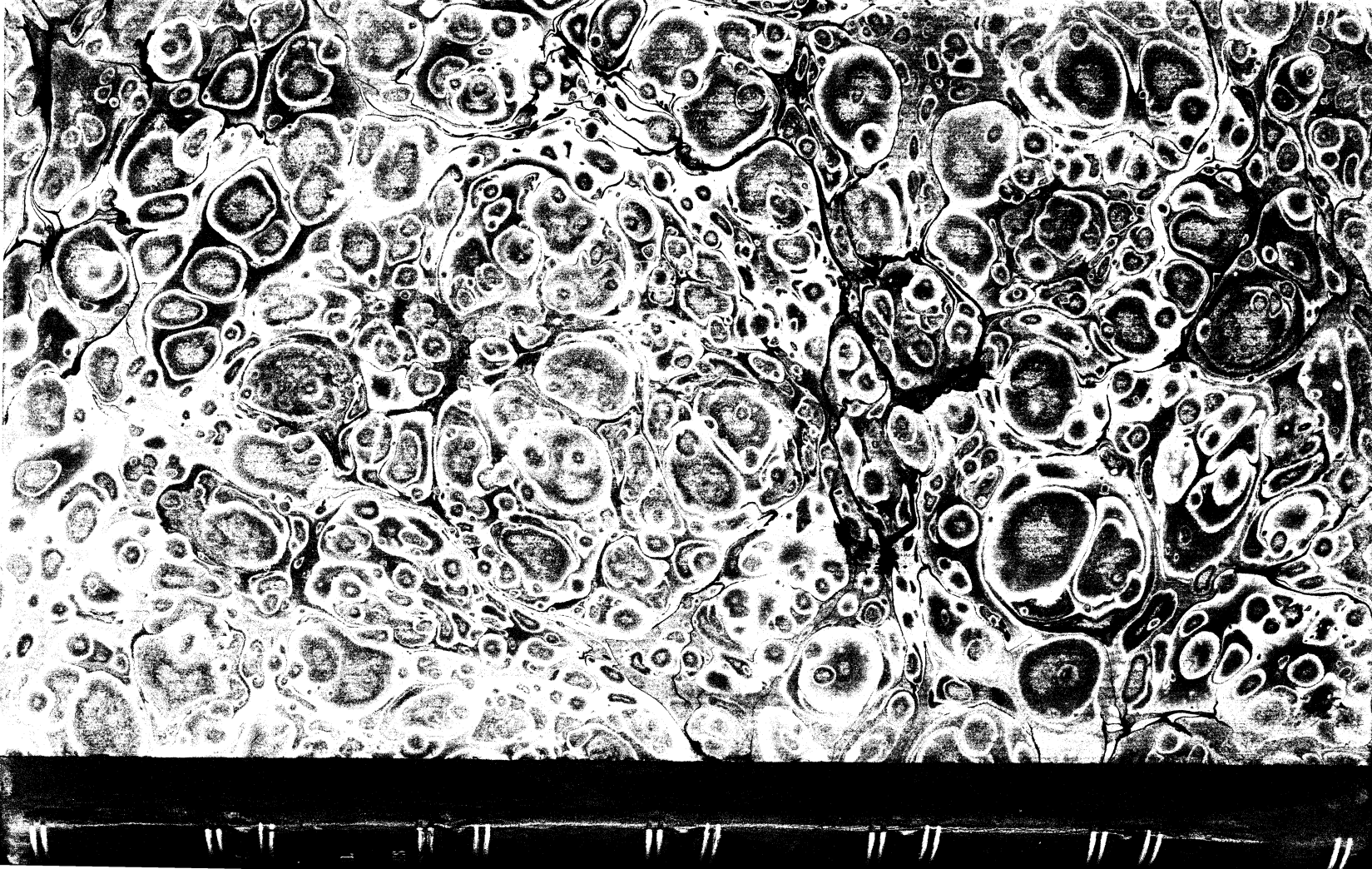

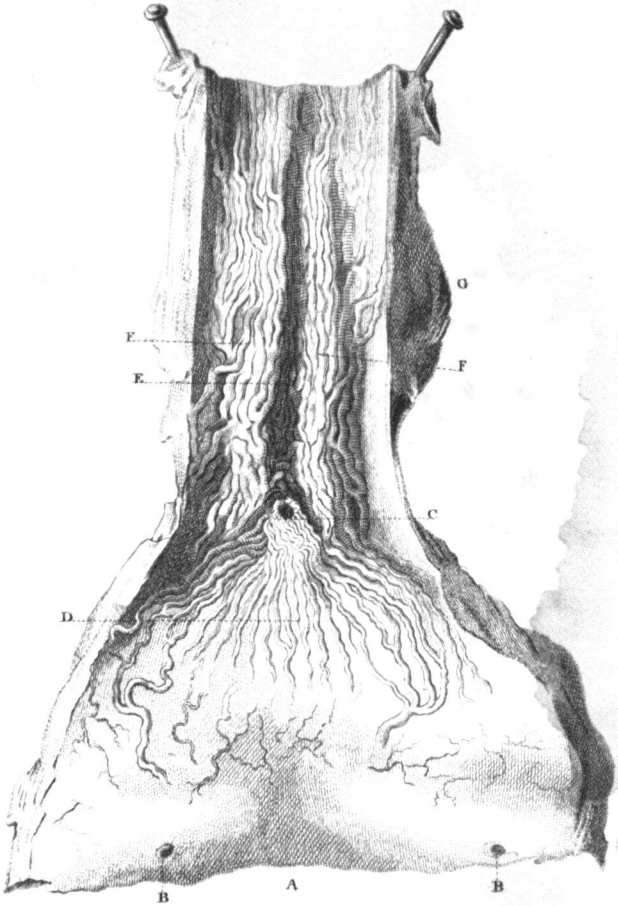

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OF

OBSTINATE VOMITING,

IN WHICH

AN ATTEMPT WAS MADE

TO PROLONG LIFE,

BY THE

INJECTION OF BLOOD INTO THE VEINS.

By JAMES BLUNDELL, M.D.

LECTURER, IN CONJUNCTION WITH DR. HAIGHTON, ON PHYSIOLOGY AND MIDWIFERY, AT GUY'S HOSPITAL.

Read Dec. 22, 1818.

IN a former Paper, which was read before the Medical Chirurgical Society in the Spring of the present year, (1818) I ventured, on the authority of the experiments there related, to recommend, in cases of desperate inanition, the injection of blood by the syringe. Since these experiments were published, the operation has been already once performed; and as a narration of the circumstances may, perhaps, be of service to some, who, at this moment, may stand in need of the remedy, I hasten to lay them before the Society.

A poor fellow*, of the name of Brazier, between thirty and forty years of age, lately a patient in Guy's Hospital, was attacked with disease about the stomach, which, as subsequent dissection proved, depended upon a scirrhosity of the pylorus. It would be impertinent to my present purpose to enter into a detailed account of the various symptoms of his long illness; it may be remarked, however, that for the last few weeks, his bowels were seldom open without the use of injections, and that during the last three or four months, he had vomited the greater part of his food. The region of the stomach was frequently examined, but though he was emaciated in a high degree, neither tenderness, nor enlargement, nor hardness could be distinguished; he had no pain there, and there was nothing in the appearance of the matter vomited, which indicated ulceration: so that on the whole there was some little ground for hoping that the symptoms might, perhaps, not arise from a scirrhosity of the pylorus.

When I saw this man at the request of Dr.

* Should this history appear prolix, the Society will have the goodness to remember, that in our total ignorance of the operation, every fact becomes important.

——————————————— *Audi!*

Nulla unquam de vitâ hominum cunctatio longa est.

Human life is at stake; and surely the infirm may, under such circumstances, reasonably exact from the profession, those minute investigations for their safety, which the sternest of the satirists has vindicated to a slave.

Cholmely, under whose care he was, the defect of sanguification had so completely exhausted him, that his dissolution was hourly expected. The veins of the limbs, I mean their trunks, were evidently shrunk; the pulse was small, and feeble, and very compressible, and so indistinct, that it could not be numbered without some difficulty; the vascular system seemed nearly empty. With these marks of inanition, the other symptoms corresponded. The temperature of the limbs was falling, and the mind sinking into a state of insensibility; the muscles were become so feeble that he spoke in whispers, and found a difficulty even in stirring his limbs; and his whole person, the limbs and face especially, was so excessively emaciated, that when he lay in the bed, so that only the face and arms were exposed, he really reminded one of an animated human skeleton, covered merely by the skin. I am aware that this figure may appear a little too fanciful, but it certainly conveys no exaggerated idea of the appearance which it is designed to illustrate. To these remarks I may add, that the complexion was slightly jaundiced, and that the skin, on various parts of the limbs especially, was discoloured, with mottled patches of a livid blue tint, which seemed rather to arise from a gathering of blood in the minuter veins, than from actual extravasation.

When it was first proposed to me by Dr. Cholmely, that the injection of blood should be

tried in this instance, as the "only and doubtful" remedy, I felt considerable hesitation. The case was every way unfavourable, at least to the splendid success of the operation; and I could not but think it unwise, by an adventurous attempt to prolong the life of a solitary individual, to risk the character of a remedy, which, if adopted into practice, would hereafter, in all probability, preserve the lives of numbers. On seeing the patient, however, my reluctance presently gave way; his truly helpless and hopeless appearance was such as might have moved compassion, even in those who are most familiar with disease. He was evidently at the point of death. Transfusion alone could give him a chance of life. He was himself willing that the attempt should be made. Even if the operation should fail, it would probably disclose facts which might be of advantage to others. These were weighty considerations, and we determined to operate*.

For this purpose, about an inch of the right cephalic vein was laid bare, a little above the elbow, (for the vessels were too much contracted to admit of the operation below it,) and a longitudinal incision, about a line in length, was made with the lancet. Some gentlemen present,

* Dr. Cholmely, Dr. Back, Dr. Wright, Mr. James South, Mr. Callaway, Mr. John South, Mr. Thomas Cox, Mr. Pollard, and several other gentlemen, were present at the operation.

undertaking to supply a few ounces of blood, about an ounce and a half was taken up by the syringe, and immediately infused into the vein in a gradual stream. This operation was repeated ten times, so that between twelve and fourteen ounces of blood were introduced, in this manner, in the course of thirty or forty minutes.

No very obvious changes, either morbid, or of a salutary nature, made their appearance during the operation. The brain, nerves, and muscles, remained undisturbed; the respiration continued unaltered; the temperature of the body scarcely rose; and even the pulse, with the exception of a slight increase in its size, and a dubious variation of three or four beats in the minute, underwent no obvious change. It should be observed, however, that the livid discolouration of the hands, already described, gave way to a more healthy complexion; the same change, though unattended to, probably taking place on other parts of the skin. In reply to repeated inquiries, the patient himself declared, that he perceived no unusual sensation whatever; and at the close of the operation, when speaking doubtfully of his improvement, he expressed himself in a more audible whisper than he had made use of before.

In performing the injections, some little niceties were attended to, which it may not be improper to notice. The different portions of blood were

not injected in immediate succession, but at irregular intervals of five or six minutes, so as to give time for each portion to be distributed over the vascular system, before a fresh supply was poured in. In one instance, however, two measures, in another three were thrown in, at intervals of a few seconds only, in such a manner, that from three to five ounces of blood were infused, in the course of two or three minutes, yet without occasioning any obvious derangement.

To facilitate the operation, the vein was laid bare, and a probe was passed beneath it at the under extremity. As this was a first attempt, it was expected that various embarrassing circumstances might occur; and it was therefore deemed a prudent, though perhaps not altogether a necessary precaution, to obviate those, at least, which might arise from the concealment of the vein.

The little pipe, easily introduced, was secured in the vessel, without the assistance of a ligature, merely by the pressure of the finger; and in order to expel the air, it was, previously to its insertion, filled with water; retained there, on familiar principles, by placing the tip of the finger over the superior orifice*.

The syringe and the tubule formed together the

* This piece of sleight was suggested by Mr. Henry Cline, and answered so well, on repeated trials, that I think it worth notice. The exclusion of air from the apparatus is important.

whole of the apparatus; and the nozzle of the syringe, sliding readily over the smooth extremity of the tube, they could be separated or united without any difficulty. This greatly simplified the operation; for the blood was taken up from the cup, and poured into the vein, with as much ease and much in the same manner too, as the anatomist infuses his injection. Two minutes scarcely elapsed during this transfer of the blood from one arm to the other.

It is scarcely necessary to add, that the syringe was made warm;* that the apparatus was air-tight; and that the greatest care was taken, that none of the air should make its way into the veins by finding a lodgment in the syringe or pipe.

The performance of the whole operation was materially assisted by Mr. Henry Cline; and though I am conscious, that his talents are too well appreciated by the profession, to require any eulogy from me, I cannot forbear expressing the pleasure which I feel on this occasion, in associating my name with his. To his instructions I stand indebted for some of my earliest surgical information, and in him I view with respect, the union of an extensive knowledge of established surgery, with that chastened and well balanced spirit of caution

* Is not the blood animated? And if so, would not a cool apparatus be preferable, as tending less to exhaust the vital principle? Blood in a cup coagulates more speedily at a higher than at a low temperature. Experiment must decide this question.

and enterprise which is of all others the best fitted to improve it. I could enlarge, but I forbear; the language of panegyric would be here misplaced. What I have said he will pardon, as the well-earned tribute of unfeigned esteem, as far removed from the selfishness, as it is from the satire of adulatory commendation.

Although the operation, which was performed two or three hours after mid-day, produced very little effect at the time; in the course of the evening, the patient experienced a very salutary change from it. His body became warmer; his respiration remained regular; and his pulse, which by this time had acquired nearly double its former size, beat with great regularity about eighty-eight times in a minute. This was its number before the operation was performed. While I was making these observations, I was very well pleased to hear one of the hospital attendants pointing out a reddening of the extremity of the nose, and the increasing ruddiness of the lips, (pallid and bloodless before,) as well as the greater alacrity which our patient manifested, when he attempted to stir his limbs. When asked respecting his feelings, the poor fellow himself replied, "I am better," "much better;" "less fainty;" and these words were certainly pronounced with a firmer utterance, and in a louder whisper, than I had heard him use before.

All these favourable symptoms continued during

the night, and the greater part of the next (the second,) day; indeed at eight in the morning, he thought himself stronger than on the evening preceding. At this time his limbs, as well as the trunk, were remarkably, though perhaps not preternaturally, warm; he passed a stool without an injection, and felt a degree of appetite, which he had not experienced for two or three weeks before; for he pressed his attendants to supply him with a little food, and drank, at intervals, about half a pint of porter. On the whole, the symptoms seemed to indicate a slight degree of excitement. Probably this excitement was analogous to that, which arises from taking food after long-continued fasting; the blood irritating the empty vessels, on much the same principle, as the aliment does the famished stomach.

It was not till the evening of this day, (the 27th of September,) that he began to droop; but he sank so rapidly in the course of the night, that, on the following morning, he seemed reduced to as low an ebb as before the operation. As the day (the third) went forward, he passed an involuntary stool, and suffered a recurrence of his retchings. At nine in the evening, his extremities were become cool; his pulse was disposed to intermit, and his mind (perhaps) to waver; and these symptoms gradually increasing upon him, he died at eleven o'clock, about fifty-six hours after the injection, apparently exhausted from inanition.

It deserves particular remark, that although all the marks of exhaustion, which had preceded the operation, recurred on this day; not a single additional symptom made its appearance with the exception of a sort of white exudation, observed on the skin of the face, and giving it the appearance of having been dusted with a few grains of coarse powder. This efflorescence, seemingly emitted with the perspiration, was in all probability of a saline nature; but owing to some misunderstanding on the part of the attendants, none of it was preserved for chemical examination.

On the morning after death, the body was examined by Mr. Callaway. From this inspection, it appeared that the *pylorus* was really scirrhous, together with the upper part of the duodenum, and that this indurated mass made a slight pressure upon the gall-ducts. Here too the passage for the food was contracted, and its inner surface irregular, though it did not appear that even the internal membrane itself had been destroyed by ulceration.

The vein on which the operation had been performed, was of course examined with peculiar care, to ascertain whether inflammation of it had been excited. The only unusual appearance observed, however, was a darkish red discolouration of the inner membrane, for about half an inch above, and a line or two below the wound. This

was seated beneath the surface of the vessel, and, at first glance, looked like the stain of a coagulum which had formed in this part of it. There was no thickening of the coats of the vein, no effusion of adhesive matter, no appearance whatever of a widely spreading inflammation; above and below the spot, the vessel appeared perfectly healthy, as it still does in the preparation of it now before me. If there had been any genuine inflammation at all, it certainly had been slight, and was confined to the vicinity of the wound.

Remarks.

There are various reflections which suggest themselves on considering this case, some of which I may be permitted to notice.

1. It will be observed, in the first place, that this poor fellow fell a victim to exhaustion, notwithstanding the supply of blood which he had received, about fifty-six hours before. When we are considering this fact, however, it must not be forgotten, that the quantity of the injection was very small in comparison with the high degree of inanition. It is wonderful what large quantities of blood may be lost, without immediate danger to life, provided the blood-vessels have time to accommodate themselves to the evacuation. Repeated venesections afford us a familiar instance of this, as well as bleedings from the womb.

I am indebted to Mr. Lewis Hensley, formerly a student at the united hospitals, for an authentic and extremely intelligent account of two cases of copious blood-letting, which it may be proper to notice here. The patients were two robust countrymen, of the middle size, and laboured under thoracic inflammation. From each of these men, Mr. Hensley *himself*, drew off by venesection, more than a gallon and a half of blood, (he weighed it *carefully*,) in the course of five days; and during the whole of this time they took little aliment besides barley-water; yet both eventually recovered, without any alarming symptoms of inanition. Brazier was a man but little below the middle size. In his case the waste of the blood had been very gradual; and at the time when we operated it had been carried to the highest pitch compatible with the remains of life. Under these circumstances, I believe a gallon and a half to be the lowest estimate of the deficiency. Indeed, when the extreme emaciation of the patient, and the contraction of the vascular system are considered, together with the gradual manner in which the blood had been wasted away, we shall not, perhaps, appear guilty of exaggeration in rating it much higher; possibly it more nearly amounted to two gallons than one and a half. But even if we take the lowest estimate, twelve or fourteen ounces will appear a very inadequate supply; nor is it to be wondered at, that, after a great part even of this

small pittance had been consumed for nutrition, in the course of the next twenty-four hours, the patient should relapse into that state of inanition from which the operation had so imperfectly liberated him.

In alluding to the causes of this exhaustion, I have said little, it will be observed, of the excitement which occurred the day after the operation, because, although this was so inconsiderable as to be in a manner dubious, its effects in contributing to wear out the little remains of the patient's strength, are too obvious to require a comment.

2. The foregoing reflections naturally lead us to inquire, whether the life of our patient would not have been further prolonged if a larger quantity of blood had been infused at first, or if the injection had been early repeated, for instance, on the second day? Upon this point there may now be room for a difference of opinion; but it must, I conceive, be admitted, that with the information which we possessed at the time of the injection, the method of operating adopted was upon the whole the most prudent.

It is hardly necessary to remark, that it would have been very unwise to have thrown a large quantity of blood (for example two or three pints of it) into the veins at once. The patient was

exhausted; the heart and vessels were feeble; their capacity was become contracted; we had no former experience of the effects of the operation; unexpected and fatal symptoms might, perhaps, have been occasioned by it.

Nor can we deny, that it would have been scarcely less imprudent to have repeated the operation upon the second day. In the memoir already alluded to, I have taken occasion to shew that dogs, resuscitated by transfusion, may, under certain circumstances, die a day or two afterwards*. With this fact before us, it seemed a necessary precaution that we should defer the second injection till the third day at least. It was thus only that we could ascertain whether any symptoms prohibiting a second trial of the operation would ultimately arise from the first.

But the history of this operation has a further claim on our attention, as it elucidates some important points connected with the injection of blood.

1. In the first place it shews that the operation is very easy. A little tube and a syringe were the only novel instruments required; and although this injection was a first attempt, not a single difficulty occurred.

* When the human blood, or that of the sheep has been substituted in large quantities for their own.

2. It further proves, at least with all the force of a solitary fact, that the infusion of human blood by the syringe is unattended with danger provided the blood be not suffered to lie at *least* above a minute in the cup. No unfavourable change was produced by the operation at the time, nor was there I think a single morbid symptom observed during the next fifty or sixty hours which could be fairly attributed to it.

3. To this I may add, that the case gives additional strength to the opinion that human blood, although transmitted through the syringe, may still retain a positive fitness for the animal purposes. In this instance it will be observed, that the strength was recruited by it; that the pulse became larger and the temperature of the body warmer. The man himself felt that he was revived; and I think the spontaneous evacuations from the bowels, and the returns of appetite especially, as they seem to have arisen from an improvement of the alimentary secretions, are further proofs of the little injury which the blood had sustained from passing the syringe. Whether, blood injected in this manner, so as to supply the vessels directly, remains so far unimpaired in its qualities that it will supersede the necessity of a supply by sanguification, the case did not enable us to ascertain, but the doctrine is plausible; there is nothing in it obviously at variance with sound reasoning, and the general tenor of the facts

related certainly gives some little countenance to it. Observation, however, and experiment, the sole basis of a solid physiology, can alone solve this problem; nor can any labour, I conceive, be ill laid out which is employed in investigating a point of such importance. And are there not at this moment many patients in our hospitals sinking under inanition, who, if the experiment were explained to them, would be grateful that it should be tried? And would not this experimental remedy secure to some of them at least the only remaining chance for life? And is there a principle in the physiology of nutrition which it is of more importance to establish? Who can tell the various diseases in the management of which it might perhaps be applied? Half the labour, laid out by Spallanzani on a single dissertation, would probably establish the affirmative; and I had almost added, that the naturalist who fairly succeeds in proving it, whether by observations on the human subject, or experiments on the brute, will be found, perhaps, hereafter, when his discovery has been matured, and applied to all the medical purposes to which it is adapted, to have conferred no inconsiderable benefit on mankind. This consideration offers a noble incentive to exertion, and cannot want its due influence over an elevated and truly benevolent mind.

St. Saviour's, Southwark,
Oct. 1st, 1818.

CASE OF

BRONCHOCELE,

IN WHICH

THE SUPERIOR THYROIDEAL ARTERY WAS SUCCESSFULLY TIED.

By HENRY COATES, Esq.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, AND SURGEON OF THE SALISBURY INFIRMARY.

COMMUNICATED BY

Mr. ASTLEY COOPER.

Read May 11, 1819.

AMONG the greatest improvements in modern surgery, none have exceeded, or perhaps equalled, that of the surgery of arteries. To the enterprising genius of modern surgeons are we indebted for the information which enables us to perform operations on them successfully, in cases which were formerly considered impossible, and by which many valuable lives have and will be saved.

The following case is recorded, not for any extra-

ordinary difficulty in the operation, but in order to shew that in some cases the thyroideal arteries may be tied with advantage; not that such cases are common, nor would I state any thing to encourage the juniors of our profession in attempting this operation, unless the vessels, as in this case, be sufficiently apparent, and readily within reach.

My friend and colleague, Dr. Grove, having mentioned to me a case of an out-patient of his, of the Salisbury Infirmary, with Bronchocele, in which the tumor was pressing on the trachea, and very considerably impeding respiration, and the superior thyroideal arteries being large, and pulsating, suggested the possibility of their being tied with advantage. Elizabeth Spratt, æt. 17, was in consequence admitted an in-patient. The thyroid glands were large, and pressed on the trachea, so as to render respiration and deglutition extremely difficult: and the noise she made was so great that it might be heard at a very considerable distance. The superior thyroideal arteries were large, and pulsated strongly. Her general health was extremely good.

It was agreed, on consultation, that a ligature on the artery afforded the best chance of advantage to the patient. Accordingly, on the 29th of December, I cut down on the left superior thyroideal artery, and having dissected it from its accompanying nerve by means of a bent probe, I passed

under the vessel a small round ligature, which was drawn moderately tight and tied. She passed a tolerable night. The next day she complained of headache, and there was some swelling of the neck and side of the head, with increased difficulty of swallowing, and some febrile symptoms. These, however, gave way to the abstraction of blood, and antimonial medicines; and in three days she was relieved from all unpleasant symptoms.

The ligature separated on the ninth day, and the wound was completely healed on the fourteenth day. Her breathing was much improved, and the size of the tumor reduced nearly half; and she was so materially benefited, that she was discharged on the 14th February quite well.

She was to have returned to the Infirmary should any of her unpleasant symptoms have recurred; but I presume that the tumor has not again increased, and that she remains so well that she is unwilling to submit to any further operation.

A

STATEMENT OF FACTS

TENDING TO ESTABLISH AN ESTIMATE OF THE TRUE VALUE AND PRESENT STATE OF

VACCINATION.

By SIR GILBERT BLANE, Bart. M.D. F.R.S.

PHYSICIAN IN ORDINARY TO THE PRINCE REGENT.

Read Nov. 10, 1819.

IT is now twenty-one years since Vaccination was promulgated in the country by Dr. Jenner, and fifteen years since it began to produce a sensible effect in diminishing the mortality from Small Pox. In regard to the latter period, it is coeval with this Society; yet, though no discovery in nature nor in medicine has been more important to the interests of humanity, nor any which ever so rapidly and universally has won the assent and practical adoption of mankind, there are no notices of it on our records, except some allusions to its influence on other disorders, in our second and third volumes. As it is to be hoped that our labours will prove to posterity some of the princi-

pal sources of reference regarding the medical and chirurgical discoveries and improvements of the age; as it is one of the reproaches of the country that it has not availed itself so much as any other of the benefits of Vaccination; and as there are writers among us who still allege that the failures are so numerous that the value of the discovery is very ambiguous, it seems one of the duties of the Society to lend its aid in placing these important points in their true light.

It seems almost needless to premise, that the Small Pox is of all maladies that, which, during the last thousand years, has destroyed the largest portion of the human species, and been productive of the largest share of human misery. There is, perhaps, no disease over which medical art has less power, and this power, such as it is, has consisted more in abolishing pernicious practices than in ascertaining any positive methods of controuling its fatality, unless we except the inoculation of it with its own *virus*. But, though the beneficial effect of this on those on whom it is actually practised is undeniable, it has no tendency like Vaccination to extirpate the disease; and from the impossibility of rendering it universal, it has actually been found to add to the general mortality of Small Pox, by opening a new source of diffusion to its *virus*.

In order to bring this to the test of calculation,

in order also to institute a comparison of the mortality of Small Pox as influenced by Vaccination, as well as by inoculation from itself, I have selected from the bills of mortality four periods, each of fifteen years, for the purpose of exhibiting the mortality of Small Pox in each of these series in regard to each other. These are thrown into the form of Tables, and annexed to this article.

The first series is the fifteen years immediately preceding the introduction of inoculation, that is, from 1706 to 1720, both included. Previous to this period, no account that could be depended upon regarding the Small Pox, could be derived from the bills of mortality, for down to the beginning of last century such was their imperfect construction, that Small Pox, Measles, and Flux were blended under one head. Exception may be taken against the accuracy of these bills, even in this improved state, particularly with regard to the discrimination of diseases. This objection, however, is certainly less applicable to Small Pox than any other disorder, its character being so striking as not to be mistaken by the most ignorant and careless observer.

The second series is taken at the middle of the last century, when Inoculation had made considerable progress, that is, from 1745 to 1759, both included. In comparing this with the preceding

series, with regard to absolute numbers, it ought to be taken into account, that eleven parishes were added to the bills of mortality, between the years 1726 and 1745, both included: so that the progressive improvement of general salubrity ought to be estimated still higher than what is indicated by the diminished mortality, as it stands in the Tables.

The third series comprises the fifteen years previous to the introduction of Vaccination, when Inoculation had made still greater progress; that is, from 1785 to 1798, both included.

The fourth series comprises the time in which the vaccine Inoculation has been so far diffused as to produce a notable effect on the mortality of Small Pox; that is, from 1804 to 1818, both included.

The result of these computations stands as follows:—

Ratio of the Mortality of Small Pox to the total Mortality.

From 1706 to 1720, one in 12.7; that is, 78 in 1000.
From 1745 to 1759, one in 11.2; that is, 89 in 1000.
From 1785 to 1798, one in 10.6; that is, 94 in 1000.
From 1805 to 1818, one in 18.9; that is, 53 in 1000.

In all these computations, fractions are not noticed in the last column of numbers.

It appears from this statement, that the proportion of deaths from Small Pox to the total mortality, increased in the course of last century; so that Inoculation appears to have added to the mortality. It is but fair to mention, however, that this total mortality is not quite a just scale whereby to measure the relative mortality of Small Pox; for in the course of that century, the general mortality itself was greatly diminished in relation to the population. This diminution of general mortality was chiefly owing to the diminished mortality of children under two years of age, which, at the time when the account began to be kept, 1729, averaged about 9000; but at the end of the century not more than 5000; also to the decrease of fevers, and still more of fluxes. The relation of the mortality of Small Pox to the population, would therefore be a more fair criterion of its increase or decrease. In this view it might, at first sight, be thought that it had decreased; for the population of the metropolis nearly doubled in the course of the last century. But it is to be remarked, that there has been little increase of population in that portion of the metropolis which is included in the bills of mortality; the great increase having been in the parishes of Mary-le-bone and St. Pancras, which are not included in these bills. It is computed in the remarks subjoined to the last parliamentary returns of population, that the population of London, within the walls, had decreased more than three-fifths in the course of last century, from the widening of streets, the erection of public

buildings, and warehouses, and, it might have been added, from the migration of mercantile families to the west end of the town. As a set-off to this, there has certainly been a great addition, in the same time, to those parishes within the bills, which stand on the verge of the metropolis, such as St. George's, Hanover Square, St. George's, Bloomsbury, Poplar, and Stepney. But the addition to the population, if any, within the bills of mortality, does not seem to be so considerable as to affect the computation. And if this is admitted, the absolute numbers of the deaths from small-pox, estimated in relation to the population, that is, exactly as they stand on the Tables, afford a fair comparative statement of the mortality in the last century, and seem to prove, that Inoculation has not added so much to it as has been alleged*.

But the truly important result from these statements consists in the clear, undeniable, and great diminution of it since the introduction of Vaccination. It appears, that in the last fifteen years, the mortality from Small Pox, in the bills of mortality, has not been much more than one-half of what it was in the two like series of years in the middle

* It was in the rural population that the effect of Inoculation in diffusing Small Pox was chiefly felt. In this situation there is much less intercourse of persons with each other than in towns, so that not only many individuals escaped from exposure to this infection during their whole life, but whole districts were known to have been exempt from it for a long series of years, before it was universally diffused by Inoculation.

and latter end of the last century. Nor does this comprise the whole benefit derived from this discovery in the metropolis; for, besides that the sixth part of it lies without the bills, it was found, in levying the tax on burials for the last six months of 1794, that the number of unregistered deaths, chiefly those of dissenters, amounted in that half year, to 3148; and the reporter of the Parliamentary Enumeration thinks that, as besides these there were undiscovered interments, the unregistered deaths may be computed at one-third of the total mortality, that is, about 7000. (*See Abstract of the Parish Registers*, 1811, *printed by authority of Parliament*, *Page* 200.)

Assuming, therefore, that Vaccination had not been practised the last fifteen years, and that the mortality, from Small Pox, within the bills, had in that time, that is, from 1804 to 1818, been the same as from 1784 to 1798, that is, 27,569 in place of 14,716; and assuming that there has been the same proportional diminution of deaths in the districts without the bills, and among the unregistered subjects, the account of lives saved in this metropolis by Vaccination in these fifteen years, will stand as follows:—

Within the bills of mortality .	12,853
Without the bills of mortality .	2,570
Unregistered cases	7,711
Total .	23,134

The first of these numbers is found by subtracting the amount of deaths by Small Pox, in the bills of mortality, during the practice of Vaccination, from the amount of them, during the same number of years, immediately before the discovery of Vaccination.

The second number is found by dividing the first by 5. The population of the metropolis without the bills is stated at one-sixth of the whole, which is evidently one-fifth of that within the bills.

The third number is found by dividing the sum of the two others by 2. The unregistered cases being, as before stated, one-third of the whole.

It appears, therefore, that, even under the very imperfect practice of Vaccination which has taken place in this metropolis, 23,134 lives have been saved, in the last fifteen years, according to the best computation that the *data* afford. It will be seen by an inspection of the table, that, in that time there have been great fluctuations in the number of deaths. This has been owing partly to the Small Pox Inoculation of out-patients having, by an unaccountable infatuation, been kept up at the Small Pox Hospital for several years after the virtue of Vaccination had been fully confirmed. The great number of deaths in 1805 may chiefly be referred to this cause. Since the suppression of this practice, the adoption of Vaccination, though in a degree so incomplete, in consequence of public

prejudice, created by mischievous publications, has been unable to prevent a considerable, though fluctuating, mortality from Small-Pox. This mortality, though little more than one half of what it was in former times, might have been entirely saved, if Vaccination had been carried to the same extent as in many cities and whole districts on the continent of Europe, in Peru* and Ceylon.

It is now matter of irrefragable historical evidence, that Vaccination possesses powers adequate to the great end proposed by its meritorious discoverer, in his first promulgation of it in 1798, namely, the total extirpation of Small Pox. The first proof of this was at Vienna, where, in 1804, no cases occurred, except two strangers who came into the city with the disease upon them. In 1805 there did not occur a single death from it in Copenhagen†. Dr. Sacco, the indefatigable superintendant of Vaccination in Lombardy, stated,

* In the summer of 1811 the author was called to visit, professionally, Don Francisco de Salazar, who had arrived a few days before in London, on his route from Lima to Cadiz, as a deputy to the Spanish Cortes. He informed me, that Vaccination had been practised with so much energy and success in Lima, that, for the last twelve months there had occurred, not only no death from, but no case of, Small Pox; that the new-born children of all ranks are carried as regularly to the Vaccinating House, as to the font of baptism; that the Small Pox is entirely extinguished all over Peru; nearly so in Chili; and that there has been no compulsory interference on the part of the government to promote Vaccination.

† See Pfaft neuen nord v. Archiv. B. I.

in his Annual Report, 3d January, 1808, that the Small Pox had entirely disappeared in all the large towns in that country; and that in the great city of Milan it had not appeared for several years. Dr. Odier, of Geneva, so favourably known for his high professional, scientific, and literary acquirements, testifies, that, after a vigorous perseverance in Vaccination for six years, the Small Pox had disappeared in that city and the whole surrounding district; and that, when casually introduced by strangers, it did not spread, the inhabitants not being *susceptible*. The Central Committee in Paris testify, in their Report of 1809, that the Small Pox had been extinguished at Lyons and other districts of France.

These are selected as some of the earliest proofs of the extirpating power. But it is demonstrable, that if at the first moment of this singular discovery, at any moment since, at the present or any future moment, mankind were sufficiently wise and decided to vaccinate the whole of the human species who have not gone through the Small Pox, this most loathsome and afflicting of all the scourges of humanity, would instantaneously, and for ever, be banished from the earth.

It is farther manifest, that extirpation being the sole and ultimate aim of this discovery, and there being the fullest historical and practical evidence of its being capable of accomplishing this end, all

other questions with regard to its expediency must be futile and irrelevant. It is in the nature of all morbid phenomena, to be liable to exception. One of the most essential and characteristic laws of Small Pox itself, namely, that of its affecting the human subject but once in life, is found in rare cases to be violated. It is, therefore, perfectly conformable to analogy, and naturally to be expected, that it may not in all cases be a complete security against Small Pox. But it is obvious, that, admitting these exceptions to be very frequent, much more so than the recurrence of Small Pox after Small Pox, this can constitute no objection to the practice, as long as the extirpating power remains unimpaired and unimpeached. Nay, it is obviously so far from an objection, that it ought to operate as a powerful additional incentive on every benevolent mind, to push Vaccination to the utmost, as rapidly as possible, in order that those who are still susceptible, either from peculiar natural constitution, or from the unskilful manner of conducting the operation, or from defective matter, may not, by any possibility, catch it; for, in the event of its extirpation, it could no where be met with. And in order to stimulate the good and the wise to aim strenuously at this consummation, let it be constantly borne in mind, that the adversary they are contending with, is the greatest scourge that has ever afflicted humanity. That it is so, all history, civil and medical, proclaims: for, though the term plague carries a sound of greater horror

and dismay, we should probably be within the truth, if we were to assert, that Small Pox has destroyed a hundred for every one that has perished by the plague.

It is true that in its last visitation of this metropolis, one hundred and fifty-four years ago, it carried off 70,000 victims in a few months; but since that time, the deaths from Small Pox, recorded in the bills of mortality, have amounted to more than 300,000; and a like number of the survivors have been afflicted with blindness*, deformity, scrofula, or broken constitutions, which is not the case with the Plague. And when it is considered that there are large portions of the globe, India, China, even one whole quarter of it (North and South America), besides all the tropical and arctic regions, in which it has never been known; and that in all the countries liable to it, it seldom appears but at one season of the year, and sometimes at long intervals, the ravage which it

* It appears, by a Report of the Hospital for the Indigent Blind, that two thirds of those who apply for relief have lost their sight by the Small Pox. It is alleged by some of the soundest Political Economists that Small Pox does not diminish the numbers of mankind, nor Vaccination increase them; for population is determined by subsistence, and the indefinite powers of procreation soon repair the ravages of disease. But, however this may be, the miseries incident to so many of those who survive Small Pox, whereby they become a burden to themselves and to society, render this disease uncontrovertibly an evil of the first magnitude, not to speak of the intense sufferings and affliction inseparable from it.

makes is trifling when compared with the unceasing havoc of Small Pox, which spares no nation in any climate, or at any season.

The preceding reasoning is grounded on the supposition of extirpation; but, however demonstrable the *possibility* of extirpation may be, it may not in all communities be *practicable;* and may not these alleged failures so operate, as, in such circumstances, to render the expediency of the practice questionable?

In order to decide this, let the nature and amount of these failures be ascertained and estimated.

The description of those cases of Small Pox, (if they can be called so,) which occur in vaccinated subjects, is shortly as follows. The invasion and eruption in every respect resembles that of the genuine Small Pox. I have seen it attended with high fever and a thick crowded crop of *papulæ*, such as precedes the most severe and dangerous cases of the confluent kind. This runs on till the fifth day from the eruption, both days included, at which time some of the *papulæ* begin to be converted into small sized pustules. The disorder then abruptly stops short. On the following day the fever is found to have subsided, with a shrivelling and desiccation of the eruption, and recovery proceeds without the least danger or incon-

venience. The face is marked, for some time after, with brown spots, but without pits. It should never be forgotten, that all morbid *phænomena* are full of varieties and exceptions. Accordingly, though the fifth day is the most common limit of this disorder, it sometimes stops short on the third; sometimes not till the sixth or seventh; and in a very few cases, it has been known to run the common course of Small Pox. What forms the strong line of distinction from proper Small Pox, is that, with a few exceptions, it does not proceed to maturation and secondary fever, which is the only period of danger. I am not prepared to deny that death may not have occurred in a few instances, nay, there seems sufficient evidence that it actually has; but these adverse cases are so rare, as not to form the shadow of an objection to the expediency of the general practice. A few weeks ago at a meeting of this Society, at which forty members and visitors were present, I put the question whether any of these eminent and extensive practitioners had met with any fatal cases of this kind. Two gentlemen had each seen a single case, and two other gentlemen took occasion to say that they had each seen a case of second Small Pox, both of which proved fatal. It is evident, therefore, that according to that maxim which guides mankind in the conduct of life, namely, that of acting on a general rule and average, and not on exceptions, these adverse instances ought not to have the least influence on practice, even though they were much more numerous.

As it is of the utmost consequence to establish the strong and important distinction between Small Pox, properly so called, and that which takes place after Vaccination, which may be called the mitigated, or five-day Small Pox, a few of the most impressive testimonies respecting the safe nature of the latter may be here recited. Mr. Brown*, of Musselburgh, gives the detail of forty-eight cases, in none of which did the secondary fever nor death occur. Here was a saving of at least eight lives, at the lowest computation, for this is the number which by the average mortality of natural Small Pox would have died if the constitutions of these forty-eight persons had not been modified by previous Vaccination. Dr. Dewar, of Edinburgh, hearing that many vaccinated subjects had been affected with Small Pox at Cupar in Fife, where the natural Small Pox at the same time prevailed, he most laudably repaired to the spot to investigate the subject. He found that fifty-four vaccinated subjects had caught the Small Pox. All these, except one, had the mitigated or five-day eruptive fever and lived. The fatal case, was that of a child, who had a complication

* See Inquiry into the Antivariolous power of Vaccination. Ed. 1809. There is an article in the Edinburgh Medical Journal by the same gentleman in 1819, in which he mentions that he had heard of several deaths having occurred from cases of Small Pox after Vaccination. But, admitting this, it is utterly incomprehensible by what process of reasoning Mr. Brown could on such premises arrive at the conclusion that Vaccination ought to be exploded and abandoned.

of other disorders, and having died on the fifth day, the Small Pox, according to its ordinary course of fatality, could not of itself be the cause of death. All the rest were safe, while of sixteen cases of the natural Small Pox at the same time and place, six died; so that if these fifty-three cases had not undergone the mitigating process of Vaccination, nineteen or twenty would have perished. Between thirty and forty cases of the same kind have occurred at Carlisle, on the testimony of Dr. Barnes, a respectable practitioner of that city*. Many proofs might be adduced from the oral testimony of private practitioners, which would over-swell this article. The only other to be mentioned is from the Report of the Central Committee of Vaccination at Paris, made in December last, in which the description of the disease occurring after Vaccination corresponds exactly with the mitigated five-day cases which have occurred in Britain. They refuse the name of Small Pox to it; but as I know from my own observation, as well as from the testimony of others, that the matter from it does by Inoculation give the Small Pox, we can hardly perhaps with propriety deny it that name; but it should be distinguished by some strong discriminating epithet, such as is suggested above.

* See also a clear and able exposition of this subject in the Medical and Surgical Journal of Edinburgh for July, 1818, by Mr. Dunning, of Plymouth.

Now let all this be applied to the case of a community, in which the total eradication of Small Pox is quite hopeless. Let it be admitted that such occurrences as have been described do frequently occur: let it even be admitted, for argument's sake, that every vaccinated case whatever must of necessity and unavoidably at some time or other in future life be affected with this mitigated species of Small Pox, would it not even under this great abatement be one of the greatest boons that could be conferred on humanity, as an instrument or remedy which would disarm Small Pox of its danger? The next greatest benefit to the total extirpation of Small Pox, would be the stripping it of its terrors by rendering it safe and harmless.

It may be further remarked, that the benefit derivable from the different proportions of the persons vaccinated to the total population, advances in a considerably higher progression than the simple arithmetical. It is evident that the smaller the relative number of the vaccinated, the greater their chance of meeting with Small Pox infection, and that though the disease they may catch is of a mitigated nature; it would nevertheless be desirable to avoid it on its own account, but still more on account of the prejudice it creates. This, in the eye of general benevolence, constitutes an additional, though secondary motive for extending the vaccine inoculation as widely as possible, even though the attainment of the *maximum* of

total extirpation should be impracticable and hopeless.

It is of the highest importance to Society that this subject should be seen in its true light, and in all its bearings, for the frequent occurrence of these cases of Small Pox, however safe in themselves, have had a most pernicious effect on the credulous and ignorant, by giving a check to the practice of Vaccination. How many parents are there now who, from a weak distrust in the virtue of Vaccination, have to lament the loss of a child from Small Pox, either casual or inoculated? Many such are known to myself. It is pleasing, however, to observe, that though this unmerited discredit into which Vaccination had fallen swelled the number of deaths in London from Small Pox to 1051 in 1817, good sense is likely still to prevail, for last year (1818) the deaths have fallen lower than they have ever been known since the institution of the bills of mortality, the total number being only 421.

On the whole matter, I believe I am speaking the language of every man of good principles and feelings, capable of reflecting seriously and considerately on the subject, when I say that whenever he applies his mind to it, he finds some new and increasing cause of complacency and satisfaction. Viewed as a mere physical fact in the natural history of the animal kingdom, the virtue of the vac-

cine *virus* in resisting the action of the *variolous*, is, by its novelty and singularity, highly striking and interesting to every one whose taste leads him to take delight in contemplating and exploring the devious ways and varied forms of nature, as curious exceptions to the uniformity and constancy of her laws. But the importance of this vanishes to nothing when the unexampled benefits of it to mankind are fairly weighed; benefits which could never have been dreamt of by the most sanguine philanthropist, who, in contemplating it, finds himself lost in astonishment, at a boon to mankind almost beyond the grasp of his mind duly to appreciate. It will in the eyes of future ages be deemed an *epocha* in the destinies of the world, and one of the highest boasts of the country in which it took its rise, with a sense of unrequitable obligation to the individual who first disclosed and promulgated the secret, by drawing it from the dark recesses of rural tradition, and rendering it available to the whole human race.

Such are the sentiments which must fill every well constituted mind, and it behoves the whole medical profession, which has already done itself so much honour by the zealous and disinterested encouragement afforded to it, to continue its efforts in eradicating every remaining prejudice against it. It becomes Englishmen, in particular, to foster it, not only as the native offspring of his country, of which he has reason to be proud, but

to redeem the character of the nation from the reproach of having of all others, whether savage or civilized, done the least justice to this noble discovery. There is no country which has prized it less, nor availed itself of it so little. Have we not seen it adopted instantly in Peru, in consequence of a flash of conviction from the light of evidence, and have we not seen this conviction fully justified by the immediate disappearance of Small Pox from that whole region? To those nations who may feel an envy of the glory attached to our country by this discovery, it must be no small consolation to perceive that a large proportion of the English nation has hitherto been so besotted as not to know how to appreciate nor to avail itself of it, and that it has encountered more opposition among ourselves than in all the world besides.

TABLE I.

Years.	Total Mortality.	Mortality from Small Pox.	Proportion.	Proportion to 1000.
1706	22,097	1095	1 in 20	50
1707	21,600	1078	1 : 20	50
1708	21,291	1687	1 : 12½	79
1709	21,800	1024	1 : 21	49
1710	24,620	3138	1 : 8	127
1711	19,833	915	1 : 21½	46
1712	21,198	1943	1 : 11	92
1713	21,057	1614	1 : 13	77
1714	26,569	2810	1 : 9½	106
1715	22,232	1057	1 : 21	47
1716	24,436	2427	1 : 10	100
1717	23,446	2211	1 : 10½	94
1718	26,523	1884	1 : 14	71
1719	28,347	3229	1 : 8¾	114
1720	25,454	1440	1 : 17½	56
Total—350,503		27,552	1 : 12.7	78

In this series it appears that the deaths from Small Pox are, to the total mortality, as 1 in 12.7; that is, 78 in 1000.

TABLE II.

Years.	Total Mortality.	Mortality from Small Pox.	Proportion.	Proportion to 1000.
1745	21,296	1206	1 in $17\frac{3}{4}$	56
1746	28,157	3236	1 : $8\frac{3}{4}$	115
1747	25,494	1380	1 : $18\frac{1}{2}$	54
1748	23,869	1789	1 : $13\frac{1}{2}$	75
1749	25,516	2625	1 : $9\frac{3}{4}$	103
1750	23,727	1229	1 : $19\frac{1}{4}$	52
1751	21,028	998	1 : 21	48
1752	20,485	3538	1 : $5\frac{3}{4}$	172
1753	19,276	774	1 : 25	40
1754	22,696	2359	1 : $9\frac{1}{2}$	104
1755	21,917	1988	1 : 11	91
1756	20,872	1608	1 : 13	77
1757	21,313	3296	1 : $6\frac{1}{2}$	155
1758	17,576	1273	1 : $13\frac{3}{4}$	73
1759	19,604	2596	1 : $7\frac{1}{2}$	132
Total—332,826		29,895	1 : 11.2	89

In this series it appears that the proportion of deaths from Small Pox is, to the total mortality, as 1 in 11.2; that is, 89 in 1000.

TABLE III.

Years.	Total Mortality.	Mortality from Small Pox.	Proportion.	Proportion to 1000.
1784	20,454	1210	1 in 17	59
1785	18,919	1999	1 $9\frac{1}{2}$	106
1786	20,445	1210	1 17	59
1787	19,349	2418	1 8	125
1788	19,697	1101	1 $17\frac{3}{4}$	56
1789	20,749	2077	1 10	100
1790	18,038	1617	1 $11\frac{1}{4}$	89
1791	18,760	1747	1 $10\frac{3}{4}$	93
1792	20,313	1568	1 13	77
1793	21,749	2382	1 9	11
1794	19,241	1913	1 10	99
1795	21,179	1040	1 $20\frac{1}{4}$	49
1796	19,288	3548	1 54	18
1797	17,014	512	1 $33\frac{1}{2}$	30
1798	18,155	2237	1 8	123
Total	293,850	26,579	1 11	90.9

In this series it appears that the proportion of deaths from Small Pox to the total mortality is 1 in 11, that is, 90.9 in 1000.

TABLE IV.

Years.	Total Mortality.	Mortality from Small Pox.	Proportion.	Proportion to 1000.
1804	17,038	622	1 in $27\frac{1}{2}$	36
1805	17,565	1685	1 $10\frac{1}{2}$	96
1806	18,334	1297	1 14	71
1807	17,938	1158	1 $15\frac{1}{2}$	65
1808	19,964	1169	1 $17\frac{1}{4}$	58
1809	16,680	1163	1 $14\frac{1}{4}$	70
1810	19,893	1198	1 $16\frac{1}{2}$	60
1811	17,043	751	1 $22\frac{3}{4}$	44
1812	18,295	1287	1 $14\frac{1}{4}$	70
1813	17,322	898	1 $19\frac{1}{4}$	52
1814	19,783	638	1 31	32
1815	19,560	725	1 27	37
1816	20,316	653	1 $31\frac{1}{4}$	32
1817	19,968	1051	1 19	53
1818	19,705	421	1 47	21
Total	279,404	14,716	1 18.9	53

In this series it appears that the proportion of deaths from Small Pox to the total mortality is 1 in 18.9, that is, 53 in 1000.

ON THE

STRUCTURE

OF THE

MEMBRANOUS PART OF THE URETHRA.

By JOHN SHAW, Esq.

DEMONSTRATOR OF ANATOMY, GREAT WINDMILL STREET.

Read June 22, 1819.

AN accurate knowledge of the Structure of the Urethra and Bladder is so important to safe practice in the diseases of those parts, that I hope the Society will receive favourably the smallest addition to our knowledge on this subject.

To none are we more indebted than to Mr. Hunter, and to Sir Everard Home, for the improvement of this part of surgery, but they, and many surgeons of this country, have described the urethra as a muscular tube; and upon this assumed fact has the practice in stricture been in a great measure founded.

As I have of late years been much in the society of gentlemen who are convinced that the urethra

is muscular, I have been induced to pay great attention to the subject, and to examine very particularly the facts adduced by them in proof of its muscularity.

It will perhaps diminish any appearance of presumption in my opposing the opinions of celebrated men, when I inform the Society, that besides the dissections which I have made for the subject of this paper, and the constant practice I have had in demonstrating these parts, I have during the last eight years prepared about seventy specimens of diseases of the urethra and bladder, which are now added to the collection of those diseases in Mr. Bell's museum.

In the course of my dissections, I think I have discovered a peculiar structure in the membranous part of the urethra, which, as far as I can learn, has not been noticed.

But before describing the structure to which I allude, I may perhaps be allowed to make some observations on the general anatomy of the part, as the decision on the question of the muscularity of the urethra must have much influence on our practice in the treatment of stricture.

It will only be necessary to examine that part of the urethra which is anterior to the insertion of the ejaculator seminis, because the rest of the

canal is so surrounded with muscles that their actions will sufficiently account for all the spasmodic symptoms that occur in the lower part of the passage.

If the anterior part of the urethra be laid open, we see that the inner membrane is continuous with the mucous coat of the bladder; that it is a secreting coat, and has a great many ducts opening upon its surface. If the pudic artery be injected with size and vermilion, the membrane will be seen to be highly vascular; if a portion of the urethra be distended, and the spongy body be carefully removed, the inner membrane will appear delicate and transparent, without the slightest trace of muscular fibres on it. When the urethra is first opened, there is an appearance of muscular fibres running in the length of the canal, but by examining this with attention, we shall find that it is principally owing to the inner membrane having been thrown into folds by the elasticity of the spongy body. We are referred to comparative anatomy for the ocular demonstration of muscular fibres; and it is confidently asserted in some late publications that circular muscular fibres may be seen in the urethra of the horse. I have carefully looked for them in this animal. On a superficial examination, we might suppose that there were muscular fibres in the urethra, but, on farther investigation, the appearance may be proved in this animal, as well as in the human body,

to be nothing but the internal membrane thrown into folds by its own elasticity, and by that of the spongy body*.

The venous structure of the spongy body is supported by a set of fibres which have been generally supposed to be muscular, and if we hold them between the light and the eye, they have certainly some resemblance to muscular fibres; but if we stretch the part and again let it go, it will contract. This may be repeated several times, evidently proving that the contractility is not owing to an irritability belonging to the living part, but to elasticity.

I have not been able to discover any fibres in the membrane of the urethra of a man, of a horse, or of an ass; within two inches of the glans of a bull there are a set of fibres which meet at a point and resemble muscular fibres; but the urethra is possessed of so great a degree of elasticity in this animal, that we must suppose them to be of the same order of fibres as those which are seen in the spongy body.

The muscularity of the urethra has been attempted to be proved more by arguments from

* The ejaculator seminis is continued up to the glans in the horse. When we see this strong muscle surrounding the whole of the urethra, we must be at a loss to suggest a use for muscular fibres in the delicate mucous membrane.

analogy than by ocular demonstration; for it is urged that muscular action does exist, even though muscular fibres be not visible. Of this, no one doubts, and I have lately had an opportunity of witnessing the fact. In attempting to inject the lacteals of a turtle, I had great difficulty in pushing on the quicksilver, and on trying to inject the arteries I succeeded no better. The cause was apparent when I observed the state of the intestines, for the vermicular motion was still distinct, the viscera having been removed from the animal only a few hours before. On the following day, the viscera having become quite flaccid, the quicksilver was thrown into the lacteals with the greatest ease; and the arteries which the day before pushed out the injection that had been forcibly driven into them, did not again contract upon it. This experiment proves that there is more than elasticity in lymphatics and arteries, for the power which prevented the injection from passing into them was destroyed by death; while in the urethra, we shall find that the power of contraction exists in as great a degree after death as during life.

An hydatid has been given as an example of a body, in which there are no muscular fibres visible, but which will contract and dilate to a considerable extent. But is it possible for the muscular power of an hydatid, of a lymphatic, or even of an artery (in which the fibres are visible), to

withstand a force equal to that which is frequently used in vain, to overcome what is called "spasm of the stricture;" for example, it has been said that "the bougie was grasped with such a degree of firmness that to withdraw it required a force equal to a pound weight;" but this was an old stricture, five inches and a half below the orifice. The cause of the difficulty of withdrawing a bougie in such a case will be shewn presently.

It is said that although the muscular fibres may not be seen distinctly in the natural healthy urethra, that they are visible in a canal where there is stricture, and that strictures commence by an irregular action of one of the fibres. There is certainly a fibrous appearance in the urethra posterior to a stricture, but very different from a muscle. It resembles the fibres which are formed on the peritoneum or pleura, by inflammation, and in many cases fibres are quite detached from the membrane, except at their two extremities, being similar to the bands which are occasionally seen running across hernial sacs.

If we examine a great number of slight strictures, very few examples of the urethra contracted into a regularly circular form will be found; but in the greater number of cases, about one half or two thirds of a portion of the urethra will have become white and dense, or a firm white line will be seen running obliquely along the passage, and yet

we do not find any oblique fibres described in the natural state of the parts. We must account for the formation of stricture on other grounds than the contraction of muscular fibres, for we find by dissection appearances which denote previous inflammation. There is a white dense line, not pliant like the other parts of the urethra, but firm and exactly similar to the stricture formed in the inner coat of the œsophagus, or to a thickening of a portion of the pleura or peritoneum.

The changes which are supposed to take place in the size of the canal during the natural actions, and the phenomena of disease, have been both adduced as arguments in favour of the muscularity of the urethra; for example, the diminution of the canal during the emission of the semen is given as a proof of muscularity, but the same diminution may be produced after death by injecting the spongy body. The expulsion of an injection in a case of gonorrhea has been considered as one of the most decided proofs; but if we throw an injection into the dead penis, the fluid will be thrown out with as much force as in the living body. I threw a small quantity of water into the corpus spongiosum, so as to swell the penis a little, making it resemble the state in which we generally see it in gonorrhea. On injecting the urethra, the fluid was thrown out nearly two yards. Surely no one will say that there was muscular action existing in the urethra of a body almost putrid; but

on the contrary, it will be allowed that the injection was expelled by the elasticity of the parts. That this elasticity is as perfect after death as during life may be proved by the examination of the urethra of a horse, for the canal, though very small, will allow of dilatation sufficient for the admission of the thumb; and on withdrawing the thumb, the urethra will regain its former size: and this may be repeated several times. Is there any muscular part, which, after death, would admit of such a degree of dilatation, and again contract to its former size?

The expulsion of a bougie by the natural actions of the urethra has been given as another proof; but this may be also met by an experiment on the dead body. If we distend the spongy body slightly, and then introduce a bougie into the urethra, it will be gradually pushed out. We must recollect, that when a large bougie is passed in the living body, the penis is pulled up upon it. When we let the parts go, the penis recedes from the bougie, the muscles push it out a certain extent, and then there remains so small a portion, that we can readily conceive the elasticity of the parts to be sufficient to press out the remainder of this *conical* instrument.

The question is asked, "why does the urine flow in a diminished stream during an attack of gonorrhea?" While the inflammatory stage con-

tinues, (at which time alone is there difficulty of passing the urine) the calibre of the canal is to a certain extent diminished by the swollen state of the parts; but what is of more consequence, the muscles of the perineum and the detrusor urinæ are very irregular in their actions, in consequence of the increased sensibility of the membrane to the acrid urine; and if we recollect the numerous muscles which surround the lower part of the canal, we can have no difficulty in explaining why the urine should occasionally stop, or why a stimulating injection should be prevented from going into the bladder.

We find the following expression very commonly made use of. "Spasm comes on a stricture so as to prevent the passing of a bougie, which a short time before entered freely." We must acknowledge that there is a sensation, which gives this idea, very frequently experienced in the lower part of the canal. To explain this symptom, it will be necessary to refer to the consideration of the natural action of the muscles of the bladder, and those surrounding the urethra. The bladder is furnished with a strong muscle, the detrusor urinæ, and the lower part of the urethra is surrounded by a set of muscles which may be considered by their actions as the sphincters of the bladder. Before the urine can flow, it is necessary that the detrusor urinæ should contract, and that the muscles surrounding the urethra should at the

same time relax. While a person is in perfect health, it is not possible to make the urine flow by pressure on the abdomen, but in a paralytic state of the lower part of the body, the urine may be forced out by pressure, because, in this state, the muscles of the perineum are passive, while by pressure, the action of the detrusor is imitated. I have witnessed a case which gave a very striking proof of this.

A gentleman with stricture, had been so entirely mismanaged, that the bladder was allowed to become much distended, and being neglected in this state, he became comatose. It was not possible to introduce a catheter. Instead of puncturing the bladder, which could have been the only hope in such a case, the surgeon was satisfied with trying to empty the bladder by pressing on the abdomen. As the patient was now paralytic, the urine flowed through the narrow stricture; upon which the surgeon exultingly said, "You see there is no necessity for doing any thing more;" the same effect would have been produced by pressure on the distended bladder of the dead body. Thus a certain sympathy must exist between the two sets of muscles, before the natural action can take place; but this sympathy is very apt to be disturbed by any cause, producing irritation on the inner membrane of the urethra, and particularly by stricture, for the point of stricture is always the seat of irritation. The urine is pressed forward

by the detrusor urinæ, the muscles of the perineum relax, until the urine comes up to the stricture; but there the acrid urine naturally produces irritation, and the surrounding muscles are called into action, as they are governed by the sensibility of the membrane. For the same reason, the muscles are irritated so as to prevent the farther entry of a bougie, which has been passed down to an irritable stricture. The means of removing this spasm give us the best idea of its cause. By passing down the caustic to an irritable stricture, the morbid sensibility of the stricture is destroyed, and then a bougie will pass, or the urine will flow, without producing such an excitement as will bring on spasm of the surrounding muscles, which, when present, has been called "spasm of the stricture*."

This explanation will not account for spasm, which is alleged to take place in the canal, anterior to the insertion of the ejaculator seminis. I have considerable difficulty in arguing this part of the question, because I have never seen a spasm of the urethra at the glans, and I have been assured by surgeons of great eminence, that they have never seen it, yet I know that there are some surgeons who say, that by a single touch of the

* Antispasmodic medicines relieve the spasm by subduing the irritation. It is necessary to remark, that the cases which are recorded as examples of relief from the use of those medicines, were strictures in the lower part of the urethra, and were completely within the action of the strong muscles.

caustic, they have seen the urethra at the glans fly open, which the minute before was spasmodically contracted. Instead of insisting that the invisible muscular fibres form the obstacle to the passage of a bougie, in the anterior part of the urethra, may we not rather assign some of the following causes? On introducing a bougie, the point may at first strike against the edge of the stricture, but becoming softened, it may turn up and pass through; it may have got into one of the lacunæ, or by exciting irritation, it may produce a sudden flow of blood into the corpus spongiosum, which will gradually subside, and then the bougie will pass easily, for we may see by an experiment, that the slightest quantity of water thrown into the veins of the spongy body, diminishes the calibre of the urethra very much.

The following symptom of spasm may take place at any part of the canal. "The bougie is grasped and held by a spasm in a stricture." I have seen a gentleman tug at a catgut bougie, which he had passed through a very old narrow stricture, and heard him say, "mark what a degree of spasm there is." On withdrawing the bougie, it was found that the part which had been passed through the stricture, had become soft and swollen, while the part which was embraced by the stricture was firm and round. In attempting to withdraw the bougie, he had pulled the button-like end of the instrument against the firm stric-

ture. The same thing happens in a slighter degree, to the wax bougie. The instrument is pushed with a certain force through the stricture, by lying in the passage it becomes softened, that part which is in immediate contact with the stricture, is indented, for though the stricture was forcibly distended by the bougie, while hard, it will make an impression on the softened instrument. But it is curious, that a stricture in almost a cartilaginous state, should be supposed to be capable of contraction and dilatation. Do we find any thing analogous to this, in the muscles, does the portion of the sterno-cleido-mastoideus which when cartilaginous, produces the wry-neck, ever contract or elongate?

Were the urethra muscular, would it not throw out the gonorrheal matter with a jerk, but can a patient ever do that? Were it muscular, in a state of disease, should we not find it contracted and fibrous, as the bladder is in a case of stricture? To prove that it is not so, I shall describe only one of the numerous examples which are to be seen in Mr. Bell's museum. There is a stricture near the glans, which admits only a bristle. All the urethra behind, is so enlarged, that the finger may lie in any part of it, and instead of its surface being fibrous, it is perfectly smooth, while the bladder is strong and muscular. If we allow the urethra to be a passive membrane, we can then understand how it has become so enlarged by the

continued action of the detrusor urinæ, to throw the urine through the stricture. But it may be asked, why is not the canal collapsed by its own elasticity, and by the pressure of the elastic spongy body? In answer to this, we find, that the spongy body, in the greater number of bad strictures, becomes quite altered in structure by the continued irritation; the oblique fibres adhere together, and in many of these cases, the whole penis wastes, is not capable of erection, and becomes wonderfully short and small, while in others, apparently by a deposition of lymph, during the attacks of inflammation, the penis is permanently enlarged.

Is it possible for a muscle, which if it does exist, is allowed by all, to be of a finer structure than any muscle of the body, to resist the action of the fibres of the bladder? which, in cases of stricture, are so strong; or can it resist the weight of the hand, and such force as is sometimes used to overcome the "spasm?" Is it possible to preserve in spirits, a spasm of a muscle, after the part has been macerated almost to putrefaction*. With as much truth, may we call the preparations of the thickened membrane in hernial sacs, examples of the spasmodic affection of the peritoneum.

I shall now describe that structure, to which I referred in the beginning of the paper, and which,

* There may be seen in anatomical museums, preparations marked "Specimen of Spasmodic Stricture."

as an anatomical fact, should go a great way to settle the question of the muscularity of the urethra.

The membranous part of the urethra has been always described, as that portion which is between the prostate and the bulb, and is called membranous, to distinguish it from those parts of the canal, which are surrounded by the prostate gland, or the corpus spongiosum.

The preparations and drawings which are upon the table, will shew that there is a structure within the membranous part, which, in some degree, resembles the spongy body. It may be seen in the horse, as distinct as the rete vasculosum in the vagina, by merely dividing the urethra, but it is necessary to inject it, before we can shew it in the human body. It may be injected in several different ways: if we put the injecting pipe into the spongy body, by using a very little pressure, we may fill the corpus spongiosum, from the bulb to the glans; if we use more force, and then cut through the cavernous body, so as to expose the lower surface of the urethra, we shall probably see a regular vascular structure, immediately under the mucous membrane, which does not terminate at the bulb of the corpus spongiosum, but passes into the membranous part.

The best manner of shewing this structure, is,

to puncture the mucous membrane, and to introduce the mercurial injecting tube under it. If the pipe be properly introduced, the mercury will not flow into the spongy body, but will pass under the membrane of the urethra, filling a very remarkable net-work of veins. These veins are spread all over the urethra, but at the membranous part, they are accumulated, lying one over another in the length of the canal, so as to form two distinct columns, with a groove between them, which extends from the caput gallinaginis to the glans. The columns unite and surround the membrane forming the sinus pocularis, which itself, from its vascularity, appears to be capable of erection. The peculiar character of the vascular structure is lost, on the prostate, by the termination of the vessels in a net-work of veins, which have communication with the common veins of the bladder. If we continue the injecting force, and interrupt the course of the mercury, it will pass into the spongy body, proving that there is a communication between the corpus spongiosum and this vascular structure, but by no means so free as between the glans and the bulb*.

* I had by chance filled some of those vessels in the upper part of the urethra, some years ago, while preparing the parts for demonstration. I was rather checked in the pleasure of thinking I had made a discovery, on being told by Mr. Bell, that the same vessels had been described by Dr. Barclay. On referring to Dr. Barclay's Paper in the First Volume of the Edinburgh Medical and Surgical Journal, I found that he had only filled a few of those vessels, on the upper part of the urethra, which by

I have placed upon the table, the bladder and lower part of the urethra of a stallion poney. There are many points of the anatomy of the human urethra, explained by this preparation. The two columns and the channel between them, are more distinctly seen than in man, because the corpus spongiosum in the horse, is more evidently divided into two portions. It is so completely separated on the upper part, that about an inch of the urethra near the glans is not on its lower surface covered by the spongy body. It is very easy, to separate, in this animal, the bulb from the internal spongy body; in the preparation on the Table it is held suspended from the internal spongy body, which is seen to pass along the membranous part of the urethra, in two columns, that unite and form another bulb anterior to the prostate*.

some Anatomists, had been supposed to be lymphatics. I pursued my investigation, and discovered the spongy body surrounding the membranous part. Since I wrote this paper, I have seen the Work of Professor Moreschi of Milan; COMMENTARIUM DE URETHRÆ CORPORIS, GLANDISQUE STRUCTURA; and I have also had a conversation with Professor Antomarchi of Florence, the Editor of Mascagni's posthumous Works, by which I find, that the researches of the Italian Anatomists had not extended to the membranous part of the urethra, but had been confined to the upper part, to determine the question so much agitated upon the Continent at present, whether the structure of the corpora cavernosa and spongiosa be vascular or cellular?

* Cowper's glands and the prostate are preserved in this preparation, they form an excellent illustration of the structure of these parts in the human subject. The vesicula seminalis in the horse, is really a bladder, and is surrounded with muscular fibres, nearly as strong as those of the urinary bladder.

This structure in the human body, is of much importance in a surgical point of view, for when we consider its great vascularity, we cannot be surprised that the vessels should be so often opened by our instruments, and continue to throw out blood for a length of time, if excited by a degree of erection. Perhaps the cases where the patient has been so miserable, from defective action in those parts, where the semen is passed with the urine, may admit of explanation, by the facts which have been detailed, for in the greater number of the instances, where the semen was pressed back into the bladder, there has been an imperfect erection, and consequently the little eminence, which may be called the internal bulb, would not be distended so as to fill the urethra, and direct the semen forwards into the channel, between the two columns, while the ejaculator seminis was acting spasmodically upon it in the sinus.

I may be now permitted to take this structure as an anatomical fact to disprove the existence of muscular fibres in any part of the canal, for I have been able to shew, that what has been described as muscular fibres immediately under the mucous membrane, is the uninjected vascular texture of the internal spongy body.

EXPLANATION OF THE PLATE.

A. Part of the bladder.
B. B. Entry of the ureters.
C. Sinus pocularis of the caput gallinaginis.
D. Veins on the prostate.
E. Canal formed between the columns.
F. F. Two vascular columns, forming the internal spongy body in the membranous part of the urethra.
G. Part of the bulb of the external spongy body.

SOME OBSERVATIONS

ON

INVERSION OF THE UTERUS;

WITH A CASE OF SUCCESSFUL EXTIRPATION OF THAT ORGAN.

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COMMUNICATED BY

MR. ASTLEY COOPER.

Read June 22, 1819.

OF all the accidents to which the act of parturition is exposed, an inversion of the uterus itself is one of the most formidable. If its reduction be not almost immediately effected, fatal consequences very frequently ensue, either at the time, from the violence of the hemorrhage, or at a more remote period, the powers of life may, from the same cause, be gradually exhausted.

The records of medicine afford sufficient evidence of the truth of these assertions, and therefore I hope the following case, and accompanying remarks, will not be thought uninteresting.

Inversion of the uterus is probably not so rare an occurrence as many suppose, even in the present day, when so much information on the particular branch of medicine, of which it forms a subject, has been diffused by the medium of lectures, and the writings of numerous valuable authors; for as the accident is generally thought to imply a degree either of carelessness or rashness, on the part of the accoucheur in the extraction of the placenta, he will endeavour, with a view to save his own credit, to keep the real nature of the affection as secret as possible; and an early death often assists in throwing the shade of oblivion over the patients themselves. Within a very short time, I am acquainted with three cases that have occurred in this neighbourhood only. One forms the subject of this Paper; the second occurred to a midwife last winter, and terminated fatally in a few hours, from severe hemorrhage; of the body of this person, I had an opportunity of witnessing the inspection after death; the third, a chronic case, is now under the care of a medical gentleman, at a short distance from Manchester. Within the last few years, other instances of this accident have occurred in this neighbourhood*.

Happily, however, the accident admits of remedy, if an intelligent person be near at hand to

* Within the last few days, a professional gentleman, living nine miles from this town, has informed me of a case he had, where the exhausting hemorrhage was fatal in about four years.

replace the uterus in its natural situation; if this be done immediately, and if the hand of the accoucheur be retained in the cavity of this organ, until it has considerably contracted; and if the patient be confined for some time afterwards to the recumbent posture, she will generally, I believe, do well. This happened in the practice of a gentleman about twelve miles from this town, nearly half an hour after the occurrence of inversion. In another case, about six miles hence, the accoucheur removed the placenta before the uterus was re-inverted, a plan perhaps less safe than removing it where the uterus is first replaced; in both instances the patients recovered well.

Where the uterus and vagina are in a relaxed state, and the female has been subject to prolapsus uteri, I believe there is a greater disposition to the occurrence of inversions at the time of labour, than when such a condition of the parts does not exist. This was the case with Harriot Barwick. In such patients, therefore, it is desirable that the medical attendant be extremely attentive and cautious, in assisting the expulsion of the placenta. I am acquainted with two sisters, both married, one of whom has had a considerable procidentia vesicæ, since the age of fourteen or fifteen; and the other is much troubled with a prolapsus uteri, so that during her last labour, the os internum descended

even beyond the external parts, yet in both of them, by careful treatment, no tendency to inversion has manifested itself during parturition.

In all cases, it is highly proper for the accoucheur to examine, after the expulsion of the placenta, if the os internum be free. At the same time his hand may be placed on the abdomen, to know if the uterus is in its natural situation, and thus ascertain that there is no tendency to inversion.

In consequence of the neglect of this practice, it is to be feared that many lives have been lost; the true cause of the succeeding hemorrhage not being ascertained till too late, as happened in the fatal case that occurred to a midwife here last winter, and that was alluded to above. The gentleman who was sent for, informed me that he had visited her twice before he became informed of the true cause of the hemorrhage, and by this time all art was unavailing. The danger of these cases is in delay. If the replacing of the uterus be not very soon accomplished, it generally becomes, from the quick diminution of its cavity, and the thickness of its contracted parietes, utterly impracticable.

If the patient be enabled to survive the immediate effects of the injury, and the reduction of the inverted uterus to its natural state cannot, by persevering attempts, continued as far as her feel-

ings and safety will admit, be effected, then a train of symptoms occur, from the severe hemorrhage, and the unnatural position of the parts, which will demand the watchful aid of the medical attendant. Some degree of inflammatory symptoms accompanied with fever ensues; the abdomen becomes full, tender to the touch, and at its lower part, sometimes rather hard; there is costiveness of the bowels, and, sometimes, retention of urine, requiring for a time the use of the catheter. By the use of fomentations, enemata, laxatives, and an antiphlogistic regimen, the symptoms abate, the power of expelling the urine, especially if the uterus is first raised a little in the vagina, is regained, and the patient gradually recovers the full power of this function. Afterwards she becomes able to walk about, suckles her infant, and perhaps enjoys apparently even a tolerable state of health; yet the sanguineous discharges are, generally after a time, occasionally returning profusely, and her exsanguineous countenance and emaciated appearance sufficiently indicate the debilitated state of her constitution.

About the time she relinquishes the office of suckling, the menses return more regularly, the discharges of blood are very considerable in quantity or of long duration, the mucous discharges are generally copious at other times, and the constitution begins to sink under the reiterated losses it sustains. The pulse becomes frequent, the ap-

petite is impaired, a cough with hectic symptoms sometimes occurs, and the patient is quite unable to pursue her usual domestic duties. In this state palliative means, as the use of astringent and other remedies, become inadequate to check the exhausting progress of the complaint, and the unfortunate sufferer must soon perish, except some decisive means are devised for her relief. In this painful extremity, the extirpation of the uterus itself has been proposed, as the most efficient means of relief, and, formidable as the operation at first view seems, it is known to have been already performed with success.

Besides the cases previously on record, partly doubtful and partly authentic, a very successful case has lately been published by William Newnham, in his excellent treatise on Inversio Uteri*. To this gentleman the profession and public are indebted for the recommendation of extirpation, under certain circumstances, in the chronic stage of inversion of the womb. An individual case, however, is very insufficient to decide the propriety of a comparatively new mode of treatment; considerable time and experience are still necessary fully to sanction so bold a practice. On this account, I beg indulgence for the detailed relation of the following case, to which I shall subjoin

* Since the above was written, there has been another successful cure by Dr. Davis.

a few observations and suggestions, on the best mode of accomplishing the operation.

1817—January 10th, 9 *p. m.*—I was requested to visit Harriot Barwick, æt. 30, the wife of a baker, No. 9, Back Falkner Street, Manchester. From her own account, and that of the surgeon who had attended her, it appeared that she had been delivered of her first child on the morning of the preceding day. The labour had gone on well, and she was congratulating herself amongst her friends on its comparative ease, when the difficulty with the placenta arose. After waiting about an hour, the surgeon, an intelligent gentleman, passed his finger into the vagina, and finding the placenta, as he thought, descended, he extracted it, without the employment of any immoderate force; however, its removal created to the patient excessive suffering; violent hemorrhage, tinnitus aurium, and syncope followed, and she believed herself about to expire. Finding that a descent of the fundus uteri had accompanied the expulsion of the placenta, the accoucheur pushed it up beyond the os uteri; in the evening he examined, and found it not in the vagina, but the following morning it had returned into the vagina.

At the time of our consultation this evening, it appears that she has lost much blood from the uterus; the abdomen, especially about the umbilicus,

is very tumid, hard (as if from the contracted uterus,) and tender. Pulse 120, and small. No stool since the 6th instant, though oleum ricini and an enema have been used to-day. Has passed her urine tolerably; complains of thirst. On introducing two fingers within the vagina, I felt a substance (evidently the inverted uterus) about as large as the fist, increasing somewhat in diameter upwards, and passing through the os uteri, which was in its natural situation, and considerably dilated by it; it protruded into the vagina nearly to the os internum, felt hard and rugous, and was tender to the touch, though not so much so as the posterior part of the vagina.

The surgeon who had been her accoucheur, now attempted the reduction; but his efforts, continued for about a quarter of an hour, were ineffectual. The woman, during this, complained of much pain, and there was a great discharge of blood; indeed, so much tenderness and inflammatory disposition had by this time apparently invaded the parts, as appeared to render all further attempts to replace it, both imprudent and unavailing. It was now, therefore, determined to sooth and palliate symptoms as much as possible; the abdomen was ordered to be frequently fomented; the domestic enema to be repeated, and a solution of magnesiæ sulphas in infusum sennæ, to be taken every three hours, till the bowels were opened.

January 11th, eight o'clock, *a. m.*—The enema procured two pretty free natural motions; abdomen still tumid, hard, and tender; has had a considerable sanguineous discharge during the night; tumor in the vagina the same; has voided a moderate quantity of urine; pulse 120; some thirst; no appetite; skin of a natural warmth. The breasts being rather full and painful from milk, were directed to be drawn. To have her belly well fomented every two hours, and to have a dose of diaphoretic mixture every three hours.

Eight o'clock, *p. m.*—Symptoms better than in the morning; two stools to-day, and urine moderately free, but is often obliged to press up the uterus before it will flow, as she used to do with her prolapsus; abdomen subsided, softer, and less tender; discharge rather diminished; teased with a cough, for which a mucilaginous mixture, with tinct. opii, and liquor antimonii tartarisat. was directed.

From the 12th to the 14th she was rather improving; the belly became softer and less tender; the bowels required occasional assistance of an aperient mixture; passing of urine difficult and painful; cough much better; breasts less painful; lochia diminished; pulse 96, and rather soft; tongue moist; appetite better; lives chiefly on oatmeal gruel. Was up a few minutes to-day, when the uterus protruded rather more than usual.

17th.—Has had a feeling of considerable heat in the abdomen for the last two days; pulse 96, and of moderate strength; tongue moist; great thirst; appetite moderate; bowels open; discharge almost colourless; urine passes with pain; sleeps pretty well; breasts rather painful, but less swelled.

20th.—Urine, for the last few days, drawn off twice daily by the catheter.

29th.—The os uteri is now so much dilated, as easily to admit the fingers between it and the protruding uterus; from the latter there is some coloured discharge; febrile symptoms gone off. For the last week has been able to void her urine, but the evacuation of both it and the stools somewhat obstructed; appetite and sleep pretty good; milk free.

February 8th.—Since last report she says, that at each evacuation of the fæces, the uterus comes low down; she then suffers much pain, and about half a pint of blood is lost; evacuation of urine also painful, especially about the end of the act; pulse 76; appetite moderate. An alum lotion has been used by means of sponge, but without apparent advantage.

March 22nd.—Uterine tumor still in the same situation, but appears reduced to nearly its natural size; it does not fill up the vagina so completely

as before. The fingers pushed up through the os uteri occasion considerable pain; and the uterus seems to have very nearly its whole length external to this part; the sanguineous discharge has continued till within the last few days, and after an examination, the fingers are still covered with coagula of blood. For the last few days has had considerable leucorrhœal discharge. Frequently feels much pain on the left lower part of the abdomen. Urine pretty free; bowels sometimes rather costive, and then the uterus descends more with the passage of the stools.

August 30th.—Is able to go about, and appears to be in tolerable health.

September 30th.—The sanguineous flow returns every three weeks in considerable quantity, and sometimes in the intervening time, although she suckles. The uterus protrudes downwards at each evacuation of the bowels.

May 20th, 1818.—Has weaned her child about three months since. At the first menstrual period after weaning it, she had a very copious discharge of blood from the uterus, amounting, she supposes, in two or three days, to several pints. Has had a return of it twice since, but not quite to the same extent. Complains of very great weakness.

August 15th.—The menstrual discharges con-

tinue very profuse, or, if less in quantity, are of longer duration. On one occasion, lately, I was requested to visit her immediately, as her friends thought her about to die, from the excessive discharge; and I certainly found her much reduced by it. Complains much of a pulsating feel in the head, and of a singing in the ears. Pulse quick; bowels generally costive; urine free; appetite tolerable. Countenance very pallid; feels extremely weak, and unable to follow any business. Has a troublesome cough. For the last two or three weeks the sanguineous discharge has been constant and free. On examining, *per vaginam*, to-day, the uterus found in the same state, the fundus reaching to near the os externum.

It is here proper to observe, that about the middle of March last she was seen by Dr. Hull, who, from that time, was interested in the progress of the case.

The solutions of alum, with sulphate of zinc, were recommended to be applied to the part, and the tinct. ferri muriati was administered internally.

The disease continued to resist all common means of relief, and, indeed, she was less attentive than we could have wished, in observing our directions, and in keeping herself quiet and cool, when the discharges were upon her. Her living,

also, constantly over a hot bake-house, was probably prejudicial.

August 22nd.—Since the 16th it has been determined to have recourse to the operation of tying the inverted uterus, which, for some time, has been looked up to as a last resource. Of late there has been an evident decline in her strength, from the copiousness and long duration of the uterine sanguineous discharges; the pulse generally from 100 to 120; frequent feeling of faintness. Her weak state of health renders her life uncomfortable, and disables her from aiding her husband in his business as a baker.

These circumstances now render her desirous of immediately undergoing the operation, and it is appointed to be performed at four o'clock, *p. m.* on this day. A draught, with fifty drops of laudanum, was given a short time before the operation; for two days, also, before this, her bowels had been kept open by an aperient mixture. We placed her sitting on the edge of the bed, with her legs raised upon a chair on each side. Having her situated in this convenient position, which Dr. Hull thought preferable to the recumbent one, I anointed the fingers of my left hand with oil, and passed them up to the inverted uterus, the lowest portion of which descended to about an inch within the os externum. I unexpectedly found the uterus so

relaxed, that I could draw it down, and without difficulty brought it into sight, about two inches beyond the os externum. A single ligature of the strongest dentist's silk was thus easily passed round it, and tied as firmly as possible. Besides this, a similar ligature, inclosed in a canula, was passed round the same part, and each end secured to a ring placed on each side of the base of this instrument; but the easy descent of the uterus without the os externum, rendered the means devised to facilitate the tying, in a great measure unnecessary. The canula I used on this occasion was made of copper, slightly curved, (though a straight one would have done), and being flexible, would yield any way, about the diameter of a middle sized male catheter, and about two-thirds of the length of that instrument.

The uterus being thus tied, was pushed gently up within the vagina, to the place it previously occupied. The patient expressed surprise at the operation being accomplished so soon and so easily. About three ounces of blood issued from the uterus at the time of the operation, which altogether took up only a very short time, perhaps ten minutes.

The pulse, just before the operation, was 96; she suffered little pain immediately afterwards, but in about five minutes it became severe, and the pulse was now 72; it continued severe about one hour and a half. The anodyne draught was re-

peated, and as she complained of a feeling of great heat at the lower part of the abdomen, a camphorated spirituous embrocation was directed to be applied by means of folded cloths, a little warm water being each time added. She was directed to take a dose of saline effervescing mixture every two hours, and to use light simple drinks for her food. In the evening, pain diminished; pulse 76; no vomiting; belly soft and easy; slight sanguineous discharge from the vagina. A starch glyster, with a drachm of tinct. opii, was ordered to be injected at bed-time.

August 23rd, 7 o'clock, *a. m.*—The enema was retained; has slept pretty well, and says she has not felt better any morning for the last two months. Pulse 90; tongue moist; some thirst; urine free; no stool; occasional pain in the belly, but relieved by the embrocation; ordered an aperient mixture, with senna and sulphate of magnesia.

Half past ten, *p. m.*—Has slept much during the day. For about an hour this evening she felt a good deal of pain in the fore-part of the right thigh, extending nearly to the knee; occasionally has felt pain in the lower part of the abdomen, but it is soft, and free from tenderness; complains a little of her back; pulse 96; urine free; bowels opened twice by the aperient.

I tightened the ligature on the canula about one-

fourth of an inch, this evening, and she felt considerable pain for a short time afterwards.

24th, seven o'clock, *a. m.*—Has slept about half the night. Pulse 104, and of tolerable strength; thigh easier, but complains a little of pain in the lower part of the back; belly soft and easy; tongue moist, and pretty clean; no appetite; bowels rather open; urine free. The ligature being tightened to-night, occasioned some pain, but it went off almost immediately.

25th, ten o'clock, *p. m.*—Pulse 100. A little pain on left side of belly, probably owing to flatulence from eating potatoes at noon; one natural stool to-day; appetite moderate; no thirst; the ligature being tightened firmly to-night, she felt much pain from it.

An anodyne enema to be given directly. The warm camphorated embrocation to be applied, and twelve leeches, if the abdominal pain increase; a dose of the aperient early in the morning.

The ligature we thought it best to tighten daily, and to tighten it very much, in order to deaden the uterus as effectually as possible; on introducing a finger this evening, the ligature seemed to have made a considerable impression, a pretty large fissure being very distinct.

26th, eight o'clock, *a. m.*—Slept moderately. After tightening the ligature, last night, she felt a good deal of pain in the uterus, but more along the fore part of the thigh; and on awaking at times in the night, was troubled with flatulent pains in the belly. Took a draught of the laxative mixture early this morning, which was rejected, probably from the opiate having disordered the stomach; has had one rather free natural stool; urine natural; appetite moderate, and food well retained. The injection and aperient mixture to be repeated.

Half past nine, *p. m.*—On the whole has suffered more to-day, than on any preceding day since the operation, from pain in the belly, especially on the left side, in which part she has, ever since her accouchement, had occasional pain. Pulse 106; two loose free stools from the enema and aperient; ingesta all retained. The ligature tightened this evening, gave her pain. Ten leeches were applied to the abdomen this afternoon, and are directed to be repeated in the night, if the pain should return severely. Has had her anodyne draught as usual this evening about an hour before the tightening of the ligature. To have an opiate enema, and the purgative mixture to-morrow morning.

27th, half past seven o'clock, *a. m.*—Has passed a nearly sleepless night, from pain in the belly, back, and thighs, but is easier since. Seven leeches

were applied to the belly this morning. Pulse 120, and small; tongue clean; great thirst; urine free; no stool since yesterday morning, though the aperient mixture was taken twice this morning; skin of a natural temperature, yet complains of a burning feel in the belly; nausea, but no vomiting. Let the purgative mixture and enema be repeated.

Ten o'clock, *p. m.*—Has been easier, and has slept moderately this afternoon; rejected her purging mixture; a powder of hydrarg. submur. gr. v. cum pulv. antim. gr. ij. taken about noon, was retained, and she has had two free loose stools this afternoon. Pulse 116; skin of moderate temperature; abdomen less tender, and feeling of heat in it diminished. In tightening the ligature this evening, a considerable fissure could be perceived; for two or three days a rather fœtid discharge has been noticed, for which she has occasionally used a chamomile injection. To continue the saline mixture, and to take one grain of opium immediately.

28th.—The ligature was tightened as usual each evening, from a quarter to half an inch; she always complains of much pain from the tightening, but it soon goes off.

29th, half past seven, *a. m.*—Slept about four hours last night, after the use of the pills and ano-

dyne enema, but the pain after the tightening of the ligature continued for two or three hours; has considerable tenderness of the belly this morning, owing chiefly to the leech bites, and at present feels pretty easy. Pulse 106, moderately full and strong; tongue clean; some thirst; complains of being frequently sick, and of occasional vomiting.

Ten o'clock, *p.m.*—We, for the first time, reluctantly omitted tightening the ligature this evening, as she was much afraid of a repetition of the pain she suffered last night.

30th, seven o'clock, *p. m.*—Has had a very good night. Pulse 106; some pain in the belly, but no tension; and it may be here observed, that she is usually of an exceedingly irritable complaining disposition. Tongue clean and moist; bowels open; urine free; stomach tolerably tranquil.

This morning I brought down the uterus, as at the first tying; it appeared rather enlarged than diminished in size since it was first tied; the ulceration had now extended about three quarters or four fifths through it. A single waxed ligature was again tied *very firmly* round it; at the same time, the ligature in the canula was tightened, and then the uterus was raised into the vagina to its usual situation. It was our intention, if the fissure in the uterus was not found considerable, to pass a needle through the remaining portion, armed with

a double ligature, so as to divide it into two portions, tying each separately, and thus to accelerate the process of separation, a mode, perhaps, very eligible at the first tying, where the uterus can be brought into view; but on examination, so small a portion remained, that we thought it unnecessary. In drawing down the uterus, without the os externum, care was taken to do it as gently as possible, in order that any adhesions to the bladder, rectum, or surrounding parts, might, if they existed, be disturbed as little as possible. Opiates both in draught and in glyster, were prescribed, and the saline mixture continued.

Half past nine, *p. m.*—Has slept well to-day. Pulse, which came down to 80 after the tying, is now 104. Bowels opened freely this afternoon by a domestic enema; belly soft, but still pain in it, and in her back; tongue clean; considerable thirst; moderate appetite. A poultice to be laid on the belly. The pills, with calomel and antimony, to be repeated, and the occasional use of anodyne injections continued.

31st, eight o'clock, *a. m.*—Pulse 96, moderately full and strong; had five or six hours' sleep in the night; slight sickness and vomiting; pain and soreness in the belly, back, and thighs; urine free; no motion since last night. She sometimes rejects the saline effervescing mixture. The pills to be repeated.

Two o'clock, *p. m.*—Pulse 125, and weaker, but respirations only about 28 in a minute; feels very faint and weak; belly sore; domestic enema was returned very little changed; no vomiting since morning; complains of much beating sensation in her head. Six leeches, followed by a poultice, to be applied to the abdomen.

Eight o'clock, *p. m.*—Pulse 120, and rather firmer; had a yellowish free loose stool about three o'clock in the afternoon, when the ligature was tightened, and soon afterwards the usual composing enema was administered. Has slept tolerably to-day, yet complains of soreness of the belly, and pain of the part, but is somewhat easier than in the afternoon; no vomiting since morning; skin rather warm and moist; tongue, as usual, clean; urine free; troubled, somewhat more than usual, with a cough. On the whole she certainly is worse to-day than at any time since the operation. A saline mixture, with tincture of opium, was prescribed.

September 1st.—No vomiting, excepting a little of her medicine; two free dejections after taking some magnesia. Pulse 124, moderately full and strong; belly rather tender; pain in back, and on anterior part of the right thigh, down to the knee, nearly similar to what often occurs in dysmenorrhœa; urine free; skin warm; cough better; respiration easy. I tightened the ligature this

morning, afterwards she had nine drops of the black drop in a draught, and the anodyne injection.

Four o'clock, *p. m.*—A good deal of pain to-day in the part, and in the back, but has slept tolerably well at intervals.

Nine o'clock, *p. m.*—Has vomited a little curdled milk and fluid slightly tinged with bile. Bowels open; urine moderately free; skin warm and moist; tongue moist and clean; pulse 120; belly rather tender, but not tense or tumid. She will not permit the ligature to be tightened this evening.

Rep. haust. anodyn. hâc nocte et manè.

2nd, half past seven, *a. m.*—Slept pretty well. Pulse, 114 in a minute; but after tightening the ligature this morning, it diminished, as usual, and fell to 100. Fœtor of vaginal discharge continues. Complains of general soreness over the breast, belly, and thighs. A mucilaginous linctus with tinct. of opium, was prescribed.

On examining this evening, which is the twelfth day since the first application of the ligature, the thin, or rather broad peritoneal surface of the uterus appeared to be the only portion remaining undivided. It was, therefore, thought advisable to complete the separation, by dividing this part

with a pair of scissors, which gave her very little pain. No hemorrhage followed. The pulse after this fell to 108 in a minute. The remaining cervix uteri was now gently raised, and supported by a little sponge introduced, and another piece applied externally with a T bandage over it, so that compression might be used, if any bleeding should occur. The anodyne draught was repeated.

The removed uterus measured three inches from the fundus to the cervix, and the same from side to side, being nearly square, but a little rounded off at the fundus; colour chiefly red, but probably from incipient putrefactive process, marked a little with greyish spots and lines; the circumference of the whole around the fundus and cervix exactly nine inches.

The uterus being cut open, exposed a part of the fallopian tubes, and the ligamenta rotunda; the ovaries and the fimbriated extremities of the tubes, it was found, were left behind. The length of the fallopian tubes removed measured two inches and a half on each side; the extremities of them on the naturally internal rugous surface of the uterus admitted a bristle; coagulated lymph in small quantity, and but slightly adherent, was observed on the peritoneal surface, but the uterus was open at the part where it was divided, the opposed peritoneal coverings having not become sealed together by the adhesive inflammation. The mouths

of a few blood-vessels appeared on the rugous surface.

3rd, half past seven o'clock, *a. m.*—Has slept moderately since three o'clock; one copious dejection; no vomiting; has still a feeling of general soreness; same appearance of aphtha in the mouth; belly soft; has had no bleeding from the part, though she soon removed the sponge, as it produced uneasiness; urine free. Pulse 108, and of moderate strength. The embrocation to be continued; and to take, every two or three hours, a draught with ten grains of subcarbonate of soda.

Ten o'clock, *p. m.*—Has slept moderately today; less pain in the back and thighs; mouth also better; some cough, with mucous expectoration. Fœtid discharge gone. Complains of weakness, and of soreness of the belly, to which common poultices are directed to be applied.

5th.—The inside of the lips and cheeks exhibits numerous small superficial ulcers, attended with an almost constant flow of saliva. Appetite pretty good, but deglutition rather difficult, from a feeling of soreness in the primæ viæ; very little soreness in the part, or in the abdomen; pain in the back and thighs diminished; has little cough; respiration easy. A little magnesia was added to the draught.

6th.—Ulcerated state of mouth, with slight ptyalism and difficult deglutition continue, and prevent her rest. Pulse 114; bowels open; urine pretty free and clear, but the voiding it rather painful; appetite tolerable; still a little pain in the back and belly; no pain in the part, and scarcely any discharge from it. The anodyne to be taken occasionally; a linctus, with soda and tinct. camphor. comp. to be used, and a draught with half an ounce of infusion of calumba, to be taken every three hours.

7th.—Pulse 112; pains and soreness much diminished; mouth and throat rather better; bowels open; urine free; a little whitish discharge only from the vagina. To take a little wine with her gruels and jelly.

8th.—Slept moderately, but complains of feeling very weak; ulcerated state of mouth, with almost constant spitting out of saliva, and occasional hawking up of mucus, troublesome; had two dejections yesterday, containing some blood and slime; throat sore; a little pain and feeling of flatus in the abdomen. Pulse 120, and rather small; appetite moderate; but deglutition difficult. An enema of milk, in which aniseed and carraway-seeds were boiled, was given. A poultice to be applied to the abdomen; and a draught, with infusion of cascarilla, to be given every four or six hours.

9th.—Pulse 120; rather firmer than yesterday; appetite moderate; food consisting principally of eggs, milk, jellies, and gruels, with softened bread. Edges of the tongue less sore; bowels regular, and evacuations more natural in appearance; urine free and natural; slight soreness in the part, with scarcely any discharge.

10th.—Not quite so well as yesterday; felt very faint last night; slept moderately as usual, but had some delirium; pulse 130; bowels regular; urine free; no great pain, but some soreness of the belly, the leech-bites having many of them suppurated; stomach tranquil. Superficial ulcers of mouth continue, with spitting out of saliva and mucus.

To use a gargle with kino, borax, tincture of myrrh and honey.

14th.—Sleep moderate; pulse 114, and of tolerable strength; complains of general soreness, but no particular pain; soreness of mouth and salivary fluid slightly diminished.

17th.—Pulse 108; a little cough, with some expectoration for the last few days, which is now relieved by using a mucilaginous linctus; soreness and slightly ulcerated state of mouth continue, though somewhat better; no discharge per vaginam.

23d.—Feels better; pulse 100, and of good strength; was dressed yesterday for the first time; remained up two hours, and ate a pretty hearty dinner; slight ptyalism and a little cough continue.

24th.—To-day I examined the state of the parts, just three weeks since the uterus was removed. The vagina appeared to be short, perhaps between two and three inches long, having at its upper part in the middle a small opening, feeling to the finger very like the natural os internum; it would admit the tip of the finger, but as the attempt gave her pain, I desisted from pushing it further, since it was from a promise not to give her pain, that I with difficulty obtained her permission to make the examination. From this, however, we have reason to conclude that the dilated os uteri, after the distending cause is removed, soon returns to its naturally contracted state.

October 11.—I met her walking out alone in the street to-day, which she has done for several days; she still looks pale and delicate, but has no complaint; has a good appetite, and is improving fast.

November 16th.—Has now regained a very comfortable state of health, is considerably stouter, and her complexion, though naturally pale, is much improved; is able to go about, and to superintend the bakehouse. To-day I carefully examined the

state of the vagina, and both it and the os uteri (which as usual projected somewhat into the vagina) did not appear to me to deviate at all from the natural condition. It is three inches in length at the posterior, and two and a half at its anterior part; the long diameter of the os uteri is directed laterally, and will admit the tip of the middle finger. There has been no sanguineous discharge since the operation, nor has any disposition to prolapsus of the os uteri as yet manifested itself.

Before concluding the subject I shall offer a few suggestions on the best mode of removing the uterus, in those cases of inversion, where palliative means are insufficient to arrest the fatal tendency of the disease; and this more for the purpose of inviting others to the subject than from any thing important that I can produce.

In Mr. Newnham's operation, the separation of the uterus was accomplished by the ligature only. In the above case it was effected partly by ligature and partly by excision.

To the patient the operation by ligature is certainly very tedious and very painful, (though perhaps amply compensated by future comforts and prolongation of life); to the surgeon it is fraught with protracted anxiety for the event. Would it not therefore greatly curtail and diminish the patient's sufferings, and the practitioner's suspense

of mind, if the excision of the uterus could be safely adopted at once instead of the slower action of the ligature? We have on record cases where excision of the uterus seems to have been followed by recovery; but much will depend on the care of the operator, and on the constitution of the patient. We have, however, one case where the operation was performed under very unfavourable circumstances. In this case, mentioned by Wrisberg, and related at considerable length by Dr. Hull, p. 119, 126, Letter II. the uterus was cut away by an ignorant midwife, immediately after the inversion, and consequently the peritoneal cavity (if I may use the expression) must have been extensively opened, yet the succeeding inflammation was rather of a sanative than destructive nature, and the patient recovered.

Where inversion occurs, the uterus, I believe, is generally contained in the cavity of the vagina, the ovaria and fimbriated ends of the fallopian tubes lie here on the brim of the inverted part, but not within it, as I have seen in one case: probably these parts become somewhat agglutinated by adhesive inflammation, and also connected by the same process to the bladder before and to the rectum behind; and hence there may be less danger of opening the peritoneal cavity if excision is practised in the chronic stage.

In some cases, either originally or by time, the

peritoneal connexions becoming elongated, the inverted uterus may have its fundus projecting beyond its external parts; and here the ovaria and fimbriated ends of the fallopian tubes may be within the cavity of the inverted uterus.

In the above case of Harriet Barwick, adhesive inflammation had not connected the opposite peritoneal surfaces where the uterus was separated, but it might previously have occurred higher up, thus diminishing the danger of general peritoneal inflammation in the operation.

After the protruding uterus is removed, the os uteri seems to be soon restored to its contracted state, which will assist in preventing any prolapsus of the abdominal viscera through this part.

Before practising excision, it would probably be best first to secure the uterus above by a ligature, in order that any hemorrhage might be more easily commanded; in a day or two the adhesive inflammation might be powerful enough to prevent any further danger of hemorrhage, and the ligature might then be safely removed.

If, however, the ligature should be preferred to the operation by excision, the process of separation might be considerably accelerated by passing a needle through the uterus, and using two canulæ instead of one, each ligature comprehending half

of the uterus, nearly in the same way as the tonsils are tied; a process suggested by Dr. Hull.

After the uterus is separated, the truncated cervix seems to recede a little, the os uteri contracts, and the vagina is restored to its natural state.

P. S. *Nov.* 15th, 1819.—Harriet Barwick has now, for a considerable time, enjoyed a very excellent state of health.

DESCRIPTION

OF AN

URINARY CALCULUS,

COMPOSED OF THE

LITHATE OR URATE OF AMMONIA.

By WILLIAM PROUT, M.D. F.R.S.

Read June 22, 1819.

M. FOURCROY had stated that the Lithate of Ammonia not only frequently enters into the composition of urinary calculi, but sometimes constitutes entire concretions*. Mr. Brande, some years afterwards, called this statement in question, and was induced to conclude from his experiments, "that no substance which can be called urate of ammonia exists in calculi†." In this latter opinion I believe most British chemists have acquiesced, and Dr. Marcet, in his recent work on this subject, observes, "the presence of this substance (lithate of ammonia) in urinary calculi I still think very doubtful, especially because, since it is so easily discoverable in the excrements of the Boa Con-

* Systême des Connaissances Chimiques, tom. x. p. 224.

† Philos. Trans. vol. xcviii. p. 231.

strictor, it is not probable that the English chemists would have overlooked it so long in the human calculi, which they have so often and so successfully submitted to chemical examination*.

From these decided opinions of such eminent chemists we must conclude that this variety of calculus is extremely rare: to obviate, however, the belief that it does not exist at all, I have been induced to draw up the present account, the object of which is to describe a calculus composed almost entirely of the substance in question.

This calculus, for which I am indebted to my friend Dr. Elliotson, was extracted in April last by Mr. Cline, jun. from a boy about two years of age, in St. Thomas's Hospital; when entire it weighed about fifty grains; its general shape was ovoid a little flattened; its external surface was smooth and of a greenish clay colour (corresponding nearly to the *wax-yellow* of Werner†). It was composed of thin concentric layers, easily separable from one another, and readily breaking into sharp angular pieces, with a compact earthy fracture. Its general colour internally differed both in shade and intensity from that of its external surface: it might be denominated a pale reddish

* Essay on the Chemical History and Medical Treatment of Calculous Disorders, p. 140, first edition. See also Dr. Henry's Paper in the first Part of the present Volume.

† See Werner's Nomenclature of Colours, by Patrick Syme.

clay colour (corresponding nearly to the *wood-brown* of Werner*). The different layers, however, differed somewhat in intensity, which caused the laminated structure to be visible to the eye. Between some of the layers also there were minute depositions of the earthy phosphates, which rendered this structure still more sensible. The nucleus exhibited the same general appearance as the rest of the calculus, except that it appeared to be made up of a fine powder and a few larger grains, loosely agglutinated together.

It was sparingly soluble in cold water†, but it dissolved readily in boiling water, (especially when in a state of fine powder,) requiring only about three hundred times its weight for that purpose. On cooling, the calculous matter did not immediately separate, but after some days a great part of it was deposited.

It readily dissolved in solutions of the fixed alkalies, and at the same time a strong smell of ammonia was exhaled. When muriatic acid was

* See Werner's Nomenclature of Colours, by Patrick Syme.

† One part of the excrements of the Boa Constrictor (which is lithate of ammonia) at 60° required about 480 parts of water to dissolve it.

at 90° 300

at 212° 240

But the calculus above described was found to be somewhat less soluble than this substance, probably on account of its compact state of aggregation.

added to this solution lithic acid was precipitated.

In nitric acid it dissolved readily, especially with the assistance of heat, exhibiting the same phenomena as lithic acid when similarly treated.

Muriatic acid, in which it had been digested, was found to be converted into muriate of ammonia.

Exposed to the action of heat by means of the blowpipe, it decrepitated so strongly that it was difficult to ascertain the effects produced by this agent. When reduced to powder, and exposed to heat, it first appeared to give off ammonia, and afterwards to burn with the same phenomena as lithic acid. It left a minute residuum, which strongly reddened turmeric paper, and appeared to consist partly of lime (and alkali) and partly of the earthy phosphates.

From these proportions it is evident that this calculus consisted principally of the lithate of ammonia*.

* The following is Fourcroy's description of this species of calculus, which does not differ much from the above. "Les calculs d'urate d'ammoniaque, bien charactérisés par leur dissolubilité dans les lessives d'alcalis fixes caustiques, mais avec un dégagement abondant d'ammoniaque, sont ordinairement petits, d'une couleur pâle de café au lait, ou d'un gris tirant sur cette nuance, formés de couches fines qu'on détache facilement les

unes

The boy from whom this calculus was taken suffered extreme irritation, and his general health was much deranged. Two or three weeks before it was extracted, I had an opportunity of examining his urine; it was pale-coloured, and exhibited the appearance it usually assumes when a calculus is present in the bladder, or when the functions of the inner coat of that viscus are otherwise deranged. Its specific gravity was 1023.8, and it abounded in urea and the triple phosphate of magnesia and ammonia. It reddened turmeric paper, but as it had been kept for some days before I had an opportunity of examining it, this property might have been acquired after it was voided from the bladder.

I possess a fragment of another small calculus, having precisely the same colour and properties

unes des autres, et qui sont lisses par les surfaces qui se touchent; presque toujours contenant un noyau dont on sépare aisément l'enveloppe. Leur forme la plus ordinaire, est sphéroidale, alongée, comprimée, quelquefois amygdaloide; leur surface est ordinairement lisse, jamais tuberculeuse, quelquefois brillante et crystalline; leur pesanteur spécifique va de 1.225 à 1.720, l'eau seule les dissout, surtout quand elle est chaude, et quand ils sont divisés et en poussière fine. Les acides, le muriatique surtout, leur enlèvent l'ammoniaque, et laissent seul l'acide urique, qui se dissout ensuite dans la potasse sans effervescence: ils se trouvent quelquefois recouverts d'acide urique pur: la couche extérieure de celui-ci est ordinairement peu épaisse, et la plus grande quantité du calcul est de l'urate d'ammoniaque. Sur les 600 calculs examinés la proportion du nombre d'individus de cette espèce a été une des plus foibles." Op. cit. p. 237.

as that above described. It was likewise taken from a boy under the age of puberty, and was accompanied by great irritation. This fragment, which is about one-tenth of an inch in thickness, appears to have constituted a part of the outer crust. Its external surface is rough, and covered with mamillary protuberancies. To a part of its internal surface there is adhering a portion of a common lithic acid calculus; probably, therefore, the whole of its centre was composed of that substance. This boy, as well as the former, recovered from the operation, and I believe neither has ever had any return of the complaint.

The characteristic properties of this species of calculus appear then to be the following:—1st, their colour and general appearance, which are peculiar; 2dly, their solubility in water; 3dly, their yielding ammonia when treated with the fixed caustic alkalies. To which, perhaps, may be added, 4thly, their property of decrepitating before the blow-pipe*.

There are also strong reasons for concluding, from the smallness of their size, and other circumstances, that this species of calculus, in its pure

* I am aware that decrepitating calculi are usually said to contain a little oxalate of lime, and this was perhaps the case in both the above instances. In these instances, however, the decrepitation appeared to me rather to depend on the escape of ammonia.

state, is peculiar to children under puberty*, and that it is accompanied by great derangement of the general health, and the most distressing irritation.

With respect to the *medical treatment* of this variety of calculus, it ought probably to differ in no respect from that adopted in ordinary cases of the lithic acid calculus; certainly not at least in a *chemical* point of view.

* The morbid urine of children generally contains an excess of the phosphates, but in some rare instances a peculiar clay-coloured deposition takes place after the urine has cooled, which, if I am not mistaken, consists partly of lithate of ammonia.

CASE OF A PRESENTATION OF A BAG OF WATER AFTER DELIVERY,

UNCONNECTED WITH

PLURALITY OF CHILDREN.

By JOHN DUNN, Esq.

COMMUNICATED

By Dr. ROGET.

Read June 22, 1819.

AN extraordinary case of midwifery occurred to me last month, in the person of Ann Reid, of Pickering, a woman of a full habit, and forty-seven years of age. This was her first labour; her pains had been regular; the presentation natural; the membranes, from her own account, had broken, as she had a little discharge of water when I was called in, and I could feel the head without the membranes covering. After having been delivered of a girl in the ordinary manner, her pains left her, and I waited for half an hour for the expulsion of the placenta.

Friction on the abdomen having been tried in vain, to excite the action of the uterus, I gently pulled the cord, and occasioned a slight effort, but still, on introducing my finger into the vagina, I could not perceive any portion of the after-birth. By keeping the cord stretched, and rubbing the abdomen, a complete labour pain came on; the perineum was quite stretched out; and a bag containing at least a pint of water presented at the os externum: this I ruptured with my finger and thumb, and the contents escaped with a slight noise, as is usual when the membranes are tense. From such a circumstance, together with the retention of the placenta, I concluded a second child was at hand, although I could not perceive it with my finger. I remained four hours with my patient, and she had not the least pain; I could perceive no presentation on examining per vaginam, and the placenta was as fast as ever. From her uncertain condition, and an anxiety of mind, to be expected on this occasion, I determined upon introducing my hand to the uterus; when, to my astonishment, I could perceive nothing but the placenta adhering to the uterus. The introduction of my hand excited the action of the womb, and, by gently insinuating my fingers between the placenta and uterus, I obtained a separation of three-fourths of the former, but towards the right side the adhesion was so firm as to appear almost cartilaginous. My hand remained in the uterus above

twenty minutes before I could detach this adhering portion of the placenta, but by persevering in the insinuation of my fingers, I at length obtained it in one entire mass, although the investing membrane was a little torn at the point of adhesion. My patient complained of no particular symptoms during gestation, except a continued chronic pain in the side of the adhesion. She has rapidly recovered, was free from pain, and the child is quite healthy and perfect.

This case may be more curious than useful; but still it will serve to guard our prognosis, and make us cautious in deciding upon the existence of twins, before we have actually felt the second child. That two bags might exist, or one divided by a septum, is not impossible to believe, considering the many anomalies that have already been observed both in the formation of animals and vegetables. I have seen a double uterus and vagina, and I think the specimen is in Mr. Brookes' Museum; and how many other instances of monstrosity have been recorded! It may be conjectured that a fold of the membranes might be so turned, by the action of the uterus conjoined with an immediate contraction of its mouth after the expulsion of the fœtus, as to block up the escape of the fluid; but when we consider what a wide breach must be made for the passage of a child's head and body, and the perfect presenta-

tion of a bag of water, actually requiring laceration for the discharge of its contents, the distention of the perineum, and the partial adhesion of the placenta, which must have been connected with original formation, the former presumption seems the most conclusive.

Pickering, Yorkshire,
Dec. 29th, 1817.

OBSERVATIONS

ON THE

RELAXED RECTUM,

By THOMAS CHEVALIER, Esq. F.R.S. & F.L.S.

SURGEON EXTRAORDINARY TO THE PRINCE REGENT, AND

CONSULTING SURGEON TO THE WESTMINSTER GENERAL DISPENSARY.

Read Nov. 23, 1819.

A RELAXED state of the coats of the intestinal canal, admitting of excessive distension, is not of unfrequent occurrence. In most cases of peritoneal inflammation, whether acute or chronic, it is one of the earliest symptoms which arises, and affords a remarkable illustration of the pathological fact, that an inflammatory excess of action in the vessels of a part, is always accompanied with a loss of its tone. In this instance the inflammation is aggravated by the distension, and that distension rapidly increases in consequence of the adhesions which form between the convolutions of the intestines, and which, by arresting their peristaltic motion, tend greatly to disable them from expelling their contents.

Parts of the canal, however, may become relaxed, and over distended in consequence of that relaxation, with little or no inflammation, and probably arising from a loss of tone simply. The large intestines seem more subject to this derangement than the small ones, and the transverse arch of the colon is especially liable to it. The extreme distension of the abdomen in tympanites is chiefly produced by the extraordinary degree in which this part is dilated. A less degree frequently accompanies ascites, and sometimes occasions an apprehension in the mind of the physician that there is a much larger quantity of fluid in the abdomen than is actually accumulated. In such instances, the fluctuation is more obscurely perceived, and it is chiefly at the lower part of the abdomen: the enlargement is greater above the navel than below it, and when the upper part of the belly is struck gently by the hand, it gives that peculiar sensation and sound which a membranous cavity filled with air communicates. This circumstance deserves the most careful attention on the part of the surgeon, who might otherwise be induced to tap the patient, and might puncture the intestines by his trocar. I believe, however, where this state of the colon exists, that the ascites is very seldom the principal disease. I have repeatedly objected to operate in such cases, having always found in those which I have had an opportunity of examining after death, that the quantity of fluid has been much less than had

been expected, and that it has been irregularly effused among partial adhesions, which have been excited by the irritation of some visceral disease. If it should be thought adviseable in such a case to puncture the abdomen, the operation should be performed by the cautious introduction of a lancet through the linea alba below the navel, and not by a trocar.

Dilatations occasionally take place on the sigmoid flexure of the colon, the sacculated subdivisions of which prevent their dilated portions from being equally distended. From this cause scybala are often formed of the excrementitious matter, and may be retained for a considerable time by the valvular projections of its internal coat, although a tolerably regular evacuation of fæces may go on. These are well known to give rise to dysenteric affections, and inflammations of the inner surface of the bowel, in relieving many of which, copious and repeated glysters are of the most essential service, by softening and washing out the hardened substance.

That the lower part of the rectum is frequently so relaxed as to prolapse externally, is well known; but it does not appear to have been much observed by practitioners that it is also subject, without any external protrusion whatever, to excessive dilatation within the pelvis, and to a semiprolapsus of its upper part into the lower. But this is a state

of that bowel which frequently occurs. It is often productive of very distressing symptoms, and it is especially to be remarked, that it is a common cause of that obstinate and habitual costiveness, under which some persons continually labour.

The rectum commences from the colon, close to the last vertebræ of the loins, and passing down into the hollow of the sacrum, it takes the curvature of that bone, in which it lies comparatively loose, invested anteriorly, but not posteriorly, by the peritoneum. When it reaches the os coccygis, it quits the peritoneum entirely, and is connected loosely by cellular membrane to the bladder, to the muscles of the perineum, to the levatores ani, the sphincter ani, and the common integument. This lower portion of the rectum is easily distensible; but while it is in a natural state, the peculiar sensibility of its internal surface speedily excites it, when moderately distended, unless the fæces are unnaturally hard, to expel its contents, and its muscular fibres are competent to enable it to do so, with a very moderate assistance from the action of the abdominal muscles. It is needless to say of how much consequence it is to the general health that the sensibilities of this important organ should remain unimpaired, and that strict attention should be paid to the regular performance of its functions: if this be long neglected, its natural sensibility becomes gradually diminished; it will

remain overcharged for an undue time; the energy of its muscular fibres will become impaired, so that a more forcible exertion of the abdominal muscles will be required to expel the stools, and not unfrequently this will also be insufficient, without some medicine be taken to quicken the action of the whole intestinal canal.

Here perhaps in a majority of cases, the evil stops. The calls of nature must be obeyed, and therefore persons who feel a difficulty in discharging the excretions regularly, are of necessity excited to employ those means which afford them the requisite assistance.

But in some instances, and these by no means rare, the lower part of the rectum becomes so frequently overloaded, and its irritability in consequence so much diminished, that it becomes excessively dilated, and almost loses the power of contracting upon its contents; the natural consent between that and its upper portion, which is covered by the peritoneum, and remains undilated, is thus weakened and further evil is induced. The superior portion of the rectum and the lower part of the colon, become also overloaded, and the deficiency in the action of these parts calling forth a greater exertion of the abdominal muscles, in the expulsion of the fæces, the upper, undilated portion of the rectum, is forced downwards into the lower and dilated portion, where it may be dis-

tinctly felt like a loose bag, of which it is sometimes difficult to detect the aperture; the finger or a bougie being more likely to get entangled at the rim of this elongated fold, than to pass exactly into the continuation of the tube.

It is under these circumstances that the chief evils and perplexities of such cases begin. For the harmony of action between the upper and lower portions of the rectum being destroyed, the stools instead of being voided with that ease, and in that regular form and mass which is usual in a healthy state of the parts, are expelled with difficulty, in small and irregularly shaped pieces. The repeated efforts made for this purpose sometimes excite tenesmus, swelling of the hæmorrhoidal veins, and an increased secretion of mucus from the inner surface of the intestine; in men, the irritation is often communicated to the prostate gland, and neck of the bladder. In other instances, and especially in females, the parts become so relaxed as to allow of a sufficient accumulation of fæces to fill the whole pelvis; and how unconscious a patient may be of such an accumulation, the following case, to which others might be added, will sufficiently shew.

A lady who was afflicted with cancer of the left breast, became affected with severe pain in the loins, which confined her to bed. She soon afterwards became unable to pass her urine, which was drawn off at proper intervals by a catheter. The

state of her bowels was regularly inquired into, and she always replied, that the evacuations were small in quantity, but frequent, and upon the whole, sufficient; and that this had been her ordinary habit for many years. After about a fortnight had elapsed in this way, her attendants noticed a peculiar appearance about the anus, which, on examination, was found dilated to the size of an half crown, by the protrusion of fæces, which had so stuffed the rectum, as completely to choke up the pelvis, and although not hardened, were incapable, from their quantity, of being removed without the assistance of instruments.

Sometimes *hardened* fæces accumulate in a similar manner, and become, from their bulk, incapable of expulsion without artificial aid, and yet that which is softer may pass over this lump in daily evacuations, and thus conceal the real mischief.

In more confirmed cases of the disease, and in persons of a sedentary habit, other bad consequences arise. The upper portion of the rectum being forced down as has been described, by a half intus-susception upon the lower, becomes in time less competent to its own functions, and transmits the fæces irregularly. The lower portion of the colon participates in this difficulty, and is kept in a state of irritation. An obscure heavy pain is felt in the lower part of the loins and the region of the sacrum; and the difficulty and imperfection

with which the stools are voided, often gives rise to a suspicion that there is a stricture formed in some part of the intestinal tube; and this suspicion, although entirely groundless, will be confirmed in the apprehension both of the patient and his attendant, if, on making an examination with a bougie, its point should be arrested, as it is very likely to be, in the edge or fold of the semiprolapsed portion of the gut.

Under these circumstances, an increased secretion of mucus from the surface of the colon may take place, to a considerable amount, so as to collect in some of its sacculated portions, and to be voided in a large quantity; and as it then has often a yellowish appearance, it seems as if an abscess had burst, and its contents had been discharged by the anus. But the matter is more tenacious than true pus; it is not mixed with blood; that degree of relief and change from former feelings, which is always felt when an abscess breaks, is not experienced; the discharge does not go on regularly; it is seldom seen above twice or thrice, and then this symptom disappears. I have several times known more than half a pint of this purulent looking mucus so voided, and then there has been no more for several days, or but once, and in some instances it has not recurred at all. A circumstance of this nature is sure to attract the patient's attention, and if mild and demulcent aperients are given, and temporary symptoms properly treated,

all goes off: and the patient becoming more vigilant over the state of his bowels than formerly, the parts affected may greatly recover their health and tone, and he may be better than he had been for a considerable time before this occurrence took place.

The state of the rectum I have now been describing, is most common to females, and to persons who, from their habits being generally sedentary, are more apt to overlook the irregularities of its action, and to defer obedience to the calls of nature. Under these circumstances, purgative medicines are mostly resorted to, and the whole intestinal canal is teased and pained, for the defective action of that very part of it which is most remote from their influence. The general health also often suffers; all the evils arising from costiveness taking place, and hypochondriacal dejection and gloom oppressing the mind.

In cases of this kind, the principal and most certain relief is to be obtained from the proper employment of glysters, the composition of which is to be regulated by circumstances. At first those of a mild aperient nature should be preferred, and thrown up by a syringe; and these should be repeated *after regular intervals*, so as to re-accustom the rectum to empty itself in an *habitual* way. Gruel, the decoction of mallows, broth, or milk with some honey, will answer the purpose very

well; but more permanent good will be derived by using afterwards the infusion of chamomile, or the old decoction *pro fotu*, which by gently stimulating the torpid surface of the bowel, may bring on a proper contraction of its coats. Where the very lowest part of the rectum continues so dilated as to allow the upper still to descend, from four to six ounces of a strong decoction of oak bark, or an infusion of galls, thrown up as gently as possible every night, will be attended with the most beneficial effects. If this be not readily retained, a little starch, or a few drops of tincture of opium, or both, may be added to it; and care should be taken at the same time so to regulate the diet, and medical treatment, that the upper part of the intestinal tube may be excited to due action, regularly, but not violently.

Should inflammation take place, which sometimes happens, at the prolapsed part, so as to consolidate the surfaces together, a permanent stricture or obstruction is formed, which, by the frequent irritation to which it must be unavoidably exposed, may take on a cancerous character, and be productive of the most disastrous effects.

ON

AFFECTIONS

OF THE

MEATUS AUDITORIUS EXTERNUS.

By HENRY EARLE, Esq.

SURGEON TO THE FOUNDLING HOSPITAL, AND ASSISTANT SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

Read Dec. 21, 1819.

THE sense of hearing is so important to the safety and happiness of mankind, and a partial or total loss of it deprives us of so many sources of information and pleasure, that it is certainly to be lamented that the treatment of the diseases of the ear should have been so long and so generally neglected by the Profession at large. It will not, I trust, be deemed presumptuous in me to express a hope, that from a judicious application of the improvements which have taken place in modern surgery, to the treatment of these diseases, some benefit may yet be derived; and perhaps some affections of the internal organ, hitherto con-

sidered incurable, may be arrested in their progress by the early adoption of the most active and powerful measures. Should, however, our hopes of affording relief in the more obscure diseases of the labyrinth, prove fallacious, we may yet be able to discover causes of deafness in the external ear and cavity of the tympanum, which have not hitherto been described, and which may partake of the nature of diseases affecting other parts of the body, and readily yield to the operation of known remedies.

I have been induced to make the above remarks, and to believe that much remains to be investigated in this unexplored path, from having met with an affection, which I shall proceed to relate to the Society, and which has I believe been wholly overlooked, though it is by no means improbable that it may have been not unfrequently the cause of deafness.

In the early part of 1816, Mr. F. an ensign in his Majesty's service, called to ask my opinion respecting a complaint in his ears, of which he gave the following account:

That from childhood he had been occasionally liable to attacks of inflammation in the external ear, accompanied with heat, excoriation, and a copious thin discharge from the passage, which af-

fected his hearing, more or less, for several weeks, but left no considerable permanent deafness behind. About ten months before his application to me, he had been exposed to damp, and, in consequence, suffered a very severe renewal of the same disease, which so nearly deprived him of the power of hearing, as to oblige him to leave his regiment, then quartered in Ireland, in pursuit of further advice, with an understanding that unless he could obtain some relief, it would be necessary for him to quit the service, as he was quite incapacitated from active duty, by not being able to hear the word of command.

On examination, I found the meatus of either ear much narrowed in its calibre, by the thickening of the surrounding parts, and especially the great increased density of the cuticle, which had a very white appearance, and was moistened by a thin discharge, resembling runnet whey, that deposited a substance not unlike small portions of curd. On washing this away, and dilating the passage with a little instrument, which I had constructed for the purpose of examining the external meatus, there was not the slightest appearance of cerumen; but the same white thickened cuticle appeared to extend as far as the eye could reach.

The sense of hearing was nearly lost, but a

watch applied to the teeth or forehead was distinctly audible, a circumstance which convinced me that there was no defect in the auditory nerves. On throwing in water with considerable force, a dull obtuse sound was produced as if some dense medium were interposed. This led me to imagine that it was possible that the deafness depended either on a thickened state of the cuticle reflected over the membrana tympani, similar to that which lined the meatus, or on some morbid secretion existing between this cuticular layer and the membrane. This idea was strengthened by passing down a probe to the bottom of the meatus, which conveyed a sensation to my touch different from that which would have been produced by the contact of a healthy membrane; whilst at the same time it did not cause that painful sensation usually expressed by the patient in these circumstances.

After a little reflection, and entertaining this view of the subject, I thought myself warranted in attempting the removal of the whole cuticular lining of the meatus externus. I hesitated less in making this experiment, as all common remedies had been resorted to in vain, and the case appeared almost hopeless, unless some new mode of treatment could be devised.

To effect this removal, I had recourse to the nitrate of silver, which I had often found beneficial

in causing exfoliations of thickened cuticle from the feet, producing what are commonly termed corns.

I threw in with a silver syringe a very strong solution, and completely blackened the epidermis of the meatus.

In a few days, I began to syringe with warm water, conceiving that maceration would contribute to the speedy separation of the exfoliations. After persevering for several days, for a considerable time each day, it began to be detached in small portions at first, but subsequently in larger pieces, one of which, from its form, was very evidently the reflected layer which had covered the membrana tympani. The next syringe-full which I threw in occasioned to the patient a very distressing sensation and loud sound. His hearing from this time was greatly improved, but still rather confused. The other ear was treated in the same way with similar success. In a few days the hearing was very nearly restored.

From the time of the separation of the cuticle, the treatment consisted in the application of ungt. hydrarg. nitratis ʒiv. cerati cetacei ʒiij. olei olivæ ʒj. He was directed to introduce a little of this, night and morning, with a camel-hair pencil; this was recommended with a view to stimulate the ce-

ruminous glands to a more healthy secretion. Blisters were also directed to be applied behind the ears, and to be kept open for some time with the same intention. Soon after this, he returned to join his regiment, and I lost sight of him until very lately, when I had the pleasure of seeing him perfectly well; and he informed me that he had never experienced the slightest return of his complaint, and could hear as well as he had ever done in his life. On examining his ears, I found that a secretion of cerumen had taken place, and the lining of the meatus had a perfectly healthy appearance.

This very favourable result induced me to reconsider the subject, and to examine most of the authors who have treated of diseases of the ear; from their silence on the subject, I am inclined to think this peculiar affection has escaped their observation. Mr. Saunders, indeed, in speaking of the herpetic ulceration of the external meatus, mentions that it is accompanied with thickening of the lining, but does not seem to have suspected that a similar affection might extend to the reflected portion which covers the membrane; a state which must more or less impede the functions of that part, and, if suffered to increase, would probably terminate in permanent and complete deafness. On the ground, then, of its novelty, and from a wish to have the subject further investi-

gated, I have ventured to bring this case before the Society, though I am well aware that insulated facts are rarely deserving the attention of the public, and ought at all times to be received with caution.

The cause of this thickened state of the epidermis may, I think, be traced to the thin ichorous discharge which takes place in the room of the healthy cerumen. It is well known that cuticle, in common with other substances possessing the same properties as the hoofs of animals, is liable to imbibe moisture, by which it becomes thickened, loses its transparency, is thrown into folds, and assumes a whitish colour. This fact is familiarly known to occur in the hands of washer-women, and when poultices have been applied for any time. Whilst this rugous state exists, the sense of touch is rendered very imperfect; but this appearance is soon lost on the evaporation of the moisture, and the cuticle resumes its former characters and functions. There is always, however, a separation of a whitish curdly substance, which, on becoming dry, assumes the appearance of a powder, having a greyish tint, similar to that produced by scraping the cuticle with a knife. Considerable quantities of this will sometimes come away from the feet, if they have not been constantly subjected to ablution and friction, and it appears to be similar to the exfoliations which

take place, on a larger scale, from the sole of the horse's hoof.

In the case now under consideration I believe that, by the continued application of moisture, the whole cuticle was thickened, and rendered opaque. Under such circumstances, it is easy to comprehend to what an extent the sense of hearing must have been impaired, as those minute and delicate vibrations of the membrana tympani, which convey the undulations of the surrounding elastic medium to the internal ear, must have been greatly impeded, if not wholly prevented.

The curd-like substance which was found in the external meatus very closely resembled the furfuraceous separation which has been described as taking place from moistened cuticle, and most probably was of the same nature, as it was collected on the surface, and could be scraped off in considerable quantity with the flat end of an eye probe. In the early stages of this complaint it is probable that the injection of astringent washes, clearing the meatus from all extraneous matter, and anointing it with some stimulating ointment, would be all that would be required: should it however be suspected that the cuticular covering of the membrana tympani was much thickened, the treatment adopted in the case above related might be had recourse to with every hope of success.

The lining of the external meatus, in common with the integuments of the rest of the body, is liable to various affections, some of which may be attended with considerable difficulty of hearing. A gentleman once requested me to examine his ears in consequence of a deafness which he had laboured under for some time. The symptoms he described very much resembled those usually attending an inspissation of the cerumen. On examination I found the whole passage choaked up with numerous scales, closely impacted together with a morbid secretion of cerumen. He had from childhood been subject to attacks of lepra vulgaris, which latterly never entirely left him, and at times spread over nearly the whole surface of his body. With some difficulty the passage was cleared of its contents. He was directed to syringe the ear every morning with a decoction of bran, or barley water, and to smear the surface with an ointment consisting of equal parts of ung. zinci, ung. hydrargyri nitratis, and ceratum cetacei. I likewise recommended him to take a strong decoction of sarsaparilla, with alterative doses of hydrargyri oxymurias. Under this treatment his general health improved much, and his cutaneous affection was mitigated. By persevering in the use of the syringe and the ointment his hearing was nearly restored.

I have met with one instance similar to the above, in which the patient, who was advanced in

life, neglected to pursue the measures prescribed, and has, in consequence, been repeatedly under the necessity of having recourse to his medical attendant for the removal of the cuticular exfoliations and impacted cerumen, which never fails to afford him temporary relief.

Some time ago I was consulted by a lady on account of an affection of the ears attended with some peculiar circumstances. From her birth she had never had any proper secretion, the meatus was unusually dry, and the substance which was deposited bore none of the external characters of cerumen. She had two brothers and a sister who were all similarly affected, and one of her eldest brother's children was deaf and dumb, and the others were affected with difficulty of hearing. At times, when she had been exposed to damp, or was disordered in her health, the secretion was more abundant and much thinner; this irritated the passage, and the whole ear had an erysipelatous redness, accompanied with considerable tumefaction and distressing deafness. At the time when I saw her she had been suffering from one of these attacks, and her health was much disordered. The natural form of the ears, particularly of the right, contributed much to increase the degree of deafness. The meatus was more curved than usual, and the tragus was so long, and projected backwards so much, that when swelled by inflammation,

it completely closed the aperture. To obviate this, she was continually drawing it forward with her finger, and introducing instruments into the passage, which tended much to keep up the irritation. I directed such medicines as I thought were calculated to improve her health, and endeavoured to sooth the local inflammation: still, however, the passage remained nearly closed, the sides being much approximated by the thickened state of the whole ear, apparently from interstitial deposit. To remedy this, I recommended that she should have a portion of sponge tent introduced every night into the meatus; in a short time, by this plan, the passage was considerably dilated, and her hearing much improved. She remained well for near a twelvemonth, when she again sent for me, on account of a severe erysipelatous attack in the right ear, accompanied with copious ichorous discharge. I recommended her to syringe it night and morning, and when the inflammation was a little abated, to anoint the passage with the ung. hydrarg. nitratis mítius. She improved rapidly under this treatment, and by persevering in the use of the ointment and syringe, she has experienced no return for several months, and can now hear better than she had done for many years.

This latter case shews, in a marked degree, the important part which the cerumen acts in the due performance of the functions of the ear. A defi-

cient or vitiated secretion generally induces a diseased state of the integuments, which may become so thickened as to cause an obstruction in the ceruminous ducts, and thus maintain the disease. The cases which I have had the honor of submitting to the Society, sufficiently prove the importance of paying attention to the state of this secretion, and of the integuments which line the meatus, and will perhaps authorize us to hope, that, by the application of suitable remedies, many distressing cases of deafness may be palliated, and some permanently relieved.

10, *Berners Street*,
December 16*th*, 1819.

NOTE, subjoined as a Postscript to DR HALL'S *Case of Chronic Inflammation of the Larynx.* Page 175.

Nottingham, April 29th.—Mrs. H. came this day to pay me a visit, and I was glad to find there had been a progressive amendment in the voice, which still, however, was rather hoarse. There was no difficulty in breathing or swallowing, and no cough. She had gained flesh, and her general appearance was altogether improved.

THE Explanation of the Plate, which refers to MR. SHAW'S Paper, "On the Structure of the Membranous Part of the Urethra," is given at Page 339.

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INDEX

TO

VOLUME TENTH.

C.

D.

E.

G.

H.

I.

K.

L.

M.

END OF VOL. X.

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