they became by degrees more tolerable, but finding no relief from their use, she at length applied for assistance to the St. George's Infirmary, where she obtained admission.

On examination, the soft parts about the instep were found thickened, diseased, and irritable. Opposite each ancle were several fistulous openings, by which a probe struck at once upon the rough surface of some dead bone. The pulse was exceeding weak and small, at 130.

In this state of parts, the removal of the limb seemed the only means likely to save her, but she

would not hear of an operation, and was therefore ordered to poultice and foment.

By these means, in the course of a few weeks, she found the severity of pain much alleviated; the general tumor also, about the instep, was somewhat diminished. There was a constant and very free purulent discharge from all the wounds, with the fætor peculiar to diseased bone.

It is scarcely necessary to add, that this poor creature continued to decline, till at last, completely exhausted, she expired, April 24, 1812.

Examination.

On removing the integuments covering the joint, the whole of the tarsal bones were apparently diseased, they were entirely detached from the surrounding soft parts, and for the most part black as charcoal. The cancellated structure in some parts of the diseased bones, had lost its natural elasticity, having become as brittle as bone that has been calcined, a circumstance which argued its being deprived of its gelatine.

The whole of the periosteum, about the affected bones, was converted into a diseased, pulpy, and putrid mass. The inferior and anterior part of the calcis, with the adjacent surfaces of the cuboides, and cuneiform bones, were completely carious. In addition to the above appearances, the inflammatory ossific action had produced a partial deposit of ossific matter, upon the posterior part of the os calcis.

CASE 117.

Dislocation of the Ancle, with Fracture of the Fibula.

Hannah Adkins, aged 49, a healthy, hard working woman, was getting out of bed one night in May 1809, when her leg somehow gave way, and the foot turning violently outwards, she fell to the ground. On attempting to get up again, she found herself unable to stand upon the foot, which on examination, early the next morning, had lost its support, from the fibula being broken a few inches above the joint.

She was taken into the St. George's Infirmary, and the limb kept cool for some days with a saturnine lotion, the fractured bone being preserved as nearly as possible in its natural position, by a splint on each side.

Subsequently, the limb was put up in the manner usual in fracture. At the end of six weeks, the broken bone being firmly united, in a very accurate line, the woman endeavoured to bear upon her foot, but found it extremely weak, and insecure. After a week's perseverance she was able to bear on it with some weight, but it every now and then turned under her, as in the original accident. This failure was attributed to the probable laceration of the ligaments of the joint, at the inner ancle, perhaps connected with the rupture of some tendon; but it might also, in a certain degree, be owing to the articulation receiving less support than before from the fibula. Whenever she brought the weight of the body to bear

upon the foot, it was so prone to turn aside, as to be scarcely adequate, with painful exertion, to support any considerable weight.

She, however, left the house, and worked about on it as well as she could, for three months, when it became so much weaker, that she was under the necessity of again applying for assistance. An instrument of iron was now made for her, to operate as a stay and support for the articulation. There was a joint opposite the ancle, and a laced boot below, into which the foot was secured. The apparatus was fitted to the outside of the leg, and just above the ancle, a strap passed round the tibia, so as to confine the bearing of the bone nearly to a parallel line with that of the foot in its natural position.

This contrivance answered the purpose very well, and she continued to wear it, till the boot was worn out; although she sometimes seemed to consider the instrument an hindrance, rather than an assistance to her, in walking.

In May 1813, four years after the accident, I met her walking exceedingly well, without even a stick. She said, she found her ancle strong enough to allow of her walking more than four miles out and back the same day, without inconvenience. The joint however was still weak, but having recovered much of its strength, was not so liable to give way as it was formerly. *

* Plate 6. *Fig.* 3. Shews the appearance and bearing of the ancle, subsequent to her recovery.

CASE 118.

Dislocated Ancle, with Fracture of the Fibula.

Mrs. Mills, a robust heavy woman, aged fifty-two years, in descending some stairs, January 8, 1810, mistook two steps for one, when near the bottom, and fell down; by which accident her right foot was dislocated outwards, and the fibula fractured, near the joint. She was immediately carried to bed, and was visited by her surgeon soon afterward. The tumefaction was considerable, and the violence of the pain extreme. The parts were directed to be wrapped up in a fermenting poultice, to be changed three times a day.

By the following morning the whole limb was considerably swelled and much discoloured, with the appearance of severe bruise. On various parts about the ancle and foot very extensive vesications had formed, the spaces beneath the cuticle being filled with a yellowish serum, and the number of these vesications increased daily. On the fourth day, two of the largest vesicles contained five or six ounces of fluid each; and, from the uneasiness these produced, they were opened, and the contents allowed to pass off. The parts were at first relieved, but the following afternoon was passed in greater uneasiness, with heat, prickling, and shooting pains about the joint. The pulse was quiet; the skin, with very little thirst; the fermenting poultices, therefore, were continued, with an occasional opiate at night, and other medicines, when necessary.

On the ninth day, the blistered parts were opened, and the poultice being laid aside, the joint was wrapped up in slips of cloth spread with the wax ointment; but this application having been productive of high fever, and the most excessive degree of heat and pain, was removed, and the poultice re-applied. It was afterwards ascertained that the ointment had been sent in a rancid state.

Some fresh ointment, applied three days after, agreed very well: the application was therefore repeated for a few days, when the limb was wrapped in soap plaster, splints, and a tail bandage. Some degree of general tumor was all that now remained.

In two months the patient was able to move about on crutches, and to bear with some firmness upon the limb. It remained, however, in a very weak state, and was very far from being capable of supporting her five months after the accident, at which time she was seized with an attack of inflammation upon the lungs, that in the course of a few days terminated fatally.

Examination.

With some difficulty leave was obtained to examine the state of the foot. The fibula had united very well, but none of the tarsal bones were in a healthy state. They were not exactly carious, nor were there any abscesses formed either in or about them. But the natural medullary contents were converted into an opaque, reddish brown coloured matter, with which the bones themselves had lost very much of their natural strength, so that when

I attempted to separate any of the bones from the rest, the external parts of the bones separated with the ligamentous fibres that happened to be undivided; and indeed the bones themselves might with ease be crushed with the fingers alone.

Case 119.

*Fractured Fibula, with dislocated Ancle.**

A farmer's servant, on his way to town, fell from the top of a cart-load of hay near Knight'sbridge, and was carried into St. George's Hospital. By this accident the ancle was dislocated, and, as it was supposed, the fibula fractured; although, from the degree of swelling and of pain that immediately followed the accident, it was difficult to ascertain precisely the extent of the injury.

Under proper treatment he was confined to his bed many months, in a very helpless state. He was then discharged from St. George's, and admitted into the Westminster Hospital, in a state of health not far removed from hectic fever. The ancle joint, and the whole of the leg, were still tumid from inflammation. There was no ulcerated opening about the joint, but many sinuses were found passing in various directions among the muscles, and opening upon the integuments, in the line of the long extensor muscle of the toes. He made no complaint of particular pain in the foot, but was distressed with a constant sense of tension across the instep.

* The following particulars I received from Mr. Fincham, who possesses the preparation.

About nine months subsequent to the accident, the limb was removed by amputation, and the patient then recovered very well.

On dissection of the limb, the sinuses upon the leg were found to be connected with a purulent cavity within the bone, just above the ancle joint. Subsequent to maceration, the real state of the bones became much more distinct.

Within a cavity, situated between the tibia and the astragalus, was a large piece of necrosed bone, entirely separated from the surrounding parts, and, on its anterior surface covered with cartilage. This piece of bone, from the figure of its articular surface, was apparently a part of the head of the astragalus, which had most probably been fractured by the fall.*

SECT. 2.

ON DISLOCATION AND ITS CONSEQUENCES.

With regard to dislocation, there has been great diversity of opinion upon several points of the most

* PLATE VI. *Fig.* 4. Exhibits the appearance of the bones, on a reduced scale, subsequent to maceration.

a. The spine of the tibia.

b. The fibula.

c. The anterior articulating surface of the astragalus.

d. The mass of ossific matter, by which anchylosis has been effected towards the outer ancle.

e. The epiphysis of the fibula, enlarged from inflammation; in consequence of which the line of junction between the epiphysis and the body of the bone is made apparent by a partial separation.

f. The ossific matter effused upon the inner ancle, firmly connecting the tibia and astragalus together.

g. The cartilaginous surface of the detached portion of bone.

material interest; and there are some circumstances occasionally connected with this branch of surgical practice that appear to have been scarcely attended to at all. This negligence has perhaps, in great measure, arisen from the cases alluded to being of a peculiar description, for which surgery can afford little or no relief. This reason, however, or rather excuse, for inattention to any of the operations that take place in the living body, is but ill calculated to forward the improvement of the most interesting, and unquestionably the most useful of all Arts. To know how to preserve life, certainly requires that we should have some acquaintance with its laws; and to acquire the power of assisting the natural operations of a living body, surely requires that we should have informed ourselves, as extensively as possible, regarding the modes and principles of action in living parts.

One question that naturally occurs is the following; — Is the capsular ligament of a joint necessarily ruptured in dislocation, or not? Upon this point experience certainly proves that in some instances, rupture of the capsular ligament takes place, but not in the majority.

It was the opinion of a very eminent surgeon,* that the laceration of the capsular ligament depends on the manner of the accident, but it may certainly be regarded as much more immediately dependant, at least in most instances, on the particular state of the ligaments themselves; for that

* Desault.

this state may be extremely various, I have in a few instances had very clear evidence.

In a series of very beautiful drawings executed by Rymsdyk*, from a dissection of a dislocated shoulder, the capsular ligament was so completely rent, that the whole head of the humerus had been protruded through it; and in a wet preparation in the same collection, the preserved parts prove that the same thing may occasionally happen to the head of the femur. From the figure of the bones, it appears that the patient was a young person, about sixteen or seventeen. The dislocation is upward, and backward, and the ligamentum teres is entirely separated from the head of the thigh bone, which has been forced completely through the capsule of the joint.

On the other hand, I have attended, and preserved notes of several instances of dislocated shoulder, where from the situation of the head of the bone, it appeared, not only that the capsular ligament remained entire, but that it had been the means of preventing the bone from being so completely thrown out from its natural situation, as it would otherwise have been. One of the most striking instances of this kind will be presently mentioned.

In these cases the capsular ligament by preventing the entire removal of the head of the humerus from its articulating cavity, affords a material assistance to the surgeon in his efforts towards re-

* Preserved in the portfolios of Mr. Heaviside's Museum.

duction. Where however, the patient is not only very muscular, but also very fat, these become the most embarrassing cases in surgery. The great thickness of the mass of soft parts renders the exact state of the parts very obscure. Even in thin subjects, the depression beneath the acromion scapulæ cannot always be either distinctly perceived by the eye, nor decidedly ascertained by the finger, but the head of the bone may be more or less clearly felt to project in the direction of the luxation; but occasionally, in very muscular subjects, nothing at all can be satisfactorily made out by examining the joint, except that its power of motion is lost. The head of the bone cannot be ascertained, either forward, backward, or downwards. When things are in this state, I have in various instances seen very persevering and well managed attempts at reduction fail. The great strength of the surrounding muscles, together with the additional power they exert in consequence of the irritation which they must feel in common with the strained capsule of the joint render it in some few cases absolutely impossible to succeed particularly when several days have been lost previous to reduction being attempted.

Where a partial dislocation has remained unreduced, the fine smooth cartilaginous surfaces of the joint being no longer opposed to each other, the muscles no longer possess their former power in producing with facility the motions of the joint; and the limb consequently remains nearly or en-

tirely incapable of action, as in complete dislocation.

From the extent of relaxation that I have sometimes observed in the ligaments of the large joints, there seems to be ground for believing that complete as well as incomplete luxation may in some cases occur at the shoulder without laceration of the capsule, particularly as there is demonstrative evidence of its occasionally taking place in the hip-joint.

Having premised these general observations, I shall now proceed to relate a case of partial dislocation of the shoulder, which was capable of being reduced. I shall next describe the state of parts that may result, where this kind of luxation proves incapable of reduction; and in doing this an opportunity will be afforded for explaining the first step of a most interesting and curious process of nature, which like many others that are occasionably set up in the animal economy, leads the mind on involuntarily to the contemplation of that Supreme Intelligence by whom alone, a fabric exhibiting such endless proofs of contrivance and resource within itself, could have been originally designed.

The more perfect result of the same process will be subsequently pointed out, as demonstrated upon a preparation where a complete dislocation of the shoulder had taken place, and had remained unreduced; to be followed by some concluding parallel remarks upon dislocation at the hip-joint.

CASE 120.

Dislocated Shoulder.

In November 1811, a poor woman aged sixty, of a spare habit of body, fell down and put out her left shoulder. She said she was subject to fits, and that the same thing had repeatedly occurred before, but that till this time she had always been able to get it in without assistance. Observed from the front, and compared with the other shoulder, it did not appear deficient in roundness, or materially altered in form. On closer examination however, the head of the bone was found to have retired from its proper situation, and was felt more protuberant than natural behind the joint, just below the spine of the scapula. I endeavoured immediately to press the humerus into its place, but the muscles of the scapula held it fast. The patient was then set upon the bed, and an assistant on the floor extending the arm while I drew the scapula steadily in the opposite direction, at the same time firmly pressing the head of the bone forwards, and the neck of the scapula backwards. In a few moments the head of the humerus was distinctly heard as well as felt to spring suddenly over the projecting margin of the articulation, back into the glenoide cavity; she said she found immediate relief from much pain.

She complained of pain and tenderness about the joint where the capsular ligament had been most severely strained, but this went off spontaneously by keeping the arm in a sling for a few days.

In November 1812, she again had the misfortune to dislocate the same joint, by falling down in a fit. On examination the head of the humerus dislocated backwards projected behind the glenoide cavity. She was totally unable to produce any motion in the shoulder, but complained of great pain, in and about the joint.

She said her health had so declined, that she had entirely lost her little remaining strength, which, however, under her present circumstances was so far favourable as that it enabled me to reduce the head of the bone without assistance, or difficulty. But as it still required some force to press it back from behind the margin of the glenoide cavity, there is no doubt that had the patient been a strong, fat, and muscular person, the reduction would have proved either extremely difficult, or altogether impracticable.

Where the partially dislocated shoulder remains unreduced, that part of the head of the humerus lying against the margin of the glenoide cavity, is exposed to the whole of that pressure, which in the natural situation of the bone, is supported by the more extended surface of the articular cavity; which pressure is in every case proportioned to the tone or power of the muscles connected with the joint. The consequence of this increased pressure is absorption, first of the cartilage, then of the bone, along the line of contact; but as the head

of the humerus is a more extended, and a lighter structure than the margin of the articulating surface of the scapula, and as absorption of the bone is, in this instance, the result of an irritation that operates indifferently, and consequently removes first, that which is most readily acted upon, a part of the head of the humerus is found to be absorbed. Again, as the direction of the pressure regulates the effect, which is the absorption, the new depression upon the head of the bone will necessarily be conformable to the figure of that part of the glenoide cavity opposed to it, and in this way the two bones will again be made to present to each other a comparatively broad surface of contact, and as this change takes place, the patient, in the course of time, recovers in some degree the power of moving his arm.

But in the case last related, the pain and tenderness felt in the joint was such as to prove, that when violently strained, the capsular ligament may suffer considerably from irritation; and carrying the idea forward, by supposing the luxated bone to remain unreduced, it is natural to expect that the increased vascular action in the capsular ligament, will by degrees, extend itself to those vessels, passing from the margin of the capsule to the continuous periosteum covering the bone, and the consequence of a certain kind of increased action in these vessels, is now known to be the excitement of the ossific action, or as Mr. Hunter would call it, " the ossific adhesive process;" and the particular figure of the bone so deposited, will of

course be regulated by that of the membrane carrying the vessels which furnish the secretion.

Thus, we see that the two opposite processes of absorption and deposition of bone are set up, and move on hand in hand, in perfect unison with each other, to the attainment of one and the same end, the re-establishment of an extended surface of articulation for a dislocated bone, with a view to the muscles recovering their original power of moving the joint.

From a preparation, * that affords a most beautiful illustration of the foregoing observations, an engraving has been made. In this instance the humerus, partially dislocated forwards, and restrained by the capsule of the joint, eventually recovered a sufficiently extended surface of contact to allow considerable motion between the bones, by the establishment of a species of double articulation. The surface of the head of the humerus divided into two by a deep notch, moved at one part upon a portion of the original glenoid cavity, and at the other upon a new surface of articulation, produced from the anterior margin of the neck of the scapula, by an adequate deposit of ossific matter. †

* In Mr. Heaviside's Museum.

† PLATE 6. *Fig. 5.* Shews the appearance of the bones, on a reduced scale.

a. The coracoide process scapulæ.

b. Acromion scapulæ.

c. The projecting line of adventitious bone, forming, with the anterior part of the neck of the scapula, a new articulating cavity.

d. The humerus.

PLATE VI.

Fig. 2.

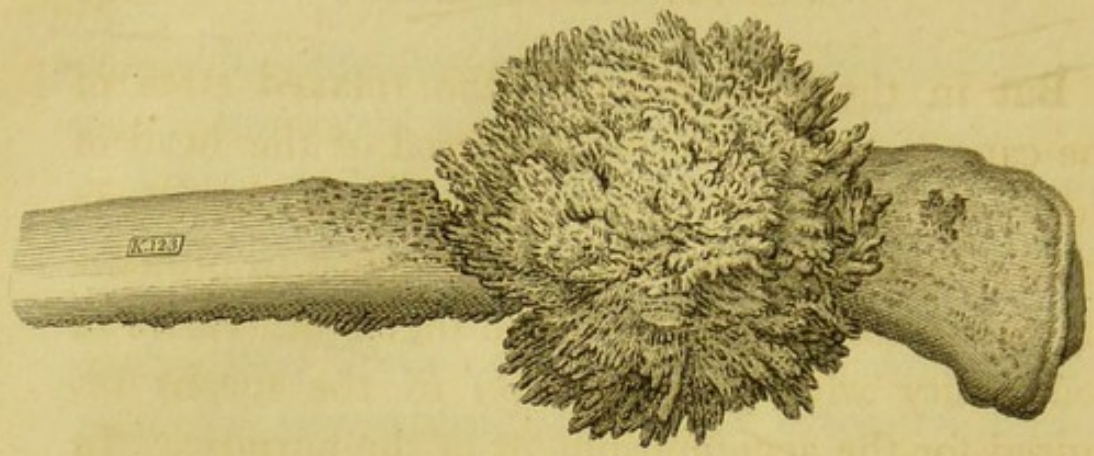


Fig. 4.

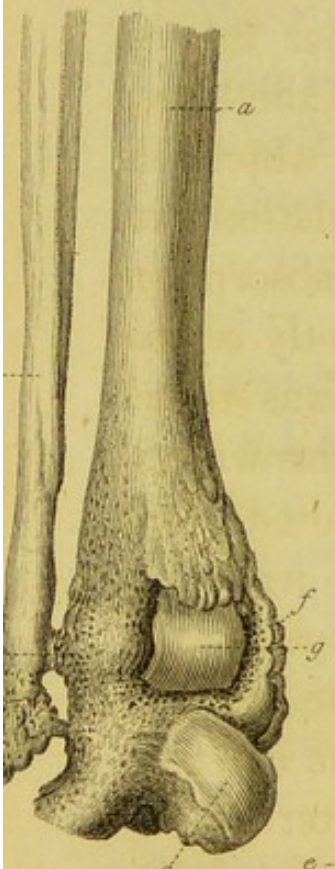


Fig. 3.

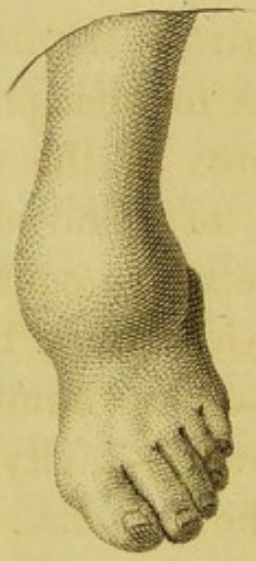


Fig. 1.

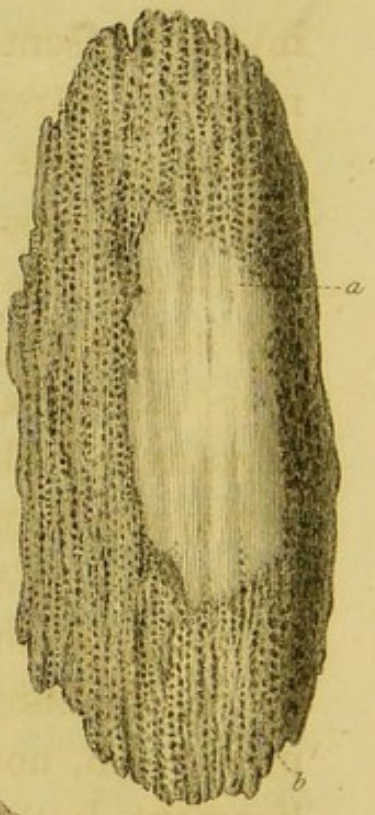
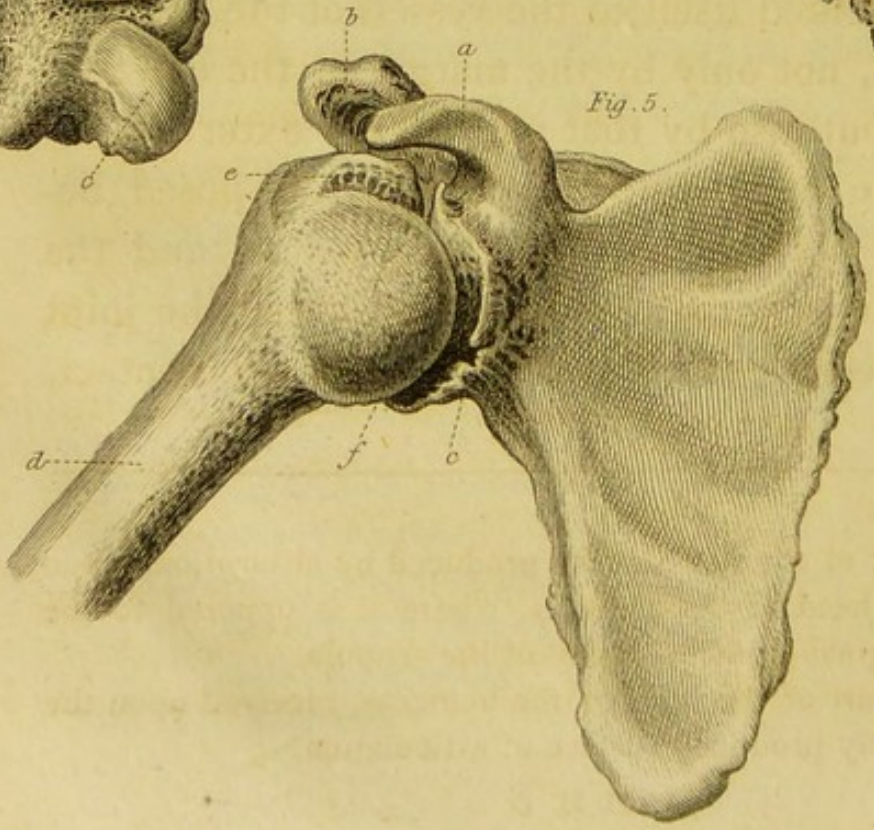


Fig. 5.



But in those cases where the relaxed state of the capsular ligament has admitted of the head of the bone being completely dislocated, the mode in which the parts are invited to assist in promoting the restoration of power to the joint, varies in conformity with the variation in the means required for the accomplishment of the purpose. In the former instance, two operations were necessary, in the present only one. In the former it was necessary to remove a part of the head of the bone, and to provide a support for that portion which fell beyond the natural limits of the articulation; in the latter the process of removal or absorption was not wanted, and the whole consequently rested with that power by which new bone was to be deposited. The head of the humerus thrown entirely out from its glenoide cavity, reposed itself against the neck of the scapula. The irritation produced in the strained part of the capsule, naturally extended itself to the vessels of the adjacent periosteum, not only by the margin of the capsular ligament, but also by that part of the external surface of the membrane which was interposed between the luxated head of the humerus and the neck of the scapula, where the capsule of the joint and the periosteum must have been in contact.

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e. A part of the new surface produced by absorption, upon the head of the humerus, where it is opposed to the original glenoide cavity of the scapula.

f. That part of the head of the humerus, received upon the newly produced surface of articulation.

Under these circumstances an adhesion was formed, with abundance of new vessels shooting between the connected surfaces of the membranes, and this medium afforded eventually an additional facility for the more abundant deposition of ossific matter, and the consequently increased firmness of the adventitious ossific structure destined to support the head of the bone, in the motions of the joint.

The only instance I have yet seen, in which the completely dislocated humerus entirely recovered its powers of action by the process just explained, was met with accidentally in looking over some diseased bones.* A very complete glenoide cavity was formed, which allowed the head of the humerus free motion in every direction. The upper part of the humerus is preserved with the scapula, and shews that the head of the bone has not lost its natural figure.†

By attending to the treatment and union of fractures, we have an opportunity of observing,

* In the Collection of Mr. Wilson, teacher of Anatomy in Great Windmill Street, who, in the most polite manner, allowed me to take a drawing of the preparation.

† PLATE 8. *Fig.* 2. Exhibits the appearance of the newly formed glenoide cavity, anterior to the neck of the scapula.

a. The acromion scapulæ.

b. The coronoide process scapulæ.

c. The old glenoide cavity.

d. The new glenoide cavity, well supported by a considerable mass of ossific matter, upon the surface of which the numerous perforations demonstrate the spaces by which the membranous septa, and circulating vessels passed into the structure of the newly formed articulating cavity.

that in some states of constitution there is a stronger disposition to form bone than in others, and that occasionally the power of secreting ossific matter, is altogether wanting, and fractured bones remain un-united. These, however, are not the only instances in which this deficiency in constitutional power is manifested, for it is sometimes found to occur in cases similar to those at present under consideration.

It most frequently happens, that where dislocation has taken place at the hip-joint, the patient does recover, (although very slowly indeed,) a certain degree of firmness in the joint, and action in the limb, so as to be at last enabled, without much fatigue, to take an adequate quantity of exercise, perhaps without even the assistance of a stick; which event we know is attributable to the constitutional powers having as it were stepped forward on the behalf of the patient, making a preternatural exertion, and setting up a process, the establishment of which proves more or less adequate to its purpose, according to the strength and health of the patient.

The following case may be considered as an instance of the most favourable result of an unreduced dislocation at the hip-joint.

CASE 121.

Dislocation of the Femur.

Elizabeth Wheeler, aged fifty, was born healthy, and ran alone at nine months old. When three years and a half old, she was taken out by a ser-

vant, and made to stand upon a post, from which her foot slipt. She did not fall, but was so much hurt, that when set down, she could not walk a step, and was therefore carried home. She complained only of the knee, and cried all night with the pain. Her aunt with whom she lived, terrified with her screams, sent for her mother the next morning. Still her complaint was in the knee only, and as there was nothing to be seen about the joint, it was supposed of no consequence. The knee was rubbed with an embrocation, and she was kept in bed, by which means, in the course of a month, she was able to limp about a little.

Still the affection appeared to be confined entirely to the knee, but as the child was observed to be unable to place her heel to the ground in walking, her father said he was sure something must have happened, although the child, threatened by the servant, was afraid to own it, and the servant herself persisted in denying it stoutly; however, as the father was clear the child had suffered some violence, she was carried to a surgeon, six weeks after the accident. The joint was examined, and the opinion given, was, that the hip was dislocated, but that from the relaxed and delicate state of the parts, it was probable the luxation might have been produced by the slightest cause. It was also stated that the thigh bone could not now ever be returned into its proper place, for that it was too late even to attempt such reduction. She was, however, directed to bathe in the sea,

and for that purpose was sent down to Scarborough, in Yorkshire.

She continued bathing for six weeks, and it was considered to have strengthened her; but as the pain in the knee still remained, she returned to London.

Twelve months after the accident, the knee, from the constant irritation and pain, was very much contracted, and the leg drawn up towards the hip, particularly when in bed. To obviate this effect, the medical person who attended, directed that a splint fitted to the limb, should be laid close behind the knee every evening, so as to keep it straight. This expedient prevented the retraction of the leg certainly, but it brought on excessive pain, with screaming and watchfulness, which no opiates were capable of alleviating.

The parents submitted to the continuance of this application, till at length they were convinced that the child would die, worn out, if it was persisted in any longer. It was therefore, after some months, laid aside. During the time the splint was applied, the knee was bathed every morning with warm water poured upon it, and afterwards wrapped for the day in a warm poultice of mashed turnip. She found the warmth of these applications afforded a temporary relief, and that only.

Subsequent to this, nothing was done, till she reached the age of eight years. The painful state of the knee still continued very troublesome, but her general health and strength were good. About this time, however, the hip began to feel uneasy,

and by degrees violently painful, with aching and shooting pains.

These pains about the hip had continued for eighteen months, when a small hard tumor began to form behind and beneath the neck of the femur, which was luxated upwards and backward. The swelling was painful when pressed upon, and by degrees came forward, but so slowly, that it did not break till six months after its first appearance.

The purulent discharge was at first moderate, but shortly after it increased so much, that a surgeon was again applied to, who directed poultices and fomentations. These means were continued for a month, when dressings were substituted. The dressings were continued for about three months, during which the discharge was colourless and transparent, more like serum than pus. The abscess then healed entirely. Through all these changes in the state of the hip, the pain in the knee still continued.

No event of consequence now occurred for very many years. When grown up, she was able to lay aside her crutches, and walked without the assistance even of a stick.

As a young woman, she had a business to attend to, and was for many years in the habit of walking into the city and back daily, and at a quick rate, almost without any perceptible impediment. She was never able, however, to bring the heel fairly to the ground, but this defect was compensated by the wearing a high-healed shoe.

She continued to go on very well till she had reached the forty-eighth year of her age, about which period, being from family circumstances, much exposed to inclement weather, and still more to uneasiness and vexation, she was suddenly attacked with a violent pain extending down the thigh, and even beyond the knee. This prevented her at once from moving about, and confinement to bed for many months followed; from this she at length recovered, although but very slowly.

In January 1815, four years subsequent to this attack, she had not entirely lost the pain about the knee, nor yet completely recovered her former degree of strength, in the affected limb.

The original dislocation in the above case, appears to have been most probably unconnected either with laceration of the capsule, or rupture of the round ligament of the joint. This opinion is much strengthened by the very great improvement that after a time took place in the power of moving and bearing upon the limb, which improvement could only have arisen from the establishment of the series of operations above demonstrated, in the production of a new joint, which operations essentially require that the capsular ligament of the articulation remain entire.

The direction of the luxation in this, as in most instances, was upwards and backwards; a part of the capsular ligament must consequently have been pressed between the convex surface of the head of the femur and the periosteum external to the margin of the acetabulum. Under these cir-

cumstances, the irritation and strain of the ligament, if the constitutional powers were tolerably good, must have been productive of the same results that have been already explained in reference to dislocated shoulder.

It may indeed be objected, that the capsular ligaments even of the large joints, are but very thin membranes, in which case how can it be supposed that the secretion of a mass of ossific matter ten times the thickness of such membrane, can be deposited within its interstitial or cellular structure? To answer this point, we must first enquire whether the state of the capsule is not previously changed? and if so, in what this change consists? I have in many instances examined diseased joints after death, in which the capsular ligaments have exhibited the appearances proper to the various stages of inflammatory action; and in all these cases fluid matter more or less coagulable was found poured out by the capillary arteries into the interstices of the ligamentous structure, and in exact proportion to the quantity and consistence of this effused matter, was the apparent thickness and firmness of the capsular ligament. By these means the capsule is rendered in some instances a quarter of an inch, in others half an inch, and in one case in particular, it was three quarters of an inch in thickness.

Admitting this previous state of parts, it becomes no longer difficult to perceive how the vessels from the bone shooting into the newly organized adventitious matter in the membrane may

readily take up the ossific action ; which once commenced, will continue to advance to a greater or less extent according to circumstances.

The precise manner, however, in which the above-mentioned phænomena occur, and the appearance they present upon dissection, are various, and they must be so, seeing that they are entirely regulated by the state of constitution, and the peculiar tone of vascular system, at the time of the process being established.*

* The mode in which the above changes take place, may perhaps be rendered still more clear by the following abstract of the dissection of the body of a female advanced in life ; it is taken from one of the most elaborate and valuable works that has been yet published on the diseases of the bones ; and it is illustrated by engravings on a large scale, which demonstrate the accuracy of the subjoined statement :

" Acetabulis solitis expulsa, et retrorsum promota, ossium fe-
" morum capita erant ; membrana capsularis maxime elongata,
" degenerata, incrassata, antiqua acetabula claudens, retrorsum
" tendebat, capita dictorum ossium obtegebat, et adnectebatur
" illi excavatæ ossis ilei, in utroque latere, parti, qua caput fe-
" moris continebatur ; margines autem illarum cavitatum per dic-
" tas membranas transparebant. Moveri capita ossium intra
" easdem potuerunt, sed non sine strepitu.

" Dissectæ, in utroque latere capsæ articulares, crassissimæ,
" et durissimæ inveniebantur. Depurata antiqua acetabula na-
" turalem amiserant formam, sed profunditatem majorem, quam
" in talibus casibus habere solent, monstrabant ; ex utroque li-
" gamentum teres prodibat, quod maxime elongatum et dege-
" neratum juxta sinum quemdam, a parte posteriore acetabuli
" antiqui inveniendum, decurrebat, quodque ad suum femur.

" In dextro latere, in confinio ilei ischiique formatus erat no-
" vus sinus, diversis eminentiis inæqualibus ab antiquo acetabulo
" distinctus, marginem cæterum non adeo extantem habens, nisi
" a parte posteriore et inferiore, ubi, non longe ab incisura, sa-
" cro-ischiadica dictabat. Superficies hujus sinus, cui caput os-

My attention was first led to the consideration of this subject, by the repeated examination of a considerable number of preparations,* that afford a very beautiful and complete series of illustrations.

With a view to set the appearances of these specimens in as distinct a point of view as possible, I have made drawings from some of them, selecting those which exhibited the clearest characters.

In all these preparations, the dislocation took place in the same direction, the head of the bone passing upward and backward.

In the first case, the head of the femur, judging from the figure of the acetabulum, and from the defined line in which the dislocated head of the bone had obviously ranged upon the ilium, remained attached to its proper cavity by the round ligament, although I should be disposed to believe the capsular ligament was ruptured. The appearances upon the bone are such as seem to me attributable to the constant friction of the smooth head of the femur upon the periosteum of the ilium, exciting absorption only.

In the second case, the luxation apparently took place under the same circumstances with the first, the round ligament only remaining entire. In addition to the deep impression upon the external

---

" sis præcipue fuerat appressum, non æqualis, sed aspera, fora-
" minulenta, et quasi cariosa erat; reliqua pars, ad quam margo
" rotundulus, et inferior capitis dicti accesserat, æquabilior erat."
SANDIF. MUS. ANATOMIC. VOL. i. p. 193.

* In Mr. Heaviside's Museum.

surface of the ilium by the head of the femur, there is upon this preparation a decided elevation of the margin of the concavity, which elevation is not the result of any new deposit of ossific matter, but evidently the consequence of the continued pressure of the head of the femur, gradually disturbing and raising the ossific structure along the margin of the depressed space. This appearance seems to have arisen from some latent tendency in the constitution to mollities ossium, an idea that is rendered more probable by the general appearance of the bone, which, from its lightness and want of muscular sharpness of character, certainly belonged to a female subject.

In the third case there is every reason to believe the fabric of the joint as related to the ligaments of the articulation, remained entire. A close attention to the appearance of this bone, compared with those above described, will prove that the round ligament was not only entire, but that its strength was so adequate to the restraining the head of the femur, that the dislocation was scarcely complete. This is shewn, not only by the distance between the old acetabulum, and the head of the femur, being in this instance much less than in either of the former cases, for it is also demonstrated by the following circumstance in the appearance of the bone. In the first, and particularly in the second case, the margin of the bone immediately below Poupart's ligament, presents a deep depression, where the tendinous parts of the psoas magnus, and iliacus internus muscles pass

down to their insertion upon the lesser trochanter of the thigh bone; this depression being the result of increased pressure, from the proper line of muscular action being changed, must be more or less strongly marked in proportion to the degree of deviation in the line of muscular contraction; but in the present case, this appearance is scarcely at all perceptible.

A considerable deposit of ossific matter has taken place, and the appearance of the structure of the new bone, affords an additional evidence of the true seat of this ossific secretion, as well as of the similarity in structure, between the capsular ligaments of the joints, and the periosteum of the bones.

The porous appearance of the surface of the newly formed bone, might be at first mistaken for a caries, but it arises merely from the nature of the structure within which the ossific matter is deposited, for the openings upon the surface, when examined with sufficient attention, will appear to be what the inspection of the parts in their recent state prove them to be, the passages necessary for the transmission of blood-vessels and fibres, which still connect the separated laminæ of the membranous capsule together, while the ossific fabric still remains, in some degree immature *.

* Plate 7. Exhibits the appearances of the three first examples of dislocated hip.

Fig. 1.

a. The spine of the ilium.

b. The anterior inferior spinous process of the ilium.

c. The impression produced by the action of the tendons of

PLATE VII.

Fig. 1.

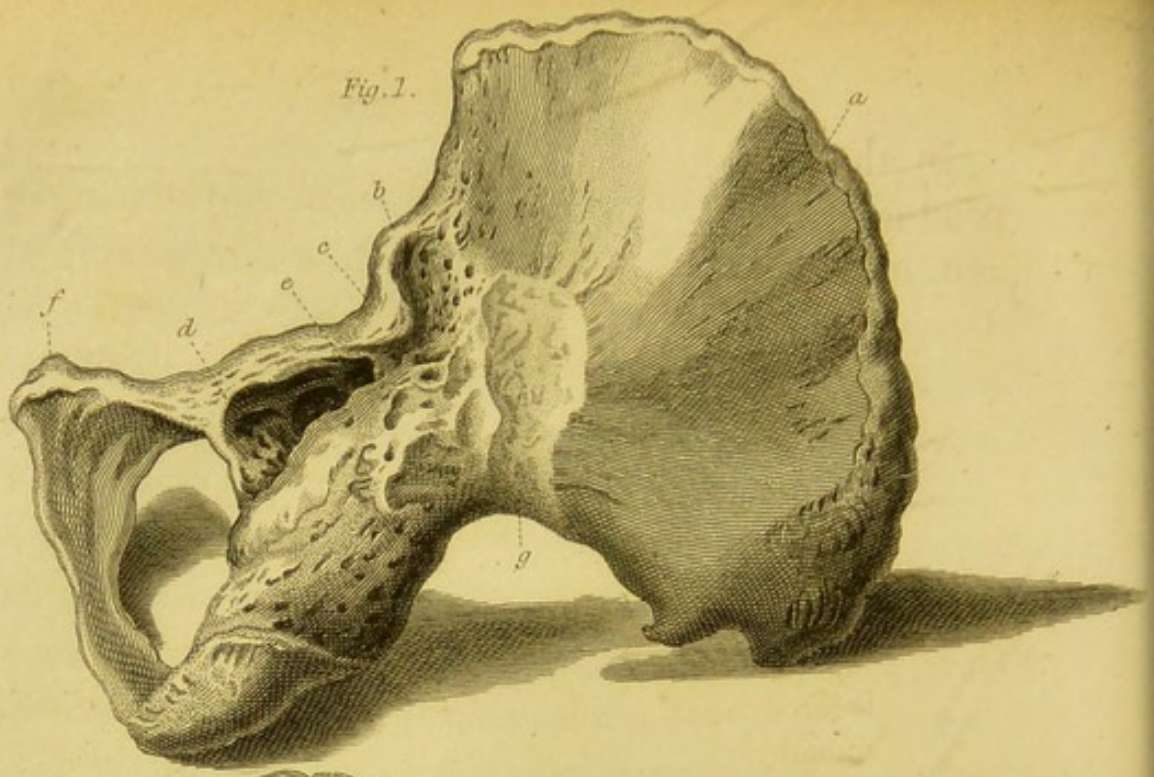


Fig. 2.

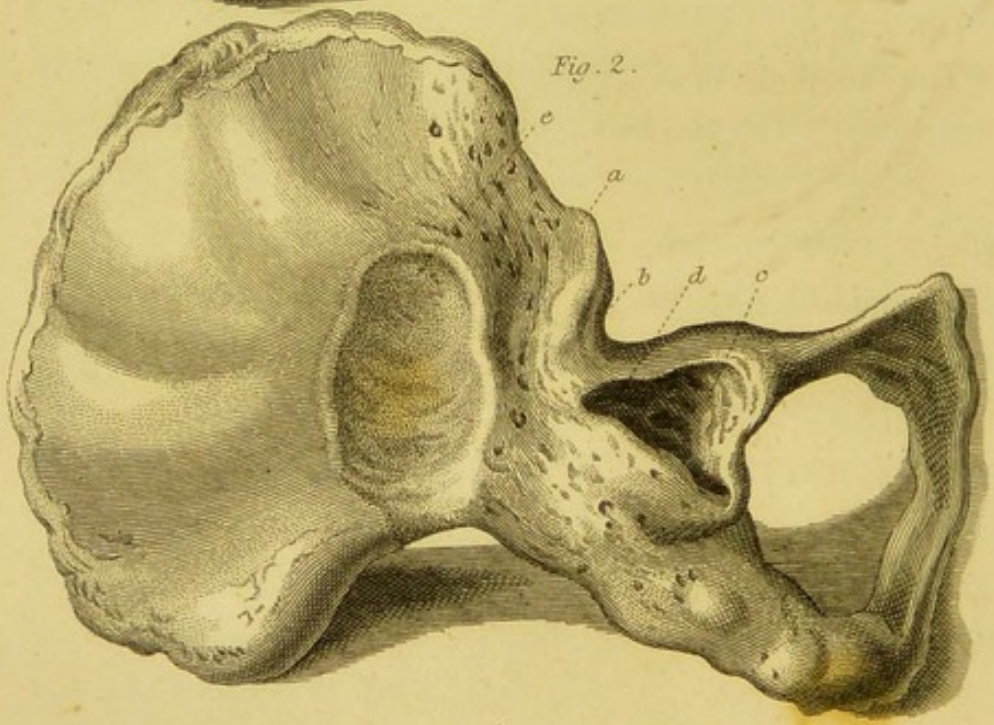
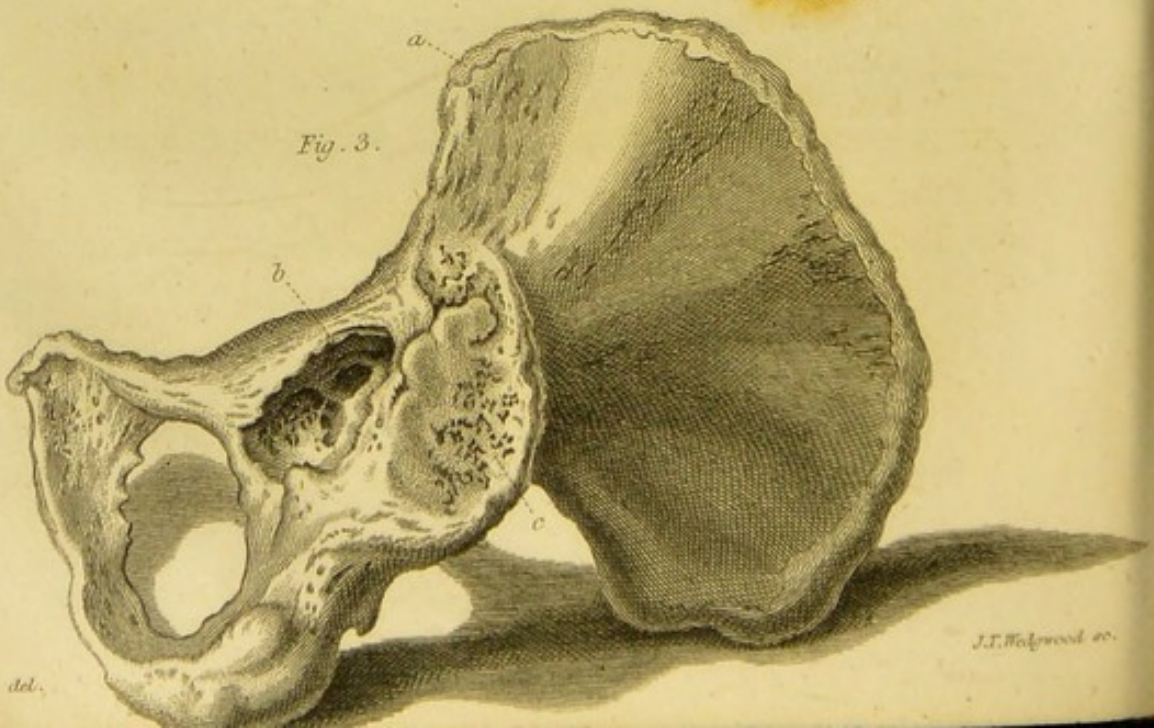


Fig. 3.



J. Howship del.

J.T. Wedgwood sc.

In the fourth case, the abundant deposit has produced a very substantial bed of ossific matter, and it is particularly remarkable, in how great a degree the frequent action of the strong muscles

---

the psoas, and internal iliac muscles, upon the femur in its new situation.

d. The old acetabulum.

e. The angle of the cavity, where the round ligament passing over the margin of the acetabulum, to the dislocated head of the femur, had rendered the bone smooth.

f. The symphysis pubis.

g. The superficial depression upon the surface of the ilium, produced by the range of the head of the femur backward and forward, confined by the round ligament, to a certain line of action.

Fig. 2.

a. The anterior inferior spinous process of the ilium.

b. The depression produced by the action of the tendons of the psoas and iliac muscles.

c. The old acetabulum.

d. The angle at which the ligamentum teres passed out from the cavity of the acetabulum to the head of the dislocated femur.

e. The space denoting the line of contact between the innominatum, and the head of the femur, subsequent to its luxation. This space is materially broader in this, than in the former instance; added to which, there is a slight elevation upon each margin of the depression, not, however, resulting from any new deposition of bone.

Fig. 3.

a. The anterior part of the spine of the ilium.

b. The old acetabulum.

c. The new surface of articulation, formed by a secretion of ossific matter having taken place into the interstices of the cellular texture in that part of the capsule of

about the pelvis, has actually brought the articulation almost back into its original situation. The ossific secretion has been deposited in great abundance, especially towards the anterior and inferior part of the joint, where it may be perceived almost to close up the original acetabulum.

In the fifth case, the appearances which mark the most perfect result of this process, are very clearly demonstrated. The cavity of the new acetabulum is deep and spacious; absorption and deposition have united their efforts, to render the operation perfect; and there is reason for believing that the patient must latterly have enjoyed so free and adequate a power of action in the joint, as to have had little reason to regret the misfortune that gave rise to so curious, and at the same time so elaborate, as well as complete provision, for all the purposes of salutary exercise, and agreeable change of scene. *

---

the joint, more immediately exposed to excitement from the pressure and irritation of the dislocated head of the femur.

* Plate 8. Shews the appearance of the remaining and more perfect specimens of new formed joints.

Fig. 1.

a. The ilium.

b. The pubes.

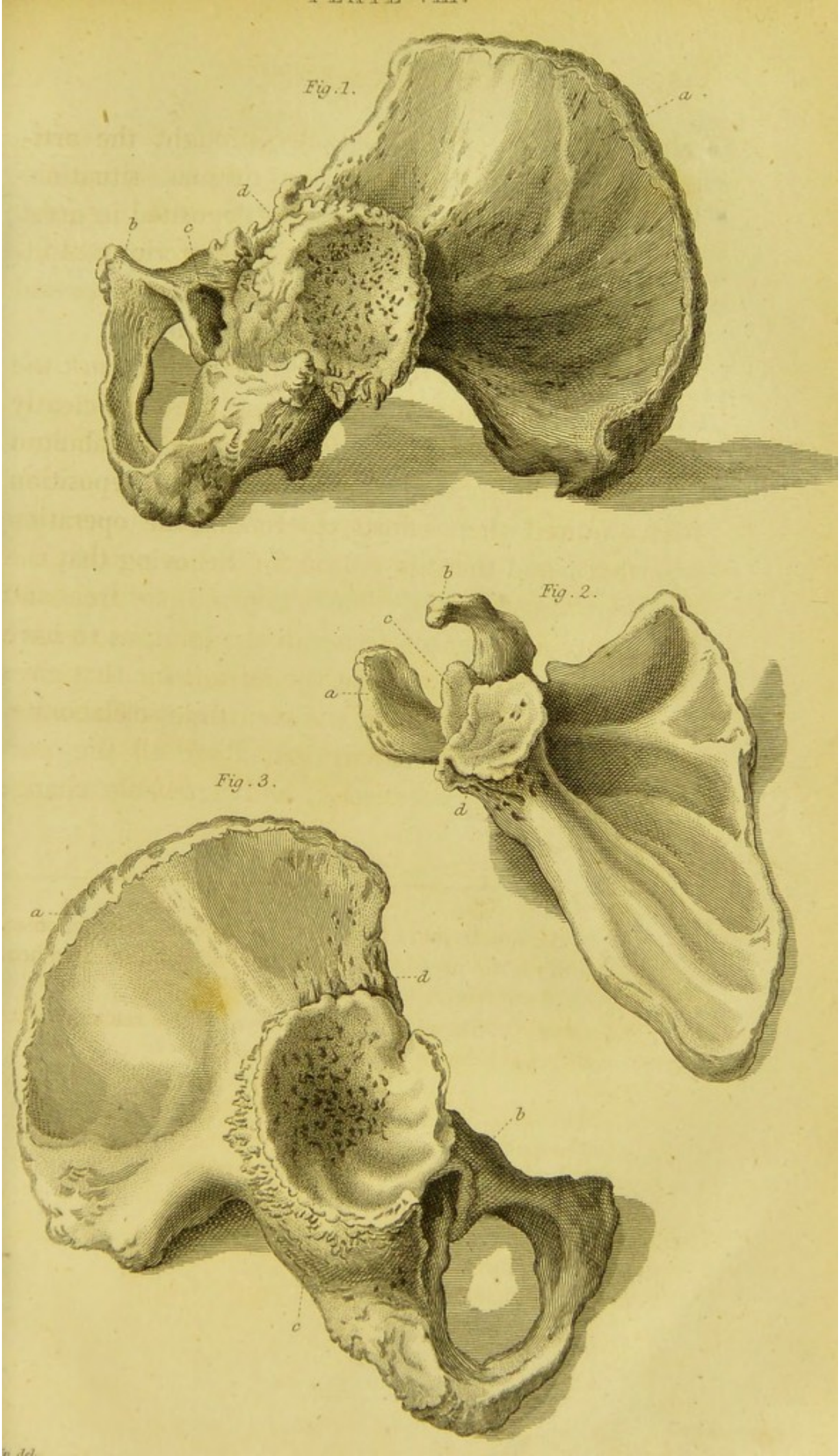
c. The remaining part of the old acetabulum.

d. The newly formed cavity of articulation.

Fig. 3.

a. The spine of the ilium.

b. The old acetabulum.


Fig. 1.
a
d
b
c
Fig. 2.
b
c
a
d
Fig. 3.
a
d
b
c

c. The new acetabulum which forms a spacious cavity for the reception of the head of the femur, capable of allowing it all the freedom of motion, with nearly the same degree of security it possessed in its natural situation.

d. The shadowed parts above the margin of the adventitious deposit, point out the manner in which the action of absorption operates in these cases; it has the effect of clearing the ground as it were, and thus prepares the necessary space for laying down the more recently provided materials, for the new ossific structure.

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THE END.

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PRACTICAL

OBSERVATIONS

ON

THE DISEASES

OF

THE URINARY ORGANS;

PARTICULARLY THOSE OF

THE BLADDER, PROSTATE GLAND, AND URETHRA.

ILLUSTRATED BY CASES AND ENGRAVINGS.

By JOHN HOWSHIP,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN LONDON, AND OF THE MEDICO-CHIRURGICAL SOCIETY.

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TO

JOHN HEAVISIDE, Esq.

SURGEON EXTRAORDINARY TO THE KING.

F.R.S. F.A.S., &c.

My dear Sir,

When I consider the number as well as the variety of my obligations to you, and particularly when I recollect that to your friendship I am indebted for all those opportunities that have led to the following observations, I consider myself bound in gra-

titude to present to you these First-fruits of my professional experience, however unworthy of your attention they may prove, on examination.

Believe me to remain
Dear Sir,
Your much obliged
and Ever Faithful Servant,
JOHN HOWSHIP.

14. *Mill Street, Hanover Square.*
May 17. 1816.

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INTRODUCTION.

The particular branch of surgical practice that forms the subject of the following practical observations, is certainly one of the highest importance, whether it is considered with regard to the comfort or the safety of the patient; neither is the humane attention, the professional skill, or the manual dexterity of the Surgeon, more frequently called forth, than on those occasions in which the urinary organs are affected with disease.

The concealed situation of most of the parts concerned, the frequent ambiguity of symptoms, and the great length of time that these complaints in some instances continue, are so many fertile sources of obscurity, and they have powerfully tended to retard the progress of our knowledge in this particular department of pathology.

The advance of chronic disease is frequently insensible, and when after severe illness, the more distressing symptoms are relieved, the patient, weary of confinement and physic, is apt to become careless of himself; perhaps being able to go about, he neglects all rule for years together, until the same complaints which he supposed entirely removed, again recur, and he then most probably consults another surgeon, under the expectation that he may prove more indulgent than the first had been, thus enabling him to recover his health, less at the expence of the comforts and enjoyments of life, than he had before been allowed to do. These circumstances throw peculiar difficulties in the way, the progress of disease is unavoidably lost sight of, and it in fact requires more diligence than many persons are disposed to apply, to follow up the progress and consequences of these complaints with that exactness and accuracy which is necessary, with a view to any purpose which may be connected with the future benefit of mankind.

In the following pages I have endeavoured to bring into one general view, the symptoms and treatment, of most of the diseases of the urinary organs, together with the appearances that have been found on examination of those diseases, in the various stages of their progress.

They are to be considered as forming some part of the result of my own professional experience,

as they are derived almost exclusively from what I have myself seen, attended to, and noted down at the bed-side; and consequently many of the circumstances hereafter noticed, will be found to agree with those already adverted to by others, who have travelled before me in the same path of scientific research.

The plan of confining the following remarks almost exclusively to what has fallen under my own observation may seem objectionable, from its conveying an idea of their affording a very incomplete view of the subject; but I have nevertheless given it the preference, because, however useful comprehensive works may be, they are generally more or less deficient in accuracy, from the admission of statements not sufficiently well-founded, but calculated rather to mislead than to correct the judgment of the practitioner.

For some few of the histories of disease I have been indebted to the kindness of Mr. Heaviside, as well as for the whole of the illustrations, which are selected from among the preparations in his extensive and valuable collection of diseases.

There has been less attention paid to form and arrangement than some perhaps may think right, but my principal and almost only anxiety has been to bring forward a simple detail of facts, the object of which is, to be if possible in some degree useful, in a Profession, the advancement of which

is in every point of view essentially connected with the happiness of mankind; and for those defects or inaccuracies that may have escaped notice, I rely with confidence upon the indulgence of a liberal and enlightened public.

PRACTICAL

OBSERVATIONS

ON THE

DISEASES

OF THE

URINARY ORGANS.

CHAPTER I.

ON THE SYMPTOMS, CAUSES, AND APPEARANCES PRODUCED BY DISEASE IN THE KIDNEY.

SECT. 1.

On the Structure and Functions of the Kidney.

THE structure of the kidney, as regards its secreting apparatus, forms one of the most simple arrangements that can be conceived.

The renal artery on reaching the central part of the kidney throws off its branches in a radiated direction towards the surface of the gland; and these again, are subdivided into innumerable ramifications on entering the cortical substance. Here the arteries take on that peculiarity of form which is the only qualification they apparently possess,

fitting them for the performance of their office in secretion. They form small masses of vessels, easily seen by the microscope, when injected; and these vessels seen in some points of view appear to take a serpentine course, in others they have the appearance of radii, and in others again they are convoluted upon themselves.

But the nature of that power by which a particular set of capillary arteries are rendered capable of selecting and combining certain elementary principles, derived from the general mass of circulating blood, so as to produce a new compound or secretion, which cannot in any case be detected in the blood itself, is one of those points in physiology, in which we are still obliged to confess our want of information.

The art of injection, however, has proved beyond a doubt, that the minute arterial extremities have an established communication with two distinct sets of vessels; one of these being the extreme branches of the renal veins, the other the tubuli uriniferi, or proper excretory ducts of the gland. Air, water, and urine tinged with ink, may be readily driven round from the renal artery into the excretory ducts, as well as into the veins of the kidney, and even wax has occasionally been made to pass in both these directions.*

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* Boerhaave. Prælect. Academ. vol. iii.

Sect. 2.

On inflammatory Affection, and increased Secretion of the Kidney.

Almost every complaint to which the kidney is subject may be connected, more or less, with inflammatory action, and as the treatment proper for the removal of inflammation must always be taken into account, in the management of those affections in which increased action prevails, it may not be improper to enumerate its symptoms in this place.

Inflammation of the kidney has been defined, "fever; pain in the region of the kidney; frequent desire to void urine, which is either of a pale, or very red colour; vomiting; numbness of the thigh; retraction, and pain in the testicle of the same side *." The pain attending in this complaint, although in some cases very acute, may be generally distinguished from that produced by rheumatic affections of the loins, by its not being materially aggravated by the motions of the trunk of the body. There appears, however, to be no symptom by which we can be enabled with any certainty to decide whether the inflammatory action is idiopathic, or whether it is symptomatic of a disposition to form calculous matter, unless this is indicated either by

* Cullen.

the state of the urine, or proved by the past experience of the patient, as to the complaints to which he may have been subject.

The most curious derangement that occasionally takes place in the actions of the kidney, appears to be that peculiar and astonishing increase in its secreting power, which constitutes diabetes. The pathology of this disease is still very imperfectly understood, but if we may be allowed to estimate the value of a theory by its success when applied to practice, that seems to be the best which attributes the diabetes mellitis to a peculiar derangement in the state of the digestive organs, which operates by favouring the too abundant evolution of those principles which furnish the kidneys with the elements of the saccharine matter, which we know is secreted in most cases of diabetes in large quantity. The particular consideration of this complaint, however, falls more immediately within the province of physic than surgery.

Sect. 3.

On Calculous Affections of the Kidney.

Of the morbid affections of the secreting vessels of the kidney, one of the most common is a disposition to evolve a concrete, or calculous matter. This deviation from the healthy action of the kidney manifests itself by the appearance of the urine, in

which a substance more or less resembling gravel or sand, is usually found.

The particles of calculous matter, however, may be collected together, so as to form one or more larger masses, and these may continue to increase, either in the cavity of the kidney or in that of the bladder, until from their weight or roughness of surface they create irritation; which irritation in its turn becomes the exciting cause of a new train of symptoms, always distressing, and frequently capable of being relieved only by the performance of one of the most serious operations in surgery, that of cutting the stone out of the bladder; but where a calculus has acquired a certain degree of magnitude within the cavity of the kidney, bringing on in this situation all the evils attendant upon irritation, the case becomes most unhappy, for the patient has not then the hope, which even the prospect of an operation might afford.

The appearance of the calculous matter voided with the urine, in what has been called a fit of the gravel, will vary according to the peculiar tendency in the habit. It most commonly presents itself in one of two forms. First, it may have the appearance either of minute crystalline grains or sand, or an impalpable brown powder, and in either case the precipitate is found by analysis to consist of uric acid, either pure or mixed with a very small proportion of the phosphates. Secondly, the matter depo-

sited in the urine may have very much the appearance of a white sand, principally composed of the ammoniaco magnesian phosphate, although frequently containing variable proportions of phosphate of lime. The phosphates, however, are occasionally voided in solution, in which case instead of their being found immediately the urine is passed, they never make their appearance until that fluid has remained at rest for some hours, when a fine pellicle, or crystalline lamellæ, may be observed to form upon the surface.

Calculi formed in the cavities of the kidney are almost always composed of uric acid, and they will sometimes increase in this situation, to a considerable size*; but where from accidental circumstances, such as exercise, bodily exertion, or the like, a small stone has made its escape from the kidney, and has passed down into the bladder, the urine is generally for some time afterward unusually loaded with uric acid, and deposits that substance now in the bladder. When this period however has passed over, the subsequent addition to the calculus consists principally of the phosphates.

In some few instances small kidney calculi, composed of oxalate of lime, have been voided, but such occurrences are rare.

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* See Calculus, PLATE I. *Fig.* 1.

We see then that the formation of a red sand, or a white crystalline matter, or a consolidation of these substances into a single mass or stone, constitute the appearances most usually met with in the urine, where a disposition to secrete calculous matter exists in the kidney; but I have in one instance found a kidney loaded with a very singular kind of matter. It occurred in the examination of the body of a person who never had complained of any affection of the urinary organs. By mere accident the kidneys were examined, and that upon the right side was perfectly healthy; the left however was much enlarged, and felt as if crammed with a stiff pulpy matter. On removal from the body it was remarkably heavy, and weighed more than a pound and a half. Upon cutting into it, the pelvis and infundibula were found full of a compact earthy substance, in consistence resembling birdlime, of a pale yellowish grey colour*. The secretion of this curious substance had in all probability been going on for a considerable length of time, as the cavities of the kidney were much enlarged from pressure, the result of which had been the removal of most of the solid structure of the gland. The renal artery and vein were readily

* By analysis Mr. Brande found this matter to consist of carbonate of lime, mingled with an extremely tenacious animal matter. He observed that it was the first instance he had ever known of the kidney secreting carbonate of lime.

enough found, but there was no remaining trace whatever of the ureter, although the cellular membrane and peritoneum in which it is commonly situated were dissected with care, a circumstance which afforded a strong argument that the healthy action of the kidney must have ceased long before.

Where a small calculus has formed in the kidney, the most desirable event is its passage by the ureter down into the bladder; particularly if the figure of the stone is such as to admit of its subsequent escape by the urethra. The symptoms that attend this event are generally sufficiently well marked to point out the nature of the complaint, provided the affection is not complicated with disease of any other kind. *

The secretion of calculous matter may be reasonably expected to produce at least some disturbance within the cavities of the kidney, by irritating the tender membranous surfaces. We see that while the urine deposits gravel at the bottom of the vessel, a thick cloud of dense mucous matter most frequently demonstrates the state of excitement in which the mucous cavities of the kidney are placed.

The increased secretion of mucus, in these cases, may be regarded as an effort on the part of the constitution, to defend the surfaces of the membranes from the contact and irritation of the cal-

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* See CASE 4.

culous particles; but it may be also considered as a bond of security in another point of view, for the quantity of fluid matter thrown off by this means must materially unload the vascular system of the gland, and keep in check any tendency existing in the parts, to run beyond irritation into inflammatory action.

Sect. 4.

On Irritation and Abscess of the Kidney.

In particular instances of disease, the irritability would appear to be very unequally distributed, and without any more obvious cause, one particular part of the kidney, and that part only, will frequently be found to pass through all the gradations of diseased action, without a possibility of tracing any previously existing cause for irritation in the particular seat of the affection.

I have much more frequently in the examination of bodies, found collections of purulent matter in some one part of the kidney, than those appearances resulting from inflammation of the whole of the gland. In one instance, however, I have known chronic inflammation and abscess of the whole kidney follow from what was at first only a sympathetic affection, alternating with irritability at the neck of the bladder. *

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* See Case 8.

Here then, we come to inflammation either partial or general of the kidney, an affection which is frequently brought on in consequence of irritation from gravel; in which case the symptoms that attend inflammation from any other cause will be present, and require a treatment regulated according to the same principles.

Should the irritation have been long continued, the increased mucous secretion from the internal parts of the kidney, may by an insensible change take on all the characters of purulent matter, without any part of the secreting surface having ulcerated; at least I have in several cases seen such fluid passed with the urine, and after death found the kidney and ureter loaded with pus, although when the parts were clean washed, the inner membrane lining the pelvis and infundibula was perfectly free from any appearance of ulceration.

Where inflammation of the kidney has proceeded to form abscess, the purulent contents may escape by bursting into the pelvis of the kidney, and flow off by the ureter with the urine, and this of all others is the most desirable mode of getting rid of it. Frequently, however, things take a less favourable turn, and the ulcerative process extends itself in some other direction, in which event the immediate seat of the disease is still relieved from its load, but the obtaining this relief is an effort of nature which very rarely terminates well. The

matter may be evacuated, but the establishing a passage by which it may reach the surface of the body, necessarily involves a diseased state of some of the surrounding parts, by which the patient is at last cut off from the long continued irritation and purulent discharge.

Sect. 5.

On Renal Hæmorrhage.

The consequences of irritation from calculus in the kidney, are not always confined to the above mentioned limits. Either from the figure of the stone, or some other circumstance connected with the excitement of the parts, abrasion of surface may take place, and hæmorrhage arise, so as to prove an additional source of uneasiness, or even alarm; although when it proceeds to a moderate extent only, it has sometimes appeared to operate rather favourably than otherwise, by abating the irritability, and procuring a state of comparative ease and comfort.

Where blood has been evacuated with the urine, the quantity will be generally such as to render the fact sufficiently obvious, for it either forms a thin coagulum spread over the bottom of the vessel, or if the quantity is greater, the coagulum will be in proportion considerable.

When the quantity of blood is only trifling, there may be some hesitation in determining upon its presence. The question may be at once decided by dipping a bit of linen into the urine, which if it contains blood will leave a clear red stain upon the cloth, a circumstance that will not be observed if the urine is free from blood, however high coloured it may be.

The circulation of the blood through the kidney, independent of those causes already adverted to, may occasionally be very much disturbed from accidental circumstances. I have in one instance seen an accidental excitement in the secreting vessels of the kidney very nearly productive of a complete retention of urine, and as the appearances in the urine were of a very singular nature, some of the particulars of the case will be noticed in a future part of these observations. *

Sect. 6.

On Distension of the Kidney, and the Formation of Hydatids.

The healthy organization of the kidney is occasionally, although not very frequently destroyed by the slow operation of other diseases. From the

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* See Case 9.

long continuance of obstruction in any part of the urinary passages, the flow of urine being interrupted, the cavities of the kidney become loaded with the fluid, which accumulates as it is secreted. By this means a degree of pressure is established, which as it increases, induces by degrees a total resolution of the whole of the natural structure of the gland, which is ultimately found converted into an assemblage of large and small cysts, or thin membranous capsules.

The kidney is also now and then subjected to a disease, that I believe commences in the cellular texture, immediately behind the membrane lining the cavities of the gland. Serous fluid is deposited at certain points, and as this fluid accumulates, the pressure from within operates by condensing the cellular structure, so as to form cysts which become detached from the surrounding parts, and subsequent to this period, they sometimes by continuing to grow larger, excite a partial absorption of the mucous membrane lining the cavities of the kidney, and upon this principle hydatids of various dimensions have in certain cases made their escape into the ureter, and have been voided with the urine from the bladder.

The consequences that arise from over distension of the cavities of the kidney when accumulation of urine takes place, will be again adverted to in the consideration of the treatment of these complaints;

but the diseased kidney produced by hydatids, is in a practical point of view less important, inasmuch as the nature of the malady is such as does not admit of relief, by any means with which we are at present acquainted.

CHAPTER II.

ON THE TREATMENT OF DISEASE IN THE KIDNEY.

SECT. 1.

On the Treatment of inflammatory Action in the Kidney.

THE treatment of inflammation of the kidney proceeds upon the same general principles that regulate the cure of other inflammatory affections; bleeding, warm bath, mild purgatives, emollient clysters, together with the free use of mild demulcent liquids; but the use of blisters although they are very excellent applications in most of the local inflammations, are in the present case hazardous and uncertain in their effect, and should scarcely ever be adventured upon, from the risk of absorption of the cantharides, the least particle of which taken into the constitution, would not fail very materially to aggravate the disease.

But notwithstanding that in certain states of constitution the lancet must be considered our principal dependence, it frequently happens that the treatment will require to be modified, accord-

ing to circumstances. Provided the patient has youth and strength upon his side, and the symptoms are urgent, large and repeated bleedings at the arm, together with immersion in the warm bath as often as may appear expedient, are very proper as well as very powerful remedies; but where on the other hand, the patient is not young, and the constitutional powers are in a state which admits of their being much more readily taken down than set up again, common prudence with a very limited share of observation will be sufficient to demonstrate the necessity for caution. Every symptom should be considered with attention, and every means of treatment that can operate by diminishing strength should be so directed, that it may as nearly as possible do what is wanted without doing more.

Upon this principle, the application of leeches, or cupping glasses, will often supersede the use of the lancet; the hip bath, or even fomentations only, will be occasionally preferable to the complete immersion of the body; and the more direct means of abating arterial action will be powerfully assisted by the judicious administration of opiates, particularly where there is reason to suspect calculous irritation about the kidney.

There are some cases of inflammatory affection of the kidney, the management of which will require almost infinite caution; in these instances

the attack usually appears to come on without any sufficiently obvious or satisfactory exciting cause.

It sometimes happens that, towards the turn of life, there shall be an attempt made to produce a new disease in the constitution, or at least one new to the patient who has never experienced it before. When this takes place, should the strength of the constitution be materially deficient, or should the treatment of the apparent symptoms be carelessly conducted, the chances are very unfavourable, from the probability of the disease settling itself upon some vital organ, an event which generally terminates fatally.

I have seen several remarkable instances of the gout making its first appearance in this way. In one, the great toe at first became tender, and somewhat inflamed, but this in a day or two went off upon the sudden accession of paralysis, from which notwithstanding every thing proper was done for his relief, the patient never recovered, although he continued for some few years to drag on a miserable existence. Two other instances of the same description, in which the kidneys were concerned, will be noticed with the cases.

Sect. 2.

On the Treatment of Calculous Affection of the Kidney.

In the treatment of calculous affections, various plans have at different periods been proposed, but the present mode, proceeding upon better principles, and derived more immediately from the very advanced state of chemical science in this country, is certainly more successful in practice than any of the doctrines that were formerly acted upon for the removal of these complaints.

In those cases where an excess of uric acid prevails, it frequently manifests itself by symptoms scarcely falling short of inflammation of the kidney, especially where a calculus has formed, and perhaps is about to make its way down into the bladder. Where, however, a calculus is not produced, the deposit either of a reddish brown sand, or a fine powder of the same colour, in the urine, will sufficiently demonstrate the nature of the action going forward in the kidney.

With a view to relieve this tendency to throw off an excess of uric acid from the constitution, the exhibition of alkalies has been had recourse to, and frequently with success. But the continued use either of the vegetable or mineral alkali, has

been generally found to derange the stomach to so great a degree, that it has been necessary to lay aside the remedy altogether.

Still however some of the properties belonging to alkaline matter, seemed to be required in every remedy for this particular kind of calculous disorder; and while magnesia appeared likely to answer the purpose as well as the alkalies in some points of view, it certainly was in others less objectionable. These considerations led to a series of experiments, which have established for it a very high regard in those calculous affections of the kidney, connected with a deposition of uric acid or red sand.

It appears from practical observation that magnesia, as a remedy, not only corrects those stomach complaints usually connected with the evolution of gravel or stone much better than the alkalies, but that the use of it can be continued for a longer space of time without injury to the digestive organs than those remedies; independent of which, it certainly succeeds much more frequently than the alkalies in relieving the complaint, by the permanent removal of all the symptoms.

So far magnesia merits the high character it has obtained; but, like the alkalies, it requires to be attended to during its exhibition, for when continued to be taken beyond the period in which it proves useful, it is found to operate by re-pro-

ducing the very evil which it had previously removed. In other words, should the administration either of magnesia or the alkalies be persevered in after the uric acid has disappeared, they almost always occasion a copious deposition of the phosphates; these salts being now found in as great abundance in the urine as the uric acid had before been. Neither is the production of the white sand materially less distressing to the patient in the irritation it produces, than the evolution of the red gravel.

When things take this turn, the case requires a considerable degree of attention, in watching the alternate vibrations of the beam, until at last the balance is brought to an exact equilibrium, and the patient's health is restored. If, as above stated, by the too long use of alkaline medicines, the excess of uric acid has given way and a precipitation of the phosphates has taken place, the alkaline remedies must of course be immediately laid aside, and instead of them the muriatic acid may be directed, under the influence of which the secretion of the phosphates will soon be observed to give way, but as the use of this, or either of the other mineral acids are known to favour the reproduction of the red sand, they also must be watched with care, for this effect may in general be prevented easily enough by laying them aside in time.

It does happen however, occasionally, that the mineral acids cannot be so exhibited as to check entirely the deposition of the phosphates, without bringing forward the increased secretion of uric acid; and this circumstance is not the only objection that may occur to their use, for in cases where the inner membrane of the bladder is irritable, they are generally found to increase this disposition, so as to occasion in some instances the most extreme distress.

Under these circumstances a trial of the vegetable acids has been proposed. They have been exhibited, and it has appeared that these remedies also have a strong claim to attention. The citric acid particularly, is ascertained to possess the power of checking the deposition of the phosphates as effectually as the mineral acids, without being so apt to induce the re-appearance of the red gravel.

Most frequently the exhibition of the citric acid, by preventing the excessive evolution of the phosphates in the urine, tends to relieve any irritable disposition that may exist about the neck of the bladder, but where the contrary effect is produced, the inconvenience has been removed by adding a few drops of the tincture of opium to each dose of the acid.

Even the carbonic acid has great influence in preventing the deposition of the phosphates, and

this does not depend on its preventing their secretion, but arises from its having the power of holding these salts in solution in the urine; for in cases where this acid has been exhibited, the phosphates have been still found in excess, although in a state of solution. This fact has been further proved by suspending the exhibition of the carbonic acid for a time, an experiment that has been immediately followed by the precipitation of the white sand, which has again disappeared upon the renewed exhibition of the acid.

The strongest recommendation in favour of this remedy seems to be this, that when the irritable state of the bladder will not admit the exhibition even of the vegetable acids, the carbonic acid will be particularly useful, inasmuch as it does not increase the irritability of the parts, notwithstanding it frequently gives the same relief to the symptoms, which in other cases the mineral acids are capable of affording.

Most of the complaints incident to calculous disorders may be considered to be of a mixed character. They are derived in almost every instance from irritation, connected with which there is generally more or less of increased vascular action.

The treatment of those symptoms that immediately arise from irritation, has generally consisted of the mildest and least stimulating regimen, with a plentiful exhibition of mucilaginous liquids.

The arbutus uva ursi has been very strongly recommended by De Haen in almost every complaint of the urinary organs, it certainly possesses considerable astringent power; but judging from what I have seen of its use, I should doubt whether it possesses any stronger claim to our attention than many other articles of the materia medica. Among the most useful of the mucilaginous liquids may be mentioned linseed tea, barley-water, and the decoctions of many of the farinacea.

The exhibition of saline medicines and opiates in these complaints, will form an important and occasionally an essential part of the treatment; tending as they do to moderate increased action, as well as to allay local irritation. Where the symptoms verge more nearly to direct inflammation, they will require the assistance of those means already mentioned as proper for the removal of inflammatory action.

Sect. 3.

On the Treatment of Irritation and Abscess of the Kidney.

In cases where from long continued irritation, suppuration or abscess of the kidney has taken place, the treatment unfortunately must be rather directed to the relief than the removal of symptoms, for it has

scarcely ever been clearly ascertained that these accidents have eventually done well.

In the progress of such a disease, should matter present itself near the surface of the body, any where in the neighbourhood of the kidney, it will be right to let it out, but this should never be done until the probable bearings of the case are distinctly made known, either to the patient, or to the friends. The very idea of an operation implies relief, and where relief is so ardently desired as it ever is in these complaints, expectation winged with hope naturally flies forward, and can scarcely fail to meet disappointment, unless the truth has been clearly pointed out before-hand.

Such an operation, although there is little probability of its being the means of eventually restoring the health or even saving the life of the patient, certainly affords an additional chance of a favourable issue, by ensuring a safe exit for a collection of matter, which if not evacuated externally, might burst internally, an event which must in most instances very soon destroy.

Sect. 4.

On the Treatment of Renal Hæmorrhage.

Where connected with the formation of matter, calculus has formed in the kidney, it may from the irregularity of its surface, or from circumstances

connected with the irritable state of the soft parts, produce abrasion of surface, or ulceration, extending itself so as to include the coats of some of the small arteries, and in either of these modes it may excite hæmorrhage.

When these accidents occur, the blood passing down by the ureter either forms a coagulum in the bladder, giving a peculiar colour to the urine, or it may principally be evacuated in a fluid state by the urethra with the urine, in which case it subsequently deposits a coagulum at the bottom of the vessel.

The treatment of this kind of hæmorrhage will generally be of little importance. Where it appears that exercise or exertion has produced it, rest and quietness will frequently prove to be all that is necessary for its removal. Where, however, the quantity of blood lost is considerable, and more especially when the hæmorrhage is disposed to continue, it may become an object of importance to determine on some means for preventing its further progress.

Bleeding, either general or local, is rarely adviseable, for it most frequently happens, that the constitution has been already sufficiently reduced by the irritation of the preceding stages of the disease. Among the medicines most appropriate for the cure of these complaints, some of the acids, the vegetable balsams, and the more powerful sedatives may be enumerated.

The mineral acids, in those cases that are known to be connected with a calculous diathesis, will be mostly objectionable, from their tendency to encourage a deposit of red sand in the urine. Under these circumstances many remedies derived from the vegetable kingdom may be exhibited to advantage, particularly the bals. copaibæ, which in most affections of these parts, has been strongly recommended.

But where the loss of blood is considerable, and has already materially reduced the pulse, it will be loss of time to wait the uncertain effect of the above means, and recourse must be had to the more powerful astringent, or sedative remedies. Of the first kind perhaps alumen is the most useful; and of the last, that which I believe to be the best, and most to be depended upon, is the acetate of lead, which may be given with excellent effect, not only in this, but in most of the other varieties of internal hæmorrhage.

Sect. 5.

On the Treatment of Distension of the Kidney.

It has been already observed that the organization of the kidney is occasionally subject to injury from the pressure produced by over distension. The degree of injury arising from this cause will be various, dependent as it must be in every case on the nature

and extent of the obstruction to the free passage of the urine.

I recollect an instance in which a distressing and constant pain in the left kidney, accompanied with the most extreme irritability of stomach, induced a gentleman to apply to his surgeon, who, as he was not exactly satisfied with the account of the symptoms, enquired how he made water, and was told very well. This answer, however, not seeming perfectly clear, his surgeon urged rather positively the introduction of some instrument into the bladder. A small elastic catheter was passed, and a quantity of urine drawn off, the symptoms were immediately removed, and the nature of the case was at once cleared up. There had been an obstruction to the free evacuation of the urine, owing to a stricture in the urethra, which had long prevented the bladder from being able to expel the whole of its contents, and as the accumulation increased, the ureters and kidneys had participated in the inconvenience, thus producing the symptoms in question, while the patient deceived himself, and was near deceiving his surgeon also, from his having been in the habit of passing his urine in small quantities, and at short intervals, for so long a time, that at last he was insensibly led to consider this to be the natural mode of action of the parts.

The most common cause of this affection of the kidney, is the blocking up the passage through the

ureter, by a calculus having been arrested in passing from the kidney down into the bladder. It is extremely curious to observe how large a quantity of fluid, and how complete a change in its internal structure, the kidney will admit under these circumstances, without altogether discontinuing its functions, or entirely laying aside the farther secretion of urine. *

In the advanced stages of calculous affections of the kidney, this state of parts is not unfrequently met with, and must be regarded as being principally concerned in shortening life, by the constant and fatiguing pain, and the excessive irritation incident to this particular affection of kidney.

The only medical assistance perhaps, that can be proposed in this distressing exigency, presents itself in the full exhibition of anodynes and opiates, which will generally do all that can be done for the relief of the patient; but under their most favourable operation, little more can be expected than a temporary alleviation of symptoms, although it is astonishing what the constitutional powers may be occasionally made to effect on the behalf of the patient, when they are properly assisted.

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* See Kidney, PLATE 1. *Fig.* 2.

Case 1.

Inflammatory Affection of the Kidney, preceding the first attack of Gout.

August 12, 1815, I was desired to visit a gentleman about forty years of age, who had been suddenly attacked in the middle of the night with a violent pain in the right kidney, attended with nausea, vomiting, and a frequent desire to pass his water.

The pain was not materially increased by the motions of the body, but extended itself downward in the course of the ureter. He also complained of a sensation of numbness about the fore-part of the thigh, and considerable tenderness in the testicle upon the same side. The pulse was at 100, small, but rather hard. The tongue was scarcely white, but the thirst was considerable.

The urine was high coloured and turbid, and upon standing deposited some calculous matter; but the quantity of the sediment was so small that it was difficult to determine its precise nature.

The manner in which the above statement was made, together with the known fallacy of symptoms suggested the propriety of ascertaining immediately the real bearings of the case. With this view I requested he would allow an instrument to be passed into the bladder, and a silver catheter was ac-

cordingly introduced, without the least difficulty or pain.

By this operation about an ounce of urine was drawn off, and the case was proved to be an affection of kidney alone.

In the way of treatment the saline draught, combined with the tincture of opium was directed to be taken every four hours. Half a dozen leeches also were ordered to be applied to the loins, which were subsequently fomented.

On the following day he was much better in every respect, and this improvement continued progressively for several days, when he was so far recovered as to be able to move in comfort about his chamber. The appetite had returned, so far as to enable him to take light food in small quantities.

At this time, without any obvious cause, sickness and vomiting again came on, although nothing was thrown off but watery insipid fluid; accompanied with tenderness, pain, redness, and swelling about the ball of the great toe, a circumstance which immediately raised a suspicion that the whole of what had passed had been dependent on gout. Upon enquiry it appeared that this disease had been well known in the family, but as he had never been at all subject to it before, he would scarcely believe it could be gout. From appearances, however, there was so little reason to doubt the fact, that he was immediately desired to take a few glasses of wine

daily, with a more generous diet than he had yet ventured upon. A light tonic also was directed, the former draught being still continued every evening, because it agreed well, and because it seemed that the medicine which, in all probability, had assisted in bringing the constitutional disease round to its right point, could not perhaps be changed for a better. The foot was well wrapped up in flannel.

Immediately inflammation came upon the toe, all remaining uneasiness left the loins. The general health and strength, improved. The inflammation upon the toe did not prove very violent, but the tenderness, and in some degree the pain extended itself along the sole of the foot, attended with a disposition to œdema.

In the course of a week, the plan of treatment being continued, the attack upon the foot had pretty well gone by, and it soon afterwards went off altogether, leaving the patient in better health than he had enjoyed for many months before.

Case 2.

Sympathetic Affection of the Kidneys, connected with Gout.

J. S. Esq. a middle aged gentleman, who had some time before visited London for the purpose of undergoing an operation for a fistulous complaint, from which he perfectly recovered, was much in the

habit of taking the Seidlitz powders for the occasional regulation of his bowels.

On November 17, 1815, he had taken one of these acidulated powders, which, however, operated so mildly, that on the following day (the 18th) he had only been moved once, and complained of an uncomfortable load at his stomach. As it was supposed that this was the consequence of bile, he, towards evening, drank freely of warm water, and urged the disposition to sickness, by tickling the fauces with a feather. By this means he was enabled to throw off the contents of his stomach, which had a sour taste, and set the teeth on edge.

He still felt so uncomfortable at the stomach, that he was induced to take another large draught of warm water, and cleared his stomach, as before, vomiting repeatedly and violently.

In the evening I called in by accident, and found him in a very restless and disturbed state. The skin was hot and parched, but the most remarkable circumstance was the extremely suffused and dark appearance of the face. There was a certain degree of irritation about the neck of the bladder, and the urine, which was passed in small quantities, had an oily appearance upon the surface, and deposited a powder resembling rose-pink, at the bottom of the basin.

He said he had no pain or uneasiness in his head, but there was notwithstanding a curious

defect in the memory, which rendered him in conversation almost incapable of finding the principal word in each sentence.

On the 19th he remained much the same, the urine still depositing the pink sediment. Camphorated and composing medicines were directed for him.

Early on the morning of the 20th, as he was evidently not better, although he still felt no pain or uneasiness whatever in his head, it was considered right to see a physician in consultation; the result was that his head was directed to be shaved, eight leeches to be applied to the temples, the head to be subsequently kept cool by the refrigerating lotion. The only symptoms still were a degree of abstraction and difficulty in recollecting the words he wanted, but these symptoms were now so considerable, that nothing he said could be understood, although in general when the word was supplied, he was able to decide at once, whether it was right.

In the course of the day he complained of his left foot, and on examination the ball of the great toe was found red and inflamed; and the whole of the fascia at the sole of the foot was extremely tender, painful, and also somewhat tumid. With a view to keep up the action if possible in the foot, the most stimulating applications were made to the parts; and as the bowels were rather confined, an aperient draught was also directed.

On the morning of the 21st the symptoms re-

mained unabated. On enquiry the servant said that his master had complained of his left foot being sore for at least eight days before; he scarcely however felt it except when getting into bed at night, and as he supposed it might have been owing to a strain it was hardly noticed.

During the forenoon he improved so much that in the course of four hours he entirely regained his power of recollection, and spoke exactly as when in health. He now complained much of the knee, wrist and elbow, on the left side, being tender and painful.

It now appeared that he had in time past been occasionally subject to rheumatism, but had never before had an attack of gout, although it was known to have existed in the family. Camphorated and spirituous applications, with hot fomentations, were kept constantly applied to the foot, but the inflammation remained at a stand.

Towards evening his mind became restless, wandering anxiously upon the state of his affairs. The pulse, which had gradually become hurried, although neither full nor very hard, was now at 120. During the night he was extremely restless. There had been two relaxed motions during the day, but there were also frequent copious discharges of flatus from the stomach.

Upon the 22d things were evidently taking the most unfavourable turn, the heat and pain about the foot remained, but the left shoulder was so ex-

tremely tender that he screamed with agony when it was accidentally touched. In the course of the afternoon the small quantities of wine and spirits which had been given at short intervals, could no longer be swallowed; the pulse sunk, and before the following morning he died.

Case 3.

Deposition of the Phosphates removed by the exhibition of the Muriatic Acid.

George Taylor, aged 50 years, was admitted into the St. George's Infirmary, December 9, 1815, having been for twenty years before subject to the gravel. The most severe attack of this kind occurred in 1803, when he was for near a month confined to his bed, with severe pains in the loins, connected with constant uneasiness, and desire to pass his water; when voided it frequently came away in drops with extreme pain, was turbid, and in small quantities, depositing more or less gravel at the bottom of the vessel. The sandy matter or gravel was at this time of a red colour. Subsequent to this attack the urine occasionally escaped involuntarily, but he was generally able to attend to his business as a taylor, up to the period of his coming into the infirmary.

He now complained of considerable pain in the region of the kidneys, with much general uneasiness

about the bladder. There was constant desire to pass the water, which was voided in small quantities, with sharp cutting pain about the neck of the bladder, great straining, and frequently with bleeding. There was also some degree of retraction of the testicle upon the right side, and a sense of numbness extending down the fore part of the thigh.

On examining the urine, it was not found to be particularly loaded with mucus, but deposited a calculous matter, which, although it contained some few particles of red gravel, was principally formed of the white sand.

He was desired to refrain altogether from the use of fermented liquors, and was ordered ten drops of the muriatic acid, to be taken in water, three times a-day.

Under this plan, he soon found his complaints relieved. The symptoms from irritation, however, had began to decline, some time before any diminution in the quantity of calculous matter formed in the urine was perceptible. In the course of a month he was so much better that he requested to be discharged. The little remaining traces of calculous deposit in the urine could now be only occasionally detected, and he observed he had not been so entirely free from pain and uneasiness, or at any time able to pass his water with so much freedom for many years past, as at present.

Soon after quitting the infirmary, these complaints left him altogether.

Case 4.

Renal Calculus voided with the Urine.

The following case occurred to my notice at Scarborough in the year 1808, and may serve to point out those symptoms most commonly produced by the passage of a renal calculus.

A. B. a middle aged man was suddenly attacked with a violent pain in and about the right side of the loins. The pain continued to increase until it became most distressing. In two days however the complaint subsided, so far as to enable him to return to his business as a shoemaker.

For the space of five months afterward, he was occasionally subject to a return of the same kind of pain. He was often entirely free from it for ten days or a fortnight, when it would again return, and sometimes so severely as to excite violent fever. These attacks usually continued from seven or eight to thirty-six hours at a time. The most severe pain was always of an acute description, shooting downward in the course of the ureter from the kidney towards the bladder, and occasionally extending itself to the external orifice of the urethra.

Latterly the severity of the pain induced a degree of torpor, both in feeling and power of action, pervading the whole right side of the body and

limbs. The attack was repeatedly productive of the most urgent and fatiguing tenesmus, with constant desire to pass his water, although neither his stools nor urine were voided without extreme pain.

During the intervals that occurred, although sufficiently recovered to be capable of looking after his business, he very rarely felt as if in perfect health, generally finding a certain degree of internal obstruction in his own idea, preventing the free passage of the water.

About five months subsequent to his first attack, when extremely ill, he was ordered a pill, containing two grains of opium, at noon ; it lulled the pain, and he got sleep. In the evening he took a second pill as before. During the night he slept well, and in the morning he arose refreshed and free from all uneasiness. Judging from his own feelings, he now considered himself quite recovered.

Towards evening however, in making water, he felt something come suddenly into the passage, instantly obstructing the flow of urine. It gave great pain, and brought on the most excessive straining, which continued until at length the cause of the obstruction was shot out from the orifice of the urethra, when the water again flowed as freely as ever. On examining the chamber-vase it proved to be a small rounded calculus of uric acid, about the size of a pea, which in all probability had been during the whole of the period of his ill health making its way through the ureter.

Case 5.

*Ulceration, with Calculi in the Kidneys.**

Catharine Harwood was admitted into the Westminster Hospital, August 7, 1765. She came in reported with stone, and was under Mr. Pyle's care. There was a suppression of urine occasioned as was supposed, by a stone or stones in the bladder; but on examination none were found; while in the hospital she in general passed but little water, yet on introducing the catheter upon one occasion as much as half a pint was found. She remained much in the same state for a fortnight, and died on the 21st of the month.

Examination.

In the abdomen all the viscera appeared sound except the kidneys, and here was the source of all her complaints, as well as the cause of her death.

Both the kidneys were in a soft, and almost putrid state. They were very much enlarged. In the pelvis of the kidney upon the right side, was a triangular knotty stone, one angle of which had

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* Extracted from a MS. of the late Mr. Watson's; which together with the disease, is preserved in Mr. Heaviside's museum.

passed through a small ulcerated hole in the pelvis, and appeared externally. The pelvis of the kidney was exceedingly thin and tender round the part where it had given way.

Lodged in the infundibuli of each kidney calculi were found; in the cells of the right were several small stones; in those of the left there was a great deal of sabulous matter, but only one stone that had reached the size of a pea. The ureter of the left kidney had several small calculi in it, for some distance down. These were not larger than small pepper corns.

In the bladder was a small quantity of sabulous matter, adhering loosely to its internal coat. Otherwise the bladder was healthy, being neither inflamed nor contracted.

The opening made by the stone through the pelvis of the kidney, must have allowed the urine to escape into the cavity of the abdomen, and thus have hastened the fatal termination of the disease.

Case 6.

Abscess of the Kidney, breaking into the Abdomen.

In May 1813, I was desired to examine the body of a little boy who had died at the age of seven years. His mother stated that he was born a very healthy child, and was so when sent out to wet nurse. He ran alone early, but before he was

eighteen months old, his urine was observed to be high coloured, and was always voided with straining, and sometimes with pain. These complaints occasionally varied in degree, but gradually increased. He had scarcely reached the age of four years, when he was seized with a very severe paroxysm of distress and pain in making water. The urine was red as blood, and deposited a sandy matter that felt like coarse gravel.

At five years old his complaints of distress, frequency, and straining in making water, were so urgent as to lead to the opinion that there was a stone in the bladder. He was therefore carried to a surgeon, who introduced a sound, and as he was able to feel the stone, considered there was no objection to the performance of the operation for its removal. The mother however thought proper to take another opinion upon the propriety of the operation, which from the disturbed and highly irritable state of the constitution, it was considered, should at least be postponed until the health was improved.

The fits of pain and distress, which usually commenced in or about the loins, passing downwards towards the bladder, still continued to return as frequently and severely as ever, reducing him both in flesh and strength, till at length a fresh attack of excruciating pain and irritation supervened, and this soon excited a considerable degree of fever. He now also complained of great pain and exces-

sive tenderness extending itself over the whole of the abdomen, so that he could scarcely endure the weight of the bed-clothes.

Under the additional pressure of his new complaints, he gave way, sunk rapidly, and within a week expired, to appearance completely worn out by the extreme pain and irritation.

Examination.

The body was exceedingly emaciated, but the abdomen was somewhat tumid. Upon laying open the cavity of the belly a quantity of purulent matter, which had a strong smell of urine, was found loose among the intestines; this appearance seemed to be partly the result of peritoneal inflammation. Both kidneys, but particularly the left, had suffered considerably from inflammation; they were studded upon their external surface with pustular appearances, arising from the purulent matter of small abscesses situated in the cortical substance of the kidney being seen shining through the peritoneal coat of the gland.

Upon the surface of the left kidney an attempt had been made, by throwing out a quantity of coagulable lymph, to establish an adhesion to the intestines, to form a passage for the discharge of the contents of the largest abscess. This attempt having failed, the matter had escaped into the general cavity of the abdomen, and subsequently

from the suppuration extending itself, the urine also, exciting an extensive inflammation of the peritoneum, which soon proved fatal.

The ureters were very much enlarged; through their whole extent they bore the traces of inflammatory action upon their internal surface, and were full of purulent matter.

The bladder was much thickened, and the inner membrane highly vascular, from the long continued irritation having established a degree of permanently increased vascular action, scarcely short of inflammation.

Within the cavity of the bladder there was a calculus of a flattened oval figure. The structure of this calculus was made up of numerous thin alternate strata of uric acid and the phosphates, deposited upon a nucleus of uric acid. Besides the calculus, the bladder contained some little urine, and a pretty large proportion of thick white mucous matter. *

Case 7.

Abscess within the Kidney, discharging itself behind the Peritoneum.

On the 4th of June 1814, I was requested † to examine the body of a gentleman, who had died at

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* See Bladder and Calculus, Plate 1. *Fig.* 3, 4.

† By Dr. Hooper.

Islington; between sixty and seventy years of age. The following is an outline of the history. About four months before his death he had been attacked with an hæmorrhagic disease, attended with a vomiting and purging of blood, connected with febrile action, which threw out a number of petechiæ. These complaints were prescribed for, and he was relieved. He then became affected with constant and violent pain in the left side of the loins. The urine was thick, and deposited what appeared to be a purulent matter. His complaints were now treated with bougies, by an eminent surgeon, by whom he was told he had a stricture, although he declared he had never in his life found any difficulty in passing his water.

In the course of about three weeks, his pain moved from his loins downwards towards his hip, and as this took place he found himself easier above. Soon after this change, he observed that he made less water than usual, that his stools were more fluid than they were in ordinary, and that they had moreover the smell of urine. This went on for a week or two, when things appeared to be reversed, for he now made plenty of water again, but with it there sometimes came a fluid fœcal matter by the urethra, and frequently flatus, which passed forth every now and then with an audible and most unpleasant sound. With these complaints

he continued to be harrassed to the day of his death.

Examination.

On laying open the cavity of the abdomen, the peritoneum covering the left internal iliac and psoas muscles was found raised up by a large collection of matter, which had taken place in the cellular structure, between the membrane and the muscles. Purulent matter was also found loose in the abdomen, a circumstance which was explained by lightly pressing the membrane, confining the contents of the abscess, for then more matter was seen to pour out by a small round hole, ulcerated through the peritoneum. By this opening a probe was introduced, and the membrane was then divided upward and downward, to the extent of the abscess.

This abscess had entirely separated the kidney from the muscular parts behind it, quite up to the lower ribs, from thence extending itself downward as far as Poupart's ligament. The quantity of matter found in the abscess was about twenty ounces.

Within the diseased kidney several abscesses were found in the infundibula. One of these towards the lower part of the kidney had burst backward into the cellular membrane connecting it to the muscles, and the matter had subsequently made its way down behind the peritoneum, into the

situation where most of it was found after death, although a part had escaped into the general cavity by the ulcerated opening above mentioned.

The contents of the abscess had discoloured and almost disorganized the muscular surface upon which it lay, giving the cellular membrane an extensive sloughy appearance.

A circumscribed spot of inflammation had taken place between the posterior part of the bladder and the anterior surface of the intestine rectum, the consequence of which had been an adhesion of these two parts together. Within this circle of adhesion a small passage was found, by which the ulcerative process had established a communication between the two cavities.

Case 8.

Abscess of the Kidney. *

In 1794 I was sent for to see a young lady, Mrs. P——e, who had been married about a year. She became subject about five months previous to my seeing her to an irritation at the neck of the bladder. She had a very frequent desire to pass her water, night and day, the urine depositing a great quantity of thick mucus. These complaints she

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* The following history, together with the diseased parts, are preserved in the museum of Mr. Heaviside, who was the consulting surgeon in attendance.

imputed to having taken cold during menstruation, which suddenly ceased, and never returned.

The disorder continued for six weeks, in spite of opiates, and other rational means. At this time however it suddenly left her, upon the coming on of a pain in the back, with which she was suddenly attacked. This pain was constant, and was situated in the region of the right kidney. A few days subsequent to the commencement of the pain, a tumor appeared upon the part, and continued gradually to increase, extending forwards towards the region of the liver. This gradual increase of the tumor externally went on for about two months.

In this stage of its progress, I was called upon, and found a large tumor in the region of the liver, very hard, very extensive, and in some parts evidently containing a fluid.

I said this seemed to have been one of those cases I had sometimes seen, wherein the disease had never existed in the part where the first symptoms had appeared. That I conceived she never had any disease in the bladder, but a symptomatic action from an original affection in the right kidney, which perhaps might have suppurated, and during the inflammatory stage, it had probably formed an adhesion to the liver, so as to point through that viscus; that although there was matter, the great hardness all around made it better to wait till it was nearer the surface; being

yet deep seated; and that in whatever viscus it might be, the making an opening into it would afford the only chance, though a small one, of recovery.

In the course of a few weeks the fluid came more forward, and the surgeon who attended her desired me to open it, provided I thought it right so to do. I said that as he requested me to do it I would, though it more properly belonged to him. Accordingly, I carefully dissected down to it, between two of the lower ribs, over the region of the liver, till I came to a white shining tumour, into which I plunged a flat hydrocele trocar. Five pints and a half of very offensive matter were let out. She lived six weeks after the operation, and in order that the bed might be kept clean, without improper confinement of the matter, a hollow canula was retained in the opening, which was corked, and the discharge let out twice a day. The quantity evacuated each time measured four ounces. She gradually became hectic, sunk, and died.

Examination.

The liver was perfectly sound, but was upon its inferior surface united by adhesion to the superior extremity of the right kidney. The urinary bladder also was perfectly healthy. The whole of the disease was confined to the right kidney, which was greatly enlarged, and had within it a very large ab-

scess, into which the opening had been made when the contents were first let out.

From this abscess had been discharged at first five and a half pints, which, with half a pint a day for forty-two days that she lived after, being twenty-six and a half pints, formed a total of thirteen quarts of matter evacuated in the above period of time. *

Case 9.

Singular Effect of Irritation of the Kidneys from the Application of Blisters.

A. B., aged 29, a private in the 82d regiment of foot, was attacked with an inflammation upon his lungs, in April 1808; for which he took proper medicines, was repeatedly bled, and had several blisters. During the continuance of the inflammation he complained of a difficulty in passing his urine, but as this was at first considered to be merely the common effect of irritation from the application of the blister, it excited no particular attention. In a day or two, however, he said these complaints were worse, although the affection of his chest was better. He felt but little pain in making water, but found great difficulty in getting rid of it, from small pieces of soft matter, resembling jelly, passing into the neck of the bladder, and checking the current

* See Kidney, Plate 2. *Fig.* 1.

of the urine, until, with considerable effort, they were at last expelled through the urethra. These fragments of coagulated matter were found in the urine, and appeared to arise from a peculiar action in the secreting vessels of the kidneys, in consequence of which a part of the gelatine was separated from the blood, together with the urine. There was every reason to believe that the appearance in question was the consequence of a change in the action of the vessels in the kidneys, for on examination of the urine, it was ascertained that the quantity of gelatine expelled in its coagulated state, formed a very small proportion of the whole quantity contained in the urine, a circumstance that was proved by the urine subsequently depositing a larger coagulum of precisely the same appearance and texture as those passed from the urethra.

The largest of these coagula, was formed in the chamber vase from about a pint and a half of urine, its figure was flattened and circular, of a yellowish tinge, but semi-transparent; its weight was near two ounces. Upon examining it more closely it was in some points mottled, from some few of the red globules having been excreted with the coagulable matter.

No further trace of organization could be discovered when these singular appearances were examined with a magnifying glass.

In the course of a week the affection had subsided spontaneously without having been attended with

any pain or particular uneasiness in the region of the kidneys, or any material irritation about the neck of the bladder. During the attack he passed his water about every four or six hours, the only subject of complaint being the difficulty in getting rid of the small coagula that occasionally interrupted the stream of urine.

CHAPTER III.

ON THE SYMPTOMS, CAUSES, AND APPEARANCES, PRODUCED BY DISEASE IN THE BLADDER.

SECT. 1.

Of the Sympathies of the Urinary Organs.

AN intimate acquaintance with the minute, as well as the general anatomy of the urinary organs, will afford the only clue by which we can expect to find any rational ground, upon which to explain the various symptoms that occur, in many of the diseases of these parts.

With the assistance of anatomy we are able to perceive on the one hand that the nerves distributed to these organs are extremely numerous, although they are small, and that in addition to this there is yet another provision, in the lateral connections which the ganglia of these nerves form with each other; while on the other hand a very general source of the sympathetic feeling of one part for another, arises out of a similarity of structure in the two parts, and very frequently the existence of a continued line of similar organization between

the two sympathetic points, however remote these may be.

This law, or principle of action, may be said to be of almost universal application; it seems to depend principally upon the particular measure of sensibility and irritability originally assigned to each particular series of structure in the animal economy, by which any impression received upon one membrane, is more exactly capable of transmission, or in other words more apt to be translated to some other membrane of similar texture, than to any other series of parts, of which the body is constituted. It exhibits a striking instance of a certain unison of feeling, if the expression is allowed, which may be traced more or less distinctly in most of the operations of nature.

Sect. 2.

Of the Symptoms of Irritable Bladder.

The symptoms that point out an irritable state of the bladder are subject to much variety, dependant upon the nature and intensity of the cause. It is however constantly productive of a sense of uneasiness in the region of the bladder, with increased frequency in making water; it is often attended with an excessive discharge of mucous matter from the inner membrane of the bladder, the anxiety to pass the urine being constant, and fatiguing; and it is

sometimes also connected with the most urgent tenesmus and straining, symptoms that are so much increased at the moment of voiding the last drops of urine, that the turgid vessels upon the membrane lining the neck of the bladder, not unfrequently give way, and blood flows out from the urethra.

This train of symptoms may be produced by a variety of causes, inasmuch as it may be excited, either by the formation of gravel or sand in the urine, or by a stone in the bladder, by disease or disturbance of neighbouring parts, or lastly by disease of the coats of the bladder itself.

Sect. 3.

Of Irritation from Gravel, and the Appearances upon Dissection.

The frequent influence of gravel, in producing an irritable state of the bladder is well ascertained, although some patients remain for many years of their life subject to gravel without having been ever materially inconvenienced by this symptom. But whether the calculous matter, when it produces irritation, operates upon mechanical principles, derived from the figure of the crystals, and the contact of these with the irritable surface of the inner membrane of the bladder, or whether it so changes the properties of the urine, as to excite irritation through the medium of the fluid contents of the cavity, the

present state of our knowledge does not enable us satisfactorily to determine.

Neither is the influence of the various remedies employed more uniform in relieving, than is that of gravel in producing, an irritable state of the bladder; for the same means which in one case shall appear to relieve the irritation by preventing the formation of gravel, shall in another equally prevent this deposit taking place in the urine, while it increases notwithstanding, the distress of the patient, by aggravating the irritation.

Where this disorder is produced by calculous matter in the urine, it will, in general, be sufficiently evident, upon observing the appearances of that fluid, independant of which the uneasiness or pain in the loins, the deranged state of the digestive organs, and the other symptoms formerly noticed as connected with affections of the kidneys, will at once clear up the nature of the complaint.

The appearances met with upon dissection in cases where the complaints have been connected with the formation of gravel, and especially in those where the appearance of calculous matter in the urine has taken the lead of all the other symptoms, afford a very interesting demonstration of the extent to which the effects of irritation may be occasionally carried in the living body.

In most instances the change is confined to the most simple effect of irritation, an increased vascu-

larity, and an increased secretion from the inner membrane of the bladder; but the mischief frequently goes further than this, and from the mucous membrane not having been able to defend itself with equal effect at all points, the minute crystals of calculous matter, partially involved in the secreted mucus, have come into contact with the inner membrane, exciting an excessive inflammatory action, with effusion of coagulable lymph. By this means the particles of gravel, although they are in some degree removed from the surface of the inflamed membrane by the interposed stratum of lymph, become permanently fixed in their situation, by the coagulation of the effused fluid.

It is this process that gives rise to certain appearances occasionally found in diseased bladder, much resembling partial slough, attached to the surface of the inner membrane, but upon a closer examination they are obviously patches of effused lymph, covered with rough particles of calculous matter, firmly adherent to them.

Here then we may see the effect of the successive efforts of the constitutional powers to prevent the continued application of an irritating matter to the membrane lining the bladder. First, the natural mucus is thrown off in greater abundance than before; but should this not answer the purpose, the cause still produces the effect, for as the irritation increases, the consistence, as well as quantity of

mucous matter increases with it, as if with a view to disengage or prevent the particles of gravel from reaching the membrane. Where however this expedient fails, that which began with irritation going on to violent inflammation, lymph is effused, which opposes in general an effectual barrier to any farther injury; but where the disposition, or power, in the constitution to throw out coagulable lymph is weak, this last effort turns out no more successful than those that had preceded it, and the irritation continuing still to increase, goes on eventually to the establishment of fatal disease in the coats of the bladder.

Where the excitement has prevailed at particular points only, producing a free effusion of lymph, capable of answering the intention held in view, the appearances may be confined to a number of circumscribed patches of coagulable lymph, each surrounded by an inflamed circle, and covered upon the surface with adherent calculous matter; but where the same effort is made in a constitution possessing more irritability, with less strength, the irritation still continuing to operate, gives rise to circumscribed spots, at which the diseased coats of the bladder eventually throw up a weak irritable vascular fungus, projecting into the cavity, much disposed to bleed from the slightest cause, and possessing, in this respect as well as others, the characters belong-

ing to cancer, while the intermediate parts of the bladder are still found to remain undiseased.

In those cases in which the irritation has been extreme, and of a more extended operation, the diseased appearances are more widely diffused. At some points the calculous matter may be found adherent by the copious effusion of coagulable lymph, at which points the structure of the bladder will retain its natural texture, but in other parts where subsequently the same security was wanted, when not at hand, the whole of the coats of the bladder have in consequence fallen into a state of loose fungous disease, extending its ravages far and wide, until the unhappy sufferer, worn out by pain, irritation, and hæmorrhage, has been at length relieved by the hand of death. *

The disease just described seems to approach the nearest to cancer, of any to which the bladder is subject, it has the same occasional and peculiar lancinating pains, and the same terrible disposition to hæmorrhage, with all the fatality that can attach to a cancerous affection.

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* See Case 10.

Sect. 4.

On Irritation from Stone in the Bladder.

An irritable state of the bladder may depend on the presence of a stone within its cavity. Irritation from this cause is generally productive of great distress in taking exercise, and the motion of riding on horseback, or in a carriage, is almost intolerable; and although, while at rest, the patient may enjoy a state of comparative ease, whenever he voids his urine it is at the risk of the water every instant stopping suddenly upon him, for the current of the fluid brings the calculus forward, so as to make it press against the neck of the bladder, a circumstance that never fails to excite a spasmodic action in the bladder, increasing tenfold the severity of his distress.

Where this complaint occurs in a constitution naturally weak and irritable, or where, from the long continuance of the disease the habit is brought into a state of sympathy with the local affection, the consequences that are induced by the irritation of stone are truly formidable. The urgency to pass the water is constant and irresistible, and in the violent straining, the contents of the bowels are frequently expelled. The pulse is quickened, the stomach impaired, and as the complaints increase, the digestive powers at last totally fail.

The skin becomes parched, there is thirst and watchfulness, hectic fever with delirium follows, and the patient at length sinks exhausted by pain and irritation.

The irritation arising from stone in the bladder is frequently productive of the most extreme torment, and from the contact of the stone with the surface of the inflamed membrane lining the neck of the bladder, it is not uncommon for the vessels to give way, in which event the urine is more or less tinged with blood. This kind of bleeding however, rarely proceeds to such an extent as to deposit a coagulum at the bottom of the vessel in which the urine is received, although this has sometimes happened. In one instance indeed, I have known the bladder completely filled with blood from the rupture of a vessel into its cavity. The patient was an old gentleman, one of the East India directors, who had been many years subject to nephritic complaints. He was attacked with what was supposed at first a retention of urine, and a catheter was repeatedly introduced, but it was suspected it had not passed into the bladder, as no water flowed, although there was a manifest tumor in the situation of the bladder. A surgeon was therefore sent for from London*, who upon feeling the tumor said he thought it was blood, and upon

* Mr. Heaviside.

introducing the catheter, he was confirmed in his opinion. The patient died the following day, and on examination the cavity of the bladder was found entirely filled with a very large coagulum of blood, which had evidently flowed in from some part of the diseased surface of the inner membrane; for upon examining the kidneys, the one was much wasted and extremely small, the other much enlarged, and from previous obstruction converted into cysts by over distension, but neither in the kidneys or ureters was there the least trace of effused blood to be discovered.

The urine is in some instances tolerably clear, but more frequently the quantity of mucous matter thrown off from the inner membrane of the bladder is considerably increased, becoming also much more dense, and consistent than natural; the quantity when the symptoms are urgent, frequently exceeds that of the urine in which it is suspended.

The symptoms produced by the irritation of a stone in the bladder, are in some measure regulated by the particular situation occupied by the calculus. Where the stone lies in contact with the neck of the bladder, it excites a sense of heat and itching sometimes almost intolerable, about the external orifice of the urethra; but where, from the coats of the bladder being naturally disposed to relaxation, or when, from its being distended with urine, the calculus is to a certain degree supported in a

mediate situation, without being pressed against the sides of the cavity, the uneasiness experienced is of a much milder description; where however, from circumstances the calculus has reposed itself at the fundus of the bladder, the peculiarity of its situation has given rise to a very peculiar turn in the symptoms, for they have been all referred to the intestine. In one case of this kind particularly there was no suspicion of stone, as there had been no symptoms to lead to such a suspicion, but there was for years so much irritation and distress about the rectum, that no doubt whatever was entertained by the surgeons in attendance, of there being disease and ulceration high up in the gut, although nothing of this could be felt by the finger. Upon the death of the patient, a large stone was found lying at the fundus of the bladder, but the structure of the intestine was perfectly natural.

The inconstancy of the symptoms produced by gravel in the urinary passages has been already noticed, and the same observation is applicable to those symptoms of irritation that usually indicate the existence of a stone in the bladder.

In some cases a very large stone has remained for many years without having excited any material inconvenience; and I have myself once found at least a dozen calculi, some of them as large as a chesnut, in the bladder, in examining the body of

a man who never in his life had suffered from any of the symptoms of stone, and the evidently quiet state, and pale complexion of the mucous membrane when the bladder was removed afforded a strong confirmation of the fact, as it demonstrably proved that there was not the least degree of excitement or irritation upon the bladder at the time of the patient's death.

Sect. 5.

Of Irritation from Sympathy with surrounding Parts.

Another occasional cause of irritation in the bladder, is the sympathetic connection existing between this viscus and the surrounding parts.

Any irritation or other affection about the uterus or rectum, will give rise to uneasy sensations in the urinary bladder; and according to the nature or continued operation of the cause, the sympathetic irritation will be either a transient affection or a more tedious source of distress.

The irritation produced by worms in the intestines, when they are situated low down in the rectum, will excite a degree of tenesmus, connecting itself with frequency and uneasiness in passing the water; and I have in repeated instances had the same thing occur temporarily, from the irritation incident to my having removed hæmorrhoidal excrescences by ligature.

In one instance I had an opportunity of seeing a gentleman who had been long distressed by the apprehension that he had a stone in the bladder. The symptoms were so like those of stone, that several of the most eminent surgeons in London, whom he had consulted, had sounded him, but in vain, none of them could find a stone, although from what he suffered on the passing the sound, it was sufficiently evident that his bladder was in a very irritable state. The surgeon whom he had last consulted, although not able to feel a stone, thought it might not be amiss to direct something to clear the bowels, and with that view some calomel was ordered.

Upon the operation of the medicine, all the symptoms were immediately relieved, a circumstance that so much surprised the patient, that it immediately struck him there must be something peculiar in the nature of the motion he had passed, when upon examining the contents of the night chair, as many as eleven living insects were found to have been voided with the stool. They were all obviously of one and the same species, the length was about three-eighths of an inch, and with the assistance of a magnifying glass, the head, thorax, with the legs, and an elongated abdomen were very distinctly seen.

A contracted state of the rectum, and especially that kind of contraction produced by a disposition

to scirrhus, always excites an irritable state of the bladder, sometimes proceeding to the most distressing extent, an instance of which, with the appearances on dissection, will be noticed among the cases.*

Where the uterus has become cancerous, a sympathy with the early stages of the complaint generally excites an irritation in the bladder, and as the disease makes progress towards ulceration, the excitement at the neck of the bladder increases, and not uncommonly the ulcerating, and sloughing processes extend through the parietes of the vagina backward to the rectum, and forward into the bladder, until, by a complication of misery difficult to describe, the unhappy sufferer is quickly drained down to exhaustion and death.

An irritable state of the bladder is not unfrequently brought on in consequence of the use of injections for the cure of gonorrhæa, in which case it is generally connected, more or less remotely, with the production of stricture in the urethra; and these circumstances, which I have very distinctly traced in many instances, ought to be regarded as the most unanswerable proofs of the impropriety of having recourse to local applications of an astringent nature, in gonorrhæa. In several cases which will be detailed hereafter, the irritation

* See Case 11.

produced by this means was of the most distressing severity, neither had the uneasiness or frequency in passing the water entirely subsided many years afterward.

The mucous membrane of the urethra is a continuous surface with that which internally forms the lining of the bladder, and externally is spread over the glans penis; any increased action therefore, existing upon any one part of this continuous surface may with ease be transferred to another, and if checked prematurely, will shift its situation and take up new ground, where perhaps it may become much less manageable than it could have proved, had it been left entirely to itself.

It is upon this principle that the irritation from gonorrhæa is so liable to be translated to some other part when treated improperly, generally passing backward to the cavity of the bladder, and creating a much more tedious and infinitely more serious complaint, than that which was the original object of treatment.

Sect. 6.

Of Irritation from Disease in the Coats of the Bladder.

Irritation in the bladder may also be produced by a diseased state of its coats, but in general, though not always, the disease may be traced back

to a connection, more or less remote, with one or other of the complaints already enumerated, so that it can be very rarely said that the bladder becomes diseased in its structure, unless long continued irritation has previously operated as a cause.

Where however irritation of the bladder comes on, and proceeds progressively from bad to worse, without having any obvious connection with other complaints, or under circumstances in which it evidently stands alone, there will be reason to believe the disease seated in the coats of the bladder, and indeed this will now and then turn out to be the case, although there may be concomitant pains, or sympathetic affections elsewhere.

That the coats of the bladder, under certain circumstances, may take on diseased action very much resembling cancer, I have endeavoured to demonstrate, but I have never yet seen an affection of this nature commencing in the bladder, where it was not the evident consequence of former irritation.

The thickened state of the bladder, in which the cavity is considerably diminished, and the coats in the same proportion thicker and firmer than natural, as it is usually found in connection with obstruction in the passage of the urethra, I never can regard as implying a disposition to scirrhus or cancer,

although some authors* appear to have considered it in this point of view.

The only affections I have yet seen, in which the urinary bladder could be fairly said to have spontaneously taken on disease, were in cases of fungus hæmatodes, a disease which has been but rarely known to affect this viscus; I have only examined two instances of it myself, and only know of one example of the same disease having yet fallen under the notice of others.

Sect. 7.

On the Uncertainty of the Symptoms of Stone.

The symptoms of stone in the bladder are extremely various, and they are so inconstant, that it has been in various instances ascertained that stones of considerable size may be formed in the bladder and there remain probably for years, without producing symptoms; most frequently however, the existence of a calculus in the bladder is indicated by a certain train of symptoms, that with proper attention on the part of the surgeon, will generally clear up the true nature of the case.

The symptoms most commonly produced by stone are a constant sense of uneasiness and weight in the region of the bladder, frequent desire to pass

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* Johnston.

the urine, with great pain and straining in the act of voiding it, sometimes connected with urgent desire to evacuate the contents of the rectum. In making water, the stream of urine is liable to sudden stoppage, before the bladder is emptied, a circumstance that arises from the stone being brought into close contact with the irritable membrane lining the neck of the bladder, and is always productive of extreme pain.

The urine voided is generally more or less turbid, from the large quantity of viscid tenacious mucous matter that usually remains suspended, or else subsides to the bottom of the water. The urine is also frequently tinged with blood, and this, as well as the other symptoms, are especially aggravated by taking exercise.

The above symptoms occasionally connect themselves with pains settling in the loins, and passing thence in the direction of the ureters, arising from the irritation spreading through the ureters to the kidneys, and there exciting an increased mucous secretion, which commonly goes on to the subsequent establishment of purulent action upon the mucous surfaces of the cavities of these glands.

In the course of time, the symptoms arising from the irritation of the bladder, increase to that degree, as to afford the patient scarcely any remission of his distress and pain. The desire and straining to evacuate the contents of the bladder

and rectum are almost unceasing, and frequently altogether irresistible. Sabulous and mucous matter, with particles of stone are occasionally voided with the urine, and from the increasing severity of irritation, the urine acquires a highly offensive, alkalescent, or putrid odour. The constitution at length sympathises with the local irritation, and the constant thirst, heat, declension of strength, and loss of appetite all assist in hurrying on the disease to a fatal termination.

There are few points more difficult in practical surgery, than the deciding positively upon the existence of a stone in the bladder, unless the calculus has been distinctly felt by an instrument introduced into the bladder for that purpose. All the symptoms of stone are more or less equivocal, but some of them are exceedingly so. The symptoms that depend merely upon an irritable state of the bladder may arise from any of the causes already pointed out as occasionally producing it; and as to the apparently less doubtful circumstance of a full stream of urine being suddenly arrested, even this has been known to arise from a soft tumor springing by a narrow base from the inner surface of the bladder, where, from its situation, it was capable of being occasionally brought by the current of the fluid, into the narrower space at the neck of the bladder, and when this happened, it operated by suddenly stopping the flow

of urine, and, it is remarkable that in this case, precisely as in stone, the obstruction might generally be made to recede by change of position.

This same symptom I have known produced in one instance, by a very curious and very uncommon affection of the inner membrane of the bladder, in consequence of which that membrane had formed a transverse valvular fold across the neck of the bladder, opposite to the orifice of the urethra. This complaint, as it increased created frequent difficulty in passing the water, and the patient at last died of retention of urine. *

One of the least fallible signs of stone in the bladder, is the extreme increase of pain and irritation at the neck of the bladder that occurs in the act of expelling the last drops of urine, although I have myself found this symptom constantly present in an irritation which proved eventually to have existed quite independent of stone.

The symptom of all others least liable to deceive, appears to be a peculiar effect of the irritation; it is the distressing sense of burning heat, and intolerable itching, that is felt either in or about the external orifice of the urethra; but even this symptom, which may be considered the most certain of any, will occur only when the stone is press-

* The preparation of the disease is preserved in Mr. Heaviside's Museum. See Bladder, PLATE 2. *Fig.* 3.

ing against the neck of the bladder; and in cases where there is no stone at all, the same sensation will be excited, if there is ulceration at the neck of the bladder.

It has been already observed that the symptoms produced by a calculus, are, to a certain degree, regulated by the particular situation of the stone; and that when immediately applied to the neck of the bladder, it usually produces the least doubtful symptoms, that where it occupies a middle situation, the inconveniences resulting from it are generally less distressing, and that in those few cases in which it has been known to have remained at the fundus of the bladder, it has produced extreme irritation and distress in the intestine rectum, and there only.

Affections of the prostate gland are occasionally productive of symptoms, which, unless attention is paid to the case, may be unjustly attributed to a stone in the bladder; but the symptoms arising from affections of the prostate gland, are less subject to aggravation upon taking exercise, than those produced by stone; and where the prostate gland is enlarged, the fact can be readily ascertained in an examination by the rectum; independent of which, the distressing symptoms arising from stone are generally found to take place in paroxysms, compared with which the uneasiness consequent to enlargement of the prostate gland,

is less subject to variation, and usually much less severe.

Sect. 8.

On the Operation of Sounding.

It is upon the whole, very evident then, that symptoms alone, however clear or conclusive they may seem to be, can never warrant a positive opinion as to there being a stone in the bladder. Our dependance requires a better foundation, and we must not rest satisfied with symptoms where we may obtain the evidence of our senses. The operation of introducing a sound into the bladder, may enable the surgeon to feel the stone distinctly, and very often it may be so struck as to be audible to the byestanders; upon this operation alone can we rely for a satisfactory proof of there being a stone in the bladder, and without having ascertained the certainty of the fact by having felt the stone with an instrument, we can never recommend, much less proceed to perform, the operation for lithotomy.

Sometimes however, notwithstanding there is a stone in the bladder, it shall not be possible to ascertain it, by bringing a metallic instrument or sound into contact with it, whether the examination has been made in the erect, or in the horizontal posture. Under these circumstances the

calculus may frequently be detected by passing in an elastic gum-catheter without a stilet.

This instrument would appear to be fitted to convey a more delicate impression than can be received by an instrument of metal, but whether so or not, it has often succeeded in demonstrating the existence of a calculus, when it could not be ascertained by the introduction of the metallic sound.

The elastic gum-catheter has another advantage. It occasionally happens that a person who has long suffered under the fatigue of perpetual pain and irritation, and perhaps has had repeated and unsuccessful attempts made to find the stone by sounding, is so struck with the very idea of the torment he expects again to go through by a repetition of the experiment, that he cannot possibly bring his mind to submit to the proposed trial, whereas if his feelings are not alarmed, if he is merely requested to allow the state of the urethra to be examined by the introduction of a hollow bougie into the bladder, he suffers nothing in apprehension, and scarcely any thing in reality.

In some instances where there has been disease connected with stricture in the urethra, if an instrument cannot be passed immediately into the bladder, so as to feel the stone, the canal must of course be first dilated; but suppose the passage will admit the sound, even this is not enough; the instrument must be left, to a certain degree, at liberty when in

the bladder, and must not be tightly embraced by the contracted part of the urethra, for if it is, every attempt to move it about to any effect when in the bladder, will be either greatly embarrassed, or altogether prevented.

Sect. 9.

On the Disappearance of the Symptoms of Stone, the Formation of Sacculi in the Bladder, and the Principle upon which Alkalies operate on the living System.

The symptoms of stone, after having long continued to harrass and distress the patient, have in some instances become permanently relieved, or have entirely disappeared; and this very desirable change having for the most part taken place during the exhibition of medicines * professing to have the power of dissolving stone in the bladder, there was for some time no direct evidence that the remedies in question did not possess the properties supposed to belong to them; and they were consequently long believed to have the power of actually dissolving a calculus in the bladder; indeed the instances of their efficacy in relieving all the painful symptoms, occurred so frequently, that it was impossible to refuse them a certain degree of regard.

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* Particularly Mr. Stevens's Solvent.

The remedies thus proposed have been all of an alkaline nature, and have all had an alkaline matter for their base, and it is most true that by the exhibition of this class of medicines, the symptoms arising from stone in the bladder are very generally alleviated, and not unfrequently removed; and they may often be given to such an extent that the urine becomes very manifestly alkaline, and is capable of exerting a solvent power upon these concretions. But on the other hand, it rarely happens that their administration can be continued to this extent, for any considerable length of time, from the disturbance they produce in the state of the digestive organs, and sometimes also in the urinary passages.

Considered therefore as solvents, the alkalies are now but rarely used, and they are employed merely to alleviate symptoms or to prevent the increase of the concretion, purposes to which they are supposed to be principally adapted by preventing the generation of uric acid, or at least the separation of it by the kidneys, in consequence of which the urine is rendered less irritating.

But the influence these remedies are capable of exerting in relieving the symptoms of stone in the bladder extends, I believe, far beyond the mere prevention of the evolution of uric acid in the kidneys. There is sufficient evidence that they possess a very remarkable power in diminishing irritability of the bladder, and allaying excitement of that viscus, even

where it has proceeded to the extent of inflammation. There is another very curious circumstance, that has often been observed under the use of alkaline medicines, a circumstance which, according to my mode of explaining it, is directly attributable to the effect they produce upon the bladder,—I mean that particular state of bladder in which a sac, or cyst, is formed.

Examinations after death, in cases where a stone has been long known to have existed, and where by the exhibition of the alkalies the symptoms have entirely disappeared, have shewn that the calculus has remained entire, but the circumstances under which it is placed have been altered, instead of its lying, as at first, loose in the bladder, it is found confined in a little recess, and is prevented from doing further mischief; in consequence of which change, instead of the bladder being, as dissection teaches us every irritable bladder must be, contracted, thickened, and its inner membrane highly vascular, it is found larger than common, relaxed, soft and pulpy in texture, and not unfrequently even gangrenous upon its internal surface; not that gangrene which supervenes upon excessive action and excitement, but a chronic change evidently arising from extreme debility in the vital powers of the part, and totally independent of any appearances of preceding increased action, such as effused lymph, or extensive ulceration upon the inner membrane.

These are very curious facts, and they appear to me not to have met with the attention they deserve.

It has been stated already, that an alkaline matter received into the circulation of the blood, has the power of preventing the separation of an excess of the opposite, or acid principle, by the kidneys. Here then, we have unquestionably an instance, in the living system, of an operation regulated entirely by the known laws of chemical affinity; and I believe that in the relief afforded by the use of alkalies in stone, the agency of the same laws may be clearly traced much further.

The genius, and researches, of one of the most distinguished physiologists of the present or perhaps of any age *, led him to this bold conclusion, that the blood, although a fluid, seeing that it undoubtedly contains the elements of all living matter, is in itself possessed of a living principle, that its spontaneous coagulation should be considered as a proof of its possessing a vital power, and consequently, that blood recently coagulated may be regarded as still alive. Now it appears to me, that agreeable to these principles, the gelatin or fibrin of the recent coagulum of blood may be considered as very nearly parallel to the muscular fibre, or gelatin that is already deposited, or laid down in the various structures of the body, and that the same measure of

* Mr. John Hunter.

vitality is possessed by both, if we make some allowance for its being destitute in the one instance of the appendages it possesses in the other, of blood vessels, nerves, &c.; and consequently, such experiments as tend to illustrate the effect of chemical agencies upon the fibrin of the blood out of the body, will also tend to explain the principle of action of the same substances, as they operate upon the muscular fibre of the constitution.

Now it has been clearly demonstrated by experiment, that all the acids, but especially those derived from the mineral kingdom, have the power of promoting and confirming the coagulation and contraction of the fibrin of the blood, while the alkalies on the contrary, tend to weaken or prevent the act of coagulation; indeed, in their concentrated state they are capable of dissolving the fibrin, subsequent to its having assumed the solid form; and the power which pure or caustic alkali exerts, when applied to the living body, producing a rapid decomposition by disturbing the arrangement of its elements, affords a strong proof that all living matter is liable to be affected even to disorganization by the influence of the more powerful of the chemical affinities.

Upon these grounds it appears to me, that notwithstanding much of the good resulting from the exhibition of alkalies in the irritation of stone may depend on their checking the excessive separation of uric acid by the kidneys, they principally operate

through the medium of the urine, by slowly and gradually abstracting from the inner surface of the urinary bladder a certain proportion of its excitability, diminishing upon this principle, not only the disposition, but the power also, for contraction and excitement; for the contraction of the muscular coat, and the inflammation of the inner membrane, being both dependent upon the same state of high tone in the parts, go hand in hand, are aggravated by the same causes, and are capable of being relieved by the same means.

It is sufficiently evident that where the exhibition of remedies operating upon this principle is continued for any length of time, the extent of their influence upon the coats of the bladder will go on progressively increasing, and the power of contraction in the muscular coat which was at first only moderated, will in time become weakened, and what will naturally be the result of this change?—We know that as the operation of the remedy takes place through the medium of the urine, all parts of the surface of the cavity must be equally acted upon, and whether the muscular coat of the bladder happens to possess every where exactly the same degree of strength or not, still the influence of the alkaline principle is sure to deprive every part of the cavity of an equal measure of its irritability and power of contraction, and consequently should any particular point have been rather deficient in strength,

it is by this means obviously set upon a much more unequal footing with the other parts of the general cavity than it was before, and therefore it gradually gives way in the act of expelling the urine, so as eventually to form a pouch, or sac; for let the thickness instead of the strength of the bladder be the question, and while the general thickness be 3-8ths of an inch, a single point be 2-8ths only, and let 1-8th be removed equally from every part; it is evident that while the thicker parts are reduced to 2-8ths of an inch, the deficient point will now be 1-8th only, or one half, instead of two-thirds the thickness or strength of the remaining parts of the bladder.

The exhibition of the alkalies, however, produce, in some instances, so much derangement of the stomach as to render it impracticable to continue them, and in most cases they prove so disgusting, that if the patient has been able to go on with them until the symptoms give way, they are then very soon laid aside; and should the calculus in the mean time fortunately have found its way into a recess or pouch, the happiest effects frequently follow. The state of the stomach very effectually induces the patient to adopt such a regimen as is best calculated to enable the constitution to recover its wonted vigour, and by the same means the tone of the muscular coat of the bladder improves; and the first effect of this improvement is a degree of contraction ex-

cited round the calculus, in the cyst; and as the muscular fibres naturally contract most, where the resistance is least, the orifice becomes the smallest part of the sac, and this circumstance explains why a calculus once encysted rarely becomes again troublesome to the patient.

Sect. 10.

On a Paralytic Affection of the Bladder.

There are, however, certain states of constitution, connected with deficient supply of the nervous influence, in which the bladder is found not only to lose its tone, but also to become diseased on its internal surface, independent of the use of alkalies. In one instance, a lady whom I attended, and who had declined into a state of complete paralysis, having lost all power of motion and feeling in the body, as well as limbs, remained in this situation for more than six weeks, during which period I was obliged regularly to draw off the water. The urine had most frequently an oily appearance, and was usually of a deep brown colour, with a peculiar alkaline odour, so fœtid as to render the apartment almost insupportable, a circumstance which was attributed to an altered state of the secretion from the bladder, in consequence of some disease of its inner membrane.

In the course of time, the constitution began unexpectedly to rally; the feeling first, and then the

power of motion, by degrees returned, and in six months the patient had almost entirely recovered. In a single instance only, where the bladder was affected much in the same way from paralysis, and where from the same peculiar and intolerable fœtor of the urine it was impossible to mistake its being a similar affection to that above-mentioned, I had an opportunity of examining the state of the parts after death. The appearances confirmed the opinion I had previously entertained, and as they may serve to demonstrate the nature of a particular affection of the mucous membrane of the bladder, they will be mentioned with the cases. *

Some late ingenious experiments have thrown considerable light upon the influence of the nerves, in regulating the operation of secretion; and considering the results of these experiments, together with the above circumstances arising from disease, it seems most probable that in these instances the routine of changes first began with some deficiency in the quality of the secreted mucus, which is obviously provided as the natural defence of the inner membrane of the bladder, from the irritation of the urine; and that the long continued excitement arising from this defect in the natural actions of the membrane, conjointly with the increased power of irritation in the urine, incident to confine-

* See Case 14.

ment in bed, had produced an attempt at inflammation, which, from the deficient energy of the parts, had sunk into exhaustion and loss of vitality.

Sect. 11.

Of adherent Calculus.

It has been observed that in severe irritation of the bladder arising from gravel, the inflammatory action will occasionally proceed to such an extent as to end in effusion of coagulable lymph upon the inner membrane, and under these circumstances it is not unusual to find the calculous matter adherent to those parts upon which the effusion has taken place. Very much the same kind of thing occasionally takes place in affections produced by stone, in which the irritation excited either by the calculus itself, or by some other cause, is productive of an effusion of coagulable lymph, the surface of which, connecting itself with the stone, becomes the bond of union between it and the coats of the bladder. In one case * this event was ascertained to have taken place in consequence of irritation at the neck of the bladder, produced by injecting to cure a gonorrhæa; although it is more generally the result of the irritation excited by the stone itself.

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* Related by Sir E. Home in his Practical Observations on Stricture.

It does not appear that the texture of the calculus has any material influence either in promoting or retarding this process of adhesion; for in the case just mentioned, it had taken place with a calculus, the surface of which was composed of the phosphates, and in another instance, which will be more particularly spoken of with the cases, the medium of adhesion had very firmly united itself to a calculus of oxalate of lime. *

The circumstance of a calculus being adherent to the coats of the bladder may in some instances be tolerably well ascertained, in the operation of sounding; for the sensation conveyed by the instrument will be pretty clearly that of a calculus confined to a particular part of the cavity of the bladder, allowing the sound to strike against it, and pass by. In other cases however there is no intimation of this sort, at least none sufficiently clear to be at all depended upon, nor indeed, would it, if known, materially interfere with the adoption of the means necessary for relief, although the adhesion of a calculus certainly lessens, in some degree, the probability of a favourable issue to the operation for lithotomy.

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* See CASE 12.

Sect. 12.

On the Operation of Lithotomy.

The performance of the operation for the removal of a stone from the bladder is frequently our only resource, it appears however to be a measure warrantable under certain circumstances alone.

In the first place it must not only be clearly ascertained that the symptoms have been produced by calculus actually in the bladder, from its having been repeatedly and distinctly felt by several persons, with the metallic sound, or other instrument passed into the bladder; but it must be also distinctly felt by the sound or staff, at the commencement of the operation, for a stone that has been long lying loose in the bladder may subsequently become encysted, and if this change takes place just before the operation is performed, the surgeon may be completely foiled in his attempts to find the stone; and as to the sensation produced by passing the end of the sound over a rough calculous surface in the cavity of the bladder, even this may prove deceptive; for it has happened that a patient has been regularly and repeatedly examined by various surgeons, and the sound has been clearly perceived to strike and grate upon a calculous substance, and yet upon the operation being performed, there has been no calculus found, the whole of the mischief having

been the result of gravel, that had excited partial effusion of coagulable lymph upon the inner surface of the bladder, which becoming subsequently encrusted with calculous matter, had given the peculiar sensation conveyed by the sound, and mistaken for the contact of a stone.

In the second place, the state of the patient's general health must be considered, previous to determining upon the operation. If the constitution appears good, with the exception of such symptoms as are known to be always produced by the irritation of calculus, proper medicines, aided by rest, will generally succeed in bringing things round into a state favourable for the operation; but when in examining by the rectum the prostate gland is ascertained to be much enlarged, or is known to have been long diseased, where there have been fistulous abscesses in perinæo, with disease in the urethra, where there has been extensive sympathetic distress, connected with tedious and racking fits of pain in the lumbar region, such as are known to be generally produced by calculi in the kidneys, or where from any other cause the strength of the constitution is essentially impaired, the operation should not be recommended, neither should it be performed, unless at the earnest solicitation of the patient; much however, in the determination of these important questions, must rest with the professional talents and judgment of the surgeon.

Sect. 13.

Of the Appearances and Structure of Urinary Calculi.

There is considerable variety in the appearance and structure of the calculi met with in the urinary bladder. It has been already observed that the concretions usually formed in the kidneys are principally composed of uric acid; but calculi that have been produced in the bladder are commonly found to be made up either of phosphate of lime, or the triple phosphate; unless they assume the mulberry form, when they consist of oxalate of lime; or where a nucleus of uric acid has come down from the kidney, while the urine has still continued to be loaded with an excess of uric acid, in which case the deposit commenced in the pelvis of the kidney, continues to increase in the cavity of the bladder, and in this way the uric calculus has become much larger, previous to the cessation of the secretion of an excess of uric acid. When however this peculiar action has once subsided, the future increase of the calculus most frequently depends on a deposition of the phosphates. In occasional instances however, the increased secretion of uric acid has returned at intervals, and in these cases the calculus has been found to be composed of alternate layers of uric acid and the phosphates.

The nucleus of a calculus from the bladder is generally formed of uric acid, a circumstance that always argues the stone having been originally derived from the kidneys *. It is much less common to find the central part composed of a little loosely agglutinated ammoniaco magnesian phosphate, the surrounding mass consisting of the same substance, together with variable proportions of phosphate of lime; but the most rare, and perhaps the most pure species of urinary concrete, is the mulberry calculus, which frequently consists throughout of little else than oxalate of lime.

Where, from accidental circumstances, any extraneous body has made its way into the bladder, the deposit that takes place around it is found to be a mixture of the phosphates; and in this way a small coagulum of blood, a common pea, a hazle nut, a needle, or a bougie, have each of them occasionally become the nucleus upon which calculous matter has been precipitated.

The external characters of urinary concretions are various. Those that are composed of uric acid, are easily distinguished by their red or deep yellow colour; they may have a smooth surface, but it is frequently rough and warty. Such as contain the uric acid deposited in combination with the ammoniaco magnesian phosphate, are of a pale or grey

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* See Calculus, PLATE I. *Fig.* 4.

colour, with a smooth, and frequently a crystalline surface. There are some that consist of oxalate of lime, and these are easily known by the protuberances and inequalities upon the surface, whence they have received the name of mulberry calculi; in their superior compactness and weight, and in their darker colour, they differ from the other kinds of urinary concretions.

When a calculus is carefully divided with a fine saw, the exact arrangement of its internal structure is at once exhibited. The central part or nucleus is in the majority of cases found to be uric acid, the surrounding laminæ being made up of the phosphates, either intimately combined, or alternately disposed, although occasionally the uric acid, and the phosphates, are laid in succession throughout the whole bulk of the calculus, but in this case the uric acid is usually found in less abundance than the other constituents.

CHAPTER IV.

ON THE TREATMENT OF DISEASE IN THE BLADDER.

SECT. 1.

On the Treatment of Irritation from Gravel.

IN the preceding observations, most of the affections to which the urinary bladder is subject, have been considered as symptomatic of some other complaint, upon which account the treatment of the symptoms arising from the state of the bladder must commonly be regulated by those principles that are most applicable to the removing, or at least relieving, the original disease.

This is particularly the case in such instances of irritable bladder as depend on the excessive secretion either of uric acid, or the phosphates, by the kidneys, under which circumstances the treatment likely to answer best in relieving the affection of the bladder, will be that which is adapted to correct the secretion from the kidneys; and the means best calculated to answer this purpose have been mentioned in the treatment of affections of the kidneys.

Where however irritation in the bladder has attained a certain point, it may be necessary to have recourse to some further measures for its relief, than those which are merely directed to the removal of the original cause of the complaint. In these cases our principal means of alleviating the sufferings of the patient may be said to be opium, and opium alone. The preparations of this invaluable remedy may be sometimes so exhibited as to afford him infinite comfort; and to these may be joined the occasional use of the warm bath, or perhaps the hip bath only, with rest, and a careful attention to the state of the bowels.

In the consideration of the symptoms and changes that arise in the state of the bladder from the long continued irritation of calculous matter or gravel, the gradations in the appearances of disease were traced through what is commonly the progressive consequence of many years ill health; and in all these progressive stages of decline, our principal dependance for relief is still upon opium. It may be given internally, either in substance or tincture, but in either case it will require to be repeated at regular intervals, in order to keep up the beneficial influence in the constitution. The tincture of opium may be exhibited as an injection, sixty or eighty drops in some warm thin starch or gruel with a table spoonful of olive oil, being thrown up twice

a day; or the opium in substance may be introduced into the rectum.

Where however the preparations of opium prove objectionable from their confining the bowels, the extract of hyoscyamus may be employed instead of it, and may be given at first in doses of five or six grains. This remedy has been very highly recommended for its influence in allaying irritation of the bladder, while it has the additional power of preserving a gentle relaxation of the bowels; but its effects must be watched, and the mode of exhibiting it, must be of course varied conformably to the state of the pulse, and other circumstances. The extract of aconite also, has in some instances, proved an invaluable remedy in relieving this kind of irritation.

Sect. 2.

On the Treatment of Irritation from Stone.

Where an irritable state of the bladder arises from calculus, the means proposed in the way of treatment, must be either palliative or radical. By the use of palliative measures we may succeed in removing the symptoms produced by the stone, but the radical means are so far superior, as that they have for their object the removal of the stone itself.

Among the palliative means may be enumerated the various preparations of opium, the various preparations of the alkalies, such as lime water, soap,

acidulous soda water, and caustic alkali, and occasionally the exhibition of tonic and stomachic medicines. All these remedies are occasionally useful in relieving the severity of the paroxysm, or fit of the stone.

From the power which the alkaline solutions possess in dissolving the concretes of uric acid out of the body, it was long believed they might be so exhibited as to effect the same desirable purpose while the calculus yet remained in the bladder; but all the experiments that have been made with this view have turned out unsatisfactory and fruitless; and their failure, when taken internally, has been attributed to the alterations produced by the act of assimilation, and the passage through the circulation of the blood.

The French chemists indeed have proposed getting over this difficulty at once by injecting the solutions of the alkalies directly into the bladder, by the urethra; but after having been repeatedly tried in this country, the practice is now entirely abandoned as useless and pernicious, not dissolving the calculus, but permanently injuring the bladder.

Sect. 3.

On the various Modes of performing the Operation of Lithotomy.

The only radical means known, or those by which the stone may be removed from the bladder, are the various modes of performing the operation for lithotomy.

The operation for the stone has been variously performed at various periods of time, and most of the alterations that have successively been made, may be considered as so many improvements in the art of surgery.

The earliest idea was that of cutting out the stone at the perinæum. Two fingers of the left hand were introduced into the rectum, to enable the operator to press the stone forward against the perinæum, and the wound being made with a knife, was enlarged to a sufficient extent to allow the calculus to be protruded into it; and the stone being then hooked out, the operation was finished. This was the mode adopted and described by Celsus.*

But the operation performed in this way was liable to many objections and dangers, the principal of which was removed by Fabricius Hildanus

* Lib. vii. cap. 26.

who first proposed the introduction of an instrument by the urethra into the bladder, to serve as a director in the operation. There were however still several considerable difficulties in cutting through the perinæum, so that it was at length proposed to extract the stone by a wound made into the upper part of the bladder, by cutting above the pubis and this mode of extracting was distinguished by the name of the High Operation. It was first introduced by Pierre Franco, in the year 1561; but the obvious risk of opening into the general cavity of the abdomen, and the consequences likely to ensue from this accident, were so many dangers and objections which prevented this mode of operating ever being generally adopted.

The original idea of the operation at present in use, appears to have been derived from that which was proposed and practised in France by Frere Jaques a monk, who in 1697 taught in Paris his method of cutting for the stone. He passed a large staff into the bladder, and with this to direct him he plunged a short dagger-shaped knife at once through the perinæum into the bladder, and then removed the stone with the forceps. The striking feature of improvement in this operation was the superior boldness and decision with which it was performed, by which an ample and adequate wound was promptly made into the bladder, instead of having recourse to the means previously in use,

for dilating or rather tearing open a small and inadequate wound. Frere Jaques latterly adopted the grooved staff in operating; and it is astonishing how constantly successful his operations were, subsequent to this period.

Cheseldon performed the operation of lithotomy by dividing the same parts that are now cut through with the gorget; but he chose to make his section in the opposite direction, and instead of exposing the groove of the staff at the membranous part of the urethra, as is done in the present day, and then dividing the prostate and body of the bladder, he struck his knife first into the bladder, found the groove in the staff, and so divided upwards, cutting through the prostate gland and neck of the bladder; by these means he was sure to avoid any risk of wounding the intestine.

Sect. 4.

On the present Methods of operating for the Stone.

Sir Cæsar Hawkins first introduced the use of the cutting gorget; and the following account of the present mode of operating with that instrument, will be found to differ in no material circumstance from the operation, as performed by that surgeon.

With a view to the performance of the operation of lithotomy, some preliminary attentions may oc-

casionally be required. Should the patient be of a full habit of body, some blood may be taken from the arm two or three days before, and a purge also be given. A few hours previous to operating, an injection ought to be thrown up, to ensure the rectum being empty, and diminish the chance of its being wounded in the operation.

It is generally considered an advantage that the bladder should be partially distended with urine at the time of operating, on which account the patient should retain his water for some time before. It is also essentially necessary that all the instruments that may possibly be wanted in an operation of so much importance should be ready at hand, and laid in order on an adjoining table.

Those instruments that are or may be required, will be the following; a cutting gorget, and several grooved staffs of various sizes, the groove of each being accurately fitted to the beak of the gorget; several scalpels, one of which will be necessary in the commencement of the operation; forceps of various sizes and forms; a probe-pointed bistoury for enlarging the section through the prostate gland, if the division of the parts effected by the gorget be not sufficiently free; a large syringe, either for injecting the bladder, washing out clots of blood, or the broken particles of the stone; a scoop should also be at hand, as it is occasionally

useful for the same purpose; and lastly the garters necessary for securing the patient's hands and feet.

Considerable difficulty is sometimes experienced in getting the staff into the bladder after the patient is upon the table, and as any delay at that time unavoidably lengthens the period of alarm and terror, the staff had much better be introduced, and the stone again felt so as to be certain of its being in the bladder, previous to his being bound.

The patient being placed upon the table, his wrists are brought down to the outsides of his ancles, and to be firmly secured there by the garters, the knees being bent, and the heels brought back against the buttocks.

The assistant supporting the scrotum with the left hand, is with his right to hold the staff, so as to make the curve of the instrument project towards the left side of the perinæum.

The first incision should commence below the bulb of the urethra opposite the membranous part of the canal, at the point where the operator intends to expose the groove of the staff. This incision should extend three or four inches downwards, to the left of the raphe of the perinæum, at equal distances from the tuber ischii, and the anus. The next object is the division of the transversales perinæi muscles, which is an essential circumstance in the operation. The point of the knife is then to be passed into the groove of the staff, puncturing

the urethra, and exposing the groove of the instrument as near as possible to the prostate gland, in doing which the knife should be made to divide the urethra as far as possible along the groove of the staff towards the bladder, a precaution that, if properly attended to, prevents the risk of the beak of the gorget being entangled by the soft parts, which would endanger its escaping from the staff, and passing in a wrong direction. The knife being now laid aside, and the beak of the gorget accurately and securely set in the groove of the staff, the operator takes hold of the handle of the staff himself, and raises it up from the groin till the handle of the staff forms a right angle with the body of the patient. Before pushing on the gorget however, the beak should be moved backward and forward a little, to ascertain clearly that it is fairly and freely placed in the groove. The bringing forward the handle of the staff so as to raise its point which is in the bladder, is a circumstance of the highest importance, for regulated by this the gorget, the handle of which must be somewhat depressed as it passes forward, will be so introduced as to pass on into the bladder in the proper line of the axis of the pelvis, by which care the risk of wounding the rectum is avoided.

The gorget having been introduced fairly into the bladder, may be again withdrawn, and the staff also being removed, the forceps should be imme-

diately passed, and whenever the finger can be made to reach the stone, it will prove the most useful of all directors, for the application of the blades of the instrument. Where this however cannot be done, the stone may be repeatedly touched with the blades of the forceps, previous to their being opened, so as to enable the operator not only to ascertain its precise situation, but to furnish him also with some idea of its magnitude and figure, before he attempts to grasp it with the instrument.

Sometimes the fundus of the bladder will require to be supported, and raised up a little by two of the fingers of the left hand introduced into the rectum, to enable the forceps to take a fair hold of the calculus.

In the first attempts to extract the stone, the greatest care should be taken to press the blades of the forceps together as lightly as possible, unless it has been already ascertained that the calculus is compact and hard in its texture, when this caution becomes of less importance.

The figure of a single calculus is generally more or less of a flattened oval, and where it is large it becomes an object of consequence that it should be so settled between the blades of the forceps that its long diameter or axis shall lie parallel to the length of the instrument, that it may be removed with the least possible difficulty or violence.

Many fanciful contrivances have been suggested for breaking up and crushing a stone in the bladder, where it is too large to admit of extraction, but these instruments although some of them are ingeniously contrived, have scarcely ever been found applicable in practice.

The surface of the stone, when extracted, should be carefully examined, as its appearance will generally point out whether there are other calculi or not. If any part of it is found flattened, or particularly smooth, it must probably have been the result of friction with another calculus; and the bladder must be attentively and repeatedly examined, to ascertain whether this is the case or not. The examination of the cavity of the bladder should always, as far as possible, be made with the finger, to learn whether any loose fragments of stone, any adhesive mucous deposit, or any sabulous matter remain behind; for in either case the bladder may require to be well washed out by means of the syringe and warm water. Experience has shewn that either of these substances may, if neglected, become the nucleus for a future stone to form upon.

The hæmorrhage that occurs either in, or immediately subsequent to the operation, may sometimes require either such pressure locally as may prevent its continuance, or perhaps the dilatation of the wound, in order that, if possible, the artery may be taken up. Where the first expedient will answer,

it is preferable for two reasons; it is more expeditious, and it conveys less alarm to the mind of the patient. It may be effected by the introduction of an adequate piece of firm dry sponge into the whole depth of the wound, and as this absorbs the moisture, it will continue to swell, until the bleeding subsides.

It is however necessary to recollect that when the tent is subsequently removed, the bladder should be carefully examined, to ascertain that no coagulum of blood be left within its cavity.

After the operation a simple pledgit may be placed over the wound, and retained in its place by the T bandage. The patient may then be laid in bed either upon his back or on his side, with his thighs closed, and a large opiate should be given.

Some care will be necessary in so disposing folded cloths and blankets upon the bed, as to receive the urine which flows by the wound, with as little exposure as possible to the chance of the patient's taking cold from the constant state of moisture of the parts; from the neglect of this precaution I have known an instance in which a severe cold came on, presently followed by inflammation of the peritoneum, and the patient died.

Inflammation of the bladder, extending itself to the membrane lining the cavity of the abdomen, forms one of the most serious dangers to be guarded against, subsequent to the performance of this

operation. The most unerring sign of this event is a degree of tenderness, more or less considerable and extensive, spreading itself over the region of the abdomen from the immediate seat of the urinary bladder.

Should this peculiar tenderness arise, the pulse, which in this case generally proves deceitful, must not be at all depended upon; it will feel weak, small, and languid, but leeches repeatedly applied, and even the lancet, if the pulse will at all admit of it, together with fomentations, aperient medicines, and the strictest abstinence, will form the plan on which we must depend for saving the life of the patient.

The gorget is, on some accounts, a convenient instrument, but many surgeons are of opinion, that from its having been repeatedly found, even in the most expert hand, liable to slip from the staff, or without this accident subject to inflict a second wound through the bladder, it should be altogether laid aside; particularly as the operation may be just as well performed by the knife alone.

An ingenious mode of operating with the knife has been described*, in which the operation commenced as for the gorget, is finished by means of a second staff introduced through the wound in the membranous part of the urethra, the knife

* By Mr. Allan Burns.

and the staff being brought out together, by the perinæum; and this, if properly executed, prevents the possibility of accident. But the fact is, that if the surgeon is sufficiently attentive and careful in operating, there can be no occasion for a second staff at all; for if the first incision is conducted in the manner above directed in operating with the gorget, and the first opening which must be freely made by the scalpel, in the membranous part of the urethra, be then carried through the prostate gland, and as much as is necessary of the exposed part of the bladder, by setting the back of the knife towards the groove in the staff, the operation will be finished in the manner in which I have myself in one case performed it with success, and in the manner that has been already recommended by one of our best surgeons.*

Sect. 5.

On the Performance of the Operation in the Female.

The performance of the operation of lithotomy is but rarely if ever necessary in females, a circumstance which arises from the organization and functions being more simple in the female, than in the male urethra.

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* Mr. Laurence.

The office of the urethra in the male is twofold; it affords a constant conveyance for the urine, when the bladder is emptied of its contents, but it has also another important duty to perform, in the occasional expulsion of the semen, and for the performance of the latter of these functions, a complex structure in the parts immediately surrounding the canal was required; while the only purpose of the female urethra is that of allowing the contents of the bladder to pass off, upon the natural impulse being given, for which reason the female urethra is extremely short, of very simple structure, and is capable of being dilated to a degree that, unless the fact was well authenticated, could scarcely be believed.*

Should the symptoms of stone in the female require the removal of the calculus, the first thing to be done is to tranquillize any irritation in the bladder by the means above pointed out, after which the urethra may be gradually dilated by the introduction of a sponge tent, until it will with ease admit the fore finger, when the calculus may be so examined as to enable the operator to judge very accurately how far further dilatation may be expedient, for the purpose of admitting the removal of the stone, or how far it may be rather

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* See CASE 13.

adviseable to divide the neck of the bladder, so as to allow the calculus to be at once withdrawn.

It has by some been objected to dilatation, that it leaves the fibres of the sphinctor muscle less capable of recovering their power of contraction, than the division by the knife would do; while on the other hand many surgeons entertain the contrary opinion, and maintain that the patient is at least as likely to recover the power of retaining the urine subsequent to the process of dilatation, as she would be from the section of the bladder required for the immediate extraction of the calculus.

Where the operation is performed, it only requires that a grooved director or female staff be introduced by the urethra into the bladder, when, with the cutting gorget, or the knife, the lateral parts of the vagina being carefully kept out of the way, the section may be effected to the necessary extent.

Sect. 6.

On the Treatment of Irritation from Sympathy.

Where an irritable state of the bladder has been produced by sympathy with surrounding parts, the treatment must be entirely regulated by the nature of the original disease. In one case of contraction in the rectum, a constant sense of uneasiness and pain in the seat of the disease, with the greatest

difficulty and distress in passing motions, connected with constant sickness at stomach, and general nervous irritation, at length induced an irritation in the bladder, which continued for several weeks; but by the occasional introduction of a bougie through the contracted part of the intestine, the state of nervous disturbance being constantly attended to, and carefully held in check by the exhibition of opiates, and by the variation of the interval of time allowed to pass between the operations, all the symptoms were eventually removed; the stricture was so effectually dilated, that it gave no inconvenience, except when the bowels happened to be exceedingly confined, the general disturbed state of the nerves subsided, the irritation of the stomach subsided as well as that of the bladder, and the lady remained free from any return of these complaints when I heard from her five years afterward.

Where irritation has been brought on by cancerous affections of the uterus, our only dependence is upon opium; aided by all those little attentions, both as to manner and conduct, which tend very materially to sooth the feelings of the patient, and to diminish the severity of affliction, notwithstanding they can have no power in arresting the progress of a fatal disease.

When irritation of the bladder has been produced by the improper treatment of gonorrhæa, the object of course will be to undo as quickly as

possible, what has been done. If the discharge from the external orifice of the urethra has disappeared, the warm bath and fomentations will tend to its restoration; and to these means, if necessary, may be added the application of some irritating matter, such as the bals. copaibi, to the urethra, by means of a bougie. The regular introduction of the bougie also will be indispensable, should the violence of the preceding inflammation be found to have brought on a contraction in any part of the canal.

It has been observed above, that the only instances in which I have been able to trace disease of structure arising spontaneously in the coats of the bladder, were in cases of fungus hæmatodes. In these the common symptoms that arise from irritation in the bladder, were the only decided characters that attended the production of the disease. Towards the latter periods, however, there was occasional bleeding in the one case, and more severe hæmorrhagy in the other; but in neither was it possible, during the life of the patient, to form any clear or satisfactory opinion as to the precise nature of the complaint.

In this disease we have little in our power, as in this, like the other affections of the bladder approaching to the nature of cancer, there are no means at present known to be within our reach, for attempting the removal of the disease. Our

object therefore, in the way of treatment, must be to alleviate symptoms as they arise, although with a very slender ground for hope as to the eventual success of our exertions.

Case 10.

Irritable Bladder, with cancerous Disease. *

December 15, 1796, I was desired to see a Mr. Lee, a gentleman who it was suspected had a stone in the bladder. On enquiry he gave the following account of himself. He said he had been all his life a very regular and temperate man. Once while young, he had had a mild gonorrhæa, which was soon cured. For the last two years, he considered his health had been on the decline. This he principally attributed to anxiety of mind, connected with affairs of business. He said that for the last two or three months he had found difficulty and pain in making water, and that twice within that period, he had had a retention of urine, which was relieved by proper medicines.

His present complaints were a frequent inclination to make water, attended with much straining, constant irritation at the neck of the bladder, and a greater or less discharge of viscid mucus,

* The following case with the diseased parts, are preserved in Mr. Heaviside's museum.

when he had nearly passed his water, which was sometimes streaked with blood, but not always. Having heard this account, I told him it was difficult to say positively what the nature of his disease might be, unless he allowed me to examine his urethra and bladder. He readily gave his consent, and I passed a middle-sized bougie into the bladder, but not easily, having met with two or three obstructions in the way. I then introduced a sound into the bladder, and endeavoured to ascertain whether there was a stone, but the sound felt so firmly wedged in, that I could neither move it one way or the other. I therefore very carefully withdrew it again, and a considerable hæmorrhage followed. It was not introduced afterward.

Dr. Crichton and Mr. Lucas were present at the above examination. We were all of opinion that there was some disease of the bladder, but what the disease was, it was not so easy to determine.

I did not see him again for several days, during which time Dr. C. prescribed for him. The Dr. then desired me to call upon him again. I found him rather worse than I had left him. He was passing his water generally every hour, and sometimes oftener, with great straining and irritation, together with a discharge, sometimes more, sometimes less, of a glairy and bloody mucus. Added to all this misery he had a teasing diarrhæa, with

prolapsus ani; was very much reduced, and had very little appetite.

Still entertaining an idea that stricture had a considerable share in producing his complaints, I passed a full-sized bougie up the urethra for about three inches and a half, where it stopped. Convinced that whatever might be the nature of the disease in his bladder, no benefit could arise till this obstruction was removed, I proposed to touch it with the lunar caustic. To this he was somewhat averse, fearful it might bring on more irritation. I assured him it was more likely to diminish it. He therefore submitted, and the caustic was applied on the twenty-fifth of December, and all the uneasiness he experienced from the application was a heat, merely local, which continued for about half an hour. In consultation it was agreed to continue this plan.

I applied the caustic every second or third day, till I had touched the stricture with it seven or eight times, and had so far gained ground as to be able to pass a full-sized bougie as far as the bulb of the urethra, but not beyond. I would willingly have persevered with the caustic, but from the sleepless nights, and repeated calls to make water, added to the diarrhæa and the prolapsus ani, he was so much harrassed and worn out, that he begged I would not only never attempt it again, but never even mention it to him, adding that the very

idea of the operation brought on an urgent desire to make water. I accordingly desisted.

He continued in this deplorable state, or rather constantly getting worse, for about three weeks, when he died, emaciated to the greatest possible degree.

Examination.

On opening the body, all the viscera appeared sound except the bladder, which was completely diseased, and in many parts disorganized. The peritoneal covering was entire, but when this was divided, the remaining coats of the bladder were in some places perfectly destroyed, and in others converted into a loose membranous, fungous, or cancerous structure. Towards the fundus of the bladder, the muscular coat, as well as the inner membrane were entire; the healthy mucous secretion however, had evidently been deficient for some time before death, as the surface was crusted over with sabulous sandy matter.

The ureters were considerably distended with urine, and rendered very thin. The rectum contained a good deal of fæces, and was indeed very much enlarged from the accumulation of excrementitious matter.

Case 11.

Extreme Irritation of the Bladder, from Stricture in the Rectum.

J. Ward, a labouring man, aged 52, first complained in December 1809, of pains in the back and loins. These pains increased, producing him much distress, till at length they prevented him from walking erect. The pain would sometimes shoot forward to the groin on the left side, where, after some time, it established itself as regularly as about the small of the back.

He had complained of these symptoms for about a month, when he began to experience pain in passing his water. It flowed freely enough, but the expulsion of the last drops was attended with severe pain, and violent straining. The affection at the neck of the bladder in the course of a few weeks became so severe, that the agony he suffered, was almost insupportable.

He now observed that his bowels, though formerly very regular, were becoming much less so; for he often required physic, and even with this assistance he was frequently several days without a motion. Almost three months had in this way passed, when he applied for assistance to the St. George's Infirmary. As he complained of distress in making water I was desired to see him. His

symptoms at this period were severe pains in the back and groin, extending down one thigh so as to produce lameness. On examining the groin, there was no appearance of disease, but as the bowels were much confined, he was ordered some physic.

The distress in making water still continued to increase, and a deposit was now observed in the urine, which, on settling, formed a thick, dense, white sediment, in considerable quantity. He was perpetually disturbed through the night, as well as day; and when the irritation was most urgent, it brought on an irresistible desire to pass a stool; the efforts to this effect however, though extremely violent, were always fruitless.

To ascertain the state of the urethra, a large-sized bougie had been introduced when I first visited him, but no stricture was found. A bougie was now again passed, without any more satisfactory result. There was no sensible obstruction in the prostatal part of the urethra, but as the affection was evidently situated at the neck of the bladder, it appeared right to examine the state of the prostate gland by a finger in the rectum. I did so, and in this way accidentally came at once upon the original disease. There was a firm contraction of the intestine, just within reach of the finger. The pain and distress produced by the examination was so great, that it was very clear,

so irritable a disease would not bear the application of the common bougie. A wax taper therefore, moulded to the proper curve of the rectum, and anointed with oil, was introduced and passed beyond the stricture, where it was allowed to remain for half an hour.

After an interval of some days, the operation was repeated, but subsequently the wax was exchanged for tallow, with a view to the bougie gradually softening, so as to allow the parts gradually to subside into a state of quietude. This proved to be the only tolerable mode of operating upon the stricture, by pressure. When the feel of the strictured part was particularly examined, the inner membrane seemed to be puckered up into numerous ridges and folds, external to which the coats of the intestine were evidently very much thickened, as well as contracted. The bowel was also found to be attached to the sacrum, so that it was not capable of any lateral motion, but felt as firmly fixed as if closely encircled with bone.

He still continued to suffer violently as ever, from the irritation in the bladder; the pain in the left groin and down the thigh had produced so great a degree of irritation in these parts, that he could scarcely endure the pressure of the bed-cloaths.

A new source of distress now arose, this was a frequent and severe pain in the diseased intestine,

which came by fits and starts, and seemed, from his description, to be principally of a spasmodic nature.

On the 20th of March, he was in every respect declining. The left spermatic process was exceedingly tender, and, on the slightest pressure extremely painful; it was also somewhat enlarged, and harder than natural. The lymphatic glands upon the affected side were exquisitely tender, but were not otherwise affected. To ascertain whether the disease was likely to be at all relieved by the local treatment, the parts were again examined, when it appeared that so far from being at all benefited, the disease was fast spreading. The tremor, and universal agitation into which he was thrown by the extreme pain incident to the examination remained upon him, as it usually did after the introduction of the bougie, during the whole of the day.

The pulse notwithstanding was undisturbed, and generally about seventy. On the 26th, he thought that the pain in the rectum was materially better, but that as related to the difficulty and urgency of contraction in the urinary bladder, he was very much worse.

The pressure against the stricture was again increased, by the occasional introduction of the wax bougie.

On the 10th of April, the extreme agony and increasing obstinacy of the contraction in the stricture, rendered the attempt to pass a bougie, unadviseable. For the last five days there had been no passage through the bowels. The stomach was in so irritable a state, that it rejected every thing nearly as soon as it was taken. A laxative injection which was thrown up into the rectum, came away without having been able to pass the stricture. An occasional convulsive hiccup now came on, which added greatly to his distress.

For some weeks a degree of swelling had been forming in the cavity of the abdomen, which evidently contained water. He complained much of general as well as local pain, with great heat, thirst, and restlessness. The pulse had become very small and weak, and beat 100 in the minute. On the 14th he died.

Examination.

Several quarts of serous fluid formed the tumor of the ascites. The whole of the intestinal canal was altered in its structure. The principal seat of the affection was apparently the muscular coat. The intestines felt somewhat like leather. They were so much altered in their texture, that when cut into, the section of the coats exceeded one-eighth of an inch in thickness. The general co-

lour was a red or mottled brown, in no part crowded with vessels.

At the upper part of the abdomen, connecting the stomach to the colon, was the omentum completely diseased. The whole of the omentum was exceedingly contracted in its dimensions, but was rendered extremely thick. To the touch, it felt like a cartilaginous substance. The disease in this part was irregularly tuberculated, and when cut into, the small honeycomb spaces between the membranous septa, were in some parts filled with a matter resembling cream, in others with a substance of more firm consistence. The general structure of the stomach exactly resembled that of the intestines. At the pyloric orifice, upon that side next the less curvature of the stomach a very extensive scirrhus disease was found. The scirrhus when divided was more than half an inch thick, and it is curious that the affection was entirely confined to the one side of the circle of the pylorus. The villous coat of the stomach was entire, but more vascular than in its natural state. The disease seemed to have left the peritoneal coat of all the viscera unaffected.

The lower part of the rectum presented the largest mass of disease. At the upper part of the pelvis, this intestine was firmly fixed to the spine and sacrum by a very extensive thickening of parts around the gut, the coats of which were com-

pletely converted into a cancerous structure; although it was impossible, by the external appearance, to determine what proportion of the general mass of the disease was formed by the intestine.

The whole was dissected out from the pelvis, and the anterior line of the intestine then laid open from the anus upwards, through the contracted part, by which means the stricture was brought fairly into view. It appeared that the contraction had commenced about five inches above the anus, and had extended itself upwards and downwards, until at length a passage through the strictured part became impracticable. The disease, from the villous coat to the external margin of the section, measured three-fourths of an inch in thickness.

The cancerous disease by which the intestine was surrounded was firm as cartilage; in structure this disease exactly resembled that of the pylorus.

The urinary bladder exhibited the consequence of long continued and violent irritation from sympathy. Its structure was undiseased, but it was exceedingly contracted, and consequently much thickened in its coats. The cavity was scarcely capable of containing a table-spoonful of fluid. The inner membrane was astonishingly vascular, and of the brightest scarlet colour.*

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* See Bladder, PLATE 2. *Fig.* 2.

Case 12.

Mulberry Calculus adherent to the Bladder.

George Rogers went through the operation of lithotomy when he was twenty-four years of age. From his childhood he had been very subject to uneasiness, and sometimes the most severe pain in passing his water, which for many years had occasionally deposited red gravel and sand. In the year 1800 he consulted a surgeon *, who from his symptoms had reason to believe there was a stone in the bladder. A sound was accordingly passed into the bladder, and the calculus distinctly felt. His habits of life were frequently intemperate, and he was sometimes inconvenienced by slight asthmatic attacks, but in other respects his health was tolerably good.

He was recommended to undergo the operation, and it was performed on the 15th of February 1800. On cutting into the bladder, the calculus was found, but it was firmly adherent to the coats of the bladder, near its neck; the adhesion however, was by degrees loosened, and the stone was safely brought away by the forceps.

On examination, the calculus proved to be oxalate of lime, and upon the least uneven part of its

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* Mr. Heaviside, who afterwards performed the operation, and in whose museum the calculus is preserved.

surface was a soft substance, closely attached, which had formed a part of the medium of adhesion. This substance, from its appearance and texture, was evidently nothing more than coagulable lymph, effused as the accidental consequence of preceding irritation.*

The young man recovered perfectly from the operation, and lived thirteen years after it, without experiencing any return of calculous symptoms. Latterly, he was much addicted to drinking, a circumstance that probably aggravated the severity of his asthmatic complaint, of which he died in November 1813.

Case 13.

Singularly large Calculus, voided spontaneously from the Urethra of a Female.

Among the rest of the specimens, in a collection of near 400 calculi †, is a concretion of very considerable magnitude. It is remarkable from its appearance and structure, but more particularly from the circumstances of the history which is annexed to it.

It was formerly in the possession of Mr. Watson, in whose hand-writing the account of the case

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* See Calculus, Plate 3. *Fig.* 1. & 2.

† In Mr. Heaviside's Museum.

stands. His memorandum states that the calculus was received together with the following particulars by Dr. Gray, from Dr. Alonzo de Cavallo, a physician at Lisbon, and a fellow of the Royal Academy there. He received it from his brother, a surgeon at Bahia in Brazil, at which place it was voided without any medical assistance by an old black woman. Previous to its coming away she had for a long time suffered excruciating pain, and remained ever after subject to an incontinence of urine. Dr. Gray received no other particulars.

The calculus itself is partly of an oval figure. It weighs four ounces and six drachms, troy weight. The section exhibits a loose crumbly texture composed of a small proportion of the phosphates, with a large one of mucous or animal matter, forming the nucleus of the stone, round which to a certain extent the phosphates have been deposited, in successive strata. Subsequently however, it appears from the structure, that the calculus took up some comparatively fixed place of abode in the bladder, in consequence of which the stream of urine making its way constantly over one part of its surface only, has given rise to a partial accumulation of phosphate of lime upon one of its sides. It appears probable also, that the large spaces between the masses that form the external part of the calculus must have been owing to the particular consistence of the mucous matter at these points, around which it

seems the phosphates were deposited, according to the accidental figure of each of the little masses of tenacious mucus.*

My having lately seen a very interesting account† of a calculus of extraordinary size that was voided under much the same circumstances, has operated as an inducement to bring forward the above particulars, as it appears to me that the two cases together form an exceedingly curious and striking parallel.

Case 14.

Diseased Urinary Bladder.

In September 1809, a woman in the 52d year of her age died in the Infirmary belonging to St. George's workhouse. She had been long in a very infirm state of bodily health, and her mental faculties had almost entirely failed. For the last six weeks of her life her stools and urine passed involuntarily, she never however seemed to suffer pain. During this period her urine was observed occasionally by the nurse, it was always very thick, extremely offensive, and occasionally tinged with blood.

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* See Calculus, Plate 3. *Fig.* 3.

† By Dr. Yelloly, in the 6th volume of the Medico-Chirurgical Transactions.

For sixteen days previous to her death the urine ceased to flow, and it was therefore removed at regular intervals by the catheter. The urine gradually assumed the dark red or brown colour of putrid blood, and became insupportably offensive, so that at last the room in which she lay could scarcely be endured after the water had been drawn off.

It is curious that for the last week of her life, whenever the catheter was introduced, she had a regular attack of rigor, resembling exactly the first stage of a paroxysm of intermittent fever.

Examination.

On laying open the cavity of the abdomen, the only appearance of disease was about the urinary bladder. The kidneys were in every respect sound. The capacity of the bladder appeared externally to be unusually great. This viscus after death is usually found contracted upon its contents, the size of it being proportioned to the quantity of contained fluid. In this instance however, it lay flaccid, nearly empty, without tone or disposition to contract; neither did it appear that this was the effect of mere paralysis, but was much more probably the consequence of disease, for the coats of this bladder, considering the degree to which it was relaxed, were at least four or five times the natural thickness, whereas we

know that in paralysis all muscular parts become wasted.

Upon cutting into the bladder the internal or mucous membrane was found completely diseased. This membrane in parts was highly vascular, but the prevailing tinge was a dark olive or grey colour. In some parts the surface was evidently ulcerated in small superficial spots, in others the membrane was black and putrid.

A few ounces of extremely fœtid, red, turbid fluid were found in the cavity of the bladder, which without any further relaxation would have contained at least a quart.

Case 15.

Fungus Hæmatodes of the Bladder.

Ann Burrows, aged 57, applied to the St. George's Infirmary for assistance in the beginning of August 1813; the following were the particulars of her account. In 1805 her menses finally left her, and for seven years subsequent to that period she had enjoyed good health.

About this time she began to be affected with a smarting uneasiness and pain in making water. The complaint gradually increased, so that in the course of six months it was sometimes attended with severe straining, and she frequently observed when the sense of bearing down was most urgent

that more or less of blood came away with the urine. For this new symptom she took some medicine, which, to use her own words, only seemed to "bring down the blood" more freely and frequently than before. Thus she went on, her complaints still continuing gradually to increase.

For the last three months previous to her application at the Infirmary she had been greatly distressed by wandering pains about the loins, and these latterly became more fixed and settled in the hips. The irritation to pass water was now so constant and severe as to reproduce the efforts, which were attended with the most severe straining about every ten minutes. Position made no difference, for it returned as regularly through the night as in the day. When the pains were most violent she generally passed a little pure blood with her water in small quantity.

The poor woman had about this time been persuaded by an acquaintance, to sit over the steam of warm water, with a view to relieve her pains. This expedient seemed at first to produce some degree of ease, but eventually it was found only to encrease the hæmorrhage, and she consequently gave it up.

An examination was made per vaginam, but the enquiry afforded no clue to the nature of her disease, for the vagina and os uteri were in a perfectly natural state.

She was herself disposed to consider her pains were rheumatic, because they were still occasionally a good deal connected with the loins, upon which account she begged to be allowed to apply a blister to the loins, and one was ordered. Upon the blister taking effect she for the first time felt, and mentioned something of a swelling that was taking place in the lower part of the belly. Upon feeling the parts the following day the tumor was evident and considerable; it was fixed and firm, situated in the region of the bladder immediately above the pubes; it felt as if firmly fixed to the bones of the pelvis, and was nearly as hard as a scirrhus disease.

From the long course of preceding hæmorrhage from the bladder, and from the feel of the tumor, there seemed to be some ground for suspicion that it might be produced by a mass of coagulated blood filling up the cavity of the bladder, added to which, the external feel of the swelling a good deal resembled that of a case already mentioned, in which the bladder was found full of blood. *

She fancied the blister had somewhat relieved the pain in the back, but not that in the bladder, although she did not find herself in more pain, either about the bladder, or between that and the loins, upon the appearance of the tumor, than she had been before.

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* See Page 60.

The pains were exceedingly violent, but she never admitted that they had the peculiar shooting or burning feel which generally forms a character of cancerous disease. The pulse was small and weak, at 120. She observed that the pains were now, and had been from the first, most constant and severe in the left side of the loins.

August 17. There was great pain and distress, constant watchfulness, and considerable fever. The tumor above the pubes was stationary. The grumous, bloody, or brown colour of the urine, which had for a few days ceased, had now returned, with an occasional deposit of a small thin coagulum of blood at the bottom of the vessel, or the occasional passage of small coagula, formed in the bladder. The turpentines had been directed in vain, and she was now ordered ætherial and opiate medicines. On the following day she expired, worn out by the long continuance of pain and irritation.

Examination.

The tumor within the abdomen was perceptible to the eye, through the external parietes. Upon laying open the cavity, a large and firm but elastic mass was found projecting upwards from the pelvis. This mass, as it had before appeared, was now found to be firmly adherent to the bones at the anterior part of the pelvis. The small intestines were

partially inflamed, and had formed adhesions with the tumor in several parts.

From each side of the tumor in the pelvis an extensive chain of diseased and enlarged lymphatic glands passed upwards upon the loins, towards the root of the mesentery. The disease had produced a more considerable change and a much larger tumor in the lymphatics upon the left than in those upon the right side of the loins. Most of these diseased glands were large as a chesnut, but many were equal in size to a small apple. As it was impossible to ascertain clearly what the large tumor was, while it remained fixed in the pelvis, the whole was dissected away from the bones, and on examination the urethra was found to pass into the tumor.

Following the natural cavity of the bladder by a probe, a section was carried through from the urethra, along the anterior surface to the fundus vesicæ; this section included a portion of the disease, which consisted of a secretion of soft white pulpy matter, into what appeared to have been originally the cellular membrane connecting the coats of the bladder. The continued pressure and the operation of the disease had given the cellular membrane the appearance of fine ligamentous fasciculi passing in various directions, while the mode in which the albuminous matter had been deposited, the secretion having been principally carried for-

ward at particular points, gave the whole mass the appearance of a congeries of smaller tumors.

The quantity of the mass varied at different points; at the anterior part of the bladder its greatest thickness was one inch, but at the lateral and posterior parts it was equal to two, and even three inches.

The structure of the disease was principally made up of the white, soft, pulpy matter, in some points resembling cream; although here and there a secretion of adipose substance had assisted in making up the quantity. In many of the smaller tumors extravasations of blood had taken place from the capillary arteries. The effused blood formed minute masses, which became apparent on cutting into the tumor; but in some it was deposited so near the surface as to be seen shining through the external membrane. The more internal of these tumors had protruded inward into the cavity of the bladder, pushing the mucous membrane before them. Several of these projections towards the cervix of the bladder had rendered the mucous membrane extremely vascular, and from these vessels, in the progress of the disease, the blood had been poured out. This was proved by small filamentous coagula being found connected with them, in the examination after death.

The extravasation of blood into the substance of these tumors had taken place to a greater extent in

the enlarged lymphatic glands than in the disease of the bladder. This was perhaps the consequence of there having been an outlet in the one situation, by which the circulation had from time to time relieved itself, which was not the case in the other. In all other respects the disease of the bladder and that of the lumbal glands was precisely the same.

Subsequent to my seeing the above case I was requested * to open the body of a lady, who had died about the turn of life. She had upon the whole been ailing for a longer period of time than the patient I had myself attended; for the progress of the disease had been much more slow. She had latterly passed blood with her urine, but for a shorter time previous to her death than happened in the above case; neither was there in this instance any tumor to be felt externally, but in other respects the symptoms were in both cases exactly the same.

On examining the body the appearances were found less striking than in the dissection just detailed, but in essential points they were very much alike. The quantity of the tumor was not above half the size in this that it was in the former case; nor was it so projected forward, or extensively adherent

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* By Dr. Hooper.

to the pelvis, on which accounts the tumor had never been perceptible through the parietes of the abdomen. The disease had in the one case extended itself upwards by the iliac and lumbal glands; in the other it had affected only those situated laterally towards the sacro-ischiatic spaces of the pelvis.

CHAPTER V.

ON THE SYMPTOMS, CAUSES, AND APPEARANCES OF DISEASE IN THE PROSTATE GLAND.

SECT. 1.

On the Situation and Structure of the Prostate Gland.

THE prostate gland is a soft body, which in figure somewhat resembles a chesnut. Its functions are of importance in the animal economy, inasmuch as they are connected with those of the other organs subservient to generation; but its principal consequence arises from its situation. Placed at the neck of the bladder, it surrounds the canal of the urethra, and although this circumstance is productive of no inconvenience while the parts remain in a healthy state, it becomes an endless source of embarrassment to the surgeon, and distress to the patient, when this gland is affected by disease.

There seems to be but little variety in the diseases of the prostate gland, for almost all the appearances that have hitherto been observed, may be referred rather to the various stages of advance that

belong to one and the same disease, than to the progress of affections specifically differing from each other.

The prostate gland is not one entire body, but a substance made up of several parts. The largest portions of the gland are placed laterally, one on each side of the canal of the urethra; and the anterior margins of these portions surrounding the superior part of the urethra, meet each other, and are connected together. Posteriorly, between the two lateral lobes, and immediately behind the membrane lining the neck of the bladder, is a smaller lobe, which, although it has long been known as the occasional seat of disease, has never until lately been demonstrated in its healthy state. *

Sect. 2.

On the Causes and Appearances of Disease in the Prostate Gland.

Affections of the prostate gland are very rarely found to occur until after the age of 60 years. Previous to that period, either from the disturbance excited by strictures in the urethra, or from the improper management of gonorrhæa, a temporary affection of this part has occasionally taken place, but the occurrence is not common.

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* By Sir E. Home in the Philosophical Transactions.

Where, from injudicious treatment, the irritation and discharge of gonorrhæal matter has been repelled, the mucous membrane lining the cavity of the neck of the bladder, and with it the prostate gland, are liable to become affected. I have known this take place in several instances. It gives rise to a peculiar deep-seated pain in the neighbourhood of the prostate gland, with an uneasy sense of weight at what the patient sometimes describes as the root of the urethra. On examining per anum the gland will, under these circumstances, feel rather full and tumid, and perhaps tender to the touch. In passing a motion also, this tenderness of the prostate gland will occasionally be attended with a shooting pain, darting up the gut, as well as a constant desire to go to stool.

The instances in which the prostate gland is affected by a gonorrhæa are by no means common, and even when they do occur, the affection, as relates to the gland itself, is of so transitory a nature, that there appears to me no good ground for presuming that such affections ever lay the foundation for future disease in the part; provided there is no complication of complaints; but where, from the improper use of astringent injections, irritation is produced in the neck of the bladder and prostate gland, together with severe and extensive inflammation in that part of the urethra originally affected by the clap, one of the worst kinds of stricture will in all pro-

bability be the immediate consequence, and the increased difficulty with which the bladder expels its contents must necessarily operate by keeping up the disturbed state of the prostate gland, and it may in this way form a ground-work for future disease.

I have in one instance seen a very curious and singular affection of the prostate gland produced by injecting to cure a gonorrhæa. It was a species of irritation, connected with a spasmodic action of the muscles surrounding the bulbous part of the urethra. As the circumstances of this case were singular and interesting, it will be again noticed in its place. *

The variety of appearances that are found when the prostate gland is affected with disease, seems in many instances to arise from some one portion being more disposed than the rest to run into an unhealthy action; for it commonly happens that either one of the lateral parts, or the small posterior lobe, takes the lead, and is found more considerably enlarged, or more materially altered from its natural state, than the other parts of the gland.

The changes to which this part is subject when affected with disease, are in some respects remarkable. It is in many instances found enlarged under circumstances in which the affection can only be attributed to the influence of cold; and the change of structure it undergoes, whether confined to mere

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* See Case 19.

enlargement, or going on to the formation of abscess, is usually the result of a slow and chronic action, frequently not at all painful in itself; and when from ulceration any part of its substance is exposed, the irritation is generally productive of a growth of fungous matter; in all which circumstances the features of the disease bear a striking resemblance to the common appearances arising from scrofulous action in other glandular parts of the body.

Sect. 3.

On the Symptoms produced by Affection of the Prostate Gland.

In some instances, where an enlargement of the prostate gland takes place, the first symptom is some degree of impediment in passing the water, which impediment increases more or less quickly in proportion to the growth of the swelled part of the gland, till eventually the flow of urine is altogether prevented; which changes may either take place in connection with other symptoms rendering it probable that the affection has been produced by cold, or they may occur under circumstances that leave no room for such a suspicion.

In other instances the symptoms are from the first connected with those of irritation in the bladder, and in this case the necessity for frequently passing the water, and particularly the pain and difficulty

experienced in voiding it, aggravate very considerably the severity of the complaint. The frequent straining to evacuate the contents of the bladder necessarily tends to increase the determination of blood to the seat of the affection, and in this way hastens the progress of the disease.

If a distinctive line were drawn, it might perhaps be assumed, that in those cases in which the lateral parts of the prostate gland form the tumor, the increase of the difficulty in making water is generally slow in comparison with the increase of swelling in the gland, the affection being connected with a comparatively trifling degree of irritability in the bladder; while on the other hand, in those cases where the middle or posterior lobe of the prostate gland becomes enlarged, it must, from its peculiar situation, operate much more quickly as a cause of obstruction to the flow of urine, from its swelling up exactly opposite to the opening that leads from the bladder into the urethra; and from its being, when enlarged, more extensively and more immediately in contact with the mucous membrane lining the cavity of the bladder that membrane is more readily brought into a state of sympathy, producing excitement and irritability about the neck of the bladder.

In the early stages of an enlargement of the prostate gland the patient is generally able to pass the whole of the urine, although perhaps with some difficulty, but as the obstruction increases, this ceases to

be the case, although, from the gradual progress of the disease, this change of circumstances is almost always unperceived by the patient, so that while he is able to pass water at all he generally considers that he has the power of emptying the bladder, when the very contrary is the fact.

Where the middle lobe is the principal, or perhaps the exclusive seat of the affection, a very moderate degree of enlargement is frequently sufficient to produce a complete obstruction to the flow of urine. The swelling of this part of the gland, raising up the inner membrane of the bladder with it, is the means of forming a preternatural transverse fold of that membrane, where it is connected to the lateral parts of the gland; and this circumstance not only makes the retention of urine more complete, but becomes an additional obstacle to the introduction of any instrument into the bladder.

Sect. 4.

On the Alteration produced in the Secretion from the Gland.

When the prostate is enlarged the mucous secretion furnished by the gland, as might naturally be expected, undergoes a certain degree of change, dependant on the particular nature and seat of the affection. Under these circumstances the quantity of the secretion is usually much increased, and it

becomes more tenacious and ropy than it is in its healthy state, the urine in which it is contained throwing off an offensive odour and passing readily into a state of putrefaction.

Should the enlargement of the prostate gland have proceeded to such an extent as to create a considerable difficulty in the expulsion of the urine, the coats of the bladder having preternatural difficulties to overcome, are under the necessity of making greater exertions than before, and the muscular coat in consequence of this exertion acquires a considerable increase of strength and thickness, while the cavity of the bladder is in the same proportion diminished, similar to what happens in stricture in the urethra. When however, the circumstances of the case are complicated, and in addition to the enlargement of the prostate gland there is irritability at the neck of the bladder, the frequent straining to expel the urine aggravates the whole of the symptoms, until at length a violent degree of inflammation of the mucous membrane of the bladder takes place, the extreme excitement of which becomes in its turn a new cause of spasmodic efforts to contraction; and these efforts, while on the one hand they induce a rapid increase of the disturbance and congestion in the prostate gland, rarely fail on the other in extending the inflammatory action from the mucous membrane to the muscular coat of the bladder, a circumstance that usually ends in a consolidation of

the general structure, which in many cases prevents it from ever again recovering its natural power of relaxation.

Sect. 5.

On the Effects produced on the Secretion of Urine.

Where, either from an enlargement of the prostate gland, or from obstruction of any other kind in the urethra, the difficulty in emptying the bladder is considerable, a diminution in the quantity of urine secreted very commonly takes place, so that the patient shall himself observe that he does not perhaps pass half the quantity of water that he used to do in the course of the twenty-four hours. This circumstance, which, from its frequency, must be supposed to be connected with the difficulty the bladder experiences in the expulsion of the urine, has been regarded as arising from the secreted fluid being checked in its free passage by the ureters, in consequence of which a certain degree of pressure being established by the urine accumulated within the cavities of the kidneys, the process of secretion is more or less retarded, and less urine is separated from the blood.

The degree of inconvenience sustained by the kidneys when placed under these circumstances will vary exceedingly in different cases. It will be in some measure regulated by the state of the con-

stitution, but will principally depend on the particular degree of the obstruction, and on the quick or slow increase of the disease by which it is produced. Should the progress of the disease be slow, the increase of the consequent pressure in the cavities of the kidneys may be extremely gradual, and these glands will be sometimes found to adapt themselves in a very remarkable manner to the difficulties of their situation, the whole fabric of the kidney becoming more or less enlarged by distension. But where the rapid progress of the disease brings on an early and complete retention of urine, the resistance from the full bladder preventing the flowing in of more fluid by the ureters, a pressure is induced, the most usual consequence of which is a sudden arrest of secretion, and unless this pressure is quickly removed by the introduction of an instrument into the bladder to draw off the water, the kidneys become incapable of renewing their functions, and the patient sinks into a comatose state, which soon terminates fatally.

Sect. 6.

On Affection of the Prostate Gland connected with Stricture.

In the foregoing observations, those circumstances have been noticed that must occur in every case of affection of the prostate gland, but it does not al-

ways happen that this affection stands alone; it is in many instances connected with strictures in the urethra; and under these circumstances, unless the history of the case is carefully enquired into and attentively considered, the symptoms that belong to each of these two diseases are extremely liable to be confounded together, to the embarrassment of the surgeon and the injury of the patient.

In some instances it appears that the obstructions in the urethra have taken the lead by many years, and that they have in all probability been instrumental in laying the foundation for the subsequent enlargement of the prostate gland; in others, however, the affection of the prostate gland has obviously given rise to contractions in the urethra, and as the importance of distinguishing the primary from the secondary disease is self-evident, it must be equally clear that it is essential to the patient's relief that the practitioner should form a clear and accurate opinion of the case, and be able to determine at once the exact relation which the two complaints bear to each other.

Where strictures in the urethra have subsisted for many years, occasionally connected with considerable spasm, and sometimes with irritation about the neck of the bladder, there may be some difficulty in ascertaining the precise period at which an affection of the prostate gland may have commenced, but the degree of present inconvenience produced

by the stricture, and that which is justly attributable to the affection of the prostate gland, are points that possess much more immediate practical importance, and these may in general be readily enough determined.

Should the prostate gland have been the original seat of the disease, any consequent contraction that may take place in the urethra will most commonly possess the characters of spasmodic stricture, and a little attention to it, in the first effects of the treatment proposed, will soon establish the accuracy of the opinion taken up, while it opens the way to the permanent relief of the complaint.

An examination of the gland by the rectum will very generally assist, and often enable the practitioner at once to make up his mind as to the existence of any affection of the prostate gland, although where the enlargement is inconsiderable there may be some difficulty in ascertaining it satisfactorily; some practitioners it is true, have of late affected to consider this mode of enquiry unnecessary, from an opinion that the exact state of the prostate gland may in all cases be determined with sufficient accuracy by the impression conveyed by an instrument passed into the bladder; this however, I cannot help regarding as one of those refinements in modern surgery, the observance of which is rather injurious than beneficial in the practice of the profession.

An affection of the prostate gland connected with stricture in the urethra is not the only complication that may occur, for it sometimes happens that during the existence of these complaints a disposition will arise in the kidneys to secrete calculous matter. The particular course of the symptoms has in certain cases led to the belief, that the irritation produced either by the affection of the prostate gland or by the obstructions in the urethra, is capable of extending itself very considerably, so as to explain the eventual derangement in the functions of the kidneys.

There can be no doubt that any hindrance to the free evacuation of the urine, whether the obstruction arises from enlargement of the prostate gland, or from stricture in the urethra, will have a strong tendency to prevent the escape of small calculi, and also favor the precipitation of mucous, sabulous, and calculous matter from the urine in the bladder, circumstances which have more or less influence in forwarding the production of stone in the bladder, and aggravating materially the symptoms incident to the other complaints with which it may be connected.

We have, unfortunately, no mode of determining with precision the exact degree of injury that may have been sustained by the prostate gland when it has once become the seat of enlargement. The progress or decline of the affection depends from

time to time upon that of the other complaints with which it may happen to be connected; should the case be that of irritable bladder with enlarged prostate gland, the means that succeed in relieving the irritation will be almost sure to alleviate the uneasiness and other symptoms produced by the affection of the gland, or on the other hand, should the original disease have been stricture in the urethra, the opening the passage from the bladder, by the means best adapted to the particular circumstances of the case, will scarcely ever fail in tranquillizing very much the disturbed state of the prostate gland.

Sect. 7.

On the advanced Stages of Disease in the Prostate Gland.

It has been already explained that an enlargement of the prostate gland, when it reaches a certain stage of its progress, becomes almost necessarily a complicated disease; and the further it advances into this state, the more difficult it will be to determine accurately upon the degree of change that may have taken place in the structure of the gland.

We learn by dissection of the parts after death, that the prostate gland has occasionally been the seat of abscess; and that the kind of suppura-

tion which takes place, appears to depend on the state of the constitution on the one hand, and on the degree to which the irritability of the parts have been previously exhausted on the other. But although I have had opportunities of watching the progress of many such cases at the bedside, in very few of them has it ever been possible to distinguish with accuracy by the course of the symptoms, at what particular period either the suppuration or its preceding inflammation took place.

When the prostate gland has suppurated the contents of the abscess may, by exciting inflammation, adhesion, and ulceration towards the posterior part of the gland, make their way into the rectum, so as to be evacuated by the anus; or the abscess may burst into the urethra or bladder, in either of which cases also the pus readily escapes; or lastly it may break into any part of the cellular membrane surrounding the gland, when inflammation will come upon some part of the perineum, and the abscess in this way will burst externally, leaving a fistulous disease more or less distressing, according to circumstances.

The diseased prostate gland has in some cases thrown up an irritable fungous growth, protruding into the cavity of the bladder, and very much disposed to bleed on the slightest disturbance; and where under circumstances of advanced disease in this part, a great and excruciating degree of irri-

tation comes on about the bladder, an irritation infinitely more severe than any former attack, which almost prevents the introduction of any instrument being endured, and is attended with frequent evacuation of dark coloured blood with the urine, there will be some ground to apprehend that the disease is taking this particular turn.

Small calculous concretions are occasionally met with in the cavities of the abscess, in diseased prostate gland. In some instances it has appeared probable that these calculi have been dropped accidentally into this situation in their way out from the bladder, but in others, the peculiar porcellaneous polish which renders them very similar in appearance to small pearls would argue a difference in composition between these and the more common kinds of urinary calculi.

CHAPTER VI.

ON THE TREATMENT OF DISEASE IN THE PROSTATE GLAND.

SECT. 1.

Of the Treatment required in the early Stages of the Disease.

WHERE an enlargement of the prostate gland takes place, while the patient is labouring under strictures in the urethra, the affection need excite no particular uneasiness, the tumor is formed by the lateral parts and not the middle lobe of the gland, it is the consequence of disturbance rather than of disease, and by the treatment adopted for the removal of the strictures the affection of the gland also will be relieved.

The affection of the prostate gland, that occasionally occurs in gonorrhæa, is of so transitory a nature as relates to the state of the gland that it scarcely requires mentioning. The whole of the importance of the case, and the severity of the irritation, rests upon the mucous membrane at the neck of the bladder, which is thrown into a state of

violent excitement, and is frequently productive of the most extreme distress. But the great increase in the quantity of secreted matter thrown off from the irritable membrane must have an evident tendency to prevent rather than promote the establishment of any permanent affection of the prostate gland.

The treatment should be that which is most likely to restore the irritation to its proper seat at the anterior extremity of the urethra, and for this purpose the means already pointed out must be had recourse to *; added to which, the parts may in some cases be still farther relieved by the abstraction of blood locally, and with this view some leeches may be applied to the perinæum, or the patient may be cupped upon the loins.

Where however a degree of frequency and uneasiness in passing the water makes its appearance for the first time towards the decline of life, there will be good reason to suspect some affection of the prostate gland, for if the patient has never before been subject to stricture in the urethra this is not the period at which that disease takes place.

During the early progress of the complaint it is generally capable of being very much relieved, and frequently altogether removed, provided it then receives all the attention it deserves.

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* See page 108.

The patient should be immediately requested to remain entirely at home, and to keep quiet. He should lose a little blood, either from the loins or perinæum; his bowels should be kept gently relaxed, he should take neither wine nor spirits, but observe a mild, cooling, and temperate diet, the above treatment being assisted by the occasional use of the hip bath, and the exhibition of an opiate at night. On no account, in this stage of the disease, should either bougie or catheter be passed, the experiment can do no good, and its only tendency will be to increase the disturbance and irritation of the parts.

The most usual course of the symptoms is that just described, but I have seen several instances, and one will be related *, in which the first intimation of any thing being wrong was a total stoppage in the passage of the urine, which complete retention continued for several days, until at length fortunately an instrument was so passed as to get beyond the obstruction, and draw off the urine.

SECT. 2.

On the Introduction of the Catheter.

WHEN the difficulty in passing the water becomes considerable, so as to be attended with much uneasiness and straining, it will be necessary to relieve the parts from the disturbance excited

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* See CASE 16.

by the natural efforts to empty the bladder; and this is to be done by the introduction of a proper instrument at regular intervals, so as to allow the water to pass off without any exertion whatever on the part of the patient.

The catheter of silver should never be introduced, unless it has been ascertained that the flexible gum catheter will not pass. Wherever the latter instrument is capable of answering the purpose it is to be invariably preferred, and it should be gently and slowly passed forward, in order that the sensible and perhaps irritable membrane of the urethra may be as little disturbed as possible.

It has been supposed that the elastic gum catheter will acquire a great superiority by having been retained in a certain degree of curvature for a long time previous to being used, but considering how readily this instrument acquires warmth in its passage through the urethra, and how readily it may be made to follow the course of the canal without having been previously set, I confess myself not inclined to ascribe any material importance to this circumstance.

Should it be impracticable to introduce the flexible catheter alone, it may sometimes be so directed as to pass over the obstruction by being introduced upon a stilet, which has some degree of firmness, and a considerable degree of curvature up to the point.

In the operation of introducing a catheter it will generally happen that success is rather attributable to attentive perseverance than to the application of any considerable degree of force, which should always be avoided. The making too much pressure with the instrument will almost always excite unnecessary irritation, it may do considerable mischief, but will scarcely ever forward the accomplishment of the object in view.

In some instances however, the flexible catheter cannot by any means be made to pass into the bladder. Under these circumstances, should the retention of urine be complete, we must endeavour to introduce the silver catheter, and by varying the direction of the point, together with the degree of pressure applied, it will in general overcome the resistance and pass into the bladder.

Should the attempt to introduce the silver catheter have succeeded, but with considerable difficulty, the instrument had better be allowed to remain some short time in the bladder, with a view to the leaving an impression of its figure upon the sides of the tumor, which will materially facilitate the subsequent introduction of a flexible gum catheter of the same size, which being previously laid ready, should be passed into the bladder immediately the silver catheter is withdrawn.

In those instances where the introduction of the flexible catheter has been effected with difficulty, it will be necessary that it be allowed to remain in the bladder for a certain number of days, for the purpose of ensuring the bladder being relieved at regular and stated intervals, either twice or thrice in the course of the twenty-four hours. In this case, the end of the instrument that projects externally must be carefully secured to a T bandage passed round the waist, so as to prevent the possibility of its escaping entirely into the bladder, an accident that might involve very serious consequences.

When an affection of the prostate gland is in that stage of its progress as to require the introduction of a catheter, the instrument should always be selected of as large a size as the circumstances of the case will admit. The rounded extremity of a full sized catheter presents a comparatively broad surface to any little obstruction that may occur, upon which account it is to be preferred, being infinitely less liable to take a wrong direction than a smaller sized instrument would be.

Sect. 3.

On the Production of False Passages.

Where a bougie or catheter has been frequently passed without due attention being paid to the natural course of the canal of the urethra, and parti-

cularly where the operation has been performed by the patient himself, it has been frequently found after death that the point of the instrument, losing the true line of direction at the curve of the urethra, has pressed for some time obliquely against the side of the canal, in this way producing a degree of depression, while the inner membrane of the urethra pushed before the point of the instrument, has been by this means formed into a transverse ridge. Where this consequence has taken place to a greater extent, that which was at first only a slight depression becomes a cavity, and this cavity in the course of time will form a tube, which according to the circumstances of the case may lead out from the posterior part of the urethra towards the rectum, or pass backward in a line parallel to the course of the natural canal, the inner membrane only being interposed between it and the urethra; or should the accident have taken place in the prostatal part of the urethra, the false passage may take its course through some part of the substance of the prostate gland into the bladder, or it may, as in the other part of the urethra, form a passage parallel to the proper line of the natural canal, so that when the instrument is introduced it will pass along between the substance of the prostate gland and the membrane covering it, subsequently making its way out again into the cavity of the bladder.

I was lately requested to examine the body of a

physician who for many years was one of the most approved teachers in London in his particular department of medical science. He had been for many years subject to strictures in the urethra, and had been long in the habit of passing bougies for himself. In consequence of this practice he had formed two false passages; one of these was anterior to the verumontanum, and passed obliquely out from the urethra for the extent of 1-4th of an inch, forming a cul de sac; the other was situated higher up, passing between the substance of the prostate gland and the inner membrane lining the canal, to the extent of 5-8ths of an inch, where it again opened into the cavity of the bladder. *

In those instances in which the urgency of the case has required an immediate evacuation of the contents of the bladder, while the degree of enlargement of the prostate gland has been so considerable as to prevent the possibility of getting the silver catheter introduced by gentle means, it has sometimes been considered expedient to endeavour to overcome the obstruction by force. Upon this principle the substance of the enlarged gland has in some few cases been made to give way, the instrument has got into the bladder, and a practicable passage has remained for the future introduction of the catheter, without the patient appearing to suffer

* See PLATE 3. *Fig.* 4.

any ill consequence from the violence thus committed upon the parts. I know of one instance, however, in which a very excellent anatomist, who is since dead, in performing this operation, at the earnest entreaty of the patient, unfortunately passed the catheter through the body of a very vascular and irritable fungus that had sprung up internally from the surface of the diseased gland. The patient was instantly thrown into the most excruciating agony, and survived only half an hour. But this was one of those accidents which it was impossible to be provided against; and supposing for a moment that the surgeon could have been previously acquainted with the exact state of the disease, the puncturing the bladder from the rectum, or in any other way, could only have lengthened out a wretched existence for a few days, or perhaps weeks.

In another instance *, where the catheter was pushed through the substance of a diseased prostate gland, hæmorrhage took place, and the blood forming a large coagulum in the cavity of the bladder, prevented the urine from passing off when the catheter was introduced, in consequence of which the patient died.

Should either the enlargement or the excitement of the prostate gland be considerable, the quantity of its secretion may be so much increased as to create

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* Mentioned by the late Mr. Hunter.

in some instances even a degree of impediment to the flow of urine, whenever the patient attempts to empty his bladder. If, under these circumstances the urine is received into a glass tumbler, the secretion from the prostate gland forms a transparent, colourless deposit at the bottom of the vessel, and when stirred up will be found as ropy and tenacious as the white of an egg. This mucous matter will frequently be found in the proportion of one sixth part of the whole quantity of urine. The increase in the quantity of secretion from the gland, however, implies no specific state of disease, but it merits attention because it serves to identify the particular seat of the affection.

Sect. 4.

On the Frequency with which the Catheter should be introduced.

It has been already pointed out that when the enlargement of the prostate gland has gone so far as to produce considerable difficulty in expelling the urine, it is very apt to derange the functions of the kidneys, and bring on a diminution in the quantity of urine secreted. This fact is of great importance, and being clearly understood, it serves to confirm the necessity for the bladder being regularly attended to, that it may be emptied at proper intervals, longer or shorter, according to the circumstances of the

case; this being the only means at present known, by which the activity of the circulation through the kidneys may be restored.

The length of the interval which may with propriety be allowed to pass between the periods at which the patient's water is drawn off, will depend very principally upon the state of the bladder.

In those cases where the bladder has never before been subject to disease, possessing its natural power of relaxation, the introduction of the catheter will not usually be necessary oftener than twice a day. Where, however, on the contrary, the history and symptoms of the disease shew that the bladder has in time past been affected with extreme irritation, and perhaps inflammation, and that the patient ever since that period has been in the habit of passing his water at short intervals, the additional difficulty produced by the affection of the prostate gland will require the catheter to be passed with a frequency conformable as nearly as may be, to the acquired habit of action in the bladder, probably every six or four hours, or still more often. Under these circumstances there will be every reason to believe the bladder has suffered more or less of permanent contraction, the degree of which contraction may be in general pretty accurately estimated by the quantity of urine usually passed at a time, previous to the commencement of the more recent affection of the prostate gland.

Sect. 5.

On the Treatment of Enlarged Prostate Gland connected with Stricture.

Should the disease prove to be an affection of the prostate gland, connected with stricture in the urethra, the treatment must be modified, according to the particular symptoms and circumstances of the case.

Where a permanent stricture exists, the first object must be the gradual dilatation of the contracted part of the urethra, by carefully passing a bougie, so as just to pass the strictured part of the canal, where it may be allowed to remain for a very short time, perhaps a minute or two, daily; and as soon as ever the stricture is sufficiently relaxed to admit of it, a small-sized, flexible gum catheter should be gently introduced, and passed on into the bladder to ascertain the state of the prostate gland, as well as that of the bladder itself; and from this time the operation of passing the catheter ought to be repeated at regular intervals, should it be found that the patient has not the power of completely expelling his urine.

When the introduction of the flexible catheter has been once effected, the repetition of the operation, if it is found necessary, forms the most proper, because the most gentle mode of treat-

ment for the stricture, provided the size of the catheter is increased as quickly as the state of the parts will admit.

It frequently happens, that in cases where a considerable degree of permanent contraction in the urethra has long existed, when the disease becomes subsequently connected with an affection of the prostate gland, the irritation arising from the state of the gland, aggravated by the difficulty experienced in passing the water, induces a degree of spasmodic action in the strictured part of the urethra, and the most effectual mode of relieving this spasm will be to relieve the bladder, upon which it depends; and this is to be done by watching the earliest moment for passing the flexible gum catheter, and drawing off the water regularly.

The above treatment will often require to be combined with some of those means recommended above, for the relief of affection of the prostate gland, particularly in the exhibition of opiates; and much the best preparation of this kind that I know of is the compound powder of ipecacuanha.

The contraction in the urethra, which is more immediately the consequence of affection of the prostate gland, appears to be clearly a spasmodic action of the muscular fibres of the urethra, for it is relieved by the means known to remove spasm, and by these only, such as the warm bath, rest, the administration of opiates, and the relieving the

bladder at regular intervals by the use of the elastic catheter, all which means are calculated to allay the disturbed state of the gland, and more especially the irritable state of the bladder connected with it.

Where unfortunately, the complaint at present under consideration, appears to have been the means of exciting a disposition in the kidneys to secrete calculous matter, it gives an unfavourable turn to the case, inasmuch as it produces an additional complication, and adds greatly to the suffering of the patient. The small fragments of gravel increase the irritation at the neck of the bladder, and as often as these are brought by the stream of urine into the urethra, they are very apt to collect behind the stricture, particularly if the canal at that part is much contracted. When this happens, the irritation and pain become excessive, and the patient, anxious and alarmed, is every hour in apprehension that it will be no longer possible either to get rid of his urine unassisted, or to make an instrument pass this collection of little calculi, for the purpose of drawing it off.

The principles of the treatment, however, in such a case as this, must be the same that have been above detailed, as proper for the relief of calculous complaints, although the extremely irritable state of the urinary organs, under the combined influence of these diseases, will very often

prevent the continued use of those remedies, which in a more healthy condition of the parts, would presently succeed in correcting the action of the kidneys, without inducing any inconvenience.

As to the treatment of the more advanced stages of disease in the prostate gland, where this part has become the seat of abscess, and the escape of the matter has produced some of those consequences already adverted to in the history of the disease, the most assiduous attention should be paid to all those circumstances by which the feelings of the patient may be soothed, and his sufferings alleviated. Should there be reason to believe that an abscess either is forming, or perhaps has already taken place, fomentations may be had recourse to with advantage, and whenever the symptoms of irritation prevail, they must be principally attended to, and as much as possible alleviated by the administration of opiates, and other antispasmodic remedies; unhappily, however, when the disease has reached this point the efforts of art generally prove unavailing, and the patient is eventually exhausted by the combined effects of long continued discharge, frequent irritation, and constant pain.

Case 16.

Enlargement of the Prostate Gland.

A. B, a healthy seafaring man, 58 years of age, left Sunderland about noon, on Wednesday, August 2d.

1808. At this time he passed his water very well. Two hours afterward, when he again attempted to make water, he was unable to pass a drop; and he remained in this state till on the next morning his vessel reached Scarborough.

The moment the anchor was in the ground, he came ashore, and sent for his surgeon, who endeavoured to introduce an instrument, but failed. He tried the silver, as well as the flexible gum catheter, and bougies of various kinds, but all to no purpose.

On the evening of August the 5th, I first visited him. The bladder was evidently very full, and was extremely painful. He had lost eight ounces of blood, he had taken opiates repeatedly, had been several times immersed in the warm bath, and the lower part of the abdomen had been repeatedly rubbed with camphorated and oily embrocations. It was stated that there was an obstinate stricture that could not be passed, and that it was proposed to puncture the bladder.

On the morning of Saturday he had passed a little water, which had dropped away for some time pretty quickly, but soon ceased again. He was in extreme pain, from the distended state of the bladder, which formed a very obvious tumor above the pubes; and his skin was covered with a copious perspiration.

It was determined in consultation to make one more attempt to pass an instrument, previous to puncturing the bladder. One of the surgeons present endeavoured to introduce the silver catheter, but failed; another gentleman made the attempt, but with no better success, when the instrument was put into my hands. The catheter was of a middling size. It passed so freely along the urethra to the prostate gland, that it appeared to me stricture could have nothing to do with the obstruction. With this impression, the direction of the point of the instrument was occasionally varied, keeping it as close behind the arch of the pubes as possible. In this way I soon succeeded, the point of the catheter in a few minutes was felt to slip over an elastic projecting point of the tumour, and passed at once into the bladder. Seven pints and a half, by measure, of high coloured and offensive urine were drawn off, to the infinite relief and comfort of the patient.

The same evening the surgeon in attendance endeavoured again to introduce the catheter, but did not succeed. The next morning he sent me word that he was going out of town, requesting me to pass the instrument for him. Subsequently, the patient entreated me to pass the catheter for him regularly. Upon making an examination by the rectum, the prostate gland was found to

be considerably enlarged, and more firm than natural.

After the first ten days, the silver catheter was exchanged for the flexible gum catheter, passed upon an iron stilet. In the beginning of September his health was fast improving, and as he was very anxious to be enabled to go to sea again, he was taught to introduce the catheter for himself. This at length he succeeded in accomplishing, although at first rather awkwardly. Towards the middle of the month the water began again to flow off, by the natural efforts, at first seldom, and in small quantities; but as he continued to improve, the natural powers became perfectly restored, so that from the 27th of the month the catheter was laid aside entirely, being no longer wanted.

Case 17.

Diseased Prostate Gland.

A gentleman, about 50 years of age, had been long subject to an enlargement of the prostate gland. The inconveniences however to which this at first gave rise were only occasional, as it was not often that the introduction of the catheter was required. But as the complaint increased, the necessity for frequently using the catheter increased, while the difficulty with which it was passed increased also.

The affection of the prostate gland continuing to get worse, his general health began to give way. He lost all power of expelling the urine, and was confined, first to his room, and then to his bed. The catheter was now passed regularly.

While lying in this state, he one day found considerable uneasiness and pain coming on in the lower part of the abdomen. This pain quickly increased to the most intolerable degree of severity, producing screams, groans, and delirium. These symptoms, in spite of every means proper for the relief of inflammation, became speedily worse and worse. Upon introducing the catheter as usual, the bladder was now for the first time found empty, or nearly so.

The severity of the attack continued to increase for 24 hours, when drowsiness and coma supervened, which in twelve hours more terminated his existence. I was desired to examine his body.

Examination.

Externally the body was considerably loaded with fat. On laying open the cavity of the abdomen, a considerable effusion of purulent matter and coagulable lymph, was found among the small intestines, and about the cavity of the pelvis. This appearance was principally confined to the neighbourhood of the urinary bladder.

On the peritoneal covering of the bladder were some shreds of adherent coagulable lymph; by seve-

ral of these it was connected to the peritoneum above the pubes. The bladder felt thickened, and on pressing it, a jet of urinous fluid sprung out from a particular part of its surface. On examining this part carefully with a probe, a small hole was found, through which the instrument passed at once into the cavity of the bladder.

By cutting upon the probe, this opening was enlarged, so as to lay open the whole cavity of the bladder.

It appeared from the examination, that the immediate cause of death had been the inflammation of the peritoneum, caused by the escape of the urine into the abdomen, through a small ulcer in the coats of the bladder. Several small partially ulcerated spots were found upon the inner membrane of the bladder, although it was only at one point that the ulceration had reached to the peritoneal covering, through which the urine had burst into the general cavity.

The prostate gland was very much enlarged, and had a considerable abscess formed within its substance. This abscess had extended itself by forming sinuses for some extent beyond the surface of the gland, passing between the diseased and thickened coats of the bladder.

The diseased state of the prostate gland had in this case most probably operated by its irritation, so as to produce that affection of the mucous mem-

brane of the bladder which had eventually become the immediate cause of death.

Several duplicatures of the membrane lining the prostatal part of the urethra were observed. The deepest of these depressions was found to extend for about 1-8th of an inch out of the course of the natural canal; an extent quite sufficient to have given a complete false passage, had any instrument been pushed forward in that direction with a force sufficient to have ruptured the membrane. These folds were all situated upon the posterior surface of the urethra, and might have been avoided by an instrument having sufficient firmness and curvature to allow of its being kept in contact with the superior part of the urethra all the way to the bladder.

Case 18.

Diseased Prostate Gland and Bladder.

Thomas Fulker, a labouring man, 35 years of age, was admitted into the St. George's infirmary in February 1815. The following was the history that he gave of his complaint.

In the year 1800, he had been frequently employed in carrying very heavy loads, which he supposed were too great for his strength, for he found himself about that period becoming weak in the back and loins, added to which he partially lost

the power of retaining his urine, and this weakness had remained upon him more or less, ever since. In degree however it was variable, at some times he was obliged to pass his water every half hour, at others he was enabled to retain it for three or four hours. For several years this complaint was very troublesome, although never at all painful, as it only subjected him to be occasionally wet in his linen.

In 1806, he said he was so ill, as to be confined for many weeks to his bed, with what he first called a fever, although on cross-examination, it turned out to be a venereal chancre with gonorrhæa; for the one complaint he had applied the mercurial frictions, for the other injections. The true nature of his disease, however he had wished to conceal, from an idea that if it was known, he would not be allowed to remain in the house. The injections had very much increased the frequency, as well as the pain and difficulty in passing his water, and these complaints remained upon him for many months afterwards, although in other respects his health was in due time restored, and he was for several years constantly able to work.

In the year 1810 an abscess formed in the perinæum. He had been engaged in a job of work as a plasterer, as far from town as Harrow, a distance of ten miles, which he walked every day. He thought this was the cause of the inflammation that took place

in perinæo, with which he was in a few days obliged to keep his bed. The tumour was poulticed and fomented, and in the course of a week gathered, and broke, when he became easier. He said he had always been able with some difficulty to get rid of his water, but a surgeon then attending was not able to pass a very small bougie into the bladder, on account of stricture.

In about a month the abscess healed, and he was able to go to work again. He now remained well for eight months, when he had the misfortune to fall from a scaffold while repairing the cieling of a room. He did not strike or materially bruise himself any where in falling, that he knew of, but immediately afterward found that his urine was oozing out from the cicatrix of the former abscess in the perinæum. From this time the urine generally passed as freely by the wound as by the urethra. This accident appeared to have occurred without preceding suppuration, at least he had not felt any pain, or observed his linen soiled by discharge previous to his fall. His general health was still tolerably good.

From this period he remained much the same till January 1815, when a renewed attack of inflammation, attended with extreme pain, and considerable swelling, commenced in the perinæum. During the violence of the inflammation, which continued on this occasion for nearly a month, the urine continued

to pass principally by the perinæum. The abscess then broke, and a very large discharge of offensive matter came away by the old wound, through which the urine also was evacuated. By this event he felt some relief, although still harassed by constant and distressing pain.

The fistulous opening in perinæo was not far from the anus; and poured out a very large quantity of unhealthy discharge. When examined by a probe it was found to lead forward, in various directions, towards the scrotum and bones of the pelvis.

During the month of March his health and strength were obviously on the decline, from the quantity of fœtid discharge secreted by the sinuses about the perinæum. His bowels were occasionally disordered, being sometimes confined, but more frequently too much relaxed.

In the beginning of April, as the proportion of urine passed by the urethra was still diminishing, another attempt was made to pass a bougie, but although one of the smallest size was selected, it could not by any means be made to pass further than half an inch into the canal. He had been before advised to allow proper measures to be adopted for the removal of the obstructions in the urethra, and the same advice was now repeated, but to no purpose, as he could not be prevailed upon to allow any thing to be attempted for his relief.

Towards the latter part of the month he had repeated attacks of diarrhœa, with constant tenesmus, great pain, and frequent watery motions, which were apparently urinous. His appetite had now failed him so completely that he could eat nothing whatever. Under this accumulation of distress he continued to struggle till the 9th of May, when he died.

Examination.

Externally there were several large excoriated fistulous openings in perinæo. A part of the diseased integuments of the perinæum, with the bladder and its appendages, were carefully removed from the body, to admit of a more accurate examination.

The bladder was contracted, and in its muscular structure more firm than natural. The whole of the cellular membrane, beneath the integuments of the perinæum, was loaded with effused lymph, which had by time become converted into a thickened mass of disease, firm as gizzard, and full of sinuous passages, burrowing in every direction.

Upon laying open the urethra, the external stricture which had prevented the bougie from passing was found to be very considerably relaxed; but from the point where this commenced to the extent of two inches and a half from the external orifice, the diameter of the canal was much diminished. The urethra at this part had evidently suffered much

from inflammation, and a considerable effusion of coagulable lymph having taken place into the cells of the corpus spongiosum, had given a degree of permanent firmness to the contraction of the inner membrane.

The inflamed part of the mucous membrane of the urethra was not only contracted, but was much thickened, and more firm in its texture than natural, retaining also, in some degree, the high colour and increased vascularity belonging to inflammation, while that part of the canal immediately beyond it, towards the bladder, still possessed its healthy appearance.

At the bulb of the urethra was a firm stricture, so closely contracted that even in the relaxation of dead parts it was hardly possible to pass a silver probe, no larger than a bristle, through it. This close contraction, however, was found to have taken place only to the extent of 1-6th of an inch.

Finding the rectum closely adherent to the bladder, I had dissected out a part of that intestine with the disease, to avoid any chance of injuring the prostate gland. The inner membrane of the gut was of a very unhealthy colour, and where it was connected with the prostate gland had somewhat of a fungous appearance. On a more particular examination of this part an opening was found, passing from the cavity of the intestine into that of

a large abscess within the substance of the prostate gland.

The bladder, on its posterior part, was then laid open, by a longitudinal section. By this means a small abscess was accidentally discovered, full of thick purulent matter; it was situated between the peritoneal and muscular coats, at the fundus of the bladder.

The coats of the bladder were extremely thickened, its cavity very much diminished, and its inner membrane of a lurid colour, and highly vascular.

The abscess in the prostate gland contained a thick brownish yellow matter. Some parts of this abscess had assumed a fungated appearance, while in others the parietes had formed little recesses, in which were lodged a considerable number of small rounded calculi. Some of these calculi were of a dark brown colour, but others, when allowed to dry, assumed the colour and polished appearance of small pearls.

Between the stricture at the bulb, and the neck of the bladder, several fistulous openings were found, leading out from the urethra; some of these canals being connected with the abscess in the prostate gland and consequently with the opening into the rectum, and others communicating with the fistulous passages in perinæo. *

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* See the Diseased Parts. PLATE 4.

CHAPTER VII.

ON THE SYMPTOMS, CAUSES, AND APPEARANCES OF DISEASE IN THE URETHRA.

SECT. 1.

On the Structure and Functions of the Urethra.

THE urethra is that canal which opens from the urinary bladder externally, at the extremity of the penis.

By dissection we learn that the urethra is made up of several different structures, all of which agree in possessing a certain degree of elasticity. It has been already observed, that the inner membrane of the urethra is continuous with that which lines the cavity of the bladder, and that it forms an extensive secreting surface.

The canal of the urethra is surrounded by a cellular or spongy structure for the greater part of its extent, which cellular structure becomes turgid with blood, together with the cavernous bodies of the penis, when the parts are under the influence of the venereal excitement.

External to its spongy structure the urethra receives a partial support from certain muscles of

considerable power, which are subservient to the purposes of generation; as well as from several ligamentous expansions by which it is more immediately connected to the symphysis pubis.

Upon laying open the cavity of the urethra we see that its internal appearance varies, conformably to the particular office assigned to each part of the canal. At the neck of the bladder it is of a pale yellow colour, and it has much the same appearance where it passes through the prostate gland, and receives the seminal ducts. Just beyond this, at the membranous part, the canal becomes smaller, and from being more freely supplied with red blood, it assumes a dark red colour. Immediately before the membranous part, the canal, for the space of two inches, becomes much more relaxed and capacious, and the inner membrane still more vascular, forming what has been termed the bulb of the urethra. Anterior to the bulb the diameter and vascularity of the canal are again reduced, so that the colour of the inner membrane appears comparatively pale.

These appearances in the healthy urethra correspond exactly to the functions allotted to the different parts of the canal. We know that, as a general rule, the sensibility and irritability of parts bear a certain proportion to the vascularity; and upon this principle there would be no difficulty in determining, from the appearance of the parts, that the most irritable points in the urethra must be bulbous and

membranous portions of the canal, and that the only part sparingly furnished with irritability, and therefore not provided for occasional excitement and action, is that portion of the urethra which passes through the prostate gland.

Upon the internal surface of the urethra numerous small openings may be observed, and into each of these minute openings a common bristle may be passed obliquely backward for about 1-8th of an inch. These are the orifices of the lacunæ of the urethra. They furnish a certain proportion of the mucous matter by which the surface of the urethra is kept continually moistened, they exhibit one of the simplest forms of glandular structure with which we are acquainted, and, like other glandular parts, they are liable to inflammation; in which case they are subject to enlargement, may secrete purulent matter, or may become the seat of abscess.

The most complicated function of the urethra is that which it performs in concert with the parts immediately surrounding it in the expulsion of the semen; during the excitement that immediately precedes the act the seminal fluid is accumulated in the bulbous part of the urethra, preparatory to emission, and upon the spasm taking place, the membranous part that leads backward into the bladder is so closely contracted as to be completely shut up, while the bulbous part of the canal, together with the stronger muscles surrounding it, con-

tracting with force, the contents of the urethra are driven forward with considerable impetus, the action of the muscular fibres of the canal coming forward with its contents, even to the orifice of the urethra. *

These are the appearances and actions of health; but it is under circumstances of indisposition that the strongest evidence is afforded of the membrane of the urethra possessing a muscular power. Indeed, the fact may be proved almost in any instance, by introducing a bougie of moderate size into the healthy urethra, and lightly supporting the

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* The infinite variety that may be observed in the resources of nature is well calculated to excite our highest admiration. The spasm by which the membranous part of the urethra is closed up, in the venereal act, is obviously appointed to prevent the dispersion of the seminal fluid; the same end is obtained by a more ingenious and a more simple contrivance in some of the lower orders of the mammalia. In the male porpoise, for example, which I some time since dissected, the bladder communicates freely with the urethra, but the seminal ducts open upon the point of a soft spongy vascular papilla, that projects forward into the urethra, as the os uteri does into the vagina. Over the surface of this papilla, while in its flaccid state, a probe may readily be passed through the semilunar opening into the bladder; but just at this part the urethra is found to be encircled with a strong thread of ligamentous fibres, so that when, preparatory to the coitus, the parts are rendered turgid with blood, this vascular body swelling up, becomes so tightly girt by the ligamentous circle round its neck, as to effectually close up the passage into the bladder, and prevent the possibility of the dispersion of the fluid contents of the urethra.

end that projects from the penis, in a horizontal position. If the action of the urethra is then watched with attention, it will be found that the power which expels the instrument, in other words the contraction of the urethra, is uniform through its whole extent. The point of the bougie is not pushed forward more quickly while it moves through the bulb of the urethra, where the canal is surrounded with strong muscles, than it is afterward, but on the contrary, its motion is exceeding slow and perfectly equal throughout, until the whole of the instrument is expelled, and the point fairly drops from the orifice of the urethra. Late authors may say this is clearly the elasticity of the living membrane, and perhaps had the bougie been passed only to the extent of half an inch into the urethra, its expulsion upon this principle might admit of doubt; but when the instrument has been introduced several inches, the advocates for elasticity forget that while the membrane of the urethra is exerting itself, for one-eighth of an inch to push forward the end of the bougie, the same power is operating against it to the superior extent of several inches, and that the considerable friction from so extensive a surface of contact must prevent the possibility of elasticity having any thing to do in the expulsion of the instrument.

It has been distinctly explained by one of the

highest authorities in the profession *, that the urethra is not only muscular, but that its canal, like all other muscular tubes in the body, is in particular cases susceptible of partial contraction, or spasm, and that this spasm constitutes one kind of stricture in the urethra; and really, the evidence which every day's experience affords upon this point is so clear, that even supposing the mind to be raised superior to any regard for the successful labours of others, it still seems unaccountable that any person should feel disposed to affirm that the urethra has no muscular power, and consequently, that spasm has nothing to do in its diseases; more especially as comparative anatomy demonstrably proves that in the larger animals, particularly in the horse, where structure is more readily developed, and where the functions of the urethra are precisely the same in every respect as in the human subject, the strong muscular fibres encircling the urethra cannot be overlooked.

Sect. 2.

Of the Nature of Spasmodic Stricture.

As the urethra is a membranous canal, surrounded externally by a series of muscular fibres, its being occasionally subject to an excessive degree

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* Mr. J. Hunter.

of contraction in any particular part, is only a quality which it possesses in common with all other muscular structures placed in similar circumstances.

Where, from any cause, the contraction of the muscular fibres of the urethra is partial, and to a certain extent permanent, it produces a hindrance to the free stream of urine, excites attention, and in this state is termed a spasmodic stricture.

The affection, in this stage of its progress, is very properly considered to be of a spasmodic nature, as the term refers merely to an excessive action of muscular fibres, and not to any change in the organization of the parts. There are also many proofs that this opinion of stricture is well founded. In the first place, the causes by which the contraction in the urethra may be brought on, are those that are known to be capable of producing irritation in any other muscular parts; secondly, the sudden manner in which, in certain cases, the effect follows the cause, affords a strong argument that the stricture must be pure spasm; and lastly it is proved by the immediate relief afforded by certain medicines, which it is well known can operate only by alleviating spasmodic action.

This species of contraction has been * described as generally affecting only a very small extent of

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* By Mr. Hunter.

the canal, producing an appearance in the urethra as if it had been surrounded by a packthread.

Sect. 3.

Of the Circumstances which favour the Conversion of Spasmodic, into Permanent Stricture.

While the stricture remains in this state, it is liable to occasional contraction or relaxation, from the influence of apparently trifling accidental circumstances. It necessarily becomes the most irritable part of the canal, and any change in diet, excess in wine, exercise, or fatigue, may be sufficient to aggravate the degree of spasm, excite inflammation, and even bring on a complete retention of urine; and the usual consequence of such accident is, that the stricture, which was at first merely a spasmodic affection, becomes converted by degrees into a permanent contraction of the part, from the change in structure incident to repeated inflammation.

Sect. 4.

On the Irritations that occasionally operate as Causes of Stricture.

As stricture in the urethra is almost always in the first instance the consequence of some irritation, it is natural to infer that the nature and tendency

of the contraction will be dependant on the circumstances under which the irritation has been applied. Where the stricture has been brought on by sympathy with some of the surrounding parts, as in disease of the rectum, bladder, or prostate gland, the affection will be at first purely spasmodic, and will be very likely to remain so; but where, on the other hand, an irritating cause of considerable power has been at once brought into immediate contact with the inner membrane of the urethra, as is the case where astringent injections are used in gonorrhœa, or when a calculus is arrested in its passage through the urethra exciting extreme pain and violent inflammation, it generally happens that an effusion of coagulable lymph takes place into the surrounding cellular texture, thus laying the foundation for the most obstinate, and extensive, kind of stricture.

The irritation of stone in the bladder generally operates in the course of time as an exciting cause of stricture in the urethra; and where the contraction is obviously of a spasmodic nature, and is readily overcome, so as to admit of the calculus being distinctly felt in the bladder, the affection in the urethra may very safely be considered as the accidental consequence of the irritable state of the parts.

It has long been a contested point in surgery, whether injections thrown into the urethra, have

the power of producing stricture. In the majority of cases, it is certainly not possible to prove that they have done so, but in several very strongly marked instances I have known them, through the medium of inflammation, not only leave stricture, but stricture of the worst and most obstinate kind that could possibly be, which never afterwards was removed, and scarcely admitted of any material relief.

In these instances however, the seat of the affection having been the anterior or external part of the canal, and this not being the most usual situation of stricture originating in spasm, it might still admit of a doubt whether the irritation from an injection applied to the one extremity of the urethra, is capable of producing a spasmodic stricture at the other. As far as my experience has enabled me to judge, I am clearly of opinion that it does happen, and that stricture is in many instances derived from this cause alone. In one case particularly, the patient who had a gonorrhœa, had been directed to use an injection, which was of so moderate a degree of strength, that it did not materially lessen the quantity of discharge, and of course was not the means of exciting any more violent inflammation, but it nevertheless brought on a retention of urine, for which I was consulted, and on introducing a bougie it was found that a spasmodic contraction had taken place in the most usual seat of stricture, the membranous

part of the urethra. The affection however, was readily relieved, by the warm bath and opiates.

In this case we see that an irritation comparatively slight was answered by a correspondent degree of temporary contraction at the part sympathizing with the original seat of the impression. But in several other instances, and in two particularly that will be again adverted to *, the use of astringent injections that were sufficiently powerful to excite violent inflammation in the anterior part of the urethra, were also productive of permanent stricture at the membranous part of the canal, in connection with irritable bladder.

Any external violence may operate as an accidental cause of stricture in the urethra, by producing either irritation, inflammation, ulceration, or perhaps sloughing in some part of the canal. The application of blisters in various instances have done the same thing; although the excitement from this cause, being of a temporary nature, the inconveniences to which it may have given rise do not often prove tedious.

Sect. 5.

On the most usual Seat of Stricture.

It has been already demonstrated that the most irritable parts of the urethra are the membranous and bulbous portions of the canal. It has been also

* See Cases, 25 and 26.

pointed out that in the first of these two situations there is a provision for an occasional spasmodic action of the muscular fibres of the urethra, as a circumstance essential to the complete effect of the most important function these parts have to perform. This, therefore is found to be naturally the most contracted part of the urethra, and it is by far the most frequent seat of stricture. Next to the membranous part the bulb of the urethra is most subject to contraction, although the same thing occasionally takes place in the other parts between the bulb and the external orifice of the canal.

Sect. 6.

Of the Symptoms produced by Stricture.

Stricture in the urethra is a disease which in its commencement is very rarely, if ever, observed. Its early progress is imperceptible, because it is not often productive of symptoms. It is natural to suppose that even in its beginning, as a stricture consists in a contraction of the canal, the diameter of the stream of urine must of necessity be lessened; but the same circumstance, it is well known, may arise from such various and trivial causes, that this symptom when alone is scarcely ever attended to by the patient.

The appearance of the stream of urine, may however have a more striking peculiarity, for in

some instances the first circumstance observed, is that the urine, as it passes from the urethra, assumes a spiral or twisted figure; and in the more advanced stages of the complaint it is not uncommonly divided into two smaller jets, and these circumstances will not only be found to vary in different cases, but in the same case at different times, according to various circumstances in the state of constitution, influencing the degree of contraction at the strictured portion of the urethra.

In the progress of the affection there is an occasional sensation of pain, in or about the contracted part of the urethra, and this is attended with some degree of frequency in passing the water, which circumstances are very apt to be reproduced, or increased, by the least irregularity in diet or exercise. As these attacks return, it is at last observed that the stream of urine is certainly much smaller than it should be, and as this remark is generally made at a time when more or less uneasiness is felt about the neck of the bladder, together with frequency and straining, in voiding the urine, the patient is at length induced to consult his surgeon, who, on passing a bougie, ascertains that there is a stricture.

The habit of frequent intercourse with women, generally exerts an unfavorable influence upon the early stages of stricture in the urethra. This arises from the temporary state of spasm connected with

the act, having a natural tendency to increase the permanent contraction previously existing in the canal. The same unfavourable influence however has now and then been found to arise in cases of stricture merely from the being in company with women, and this remark is more particularly applicable to other affections of the urethra, as gonorrhœa; at least I have repeatedly had occasion to make the observation. A young gentleman whom I had attended with gonorrhœa, had got entirely rid of all the symptoms; and thought he might again venture into company. His first visit was to the pit at the Opera House. The evening was moderately cool, and he took no refreshments whatever. The next morning he sent for me, told me what he had done, said the ballet had greatly interested him, but that to his great surprise he found the discharge had returned, and was just as bad as ever. In spite of all the usual remedies, it continued for more than three months afterward.

The irritation produced in the strictured part of the urethra, in consequence of the spasm that takes place during connection, is not confined in its effects to the mere increase of the contraction; it frequently excites a sympathetic uneasiness at the anterior extremity of the canal, with an increased secretion from the membrane lining that part of the urethra; and from the manner and circumstances under which this occurrence usually takes

place, it is particularly liable to be mistaken for gonorrhœa. A moderate degree of attention however, will be sufficient to enable the surgeon to distinguish between the two cases. The accession of the discharge is more sudden, and the inflammatory symptoms with which it is attended are infinitely more moderate, than in gonorrhœa; indeed the nature of the attack is such, that if it is let entirely alone it will in general subside spontaneously, in the course of a week or two.

As the disease advances, the contraction increases, the strictured part becoming so much smaller than natural, that the bladder is constantly called upon to make preternatural exertion, in order to get rid of its contents; under these circumstances the straining that was formerly only an occasional symptom in voiding the urine, becomes a more frequent source of inconvenience, and eventually never entirely leaves the patient.

Sect. 7.

Of Irritations produced by Stricture.

The irritation arising from a stricture in the urethra is productive of various symptoms, according to the state of constitution, and the particular circumstances of the case. Not unfrequently it is the means of exciting the natural actions of the parts at an improper time, producing nocturnal emis-

sions. This symptom most commonly occurs in unison with other circumstances that serve to clear up the nature of the case, but it is occasionally the first incident that attracts the attention of the patient.

In the further progress of the disease, the urinary bladder, subject to continual disturbance in the performance of its functions, becomes subject to increase of irritability from the most trivial causes, and the slightest cold will, upon this principle, be occasionally productive of considerable distress, exciting a material increase both in the pain and frequency of passing the urine, which is voided thick and turbid, but in small quantities.

These occasional attacks of increased irritation are not always confined to the neck of the bladder, the excitement is apt to be communicated more or less extensively to the parts around, and to the prostate gland particularly. In this case the progress and extent of the affection may be ascertained readily enough by an examination of the urine, which is found loaded with a considerable quantity of colourless glairy mucus, which subsiding to the bottom of the glass is distinguished by its transparency, while the urine above it is high coloured or turbid.

Where the disease still continues to advance, the attacks of irritation about the bladder come on more frequently, and prove more severe and harass-

ing to the constitution; in this stage of the complaint also, it not unfrequently happens that the irritable state of the bladder is found to operate as a cause of aggravation to the contraction in the urethra, the stricture becoming so much narrower that the urethra is rendered very nearly, if not completely, impervious. When the disease has reached this point it becomes essential to the patient's existence that the urine should find some other means of escaping from the bladder; a provision that must be made either by the efforts of nature, or the exertion of art.

Sect. 8.

On the subsequent Consequences of the Disease, Ulceration of the Urethra, Abscess, and Fistulæ.

In this stage of the progress of the disease there is usually a very considerable degree of permanent contraction in the urethra, to which is superadded occasional attacks of severe spasmodic action, connected with the other sympathetic affections that have been already described, and by the joint operation of these complaints several new consequences of the disease are now brought forward.

The continued irritation from the stricture excites perpetual uneasiness and discharge from the anterior part of the urethra. The constant exertion and aggravated straining to empty the

bladder, is productive of irritation, distension, and inflammation in that part of the urethra between the bladder and the stricture; and the inflammation so excited frequently proceeds to a considerable extent, spreading itself into the surrounding parts.

It is by this means, when unassisted, that nature seeks to relieve herself by the formation of a new passage for the urine, and this effort generally succeeds to a certain extent, inasmuch as it averts the danger which otherwise would in a few days prove fatal; although in its subsequent consequences the remedy proves sometimes almost as formidable as the disease.

The mode in which these changes are brought about is the following. The frequently repeated and almost unavailing exertions of the bladder to get rid of its contents, keeps up a constant pressure of urine against the sides of the urethra behind the stricture, in consequence of which this part of the canal suffers a gradual enlargement; but the same cause continuing to operate, the effect does not stop here; irritation supervenes, and this imperceptibly runs on to inflammation, frequently followed by a considerable effusion of coagulable lymph upon the surface of the inner membrane. Ulceration of some part of the inflamed surface subsequently takes place, and the urine makes its way out into the cellular membrane around the

urethra, thus producing an œdematous tumor either in some part of the perinæum, or scrotum, or both. In this way the irritation of the urine effused into the cellular structure, usually excites a sloughing inflammation beneath the integuments, in the neighbourhood of the perinæum, and either abscess or mortification, according to the state of constitution, is the result.

Where matter forms readily and is soon let out, the complaint may now take a favorable turn; and provided the patient's constitutional powers are not too much exhausted by what he has already gone through, the local irritation subsides to a certain degree; he finds his health improve, his appetite returns, and the sloughy cellular membrane separating the ulcerated parts contract, and all that ultimately remains may be one or more fistulous openings in the perinæum, through which the urine is either partially or wholly evacuated.

This ulceration of the urethra and the consequences derived from it can be prevented only by the timely relief of the stricture; when however the urine has once made its escape into the cellular membrane, producing inflammation and abscess, even the removal of the obstruction in the urethra will not always succeed, in relieving the complaints that have been derived from it.

Sect. 9.

Of the Sympathetic Spasm of the extreme Vessels.

One of the latest and most distressing sympathetic complaints to which stricture in the urethra occasionally gives rise, is a sudden attack of violent shivering, succeeded by feverish heat and sweating, an attack which is generally of so intense a character as to create, on its first appearance, considerable alarm for the safety of the patient.

This affection is not unlike the paroxysm of an intermittent fever, but it is much more severe, and is sometimes attended with delirium.

It is frequently the result of the application of caustic, and like the hæmorrhage that now and then occurs under the same treatment, it has been considered as a favorable circumstance, and a sign that the stricture is about to give way.

Sect. 10.

Of the Cartilaginous Stricture.

It has been already stated that the first commencement of stricture in the urethra, particularly where it occupies its most usual seat, is generally nothing more than an excessive contraction of the muscular fibres in some part of the canal, in which state the complaint stands unconnected with any

change in the structure of the parts; but when the disease has proceeded to such an extent as to have produced long continued irritation in the bladder, with the other consequences above noticed, the degree of the contraction in the urethra is not only much increased, but the nature of the affection as well as the structure of the parts is changed; the texture of the stricture becomes so firm that although the extent of the contracted part of the canal may still be inconsiderable, it nevertheless opposes a resistance that cannot be overcome by force; and a stricture in this state, when examined after death, is sometimes found to possess a degree of firmness very nearly equal to that of cartilage.

CHAPTER VIII.

ON THE TREATMENT OF THE DISEASES OF THE URETHRA.

SECT. 1.

On the Treatment of Spasmodic Stricture.

THE treatment of stricture in the urethra is directed upon one of two principles, and is intended either to remove the obstruction by relaxing the contracted part of the canal, without doing further violence to the parts; or if this fails, it professes to restore the passage through the urethra by the destruction of the stricture.

The first of these two purposes is applicable to the relief of spasmodic stricture, and is atchieved occasionally by the exhibition of opiate medicines, although in a surgical point of view, the principal means is the use of the bougie; the second object is generally directed to the removal of permanent stricture, and is most frequently accomplished by the application of caustic.

Sect. 2.

On the Use of the Bougie.

In the early stage of stricture in the urethra when the contracted part of the canal is not very irritable, the bougie under proper management becomes not only the best instrument, but the only means necessary for the removal of the complaint.

Where this instrument is carefully adapted to the tone and degree of contraction of the stricture, the size of the bougie being increased as rapidly as the temper of the parts will admit, the affection may in many cases be removed without the intervention of any untoward circumstance, or the necessity for having recourse to any other mode of treatment.

But it frequently happens that when this plan has succeeded, and long after the use of the bougie has been laid aside, the disposition to contract shall return upon the parts, in consequence of which the patient finds his former symptoms recur, and it becomes indispensible to again have recourse to the bougie.

We see then, that the bougie although capable of overcoming the effect, which is the contraction, is not always equal to the removal of the cause, which is the disposition to spasm, in the part; but notwithstanding this apparent defect, the bougie is

still the most appropriate means we know of, and indeed all that is adviseable to recommend, in the way of treatment, while the moderate degree of irritability in the urethra admits of its being adopted as often as may be necessary.

Sect. 3.

Of the various Properties of various Bougies.

With regard to the comparative merits of the different kinds of bougies, there have been various opinions. The common wax bougie is that which is in most general use, and for several reasons I think it deserves the preference it has obtained among practitioners. Some surgeons are in the habit of using bougies formed of catgut, and in very contracted strictures that will not allow the smallest sized wax bougie to enter, the catgut bougie often proves useful, and may be tried with advantage. But it has been objected to the common bougie that it loses its proper consistence when allowed to remain in the urethra for any length of time, and this objection applies in a much greater degree to the bougie of catgut, which absorbs moisture rapidly, swelling, and untwisting its fibres to that degree as to occasion considerable irritation at the neck of the bladder, and giving great pain when it is withdrawn.

The bougie of elastic gum is certainly less liable to these inconveniences than either the catgut, or the common bougie; and it appears to me that in cases where stricture is connected with affection of the prostate gland, the gum elastic may be more usefully applied than the wax bougie, at least I have found it upon trial in two or three such instances answer much better, passing through the stricture with more ease, and slipping over the projecting parts of the enlarged prostate gland with much less uneasiness to the patient, and without exciting any of that irritation that would have rendered the introduction of the common bougie improper, a circumstance that can be attributable only to the superior softness which enables the elastic gum to follow with facility the course of the canal.

One quality considered desirable in a bougie is a power of receiving and retaining any particular degree of curvature that may be chosen, and upon this ground principally the metallic bougie has been introduced into practice. This bougie, at first view, might be expected to answer very well, but it is notwithstanding, in my opinion, a most objectionable instrument. There have been several instances in which these bougies have broken in the urethra, a part has escaped into the bladder, and it has been found necessary to save the patient from the ill consequences of irritation and inflammation of the

bladder, by cutting it out as in the operation for the stone.

It has indeed been asserted by those who recommend the metallic bougie, that even should this accident occur, there would be no difficulty in dissolving and bringing it away by injecting a quantity of mercury into the bladder, which it is said will form an amalgam, and the whole being thus reduced to a fluid state, will come away by the urethra. That this effect would take place in a mixture made in the elaboratory is very certain, but that the same result might be depended upon in the bladder of the living body appears to me very doubtful, where there is not only the urine but the various mucous secretions furnished by the internal surfaces of the kidneys, ureters, and bladder, which matters it is well known have a strong tendency to form a precipitate in the course of a few hours upon the surface of any extraneous body introduced into the bladder, a circumstance which must at least interfere with, or more probably entirely prevent, the mutual action of the metals upon each other.

Sect. 4.

Of the mode of applying the Bougie.

In using the bougie the point being somewhat incurvated upward, and the instrument lightly rubbed with oil, it is to be passed gently down the urethra

until the point stops at the contracted part. A moderate degree of pressure is then to be made against the stricture, and continued for a short time, but should the instrument not be enabled to pass, it must be withdrawn, and one of a size smaller substituted. By this means it will be ascertained what particular sized bougie is best adapted to the degree and tone of the contraction. The bougie determined upon should be so large as to pass the stricture with a moderate degree of pressure; the period for which it is allowed to remain must be regulated very much by the feelings of the patient, and the same rule must also direct from time to time an occasional increase in the size of the instrument.

In the use of the bougie however, it has been already shewn, that the least deviation between the line of pressure, and that of the natural course of the canal at the part where the point of the instrument may happen to be, is sure to do harm, as it invariably tends to lay the foundation for the production of a false passage; and the particular instance adduced*, where this consequence took place is sufficiently striking to prove that no person is equal to the task of introducing a bougie upon himself without the risk of getting into this dilemma, which, independent of all other inconve-

* See Page 157.

nience arising from it, must prove an endless source of embarrassment to the surgeon, when at some future time it may perhaps be essential to the life of the patient that an instrument should without delay be got into the bladder; for when a false passage is once made, it is sure to catch the point of any instrument that is passed, so that it becomes next to impossible to introduce either bougie or catheter by the urethra into the bladder, however great may be the urgency of the occasion.

The most likely means for enabling us to avoid this difficulty is suggested by what we learn from the morbid anatomy of the parts. We find almost invariably that when a false passage is produced in any part beyond the curvature of the urethra, it is on the posterior side of the canal, and consequently if the instrument passed has sufficient firmness to admit of its point being pressed against the opposite or anterior part of the urethra in its way on to the bladder, it may slip past the opening that leads out of the urethra, and by this means be enabled to reach its destination in safety.

Sect. 5.

On the Treatment of irritable Stricture.

Unfortunately, it often happens that a stricture that has formerly been very readily removed by the use of the bougie, becomes again trouble-

some, and proves subsequently much less manageable than it was at first. The strictured part of the urethra has acquired so great an increase of irritability, that the introduction of a bougie is attended with pain; its being retained in the stricture is productive of much distress, and if under these circumstances it is allowed to remain long in the urethra, but more particularly if the surgeon ventures to pass one a size larger than ordinary, the irritation is so increased that it either excites spasm at the neck of the bladder and retension of urine, or endangers the production of inflammation and abscess in the perinæum, inflammation of the testicle, or some other ill consequence.

The treatment of this irritable state of stricture will require considerable judgment; for although the degree of the permanent contraction may be so inconsiderable that were the irritation and disposition to spasm relieved, the urethra might be with ease brought back to its natural state of relaxation by the bougie, yet while the irritation remains upon the parts, it is difficult to determine what had better be done, for if let alone the stricture is sure to increase, and if meddled with in order to its relief by the bougie, the attempt only serves to aggravate the disease.

Sect. 6.

On the Application of Caustic.

It is in this case as well as in the more advanced stages of the permanent stricture that the application of caustic has been recommended; and where the circumstances of the case are suited to the treatment it certainly becomes an invaluable remedy; but it is a remedy that sometimes very materially involves the future comfort of the patient, on which account it should never be hastily determined on.

The escharotic applications in present use are the lunar caustic, and the caustic vegetable alkali. As to the particular manner of employing these substances, the lunar caustic is applied by letting a small piece into the point of a wax bougie, which being passed down to the seat of the affection, is pressed against the stricture for the space of a minute, so as to produce a superficial eschar. The caustic alkali is used much in the same way, but in a much smaller piece, for the intention here is the complete solution of the whole quantity of caustic introduced; in which case the caustic forms a fluid, that is diffused over the strictured part of the canal, and is found to diminish spasm, although it does not operate with the same local severity as the lunar caustic, by destroying the parts touched.

Now, although the simple bougie is liable to do harm by bringing on or increasing irritability in the

stricture, so as to aggravate the complaint it was intended to relieve, it has been ascertained that the armed or caustic bougie has the power of acting on the stricture, while so far from being objectionable on the same ground as the simple bougie, it most commonly is found to operate by diminishing very materially the irritability of the parts.

In the irritable stricture at present under consideration it will sometimes be impossible to pass even the smallest bougie, or perhaps one of a small size may be made to pass, but will not fail to aggravate the distress of the patient. With a view to the relief of this stage of the complaint the application of lunar caustic has been recommended, because it is capable of progressively acting upon, or in other words destroying, the whole of the stricture, and because as it has been very justly stated, from its tendency to relieve spasm, it may remove a part of the stricture and relax the rest. With the same view the caustic alkali has been recommended, and it has been represented as capable of accomplishing the relaxation and relief of the stricture upon easier terms than is usual with the lunar caustic; and judging from a pretty extensive experience I am persuaded that the caustic alkali is the most generally effectual, as well as the most safe of the two applications, in the irritable state of stricture.

I am not aware that the rationale of the action of the caustic alkali in stricture has ever been entered

upon further than by the mere statement of the fact that it tends to relax spasm and diminish irritation; it appears to me however, that the principle upon which it operates is clearly the same that I have already endeavoured to explain in relating the effects produced by the internal use of the alkalies, in diminishing irritation of the bladder. *

Sect. 7.

On the Treatment of the Sympathetic Spasm upon the Skin.

As to the treatment required for the relief of the feverish paroxysm which occasionally attacks those who are labouring under stricture, it is very simple. The patient should be immediately laid in a warm bed, and drink plentifully of hot tea, or hot spirits and water, or if the moderate severity of the attack will allow of it, he may first take an aperient draught with a view to clear the bowels, and subsequently a pretty strong dose of opium, so as to favour the establishment of a copious diaphoresis, which generally effects a complete solution of the attack.

Sect. 8.

On the Circumstances under which Local Treatment should be suspended.

Where repeated attacks of aggravated spasmodic contraction have rendered a stricture exceedingly

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* See Page 79.

distressing to the patient, and have perhaps been also connected with irritation about the neck of the bladder, it may be unadviseable to meddle with the stricture, unless in the most gentle way possible. The degree of irritation in the bladder may forbid the adoption of any but the most cautious measures. Although the strictured part of the urethra may be so contracted as to be almost impervious, it may be still necessary to confine the treatment for a time to the exhibition of opiates, the use of the warm bath, and the other means known to alleviate spasm.

Sect. 9.

Of the Treatment of Permanent Stricture.

It has been observed that when a spasmodic stricture has been of long standing, and frequently subjected to attacks of severe irritation, sometimes inducing a degree of inflammatory action, the usual consequences of inflammation take place, coagulable lymph is effused, and consolidation of the cellular structure is the consequence, so that what was at first a spasmodic action only, becomes converted into a permanent stricture.

Now in proportion as this change takes place, the treatment must be changed with it. The application of caustic may still be required, and may still prove successful, but the milder or alkaline

caustic will not succeed. The contracted part of the urethra is no longer capable of being relaxed, and the only mode of removing the stricture is by destroying it. This forms the fairest case for the lunar caustic, provided the contracted part does not include any considerable extent of the canal of the urethra; and notwithstanding some practitioners have of late thought fit to enter their protest against the use of caustic altogether, it seems to me that these gentlemen have taken a very superficial view of the subject, otherwise it must have appeared even to them, that in various instances these diseases are not at all manageable by the bougie alone, although from the satisfactory list of cases brought forward, all ending well, it would seem that a patient's only anxiety need be exerted in the selection of the right surgeon; one who even professes to consider his patient's feelings with so lively a sympathy, as to persuade himself that it is not necessary to give pain, but that the objects of surgery may be attained just as effectually without any such inconvenience.

The particular situation as well as the other circumstances connected with stricture, will have some weight in determining the propriety of attempting the cure by the lunar caustic. The nearer the orifice of the urethra the obstruction may be, the more readily and more securely may the application be made; and the nearer the neck

of the bladder the more uncertain the exact direction in which the caustic may act. The curvature of the urethra, and the natural elasticity of the canal are difficulties in the way, and even with the simple bougie, which acts only by mechanical pressure, there is considerable uncertainty in operating upon a stricture situated at the membranous part of the urethra, provided the contraction is such as to prevent the instrument passing through it.

Sect. 10.

Of the Hæmorrhage occasionally produced by Caustic, and of the other Modes of removing permanent Stricture.

The strongest objection urged against the lunar caustic is the hæmorrhage that in certain cases has followed its application, and from the extent to which this accidental bleeding has occasionally proceeded it is undoubtedly an objection, but to determine this or any other argument fairly, it is necessary to consider both sides of the question. The lunar caustic is never proposed, or at least ought not to be, unless in extreme cases, where the object is to restore the natural passage for the urine, instead of allowing it to continue to escape as it generally has done previously, either by fistulous openings in the neighbourhood, or perhaps involuntarily, or at the least, almost constantly

and with extreme distress to the patient, in either case obliging him to drag on an irksome existence, loathsome to himself, and offensive to others.

To relieve him from the miserable prospect which this state affords for the rest of his life, is the proper object of surgery, and there are various modes of attempting the accomplishment of it; but they are all painful, and all more or less uncertain as to their eventual success.

Upon these grounds then, it becomes right to explain to the patient beforehand the comparative merits of each method of treatment, that he may, if he chooses, determine for himself. It appears to me that the lunar caustic is in such cases deserving of the preference. It is true the stricture may in most instances be cut down upon by an operation, and may in this way be either laid open, or entirely dissected out, allowing the parts to heal over an elastic gum catheter, in which case the patient may do well, and even perfectly recover; but this is a very severe operation, and attended with considerable hæmorrhage. Or by passing a silver canula down to the stricture, a fine spear pointed instrument may be conducted to the part, and may be thrust through the stricture so as to divide it, and perhaps in this way a passage may be restored to the sound part of the urethra beyond, the divided part being subsequently made to heal over a bougie or catheter.

Of all these modes however, where extreme irritability of the bladder and urethra do not form an objection to it, and particularly when the situation of the stricture is favourable, the lunar caustic forms the least exceptionable remedy, and promises relief according to my estimate, upon easier terms than any other kind of treatment, under these distressing circumstances.

The application of the lunar caustic operates by producing a superficial slough upon that part of the stricture with which it comes in contact, and it is consequently necessary in every instance to wait until this slough is separated before the caustic is again applied.

As to the number of times that the application of the caustic may require to be repeated, this will vary exceedingly in different individuals, dependant on the circumstances of each particular case; in some instances it has been considered necessary to continue this treatment with occasional intermissions for many months.

Sect. 11.

On the Mode of ascertaining the Operation of the Caustic.

From the length of time sometimes required to enable the surgeon to overcome the obstruction, it becomes necessary to ascertain with accuracy

from time to time, the exact progress the caustic has made, in order that it may appear whether it is making its way fairly through the stricture, or whether on the contrary it may not be forming a new passage for itself, leading out from the proper line of the urethra. This information is to be acquired by occasionally passing down a soft bougie, and keeping up a gentle pressure against the stricture for some minutes, until having become warm, it has taken the exact impression or figure of that part of the canal; it is indeed customary with most surgeons, to pass down a plain bougie of as large a size as convenient, previous to each application of the caustic, with a view to clear the canal, and at the same time to determine the exact distance of the stricture from the external orifice of the urethra.

Sect. 12.

On the Operation of puncturing the Bladder.

In the history of stricture it was observed, that where the progress of the disease is considerably advanced, a degree of spasm occasionally takes place, which may altogether prevent the passage of the urine by the urethra, and that it then becomes essential to the life of the patient that the contents of the bladder be enabled to escape by some other channel, which must be provided either by nature, or art. Where this provision is of

the first kind, it is formed by those fistulous openings from the bladder, the nature of which has been already explained; where of the second, it consists in the puncture of the bladder, an operation which has been variously performed, but in all cases with one and the same object, that of relieving the bladder from its load, and preventing its bursting from accumulation of urine.

The puncture of the bladder has been proposed to be made in one of three ways, either by passing in a trocar through the abdominal parietes above the pubes, or by introducing the same instrument by the perinæum into the bladder, or lastly by puncturing the bladder through the rectum.

The operation has been successfully performed in each of these situations, but as the puncture from the rectum has most frequently terminated well, and as it is in my opinion, on several accounts, infinitely superior to either of the other methods, I shall only say a few words more in explaining this particular mode of relieving the bladder.

The trocar need not be larger than that which is employed for hydrocele, although it must be somewhat longer, and should have a gentle even curvature. The form of the instrument should be that of the common trocar with a triangular point, as I have seen that the lancet pointed trocar is sure to divide whatever blood vessels fall in its way, while the triangular point pushes them aside without further injury.

As to the position of the patient it is not very material, the operation may be conveniently enough performed as he lies in bed.

The fore-finger well oiled is to be first passed up into the rectum, and the general degree of fulness of the bladder, as well as the most convenient point above the prostate gland, ascertained. When these circumstances are satisfactorily made out, the trocar pushed nearly but not quite through the canula, is to be gently introduced, and passed up until the extremity of the canula corresponding in situation with the point of the finger already in the rectum, is felt to be against the part where the puncture is to take place. The canula being then in the least degree retracted, while the stilet is pressed forward, places the instrument at once in a fit state for making the puncture; keeping in view the line of direction tending to the centre of the distended bladder, the trocar is now to be steadily passed forward through the coats of the intestine and bladder, when the stilet being carefully withdrawn, the canula must be retained, and the urine allowed to pass off.

As the accidental slipping of the canula out of the orifice in the bladder has been productive of inconvenience from the premature healing of the wound, and the consequent necessity for making a fresh puncture, it is desirable to have a little plate attached to the external part of the canula,

perforated with holes, so as to admit of its being secured to a bandage passing round the waist and between the thighs. This precaution however, generally becomes unnecessary after the first week or two, as the opening usually very soon loses its disposition to heal, until the restoration of the natural passage of the urine renders it useless.

Case 19.

Spasm of the Accelerator Urinæ Muscle, from Affection of the Prostate Gland.

Mr. William G. a married man, aged 34 years, consulted me in April 1810. He said he was subject to a most distressing and severe pain, which generally occurred when on the water-closet, the uneasiness always commencing at the instant the motion was passing. The severity of this pain he said, was frequently acute beyond all description. At times it had produced fainting, and it generally brought out a sudden and copious perspiration. The seat of this affection was invariably the same. It commenced at the anterior point of the anus, extending thence for some distance forward, in the direction of the urethra.

These attacks were more or less severe, and they appeared to vary according to the state of his general health. Any bodily fatigue, but especially any vexation in business uniformly aggravated the complaint. The pain however was not productive of

any material inconvenience in making water, neither did it continue at any one time, beyond the space of a few minutes.

On inquiry he said he was not able to attribute this singular affection to any particular cause, unless it might in some way have been connected with a gonorrhæa of which he had been cured about five years before. The discharge at that time had certainly been removed by an injection, and he very soon afterward had experienced the first of those attacks of which he still complained.

He said he had taken several opinions, and that one of the surgeons had pronounced it to be the internal piles, and another had told him it was a stricture in the urethra, and could only be relieved by the repeated application of caustic; he had even allowed the introduction of the armed bougie once, but finding no relief, and suspecting something wrong, would not permit this treatment to be continued.

He observed that the complaint in question did not very much interfere with his habits of life, although of late he had found riding so frequently bring it on, that he had not been able to use his horse and chaise for the last six months.

The urethra was first examined, and was found very fairly and equally relaxed, a full sized bougie passed forward without interruption into the bladder. I next examined the state of the rectum, where there was nothing to indicate hæmorrhoidal

disease, but on pressing forward, the prostate gland was felt rather more distinctly than ordinary. At that instant he started and cried out in great agitation that I had now found the real seat of his complaint. When the part was touched ever so lightly, the peculiar pain was immediately produced, which, as he described it, was neither seated in the coats of the intestine, nor in the general body of the prostate gland, but in the old spot, a particular point at the inferior part of the gland, anterior to the sphinctor ani muscle, and extending itself from thence for about an inch along the perinæum.

With a view to the relief of these symptoms, a draught containing some of the compound tincture of bark was directed to be taken every morning, and an opiate to be taken occasionally, when the pain came on. He was also requested to avoid all such exercise as might tend to heat or disturb the parts locally, to keep the bowels regular, and to use the shower bath every morning.

When the pain came on with unusual severity, he was desired not to wait the effect of the opiate, but to take a glass of hot brandy and water, as he had proved the efficacy of this remedy by previous experiment, and had repeatedly found it operate to his relief almost instantaneously.

In addition to the above plan a large sized bougie was passed into the bladder twice a week, with a view to favour the more complete relaxation of

the fibres of the accelerator muscle, in which there was every reason to believe the spasmodic disposition existed.

Under this treatment he improved, and in the course of three months found himself more free from his complaint than he had at any time been for the last three years. Within six months he had perfectly recovered.

Case 20.

Spasmodic Stricture.

Corporal J. Keenan, of the 82d regiment of foot, aged 27, had for some weeks observed that the stream of his urine was becoming smaller than usual, when on Sunday morning, August 28th, 1808, he paraded for church. He felt a desire to pass his urine while the regiment was going into church, but did not chuse to fall out of the ranks. He therefore waited till the service was over, but on making the attempt found to his great surprize that he could not pass a drop. The effort was attended with much pain, followed by violent straining, and a few drops of blood. The desire to pass his water came upon him very frequently, every attempt being productive of considerable pain, and bearing much down. He was out of bed eleven times the following night, without being able to pass any water, and on the Tuesday he attended at the hospital, and related the above circumstances.

I passed a bougie of moderate size, and a yielding obstruction, which as the instrument passed through it gave much pain, was perceived six inches from the external orifice. It was however overcome by a pressure not more than equal to an ounce weight. Much pain continued to be felt at the part where the contraction had taken place, for the minute that the bougie was allowed to remain in the urethra.

On withdrawing the instrument he was desired to see if he could pass his urine, he made the attempt and succeeded in getting rid of about an ounce, but it flowed in a very contracted stream, the close of the act was attended with straining, and a few drops of blood followed. He said he had now passed his water not only more copiously, but with much less pain, than at any time since the attack.

In the course of his walk from the hospital to the barracks, up a steep hill, he repeatedly experienced an inclination to pass his water, which each time flowed with more freedom than before. The night before he had been up nine times, but the night following the introduction of the bougie he was up only twice, and the night after this again, he was not disturbed at all, the symptoms having entirely left him. On making a second examination with the bougie, a few days afterward, the canal was found free from any obstruction, and the stream of urine was apparently as large as ever.

About a month previous to the above attack, he had spoken to me on account of a discharge from the urethra, which came on suddenly after connection with his wife, a circumstance which as he could not explain it, gave him some alarm, for he acknowledged that only four months before, he had been in hospital for a venereal bubo, with gonorrhæa; which complaints had been treated by the mercurial frictions alone. The bubo had suppurated and healed, and the gonorrhæa had subsided very readily, unassisted by any local means.

On this occasion I had desired him not to allow the discharge in question to give him any uneasiness, acquainting him at the same time, that he might with advantage bathe in the sea every morning, while the weather remained warm. He did so, and the discharge disappeared spontaneously in the course of a few days.

Case 21.

Spasmodic Stricture.

Mr. O. a gentleman 32 years of age, desired my opinion August 4, 1811. He said his general health was very good, but that for some months past he had been troubled with a weakness which prevented him from being at all times able to retain his water. On enquiry it did not appear that the stream of urine was materially diminished, neither had he ever found himself subject to difficulty in voiding it.

On passing a bougie of moderate size down the urethra a stricture was met with at six and a half inches from the external orifice. This was merely an instance of spasmodic contraction, which by a moderate degree of pressure gave way, and the instrument passed on to the bladder, where it was allowed to remain ten minutes.

The operation was attended with some pain in the situation of the stricture. The introduction of the bougie was repeated every second day for a fortnight, when the passing it no longer gave pain, while the power of retention was much more perfect than before.

For the following ten weeks a full sized bougie was introduced every third day, by which time the urethra being restored to its natural state of relaxation, he had completely recovered the power of retaining his urine, and I consequently took my leave of him.

Case 22.

Spasmodic Stricture.

Mr. H. a gentleman aged 36 years, applied to me, February 7, 1812. His principal complaint he said, was an acute pain that was apparently situated in the urethra, near the neck of the bladder. This pain was not at all times equally troublesome, but was generally particularly distressing subsequent to connection. He observed that when-

ever this pain was very severe, he found that his urine passed in a diminished current, although at other times he thought it flowed freely enough.

I requested he would allow me to pass a bougie into the bladder to ascertain whether there was any obstruction forming; to this he agreed, and a bougie of full size was introduced, when a stricture was found at six inches from the external orifice. The obstruction however was easily passed with a bougie of smaller diameter, and by repeating the operation at regular intervals, and gradually increasing the size of the instrument, the urethra was so fairly relaxed that in the course of six weeks he felt no inconvenience from a full sized bougie being passed forward into the bladder; neither was he any longer subject to those uneasy sensations, and spasmodic affections, that had previously been a source of distress to him, as often as the parts were called upon to perform their natural actions.

Case 23.

Spasmodic Stricture.

J. Davis, a very hard working man, a lamplighter, aged 35 years, applied for assistance to the St. George's Infirmary in May 1810. In his account of his complaints he said that as long as nine years before, he had experienced the first attack of stoppage in his water subsequent to great fatigue,

but he was the same evening relieved, by drinking hot spirits and water.

About a twelvemonth afterward he had a second attack which proved obstinate, a complete retention continued several days, producing considerable swelling and exquisite pain in the region of the bladder, although latterly a small quantity of water occasionally dropt from the urethra. Obliged at last to complain, he applied to an apothecary, and the medicine he took operated in about an hour, and entirely removed the complaint.

An interval of two years now passed, when the complaint returned, and remained upon him with more or less violence for the space of a fortnight; during this time he was able to get rid of his water, but it was with considerable difficulty. At the end of the fortnight he applied for assistance. On this occasion the contraction in the urethra was overcome by mechanical pressure, a bougie was introduced, and passed the stricture, which on being once relaxed did not contract again.

In 1808, another attack came on, which was relieved by the bougie.

In January 1810, his complaint again returned, he now stated that he had been repeatedly relieved by the use of the bougie. One of a full size was therefore passed down to the stricture, but the contraction could not be overcome. The pressure by which the instrument was urged forward was

rather considerable, and upon withdrawing it, a degree of bleeding followed, and he lost several ounces of blood.

The warm bath and opiates completely relieved him in twelve hours.

In May 1810 he again complained, and on making the attempt to pass his water, could not get rid of a drop. A bougie of moderate size was stopt at five and a half inches, and could not be made to pass further. A few drops of blood followed its removal. The bougie was grasped by the urethra with so unusual a degree of firmness, that to withdraw it required a force more than equal to a pound weight. The warm bath, and repeated doses of the compound powder of ipecacuanha, aided by a day's rest from his work, enabled him again to pass his urine.

Towards the latter end of the month he had a relapse, in consequence of which he was unable to make a drop of water. As the retention was complete, and rest seemed indispensable, he was advised to come into the Infirmary, and he did so on the 21st. His former treatment was now had recourse to, without success, until the 24th, when he began to void his urine, although in very small quantity. But he now complained of a swelling with heat and extreme tenderness, which had taken place upon his left hand, particularly affecting the last joint of his little finger. The hand was well fomented. The next

day (the 25th) the hand was getting much worse, and the same kind of pain was with great violence felt darting through the fore finger of the right hand. Fomentations were directed to both the hands. In the course of the evening the whole of the right hand became as severely affected as the left.

On the 24th he had been able to pass his urine in a very small stream, with much painful exertion, and great straining. In the evening the stream was observed to be much more full and free. On the 25th the urethra was still more relaxed, and the straining to pass it had nearly subsided. In describing his own feelings, he said, that immediately the pains came on in his hands he found the complaint about the bladder began to mend.

On the 25th his right knee became affected with extreme pain, heat, and swelling, and on the 28th the left foot became painful and inflamed. The pulse was small and hard, beating 112 in the minute, and he said he had occasionally some pain in the head. On examining the right knee there was evidently a considerable effusion of fluid within the capsular ligament of the joint, by which the patella was raised up from its situation. The integuments were somewhat tumid; and giving motion to the joint produced acute pain.

By rest, and diaphoretics, he soon began to mend, but on the 9th of June his retention of urine re-

turned upon him, with repeated and distressing desire to empty his bladder. This attack however subsided spontaneously, in about two hours.

On the 23d of June he found the inflammatory affection of his hands much increased, but without any correspondent relief to the state of the urethra. He had lately taken opiates in other forms, and was now directed the compound powder of ipecacuanha. Under this plan he continued to mend, and was soon able to leave the house, returning to his work.

September 24th he experienced another attack of complete retention, and came to me the following morning in great pain, begging me to pass an instrument to draw off his water. Bougies and flexible catheters were introduced, but to no purpose. I therefore directed him to go home, wrap himself in warm blankets, and take ten grains of the compound powder of ipecacuanha every two hours till he was relieved; by these means his complaint was in the course of the day entirely removed.

After this he remained pretty well till November, when the irritation and spasm returned upon the urethra in full force, but was again relieved in the course of twelve hours by the compound powder of ipecacuan.

From this period he enjoyed tolerably good health, till the latter end of the following year.

In September 1811, he was admitted into the Infirmary and was confined to his bed for near four months by a most severe attack of the old complaints in his joints and limbs.

For more than two months he could neither feed, stand, or move himself. The stricture was at this time troublesome, so far as to render him repeatedly unable for a day or two to pass any water without great difficulty, but when his rheumatic gout began decidedly to mend, a most distressing degree of irritation settled itself upon the bladder. The desire to pass the water was now extremely frequent, as well as violent. Sometimes, notwithstanding the use of the warm bath, opiates, and other medicines, he was unable to pass a drop for two or three days together, while the violence of the efforts in straining were severe beyond description. From this state he recovered so slowly, that it was the latter end of December before he was well enough to be able to return to his employment.

In December 1813, he came again into the House, with a renewed attack of the rheumatic gout, which in this instance had entirely deprived him of the use of his limbs. All the joints of the hands and fingers, feet and toes, were severely affected; but the first joint of the left little finger was particularly painful. It produced more swelling and heat than before, threw out chalky matter,

and was followed by anchylosis of the joint. As he could never be persuaded to allow of any regular or continued treatment for the further relief of his stricture, that contraction which was formerly pure spasm, was now to a certain extent, a permanent state of stricture. He was however generally able to get rid of his water, although it was always passed in a very small stream, and sometimes with great difficulty.

In January 1816, he was again taken into the Infirmary, where he remained for several weeks entirely helpless from the gouty affection of his joints. The stricture however, remained much the same.

This case affords an interesting illustration of the circumstances under which spasmodic stricture frequently commences, and of the symptoms that generally usher in the change from a spasmodic to a permanent state of contraction, in the urethra. While the affection was pure spasm no mechanical force could be made to overcome the contraction, although it might with certainty be removed by the exhibition of diaphoretic and antispasmodic remedies; but as the state of the stricture changed, the same medicines, which at first never failed, operated with diminished power, and eventually lost their effect altogether.

Case 24.

Sloughing of the Urethra, and consequent Stricture, from external Violence.

Major W. a Field Officer, on the staff of the Duke of Wellington's army in Spain, met with an accident while on duty. On the 3d of December 1812, while employed in inspecting a large house preparatory to its being converted into an hospital for the wounded, he was ascending an old staircase, when a part of it gave way, and he had nearly fallen through. By this accident the perinæum was violently bruised against the edge of a plank.

The most acute pain immediately came on, and inflammation quickly followed. He continued however in the fulfilment of his duty for four hours afterward, although he was then obliged to report himself, being no longer able to keep his feet. He felt constant and urgent desire to make water, although in the attempt he was only able to expel a few drops of blood.

The tumor and inflammation soon became considerable, for which poultices and fomentations were diligently applied, but as every endeavour to introduce an instrument by the urethra proved unsuccessful, it became necessary to puncture the bladder.

This operation was performed by one of the staff surgeons * who happened to be upon the spot, and

* C. Boutflower, Esq.

the puncture was made from the rectum, about 48 hours subsequent to the receipt of the injury.

By the eighth day the bruised parts had suppurated, the swelling having formed an abscess and burst, when an attempt was again made to introduce a silver catheter, which after much difficulty succeeded. The instrument was left in the bladder, but unfortunately, it only remained till the following morning, when it was expelled by the action of the bladder, and could by no means be again introduced.

In the course of the night, subsequent to puncturing the bladder, the canula by some means slipped out of its place; but the urine continued notwithstanding to pass very freely through the opening, while the sloughing and abscess was taking place in the perinæum.

On the fourteenth day the discharge of urine by the rectum had entirely ceased, by the healing of the opening in the bladder; in consequence of which there was again a complete retention for the space of two days. Fortunately, however, the slough at this time gave way, and the urine rushed out by the separated part of the urethra. In a few days more the slough was completely detached, and the wound clean and healthy.

It was now an object to introduce a catheter through the urethra, with a view to the parts subsequently healing over it. The instrument was readily

enough passed down to the part where it became exposed upon the ulcerated surface, but it was found difficult to find the precise point at which the continuation of the urethra led on into the bladder, it was at last ascertained by watching the moment of the expulsion of the urine.

An elastic gum catheter was first passed, but it created so much uneasiness and irritation that it was found necessary to change it for the silver catheter, which remained quiet, being removed only occasionally, for the purpose of keeping it clean.

In about six weeks the granulating mass had closed round the instrument, and supplied entirely the deficient part of the canal, which had sloughed off, to the extent of an inch. The external wound was very soon completely healed, and he returned to his duty.

Some months afterward he came to England, visited London, and consulted a surgeon of eminence in the city, who failing in his attempt to pass a small sized bougie, stated that the only mode was to clear the way by the lunar caustic. To this proposal however not chusing to submit, he discontinued his attendance, and was recommended to take my opinion.

A bougie of moderate size stopped at six inches, and one the diameter of which was one-tenth of an inch passed with difficulty through the contraction at this part. After remaining quiet for about three mi-

nutes it excited some uneasiness, and was withdrawn. The introduction of a flexible gum catheter he was rather averse to, from its having formerly made him very uncomfortable, and a silver catheter was therefore selected, the diameter of which rather exceeded that of the small bougie; it passed the stricture with more ease, remained quiet a longer time, and was removed with less pain than the bougie had been. These circumstances naturally led me to consider the silver catheter a preferable instrument in this case to the bougie.

The opinion I gave him was that the application of the caustic was not adviseable, being unnecessary; for that the urethra seemed disposed to allow of the necessary dilatation being effected, under proper management, upon much easier terms; and with this opinion he expressed himself satisfied.

A silver catheter, the eyes of which were previously made very smooth, was introduced, and allowed to remain in the stricture for a few minutes, till it created some uneasiness in one of the testicles. It was then withdrawn, and he was requested to keep quiet for the day, to suspend the testes, and to take ten grains of the compound powder of ipecacuan, at night.

This plan was continued for some time, the catheter being regularly introduced every second day. After the first fortnight the instrument was changed for one a size larger, but as the eyes of the catheter

had occasioned a degree of uneasiness and even pain in passing the prostatal part of the urethra, I had some silver sounds made, exactly resembling the catheters, but without any openings at the extremity. These answered beyond expectation. The uneasiness experienced, and the occasional pain felt were much less frequent, and comparatively trifling.

In the course of the treatment it was observed, that after every change to an instrument of larger size, it was necessary to have recourse to rest and an opiate. The neglect of these precautions, or the least irregularity in wine or diet, invariably put him back in his progress, obliging me sometimes to be content with passing a sound of a smaller size than that which had preceded it.

From an accidental neglect on one of these occasions, a swelled testicle came on, and it became necessary to lay aside the use of instruments altogether for three weeks.

By these means alone, the contracted part of the urethra was enlarged in the course of five months to a very adequate degree. The instrument which passed with ease at the end of this period was seven sizes larger than could be introduced at the commencement of his attendance, and was only two sizes less than a very full sized bougie.

As he was about to return to the peninsula, he was recommended to carry with him two or three

sounds of the most suitable sizes, with a view to pass them about every fortnight or three weeks, to prevent the parts from becoming again contracted.

I had the pleasure of receiving a letter of consultation from this gentleman in February 1816, in which however he expressed some uneasiness at not being able to continue the use of the same instrument which he had been in the habit of introducing when he left town. But as the next size smaller was very adequate for every necessary purpose of security, he was advised to rest satisfied with the introduction of it, observing at the same time carefully to avoid all those circumstances that might tend to bring irritability upon the parts.

Case 25.

Stricture in the Urethra, with Irritable Bladder.

Mr. W. a gentleman about forty, had for many years laboured under strictures in the urethra, which had produced abscesses and fistulæ in perinæo, occasionally connected with severe attacks of irritation at the neck of the bladder, all which complaints had been originally the consequence of injecting to cure a gonorrhæa.

In May 1813 he consulted me, because he said his complaints were so much worse than usual as to render it necessary to adopt some means for his

relief. There were two fistulous openings in the perinæum by which the greater part of the urine was voided, a fresh abscess also was forming, with considerable heat and inflammation in the integuments at the posterior part of the scrotum. There was so much irritation about the bladder as to oblige him to pass his water with extreme pain every fifteen or twenty minutes. He had for many years been in the habit of occasionally passing one of the smallest sized silver catheters into the bladder, so as to afford temporary relief by drawing off the water, but at this time the canal was so much contracted that it was not possible to introduce the smallest sized bougie further than half an inch down the urethra.

For these complaints warm fomentations, poultices, and opiates were first directed, with a view to bring forward the abscess in the perinæum, and at the same time relieve the irritable state of the parts. The swelling in a few days gave way, and suppurated freely, and in the course of a week the general irritability of the parts was so far alleviated as to admit of some attention being paid to the state of the urethra.

The stricture at half an inch from the orifice was at once so firm and so irritable, that after making repeated trials with the common bougie there seemed to be no prospect of gaining any real advantage by this means alone. The contraction was such as only allowed the smallest sized bougie to pass, and

even this never failed to produce extreme pain and irritation in the urethra, bladder, and perinæum.

From the constant pressure of his connections in business, and the impossibility of his attending to it in his present situation, I was requested to lose no time, but to proceed in any way that appeared least objectionable. I therefore determined to propose the lunar caustic; it was at once acceded to, and an armed bougie was accordingly selected of a moderate size, but yet sufficiently large to admit of the same treatment being carried forward to the more internal parts of the canal, in the event of its being found necessary.

The common bougie was first passed, and pressed moderately against the stricture, giving extreme pain scarcely to be borne; the armed bougie was next introduced, and pressed with the same degree of firmness as the other had been, but it gave much less pain. It was retained against the stricture for the space of a minute, and was then withdrawn.

The caustic bougie was applied every second or third day for near three weeks without apparently making much progress, although the irritation of the parts certainly continued to decline. The application of the caustic in fact was found to be so much less painful than that of the unarmed bougie, that the patient said he was clearly satisfied in his own mind, that provided I had considered it right to apply the caustic without previously intro-

ducing the common bougie, the pain produced by the operation would be comparatively nothing.

At the end of this period, on pressing forward the common bougie the stricture gave way, and allowed the instrument to pass on to six and a half inches, where it was again stopped. It was therefore withdrawn and one a size smaller was introduced in its stead, which with a little hesitation went forward into the bladder. The common bougie was now passed every second day for a month, and succeeded in preserving a sufficiently relaxed state of the canal; a much larger proportion of the urine now passing off by the urethra than before, at much longer intervals, and with infinitely less pain.

At this time he was recommended to introduce a moderately sized bougie about once every fortnight or three weeks, and I took my leave.

On the 7th of January, 1816, a bougie of elastic gum was passed, and allowed to remain in the urethra during the night. In a few hours after retiring to bed he awoke in great uneasiness, and found the bougie had so nearly escaped into the bladder that with extreme difficulty he at last succeeded in pressing back the glans penis far enough to enable him to take hold of the end of the bougie in the orifice of the urethra, so as to withdraw it.

A most severe attack of irritation in the bladder was the consequence of this accident, and upon this account I was again desired to visit him. The pain and

frequency in making water were excessive, and although obliged to make the most violent efforts to empty his bladder every ten minutes, he was sometimes totally unable to expel the urine.

As to the appearance of his water it was for the first few days of the attack very clear, and deposited little mucus, although numerous small shreds of white opake coagulable lymph passing by the urethra, occasionally impeded the flow of urine. By degrees however, the quantity of sediment increased, while the appearance of shreds or flocculi diminished; the mucous deposit was of so thick a consistence that the water was passed with more difficulty than ever.

The quantity of opake white sediment was now very considerable, and on examination after it had stood for some hours, numerous portions several inches long floated up in the urine, although even these were in some degree connected with the general mass that lay at the bottom. These tenacious mucous filaments were many of them formed in the bladder, and the straining to get rid of them by the urethra was so great, that at times the urine was tinged with blood.

For these complaints I first directed fifteen grains of the compound powder of ipecacuan twice a day, as this medicine had on former occasions proved useful to him, and indeed in the present instance it seemed at first likely to be successful. He was also

requested to take the simplest and least stimulating diet, to drink barley water, and to avoid all fermented liquors.

Still however he continued to be so constantly and painfully disturbed through the night as well as day, that he was never able to get five minutes rest; but it was difficult to determine on a plan which under all circumstances might with certainty prove more useful.

January 10. As the compound powder of ipecacuan appeared to have entirely lost its power in relieving the irritation, he was directed to lay it aside, and take instead of it sixty or eighty drops of the tincture of opium, at bed-time.

February 13. He was not in the least better, nor had the tincture of opium had the desired effect in procuring rest, or alleviating his distress, opiates were therefore now altogether given up, and he was directed to try the effect of the carbonic acid, by taking the ærated soda water; of which he drank three half pints daily. He was also allowed to take porter, but not wine.

In the course of the second day of his taking the soda water it had evidently begun to operate in his favour, producing a gradual abatement of all the symptoms. In a few days more the appearance of the mucous matter contained in the urine was decidedly altered, there was less tendency in it to coagulate firmly, and with less tenacity there was more of a

purulent appearance; this change alone was relief, because in the one state the secreted matter blocked up the passage of the urethra, in the other it did not.

February 15. He mentioned that now some small pieces of reddish coloured gravel or sand had made their appearance, and these occasioned additional pain in making their way along the urethra. Some of this matter dried on paper, was found to be principally composed of uric acid. On enquiry, he said he had once been very subject to gravel, but that of late he had seen nothing of the kind.

February 18. He was directed to continue his present plan, and to take ten drops of the muriatic acid in some water twice a day, in the intervals of drinking the soda water.

February 25. He was in every respect much better. The proportion of the sediment in the urine was now diminished, and the appearance of it was that of a transparent weak gelatin, rather than an opake mucous deposit. There was no longer any appearance of red gravel in the urine, but a single fragment of calculous matter was occasionally detected in escaping from the orifice of the urethra. One of these was dried, and from the light grey colour, and loose cohesion, was evidently composed of the phosphates. The muriatic acid was therefore laid aside, but the soda water was continued.

February 27. Within the last two days he had passed no gravel at all and was so much better

that he was able to sleep at night for two hours together. In other respects he was now as well as he had been previous to the escape of the bougie into the bladder.

February 28. As the parts were now restored to a comparatively quiet state, and the necessity for frequently passing the water was merely the consequence of the habitually contracted state of the bladder, and not of any excessive irritability, the state of the case seemed to afford a fair opportunity for trying the effect of gradual distention of the cavity, with a view to enable him by this means to retain his water for a longer period. For this purpose an elastic gum catheter was introduced, and about two ounces of warm water were injected. It immediately produced considerable uneasiness and pain in the small of the back, the volume of the fluid was more than the cavity was accustomed to retain, it excited occasional sharp spasmodic pains in the viscus, and I thought it prudent to allow it to run off when it had remained five minutes.

The immediate pain produced by this experiment soon subsided, but by the next day the irritability of the parts was so considerably increased, as to have brought back most of the symptoms nearly to their former extent. So that, although Le Dran has recommended the operation, which has since been tried and spoken well of by one of our own surgeons*,

* Mr. Jesse Foote.

I shall recollect how deceitful appearances sometimes prove, and shall be very slow in proposing the experiment in future, considering that the state of bladder in question can in scarcely any instance, perhaps, be divested entirely of a disposition to excessive irritability, seeing that from this cause the change in its structure was originally produced.

Towards the middle of March, he again improved, still continuing the soda water, and on the 21st of the following month I received a visit from him, when he acquainted me that he was scarcely ever disturbed more that once during the night, that he passed his water very freely, with little uneasiness, and no gravel; that the urine had for many weeks past come away entirely through the urethra, and that consequently as the fistulous openings in the perinæum were completely healed, he was no longer subjected to the distressing inconvenience of his linen being always wet and offensive. Upon this favourable report I recommended him to lay aside his soda water, and return to his usual habits of life, as before his illness.

Case 26.

Stricture in the Urethra and Irritable Bladder, produced by injecting for Gonorrhœa.

W. H. a groom, aged 32 years, contracted a gonorrhœa in 1806. He applied to a medical

person near him, who ordered him an astringent injection, and the pil. hydrarg:

He threw up the injection as directed, and immediately felt great uneasiness about the neck of the bladder, with increased frequency of desire to pass his water. In a few hours he repeated the injection, and the consequent irritation soon increased to that degree as to prevent his remaining in bed five minutes the whole of the following night. The straining to pass his water was incessant, and the irritation of the urethra was so great that the whole canal felt as if violently contracted, so that he could scarce get rid of any water at all, and what did appear was tinged with blood.

The next day the apothecary told him that what he had felt was not of the least consequence, and that as it merely arose from the injection being too strong he was to dilute it with a little water, and go on. He therefore continued to use the injection, and in the course of two months the inflammatory symptoms had subsided, so that he had no longer pain in making water, although the frequency of passing it as well as the discharge, were troublesome as ever. The pills he took for near three months, and the only sensible effect they produced was a slight affection of the mouth.

Subsequent to his laying aside his remedies, the discharge from the urethra continued for more than eight months, when he first observed that the

stream of urine was becoming smaller than usual. On this account he again applied to a person who passed a bougie for him once. The operation somewhat relieved him, and he afterward went on for some months without paying any further attention to it. Finding however, the contraction increasing, he again had a bougie passed several times, by which he was for a time much relieved.

With the occasional assistance of bougies he went on pretty well till October 1814, at which time he was passing a bougie every day. The parts however were more irritable than usual, and a swelling made its appearance in the perinæum. As the increase of this swelling was extremely slow and the pain trifling, he supposed it of no importance, and consequently did not at first mention it. In the course of two months however, it became extremely hot and painful, he now spoke of it to his medical attendant, who immediately desisted from using the bougie, ordering him to rub in two drachms of mercurial ointment every night upon the swelled part of the perinæum.

This treatment he continued for a month, when his mouth became very sore, and he was considerably salivated. Just at this time also, a retention of urine suddenly came on. At this his attendant expressed his surprise, ordered him into a warm bath repeatedly, applied leeches and fomentations to the perinæum, and directed an opiate clyster to be thrown up.

The following evening a small sized elastic gum catheter was introduced, and succeeded in drawing off the urine.

Warm poultices were now applied regularly to the perinæum, and the quantity of mercurial ointment, instead of being rubbed in as before, was laid upon the poultice, in order that the parts might absorb it or not as they chose. In the course of a fortnight the external swelling began to decrease, from which circumstance and from the appearance of the urine, it was concluded the abscess had broke into the urethra. From this time he continued to mend. The poultice was continued for about a month, and then a mercurial plaster was applied in its stead.

The affection of his mouth continued for about two months. He was then well enough to leave his home, and soon returned to his work; his power of passing his water being much improved, but not quite relieved, and there being yet some remains of the swelling in the perinæum.

He remained tolerably well till March 1815, when finding the swelling was again increasing he determined to come to London for advice. He did so, and was received into the St. George's Infirmary.

The inflammation was not very acute, but there was sufficient to create him increased difficulty in getting rid of his water, with much pain. Poultices and fomentations, persevered in for eight weeks did not bring it materially forward, they

were therefore laid aside, and leeches repeatedly applied with cold lotions, under which plan he became easier.

Several unsuccessful attempts were now made to introduce bougies and catheters, but on June the 6th, I with great difficulty got a very small silver catheter nearly through the obstructions into the bladder but yet the water did not flow, and consequently the instrument could not have actually reached the cavity of the bladder. This circumstance added to what I had before observed in former examinations confirmed the opinion repeatedly expressed to him, that some false passage existed, by which the point of the instrument was caught, and prevented from passing the right way. Fortunately however, the object of the operation was by no means essential to his safety, as he was perfectly able at all times to get rid of his water, although not without considerable difficulty.

He soon after this left the House and went to St. George's Hospital. The surgeon who subsequently attended him acquainted me that he believed there were false passages; that in the course of three months he had made no material progress; that now and then an instrument had been got into the bladder, but that the attempts were most frequently unsuccessful; that the abscesses in the perinæum had suppurated, and had left fistulous openings, through which the urine escaped.

Case 27.

Stricture in the Urethra, and Irritable Bladder.

James Kellet, a labouring man, had for fifteen years previous to his death, been troubled with stricture in the urethra, brought on in the first instance by virulent gonorrhæa. From that period the medical gentleman who attended had been occasionally called in to relieve him from retention of urine; which for the most part was readily accomplished by the introduction of a small sized common bougie; latterly however, the stricture had become so contracted as barely to admit the smallest catgut bougie that could be procured.

On these occasions, the instrument was usually suffered to remain some little time, and upon withdrawing it the urine generally followed. These attacks were commonly preceded by inebriety.

For some time previous to his death, he complained of considerable pain in passing his urine, as well as difficulty in getting rid of it; the attempt was frequently followed by the appearance of a few drops of blood, and a purulent discharge. The desire to make water proved a constant source of distress, and it came away in very small quantities, almost guttatim.

When visited in his last attack every endeavour was made to relieve him by the means formerly

made use of, but the introduction of the bougie not succeeding, he was put into the warm bath, in which he voided urine in small quantity but with great pain, to relieve which opiates were administered.

The following day the urethra gave way, a quantity of urine escaped into the cellular membrane, the perinæum sloughed, and the urine escaped by the opening; a very few days after this he expired.

Examination.

On examining the body, the bladder was considerably thickened, but not much contracted, for it still contained near a pint of urine. When the parts were removed and laid open, the internal surface of the bladder was found very much diseased. The inner membrane had apparently suffered repeated attacks of violent inflammation. On some parts the natural surface of the membrane was still visible, but rendered of a bright red colour from inflammation; on other parts effused coagulable lymph had become covered with a reddish brown crust of adherent calculous matter; this change had taken place to a considerable extent about the fundus of the bladder, and also in the commencement of the urethra, at the neck of the bladder.

The prostatal and membranous parts of the urethra were much enlarged from the pressure of the urine, as far forward as the stricture, which was situated at the bulb of the urethra.

The stricture itself was very nearly impervious, and was of a compact texture, although of no considerable extent.

Where the canal of the urethra had suffered inflammation and distention behind the strictures, coagulable lymph had been effused, and the particles of uric gravel had become adherent through the whole extent of the effused lymph.

The fistulous orifice where the urethra had burst, was situated immediately behind the strictured part of the canal.

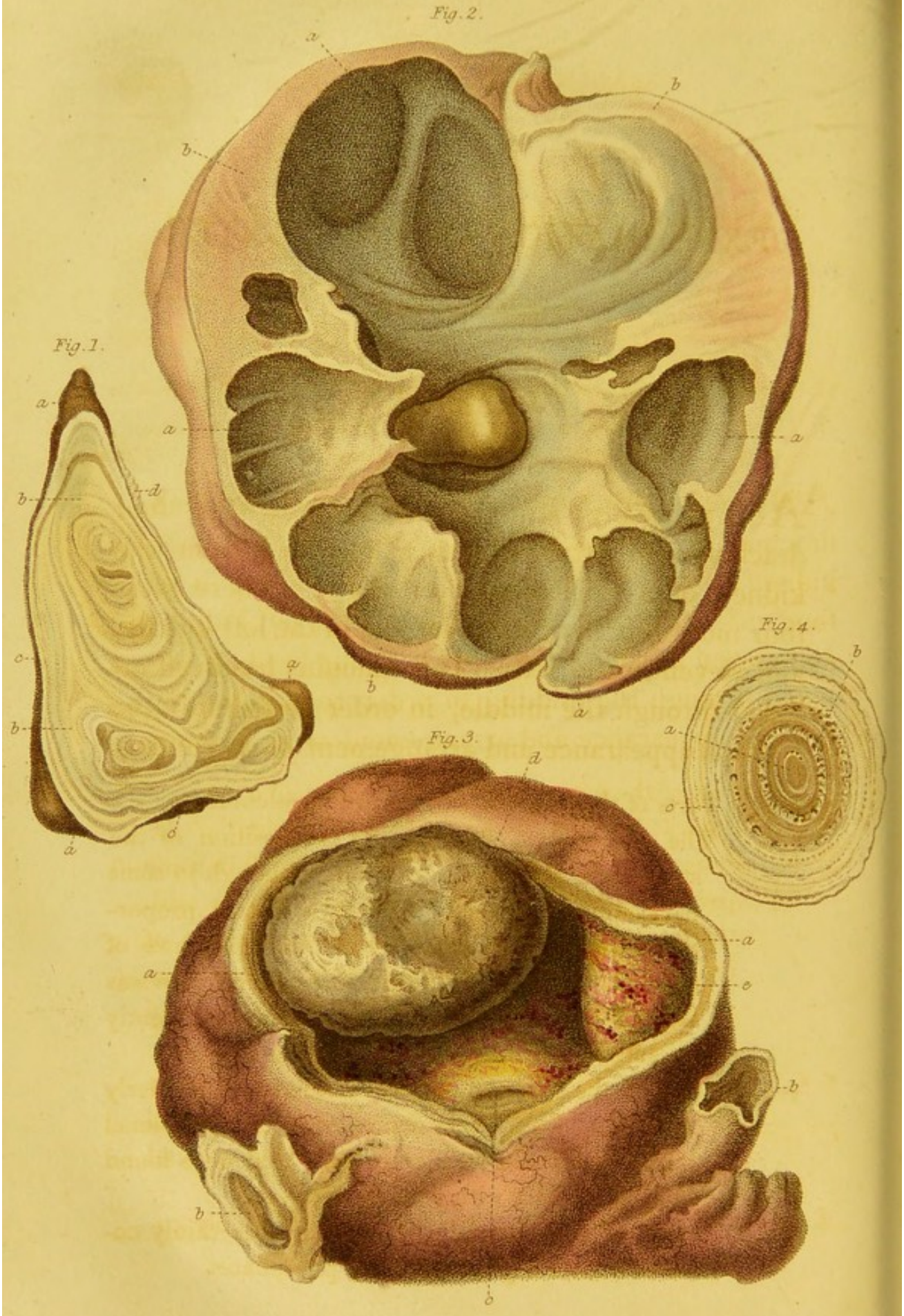
The prostate gland was considerably enlarged, and had an extensive abscess formed within its substance. *

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* See appearance of the Bladder, PLATE 3. *Fig.* 5.

THE END.

PLATE I.



J. Howship del.

J. T. Wedgwood sc.

Published June 20th 1816, by Longman, Hurst, Rees, Orme & Brown, Paternoster Row.

EXPLANATION OF THE PLATES.

PLATE I.

Fig. 1.

AN unusually large calculus, weighing four drachms and fifty-six grains, removed from the kidney of a nobleman after death. There were four more calculi of a smaller size in the left kidney, and eleven in the left. This calculus has been divided through the middle, in order to exhibit the internal appearance and arrangement of its laminæ.

a. a. a. Parts of the external surface of the calculus.

b. b. The cut surface, shewing the composition of the stone to be principally uric acid, although in some parts apparently combined with a certain proportion of the phosphates. From the appearance of the section it is pretty evident that this calculus was originally several distinct parts, which subsequently became united together into one larger mass.

c. c. Parts of the external surface rendered particularly smooth, and somewhat depressed by the occasional friction with the smaller calculi, that were found lying in contact with it in the kidney.

d. A part of the external surface, that was thinly covered with a deposition of the phosphates.

Fig. 2.

The kidney of a child laid open; shewing the effect of distention from accumulation of urine, in consequence of a calculus formed in the kidney having become impacted in the orifice of the ureter.

a. a. a. a. The natural cavities or infundibula of the kidney very much enlarged from the continued pressure of the secreted urine, all the cavities communicating internally with the central part, or pelvis of the kidney.

b. b. b. The secreting structure of the kidney, rendered so thin by the pressure as to be in some parts almost entirely destroyed.

c. The calculus, as it was found closely wedged into the orifice of the ureter.

Fig. 3.

The urinary bladder of a child laid open on its posterior part, to shew a calculus that was found within its cavity, and also to exhibit the appearance of the internal membrane when labouring under the irritation of stone. *

a. a. The thickened parietes of the bladder.

b. b. The ureters considerably enlarged, and purulent upon their internal surface.

c. The neck of the bladder, and internal orifice of the urethra.

d. The calculus.

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* See Case 6.

c. The surface of the mucous membrane lining the cavity of the bladder, exhibiting the appearance of numerous small spots of extravasated blood, produced by the friction of the stone producing abrasion of the capillary arteries distributed upon the membrane. This appearance demonstrates the principle upon which the urine is in these cases so frequently tinged with blood, shewing that it arises merely from the mechanical injury to the membrane lining the bladder.

Fig. 4.

Exhibits the section of the calculus seen in the last figure.

a. The nucleus of the stone, consisting of uric acid.

b. A thin stratum which from its open and loose texture, and light grey colour is evidently composed of mucous matter and the phosphates only. From the size of the concrete round which this first deposit of the phosphates has taken place, it appears very probable that upon the passage of the uric nucleus from the kidney into the bladder, the secretion of an excess of uric acid had for a time been suspended, a change to be perhaps explained by the escape of the calculus having allowed the irritation within the kidney to subside to a certain degree, although the nature of the subsequent addition proves that this action was very soon re-assumed.

c. The more external parts of the stone composed of the phosphates with variable proportions of mucous matter.

PLATE II.

Fig. 1.

A very large abscess formed within the kidney, the cavity being laid open on its anterior part. *

a. The inner margin of the kidney, or that situated towards the spine.

b. The upper extremity of the ureter, into the divided end of which a bristle has been inserted.

c. The inferior surface of a part of the liver, which from the inflammation of the kidney, had been united by adhesion to its superior extremity.

d. The gall bladder.

e. The general cavity of the abscess, the immediate parietes of which were covered with flocculent coagulated matter, together with the purulent contents of the cavity.

f. A portion of a bougie, introduced from the opening originally made at the posterior part of the kidney, by which the contents of the abscess were evacuated.

Fig. 2.

Shews the appearance produced in the bladder by extreme irritation, from sympathy with schirrhous disease in a neighbouring part.†

a.a.a.a. The thickened parietes of the contracted bladder, laid open by a transverse section through its fundus.

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* See Case 8.

† See Case 11.

Fig. 1.



Fig. 3.

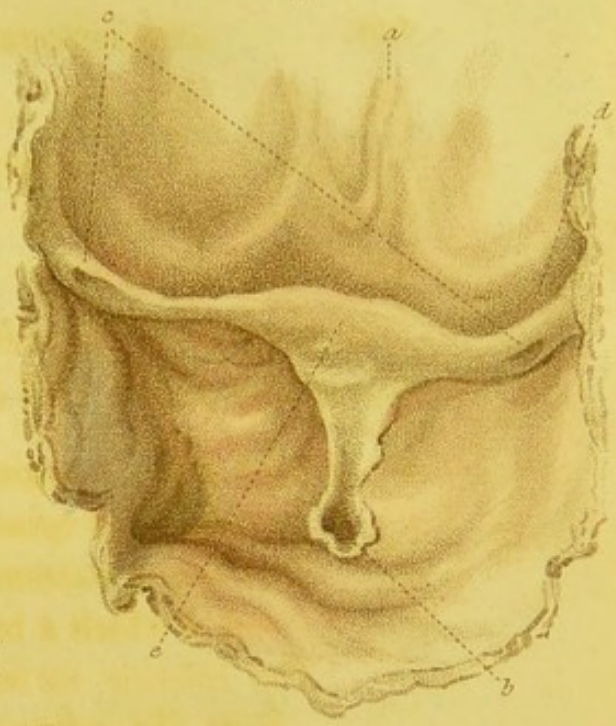
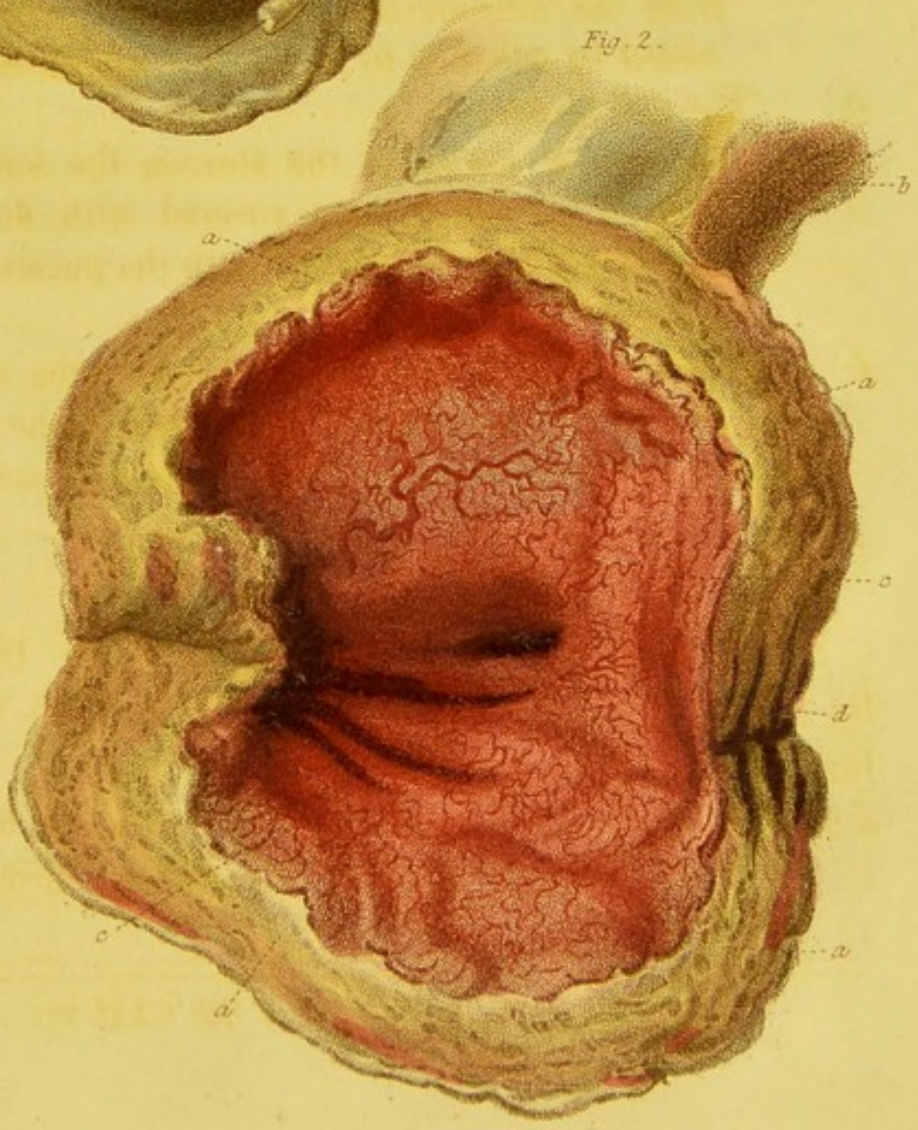


Fig. 2.



J. Howship Ad.

J.T. Wedgwood sc.

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b. The corpora cavernosa, and corpus spongiosum, of the penis.

c. The mucous membrane lining the cavity of the bladder, crowded with innumerable vessels, and excessively loaded with blood.

d. The neck of the bladder and orifice of the urethra.

Fig. 3.

Exhibits a very singular and curious instance of a preternatural fold of the inner membrane of the urinary bladder, extending from the orifice of each ureter to the opening into the urethra in the prostate gland, forming a valve on each attempt to void the urine, which at first impeded its free exit, and at length proved fatal, with symptoms not unlike to those that attend in cases of bad stricture.

a. The posterior part of the cavity of the bladder.

b. The orifice of the urethra.

c. The opening of the right ureter.

d. The opening of the left ureter.

e. The preternatural fold.

PLATE III.

Fig. 1.

An adherent mulberry calculus, weighing five drachms and four grains, that was extracted from the urinary bladder by the operation of lithotomy.*

a. That part of the surface of the stone that was found adhering to the coats of the bladder, the boundaries of which adhesion are very well marked upon the calculus itself, by that part having been rendered much darker in colour than the rest of the surface.

Fig. 2.

Exhibits a section of the calculus shewn in the first figure.

a. The nucleus, or central part of the stone.

b.b.b. The parts immediately surrounding the nucleus, demonstrating that particular stage of its growth at which the mulberry calculus begins to assume the peculiar appearance which constitutes its most striking external character.

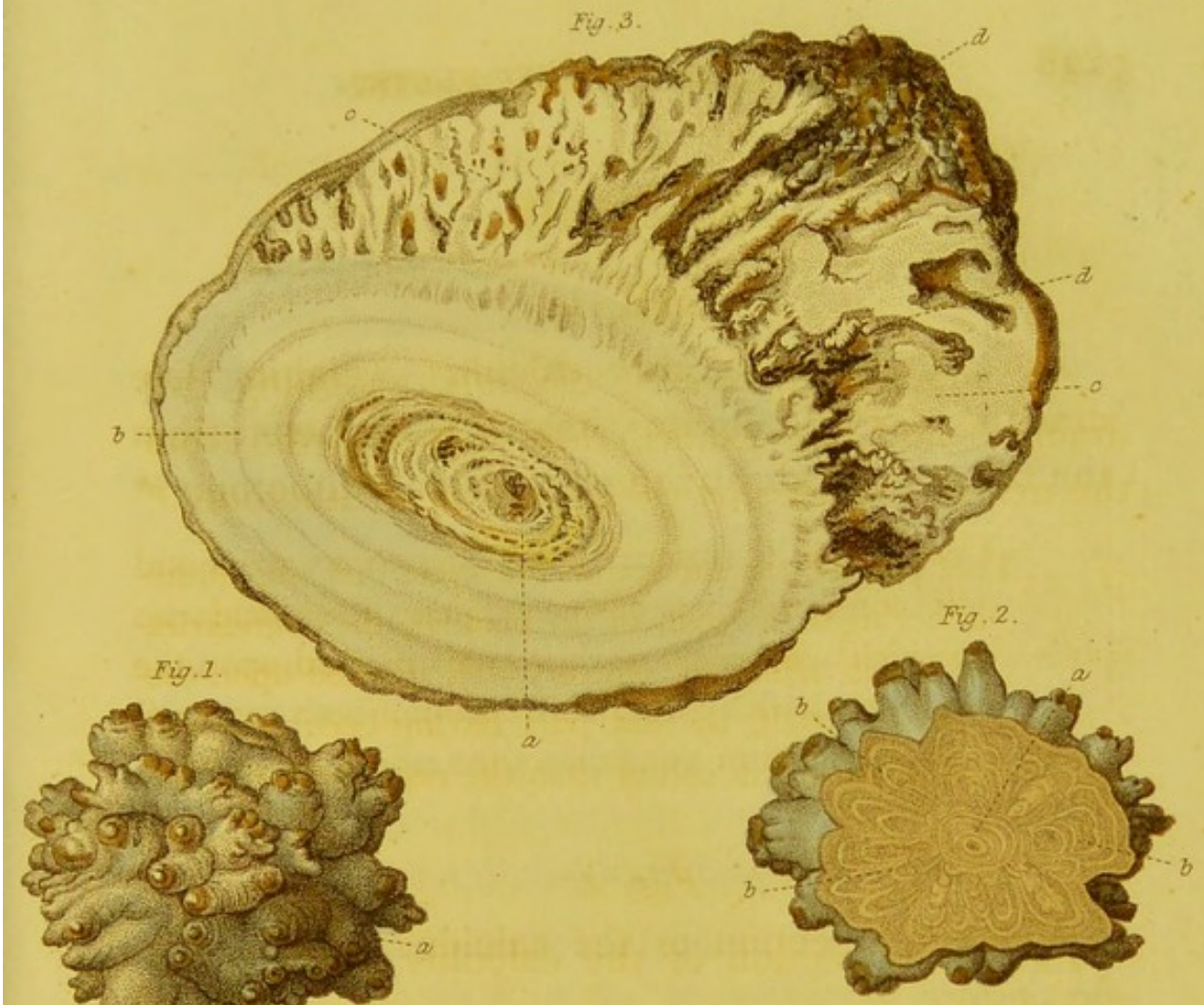
Fig. 3.

A section of a very singularly large calculus composed of the phosphates, and voided by the natural efforts, from the urethra of a female.†

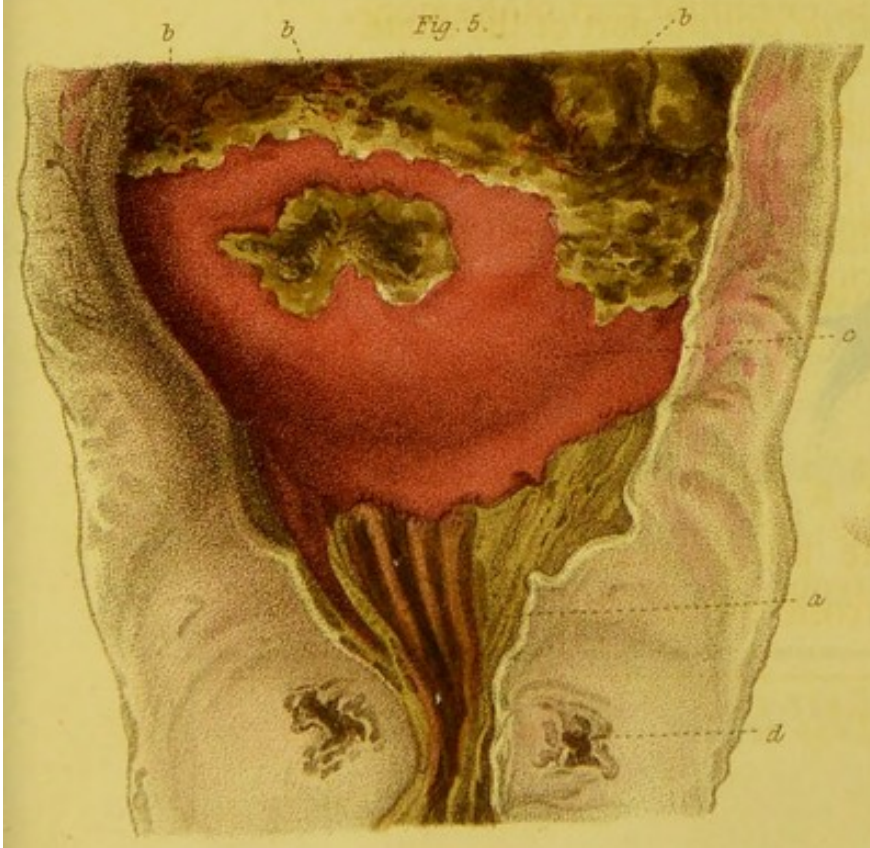
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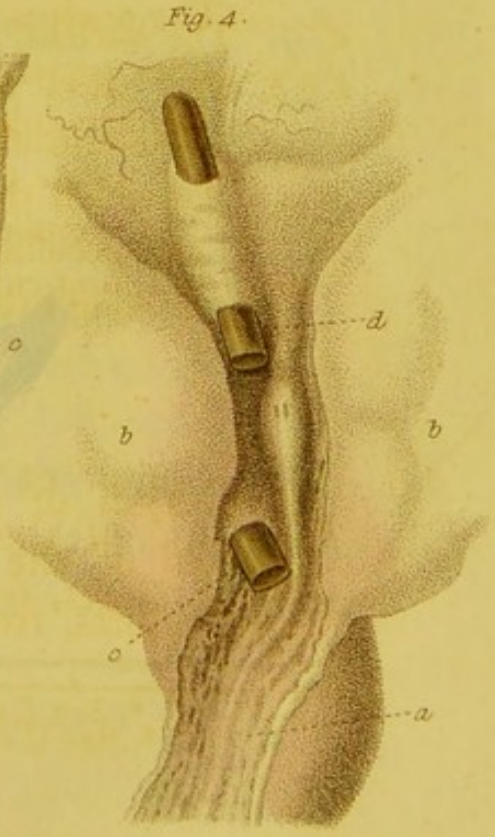
* See Case 12. † See Case 13.

PLATE III.









J. Howship del.

J.T. Wedgwood sc.

Published June 20th 1816, by Longman, Hurst, Rees, Orme & Brown, Paternoster Row.

a. The nucleus of the stone, the texture of which was extremely loose and friable.

b. The subsequently deposited laminæ, very uniform, and similar in structure throughout.

c. c. A very large mass of calculous matter deposited upon one side of the original concretion.

d. d. Numerous open spaces that were found in the more solid texture of the calculus.

Fig. 4.

Represents the neck of the bladder and prostatal portion of the urethra laid open on the anterior part, from a gentleman who by the unskilful introduction of bougies had produced two false passages. *

a. The bulbous part of the urethra.

b. b. The lateral lobes of the prostate gland divided, to shew the course of the urethra.

c. A part of a bougie inserted into a false passage, the direction of which is seen upon the figure to be obliquely backwards, into the substance of the gland.

d. Another portion of a bougie passed through a second false passage that had been produced at the neck of the bladder by the bougie first pressing up the inner membrane into a transverse fold, and subsequently passing through it, making its way out again at some distance beyond.

---

* See Page 157.

Fig. 5.

Shews the appearance produced by extreme irritation at the neck of the bladder, with effusion of coagulable lymph, and the adhesion of calculous matter to the newly formed surface.*

a. The neck of the bladder and prostatal part of the urethra, covered with a layer of coagulable lymph, and crusted over with particles of uric gravel that have become adherent to its surface.

b.b.b. Masses of effused lymph, and calculous matter, similar to the above.

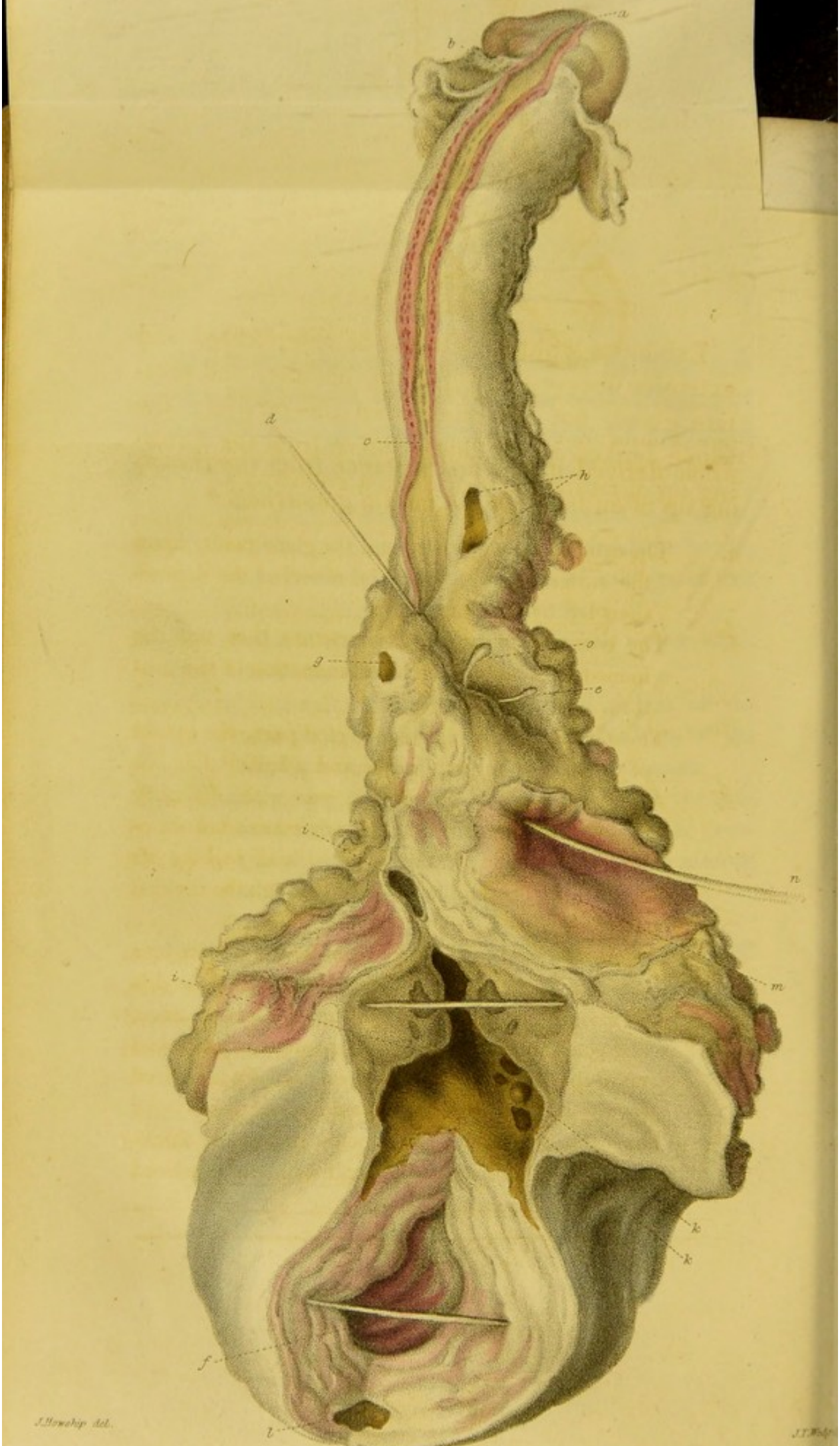
c. The remaining part of the natural surface of the membrane lining the cavity of the bladder, of the brightest red colour, from high inflammation.

d. An opening into an abscess connected with the urethra, and formed within the substance of the prostate gland, the cavity of which abscess was covered with adherent calculous matter.

---

* See CASE 27.

PLATE IV.



J. Howship del.

J.T. Bell sc.

PLATE IV.

Exhibits a striking example of complicated and extensive disease of the urethra, bladder, and prostate gland, not excepting even the rectum; the whole derived in the first instance from the throwing up of an injection, to cure a gonorrhæa.*

a. The orifice of the urethra, and the glans penis, upon the surface of which may be observed the depressions left by the chancres.

b. The commencement of the stricture that was the immediate consequence of inflammation of the urethra.

c. The termination of this contracted part, the extent of which is about two inches and a half.

d. A very fine silver probe that was with difficulty passed through a firm and closely contracted stricture at the bulb of the urethra, and making its appearance behind the stricture through the divided parts at,

e. Where the canal might have been brought more into view but for this objection, that the whole of the disease could not in any way be distinctly seen at once, and consequently the other appearances preserved upon the figure would have been partially sacrificed by any further prosecution of the dissection.

f. The urinary bladder; its parietes excessively thickened from habitual labour, and its cavity rendered smaller in the same proportion.

---

* See Case 18.

g. The orifice of one of the fistulous canals, many of which were found passing from the urethra in various directions.

h. The double opening from two fistulous passages running into the body of the left corpus cavernosum penis.

i. i. The cavity of an extensive abscess formed in consequence of irritation and disease in the prostate gland.

k. k. Small rounded calculi with highly polished surfaces, many of which were in this case found deposited in little recesses or cells, around the cavity of the large abscess in the prostate gland.

l. A small abscess that was accidentally divided into at the fundus of the bladder, between the external laminæ of its muscular coat.

m. A part of the anterior surface of the intestine rectum, closely adherent to the diseased prostate gland.

n. A common probe introduced by an ulcerated opening in the coats of the intestine, through the abscess in the prostate gland, thence passing out from the divided part of the urethra at,

o. Where the point of the probe makes its appearance immediately behind the stricture.

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