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ESSAYS

ON

SURGERY & MIDWIFERY;

WITH

PRACTICAL OBSERVATIONS,

AND

SELECT CASES.

By JAMES BARLOW, Surgeon.

WITH PLATES.

LONDON:

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TO

DR. HAWORTH,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND

PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL;

SIR ASTLEY COOPER, BART. F. R. S.

SURGEON TO GUY'S HOSPITAL;

AND

JOHN ABERNETHY, F. R. S.

SURGEON TO ST. BARTHOLOMEW'S & CHRIST'S HOSPITALS,

Of London,

THIS VOLUME IS RESPECTFULLY INSCRIBED,

AS

A TESTIMONY OF ESTEEM AND FRIENDSHIP,

BY

THEIR OBEDIENT SERVANT,

JAMES BARLOW.

Blackburn, Lancashire.

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THE following Essays are submitted to the notice of the Faculty, with that confidence which arises from a lively interest in every thing which tends to secure the efficiency of Professional exertion.

The Author, for many years, has been in the habit of attending, not only to the practical rules which experience and observation have supplied, but to the principles which are involved in their application, and established by their success.

He is convinced, that the more the efforts of a Practitioner in Surgery are directed by an accurate knowledge of Physiology and Anatomy, in their varied and interesting details, the greater will be the certainty of

eventual and permanent respectability and success. On this ground, he has often regretted the too frequent neglect of those pursuits which connect the attainment of skill with the study of science; and in consequence of which, the Philosophy of the healing art, in its Surgical and Medical Departments, has not kept pace with the facilities acquired by practice.

He rejoices, however, that the diffusion of knowledge, and the legislative arrangements which have of late been made, not only for the honour of the profession, but for the benefit of the community, have effectually secured an increasing attention to every branch of science, directly or remotely connected with that important department in society, which the Students of Surgery and Medicine are destined to occupy. Frequently has the author lamented, that when his professional career began, the same requisitions were not enforced, and

of course the same advantages of scientific instruction were not generally professed, and the locality of his situation has also greatly deprived him of these professional advantages. He has, nevertheless, endeavoured to supply the deficiency by assiduous investigation and patient research, when the intervals afforded by extensive and laborious practice gave him time and opportunity.

In the studies connected with his profession, he has always felt the deepest interest, and enjoyed no ordinary gratification ; and being in the habit of committing to writing the result of his enquiries, (in the first instance solely for his own improvement,) he has ventured to lay before the public those which are contained in this volume.

From a variety of papers he has selected such as have excited, on his part, the greatest degree of attention ; and though some of the Essays were communicated by the Author

to the Periodical Journals, in the early part of his practice, yet time and experience have suggested those improvements and corrections which have enabled him to enlarge considerably his original communications. He trusts that what he has published will be received with that liberality and candour which are the best ornaments of professional excellence. He has no wish to disarm the severity of criticism by acknowledgments or professions, because he makes no pretensions beyond such as are founded on a sincere desire to advance the interests of surgical science, and to facilitate the operations of surgical skill.

JAMES BARLOW.

Blackburn, January, 1822.

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PRELIMINARY OBSERVATIONS

ON SOME DISEASES OF THE URINARY ORGANS CONNECTED WITH STONE IN THE BLADDER, AND ON THE USE OF THE FLEXIBLE CATHETER.

It is not my intention, in these preliminary remarks, to enter minutely into the description and method of treating the morbid affections of the urinary organs in general: I purpose merely to touch on a few particular diseases more intimately connected with Lithotomy.

A comprehensive knowledge of the structure of the pelvis, and functions of its connected viscera, and the mutual relations and sympathies which each organ bears to the respective diseases to which they are liable, is indispensably necessary to direct the medical enquirer to their true source and diagnosis, as well as to the most appropriate remedies. By this mode of research, it will be ascertained that a muscular nervous structure belongs to these parts, and that they are endowed with great sympathy; which, when assailed by disease, excites impressions on one organ that are translated to some other remote part; and thus by a law of association in the animal economy,

we are enabled to explain the diversified symptoms so often equivocally manifested in the morbid affections of the bladder and the neighbouring parts. Such an assemblage of muscular and nervous actions is formed in this part of the system, as to occasion a frequent exposure to pain and disease, and therefore to require the most prompt and judicious treatment. Indeed no subject in the whole circle of surgical science appears of greater importance than lithotomy and the diseases associated therewith; nor is there any which renders more necessary a competent view of the anatomy of the parts in all their bearings; an accurate knowledge of which is indispensably requisite, when contemplating an operation of such vast moment.

There is a progressive evolution which characterises the human body; and various diseases invade certain parts of the system as life advances, though in their first stage they are of a latent and obscure nature: none however appear more frequently than morbid affections of the prostate gland. This progressive change of organic structure is perpetually acting on the living body, and appears inseperable from human growth and decay. The prostate gland and neck of the bladder, from their vascular texture and situation, are perhaps more exposed to disease than most other parts of the system from peculiar causes: among which are high living, constipation of the bowels,

and excessive sexual intercourse. These excite undue action of the blood vessels of the perineum; and the prostate gland in advanced life being more disposed to enlargement than at an earlier period, the orifice of the bladder becomes in part blocked up, so that the urine seldom gets completely evacuated and a sediment is left behind. When there exists in the constitution a predisposition to the formation of calculi, portions of gravel which pass from the ureters are retained in the cavity of this receptacle till a nucleus is formed; and this may be one way in which calculi are primarily produced, and eventually become increased to a size too large to pass through the urethra naturally. Thus one disease frequently tends to aggravate another, and in this instance a retention of urine at intervals occurs; hence the aid of the catheter is required as a means of affording temporary relief to the patient.

Most diseases of the urinary organs are marked by various diagnostic symptoms peculiar to themselves, though often participating in some degree with other affections of the neighbouring parts.

The symptoms attending a diseased prostate gland, and those of calculi or a morbid affection of the coats of the bladder, are so associated with each other, that no true diagnostic can be formed without an actual investigation, either by means of the finger passed up the rectum, or by the sound

into the bladder; and this mode of enquiry should never be dispensed with when there is reason to suspect a combination of these affections. The substance of the gland is apt to become inflamed from various causes, which may proceed to the formation of an abscess, and terminate in suppuration of one or more of its lobes. Occasionally a deposit of puss is also formed in small sacks or follicles; and this species of diseased prostate usually produces retention of urine, by pressing on the sides of the urethra, and diminishing its diameter. Sometimes an abscess will form in the vicinity of the gland, and either burst into the bladder during the introduction of the catheter, or the puss be discharged through the instrument, aud pass off spontaneously. In either case it may be prudent to allow a flexible catheter to remain in the passage for a few days, to aid the further evacuation of the contents of this viscus so long as the discharge appears purulent; or until the gland subsides to its natural and healthy state, or the wound is healed, to prevent the urine getting diffused in the pouch of the abscess, and thus irritating the surface of the sore, and preventing its healing. In some more rare instances, a portion of the posterior, or middle lobe of the gland becomes enlarged, projects into the bladder, and hermetically closes the opening of the urethra, so that the point

of the catheter cannot be made to pass by the protuberance without great difficulty. During the efforts of the surgeon its point may be inadvertently pushed into the substance of the gland, or get entangled either in the excretory ducts of the *vesiculæ seminales*, or in some of the larger lacunæ of the urethra. As the gland is of a spongy texture, when accompanied with inflammation, extending along the urethra, this delicate membrane may give way rather than the passage yield to the impulse of the instrument; and thus do irreparable mischief by the urine getting diffused among the cellular membrane.

In cases where the bladder is excited to great pain and irritation, either from the presence of calculi or some morbid affection of its coats, accompanied with an irresistible solicitation to urine, and painful sensations in the glans penis, or neck of the bladder, attended with a discharge of mucus from the urethra, I have frequently succeeded in soothing the pain and irritability of this viscus and its adjacent parts, by occasionally injecting a solution of opium, or infusion of the leaves of Belladonne and Mucilage Acacia in tepid water into the bladder. This fluid may be useful if it tends only to allay the acrid stimulating property of the urine acting on the inner surface of the bladder. Sometimes the occasional passing of a bougie, though there be

no stricture in the urethra, is attended with evident advantage. On other occasions the gland may be invaded with an irregular swelling, and greatly increase the prostatic curve of the urethra, thus distorting the passage so as to cause permanent retention of urine. I have attended many cases of this description, and have sometimes succeeded in employing a catheter less curved than ordinary; on other occasions, one more bent has seemed to pass into the bladder with greater freedom when assisted with the finger in the rectum; but in cases so complicated, and where the passage is become much diminished and contorted by disease, this is mere chance, and the surgeon is left to grope his way, as it were, in the dark in the best manner he can. An indolent and less sensible enlargement of the gland sometimes occurs, distinguishable from phlegmonous inflammation, which is not unfrequently combined with a scrophulous diathesis, and which does not altogether produce constitutional irritation further than what is excited by occasional interruptions of the flow of urine. This may be relieved by a judicious introduction of the catheter; and if much difficulty be experienced, rather than having it to pass as often as the patient has occasion to evacuate his urine, he may retain it in the bladder for a given time; during which the urine may be evacuated *ad libitum*, either wholly or in part.

The instrument, however, should be taken out occasionally and cleaned; and if the urine is not discharged naturally by the action of the bladder during this interval, it may be replaced for a certain period. This mode of distending the passage and allowing the parts time to regain their ordinary functions, may be advantageously adopted in many cases of morbid retention of urine, arising from inflammation, irritation, or indurated structure of the prostate gland. Another and no less perplexing cause of retention of urine, proceeds from active inflammation of the prostate gland, extending up the urethra, the tender vessels of which become so surcharged with blood, that on every gentle attempt to introduce the catheter, the eyes of the instrument get so completely blocked up before it enters the bladder, that no urine can pass through the tube. In this case the gland is usually of a spongy texture, and the blood often recedes into the cavity of the bladder, and from its gravity naturally occupies the lowest part, whilst the urine remains above. To obviate any obstruction in the catheter, I usually plug up the eyes of the instrument with wax before its introduction, and when the point has reached the fundus *vesica*, I withdraw the stillet, and if the wax does not dissolve by the heat of the part in due time, I then place my mouth to the open end, and by blowing forcibly

through the tube the wax will be forced out, and the urine pass off without further interruption. In other cases, where the eyes of the catheter have not been previously plugged, and where the urine does not pass voluntarily, I adopt the same expedient, and generally with the same success.

To prevent unnecessary irritation of the parts, by having recourse to the use of the catheter as often as the patient has a call to *micturate*, having once succeeded in its introduction, I generally prefer leaving it in the bladder; as the urinary organs are easily excited to inflammation by frequently passing the instrument.

In most cases of diseased prostate gland, or affections of the bladder, accompanied with retention of urine, I have long been in the habit of retaining the *flexible pewter catheter* in the bladder, by first passing the instrument in the usual way, and then introducing a finger up the rectum, pushing it upwards so that the concave part near the point will hook behind the os pubis, and remain permanently fixed; I then plug up the open end of the catheter with a piece of cork, which may be taken out and replaced when the patient has a call to evacuate his urine. In cases where the coats of the bladder have appeared in a state of great irritation, or inflammation, I have tied a small bladder to the open end of the catheter to receive the fluid as it dribbles

through the tube; by which means the receptacle is always in a collapsed and quiescent state, during which interval it will more readily resume its healthy state, and the system suffer less irritation.

On some occasions it may be requisite to continue the practice for several weeks, particularly in cases of paralysis of the bladder, and affections of the spine from injury: in such instances it is indispensably necessary to take out the instrument every sixth or eighth day, to clean it from incrustations which unavoidably form about the point, and which would, if neglected, occasion much pain and irritation of the urethra on its being withdrawn in that state. Before the use of the catheter be wholly relinquished, it is always requisite to leave it out occasionally, for a given time, that the patient may ascertain if he can make water without it; for whilst the expulsive powers are inadequate to empty the bladder, its application may be still requisite. But if this precaution be wholly neglected, the bladder may lose the power of expanding and contracting, and thus its functions be irreparably lost. Suppuration and ulceration of the gland are no uncommon occurrences after the frequent use of bougies or caustic; sometimes taking place independently of an enlargement of its substance, and forming sinuses in the different lobes of the

organ, or ulcerated foramina in the vicinity of the caput gallinaginis. This species of diseased prostate I have also known to terminate in an abscess of the perineum. In such cases, after the matter has been discharged, the catheter may be cautiously conducted into the bladder, and the point kept from getting entangled in the pouch formed by the abscess, or lacuna of the passage; and be retained there with the same view as before directed, or till the external wound be healed, lest the urine get diffused into the cellular membrane, and produce subsequent inflammation.

An inflammation of Cowper's gland is often accompanied with a difficulty of discharging the urine, attended with pain and swelling of the perineum, and occasional discharge of mucus from the urethra. Sometimes the gland suppurates, and an abscess is formed in the perineum, and puss and urine are discharged by the wound; in this case the permanent use of the catheter will be found an eligible resource, and tend greatly to expedite the progress of the cure.

When the bladder from any cause becomes surcharged with urine, and its muscular fibres are so distended, that it occupies the whole abdomen, and remains in this situation for two or three days, it usually loses its natural disposition to contraction; the use of the catheter becomes

in this stage of the disease, an uncertain remedy, the ureters and pelvis of the kidneys participate therewith, and the peculiar valvular structure, by which these tubes communicate with the bladder, becomes changed, and the secretory functions of the kidneys suppressed. If a dribbling of urine from the urethra did not take place, the bladder would more frequently yield to the effects of inflammation and gangrene than what we find to be the case.

The gradual dribbling of the water by the urethra in cases of retention of urine and over-distention of the bladder, is sometimes unobserved by the patient in its incipient state, owing to the deceptive nature of the disease.

I have seen cases of this description, where even the medical attendant has overlooked the symptoms, and considered the disease to be an incontinence of urine. Such cases require prompt and early attention from the practitioner in order to obtain a passage by the urethra with the catheter; for unless the urine be evacuated, the abdomen becomes distended and painful, accompanied with thirst, quick pulse, dry skin, vomiting and a ghastly countenance; while the inflammation is insidiously spreading over the whole of that region, a state of insensibility and delirium is followed by hiccup, vomiting, and gangrene; and sometimes the urine either exudes through the

coats of the bladder, or it gives way, and gets diffused into the cavity of the abdomen, in which case the patient is inevitably lost. On the contrary, where the symptoms of inflammation have not made so much impression on the system, and a rupture of the bladder takes place below that portion of the organ which is screened by the peritoneum, the surgeon should immediately proceed to make a dependant opening into the cellular membrane, where the extravasated urine is lodged, and evacuate the fluid; and to promote the healing of the wound of the bladder, a catheter should be kept constantly in the passage of the urethra, lest a fresh supply of urine from the ureters be accumulated in the cavity, and prevent the process of the cure. In cases of enlarged prostate gland, it is obvious that whatever sort of catheter be used, it should be longer than those in general use, and the curve and diameter adapted to the nature of the case, and inclination of the surgeon.

Retention or a defect in the evacuation of the urine is always a serious disease, and may be produced by a variety of causes; such as, mechanical or morbid obstructions of the urethra, prostate gland, or inflammation of the bladder; for when this receptacle becomes extensively distended for a length of time, it loses its power of contraction, and unless relieved by the catheter in

due time, the urine becomes acrid, and inflammation and mortification are the consequences. This calamity is more frequently incidental to the advanced state of life, and its morbid effects are, in some degree, counterbalanced by the system being less susceptible of irritation and stimuli than at an earlier period. I have known many old men retain their urine with comparative impunity for the space of two or three days; and in one instance a gentleman, by whom I was consulted, was six days and nights without voiding any urine. During the whole of that period, the catheter and other means had been fruitlessly employed by two medical attendants, who considered the disease to be a suppression of the secretion of urine. In this case, instantly and without difficulty, I passed the catheter into the bladder, and evacuated more than three quarts of turbid offensive urine; and on passing the finger up the rectum, I discovered an enlarged prostate gland, which induced me to leave a flexible catheter, with a small calf's bladder affixed to it in this viscus, through which the urine was permitted to pass off *ad libitum*. The instrument was taken out and cleaned occasionally, at which times I could distinctly feel a calculus with its point, and after a lapse of a few weeks, the organ resumed its natural functions. The inflammatory symptoms having subsided, I became anxious to as-

certain the natural power of the bladder; for which purpose the catheter was left out, and in a few hours the gentleman was seized with excruciating pains about the neck of the bladder. On attempting to pass the instrument I perceived the calculus had got into the urethra, which led me to pass the finger up the rectum, with which I pressed the calculus forwards, whilst the point of the catheter served to distend the passage. In this manner I extracted a calculus about the size of a horse bean, and the instrument was replaced in the bladder as before. During this period the gentleman was allowed to walk about; and though he has since experienced occasional attacks of retention of urine, the same mode of treatment being adopted, his life has been preserved, and he now enjoys a good state of health in the eighty-fifth year of his age. In addition to mechanical aid, these cases require a strict attention to the antiphlogistic course, according to the age and condition of the patient. If there be a full quick pulse, with flushings of the face, and much fever general as well as local, bleeding will be proper, such as cupping from the pubis or perineum.

The bowels should be emptied by brisk cathartics. If there exist much pain and irritation about the neck of the bladder, the tepid bath, and the application of leeches may be useful. A combi-

nation of the extract of *Conii hyosciami, colocynthidis* and *Pil hydrargyri* may be given night and morning, along with the effervescing mixture, or one of *Potassæ nitras*, with *ipecacuan wine* and *Tinct digitalis*.

I have likewise experienced in these cases great benefit from alternately injecting large portions of warm and cold water up the rectum.

The use of mild diluting drinks will have a good effect in abating the stimulating qualities of the urine, such as barley-water or linseed-tea, with a portion of *Potassæ nitras* added thereto.

If, notwithstanding, these means fail in arresting the progress of the disease, and it becomes propagated by continuity to the neighbouring viscera, with tension and pain of the abdomen, accompanied with hiccup and unrestrained vomiting, death is unavoidable.

When it is necessary to pass the catheter on account of atony of the bladder, and retention of urine caused by injury inflicted on the spinal marrow, producing paralysis of this organ, and the whole of the lower extremities, the curve of the instrument should be less than common; otherwise the apex will be so much elevated in the bladder, (particularly if the patient be in a standing position) that a portion of the urine will unavoidably remain in the inferior part, behind its neck and below the plane of the eyes of the in-

strument. To obviate this impediment, a catheter slightly curved, and pressure made on the region of the bladder, will promote the discharge of the urine when aided by a varied position of the body of the patient; and by way of convenience the instrument may be retained, and the water taken off when required. In this species of retention of urine, the catheter appears indispensably requisite before other means can be adopted with propriety; and an early introduction is always requisite, though it only afford temporary relief; the state of the spine should not be overlooked, but must be treated according to the nature of the case.

There is in some peculiar constitutions, either a wrong distribution, or a deficiency of nervous energy in the organs of urine which produces paralysis of the bladder. Such a case I have at this time under my care; the person in other respects enjoys a tolerable state of health, and is able to follow his occupation; he has for several years been under the necessity of evacuating his urine himself, being furnished with a flexible catheter for the purpose, and which he always carries about with him.

Not very dissimilar to this affection is that which is produced from disobeying the calls of nature;*

* It is said that Tycho Brahe, the celebrated astronomer, died from this cause.

in consequence of which the muscular fibres of the bladder become expanded beyond their power of contraction, insomuch that a retention of urine follows. This species of retention of urine from paralysis, I conceive to be the only case in which the mode of partially evacuating the urine at intervals can be adopted with advantage. Sometimes a tumor has been known to press upon the nerves of the bladder causing paralysis and retention of urine; in which case recourse must be had to the use of the catheter, after which the chief remedies in these affections, are the warm bath, electricity, stimulating embrocations, blisters, *Tinct Cantharides* in conjunction with mercury.

Inflammation of the *Verumontanum* and follicles of the canal of the urethra is often associated with diseases of the prostate gland; and sometimes they become excited to irritation by the improper use of injections in gonorrhœa, and the too frequent introduction of bougies ill adapted to the diameter of the passage; by retaining the urine too long in the bladder; and by the irritation caused by hæmorrhoidal tumors, prolapsus ani, and not unfrequently by debauchery.

These are among the most frequent causes which induce affections of the seminal vessels, though their symptoms are often equivocal, and not easy to discriminate from incipient affections of calculi, and diseases of the neighbouring organs.

They assume different degrees of excitement according to the age and temperament of the patient; sometimes inciting wavering pain along the posterior portion of the urethra as far as the neck of the bladder, and inducing nervous and spasmodic contractions of the *sphincter vesica;* hence a degree of sympathetic uneasiness, attended with unavailing endeavours to *micturate;* aggravated by the combined action of the abdominal muscles and bladder rendering the disease still more distressing to the patient.

Such derangement of the functions of the *ejaculatory ducts* occasionally tends to the formation of *Carunculi,* and materially opposes the passing of any instrument by the urethra with safety during a state of high inflammation and irritation; and in some cases where the catheter has been used, no water could be found in the bladder, and yet the propensity has still remained. In other instances the bladder has been distended with urine and the patient unable to void its contents, owing to the *sphincter* muscles, which surround the neck of the bladder and posterior part of the urethra, not acting in consent with those of the diaphragm and abdomen. For unless the expulsive and retentive powers which govern this agency, harmonize with each other, the voluntary evacuation of the urine is wholly prevented, though the propensity exists in a painful degree.

An undue degree of irritation excited in the vicinity of the neck of the bladder, particularly in nervous and irritable constitutions, will frequently give rise to remote sympathetic sensations of other parts, and excite a disposition to pass the urine more frequently; though these sensations, when attentively contrasted with those of calculi in the bladder or permanent retention of urine, possess little affinity with them; being more immediately connected with piles, schirrus of the rectum, worms in the lower intestines, hypocondria and mental illusion. The use of the bougie or catheter is generally inadequate in such cases though frequently used. The resources of the surgeon will be most availing when directed to abate the undue excitement by a strict attention to the state of the bowels, together with the warm bath, antiphlogistic and antispasmodic remedies both general and local, aided by a mucilaginous beverage, to which may be added a portion of *Potassæ nitratis*. When these morbid excitements continue for a long time, and have been aggravated by constitutional causes or the too frequent introduction of instruments up the urethra, or the improper use of internal irritating, diuretic medicines, an indurated state of the prostate gland or one of its lobes may ensue, and obstruct the discharge of urine; thus ultimately defeating every effort of the surgeon by the in-

flammation extending in an insidious manner over the internal surface of the bladder, and terminating either in an abscess or gangrene. In these cases, on dissection after the patient's death, one or both kidneys will be found to have participated with the disease, and the *infundibula* will in general exhibit a deposit of bloody exudation.

In these irritable and sympathetic affections of the urethra and seminal ducts, when associated with inflammation and pain of the urinary organs, such remedies as blisters applied to the loins, leeches to the perineum, warm bath, cooling lotions, and anodyne fomentations have occasionally afforded relief.

In addition to these, small doses of *Emetic tartar*, *Tinct digitali* or *Tinct ferri muriati* may be given till nausea is produced. Bathing the penis and scrotum in cold water; or throwing cold water on the region of the abdomen; sometimes a brisk cathartic succeeded by the injection of 120 drops of *Tinct opii* in about four ounces of cold water up the rectum, or injecting into the bladder a solution of opium in tepid water; or a watery solution of opium injected up the urethra, and retained therein by means of the fingers applied externally on the penis for a given time may be adopted. Mercury is sometimes useful when there is reason to suspect an indurated state of the prostate gland, by changing the action of the

system, particularly when joined with opium and cicuta. The introduction of solid opium and cicuta up the rectum to the extent of two inches, in the form of suppositories, is also serviceable in these cases, when the patient labours under great pain and distress of mind.

A scrofulous diathesis is sometimes known to lurk in the system, and to be the exciting cause of an indolent induration of the prostate gland, as well as other morbid affections of the seminal ducts and canal of the urethra; in which case relief may be obtained by the use of *bark*, *cicuta*, *sarsaparilla*, *Tinct ferri muriati*, and sea bathing. I have known issues applied in the vicinity of the perineum, afford great relief.

These means, with a suitable regimen, and gentle exercise in the open air, together with attention to the state of the bowels and digestive organs, and appeasing the agitation of the patient's mind, form the chief basis of treatment in this species of disease, connected with the urinary organs.

ON THE SYMPTOMS OF STONE IN THE BLADDER, AND METHOD OF SOUNDING.

NOTWITHSTANDING the elaborate researches of modern authors, the proximate cause of the production of urinary calculi appears still involved in some degree of obscurity; and different opinions are assigned on this important subject. Among which may be enumerated, a peculiar structure or action of the excretory vessels of the kidneys,* and particles of blood, or inspissated matter deposited in the *infundibula*, by which, on their passing along the ureters into the bladder, through affinity with urine, a nucleus is formed in one or other of these receptacles, too large to be evacuated by the urethra. Or they may be produced by some peculiarity of constitution, or morbid condition of the part in which such depositions are formed. Few diseases, to which the human body is liable, are more distressing to the patient, or more dangerous in their tendency, than those of the urinary organs; and when accompanied with stone in the bladder, the pain and irritation excited thereby, present one of the most deplorable maladies to which the system is subject.

* This was the opinion of Platner.

The concealed situation of these parts, particularly when combined with calculous affections, the ambiguity of the symptoms, the associated action of the muscles of the pelvis, and the varying nature of the diseases connected with them, evidently shew the insidious progress and extent of such morbid phenomena; at the same time these causes account for the obscurity which marks the symptoms, and so often retards our efforts in determining the true mode of treatment.

Though most surgical authors have enumerated various symptoms as unequivocal indications of the existence of stone in the bladder, yet the proofs which usually characterize the disease, are so extremely complex, that in this peculiar department there is great difficulty in discriminating between the sympathetic affections of the bladder, and the genuine source of the disease.

The operation of sounding the bladder for the purpose of discovering a stone, is in general so slightly noticed by surgical writers, that we might suppose it not of much importance; but as we never can be certain whether there is or is not a stone, without the introduction of some instrument for this purpose, it is presumed no apology is necessary for these remarks; more particularly when it is evident that such research cautiously made, frequently leads to the discovery of other

affections which accompany this distressing malady.

To acquire an accurate diagnosis of the presence of stone in the bladder, it is proper to question the patient respecting the primary symptoms; whether they originated in the kidneys, or in the bladder; whether small calculi, or sabulous depositions have been observed in the urine; and whether there be any cause to suspect an hereditary diathesis.

The symptoms usually accompanying stone in the bladder are gradually developed, and may be included in the following statement.

A sense of weight and uneasiness felt about the neck of the bladder, and pressure at the rectum, particularly when the patient moves about.

An irresistible propensity to a frequent expulsion of the urine, although the bladder may have been emptied not long before; especially when in an erect position, along with a smarting, burning, or pricking sensation at the extremity of the penis, which causes the patient to walk in a creeping straddling manner, with an almost incessant desire to go to stool. The urine in the incipient stage is almost always clear; but as the disease advances it becomes turbid, caused by repeated attacks of inflammation, which produce ulceration, and a secretion of coagulable lymph from the inner surface of the bladder. Eventually

puss is perceived to be blended with the urine, and streaks of blood more or less, as the surface of the calculus is rough or smooth: and during the progress of the disease, the desire to pass urine becomes more and more frequent, till at length the bladder loses its usual power of distension, hectic fever ensues, and the patient sinks under the disease unless the stone be removed.

Great pain at the glans penis on ejecting the last drop of urine, connected at other times with *tenesmus*, more particularly in young persons; an intolerable itching irritation about the external orifice of the urethra, attended with frequent involuntary erections of the penis, which part the patient is induced to nip with his fingers to relieve the paroxysms, while the prepuce becomes elongated, and sometimes nearly closed,—are also among the symptoms of this disease.

In some instances the sufferer is free from pain for a certain time, and a considerable quantity of urine will be collected in the bladder, which, on evacuation, *pleno rivo* is suddenly stopped; but on the patient varying the position of his body, the calculus recedes from the neck of the bladder, and the urine flows again freely as before.

In the advanced stage of the disease the urine deposits a sabulous and turbid sediment, with an offensive smell. On some occasions the abdominal muscles become affected with spasm, and

the patient is seized with fits of shivering, accompanied with a discharge of mucus along with the urine, which indicates inflammation of the coats of the bladder: under these circumstances the operation is inadmissible.

Difficulty of retaining the urine, with dribbling resembling *stillicidium urinæ*, and at intervals urgent efforts to expel the contents of the bladder, caused either by a change in the situation of the stone, position of the body of the patient, or the coats of the bladder being no longer protected by the intervention of the urine; during these efforts the difficulty becomes greater, and the pain aggravated.

Hæmorrhoids in the decline of life, and *prolapsus ani* in children, are frequent attendants on the disease, together with occasional retraction and atrophy of the testicles.

When small calculi become lodged in the ducts of the prostate gland, there is usually some difficulty in voiding the urine, attended with pain about the neck of the bladder, and a sense of uneasiness at the glans penis, not very dissimilar to that produced by a stone in the cavity of the bladder; in which case, the surgeon should aid the researches of the sound, by passing the finger up the rectum, in order to acquire a more correct diagnostic of the nature of the case.

The pathological symptoms above enumerated,

especially when occurring in the same individual, leave little doubt of the existence of stone in the bladder; though they are not altogether to be considered as infallible proofs of the disease, to warrant an operation without the aid of the sound.

We occasionally meet with cases where the patient has been known to have had a stone in the bladder for years, without suffering any material inconvenience.

In other instances the patient has endured the ordinary symptoms attendant on the disease for a long time, and on inspecting the bladder after death, the grievance has been discovered to have proceeded from an enlarged prostate gland, which has excited symptoms greatly resembling calculous affections, and communicated through the medium of the sound, a sensation somewhat resembling stone. An indurated and enlarged state of the prostate gland, usually excites frequent efforts in the bladder to overcome the resistance which reiterated action invariably produces. Hence thickening of its muscular coats, which sometimes embarrasses the surgeon when sounding this viscus.

These indications may unwarily mislead the surgeon, but their equivocal nature will, it is presumed, guard him against inadvertently deciding on the case, without first having recourse to the assistance of the sound. The prostate

gland, in its natural state, is about the size of a horse chesnut in an adult; and when affected by schirrous disease, it is sometimes augmented to the bulk of a large apple, of a firm compact structure, exhibiting internally various membranous septæ.

This enlarged morbid state of the lobes, so completely blocks up the opening into the bladder as to obstruct the flow of urine and interrupt the introduction of the catheter. In this precarious state, an artificial passage has on some occasions been hazarded with temporary relief to the patient, by pushing the instrument directly through the substance of the gland at a venture into the bladder, and evacuating its contents; a project I have never had occasion to adopt, nor do I think it justifiable while other less hazardous means are at hand.

The instrument usually employed for the purpose of exploring the cavity of the bladder, is a piece of rounded solid polished steel, curved and modelled to the form of the urethra, denominated *a Sound;* and the mode of its introduction into the bladder is similar to that of the catheter, the chief use of which is to convey a sensation of the percussions made on the stone to the fingers of the surgeon.

Though some practitioners give a preference to a hollow sound, formed of silver or elastic gum,

yet I am induced to believe that a solid one of steel will produce a more distinct and characteristic sensation to the touch, than one of silver or any other ductile substance; as the undulations of the urine, when issuing through the eyes of the instrument, may impose on the sensation of the surgeon, and embarrass his judgment.

After the many different attempts made by modern surgeons in the construction of instruments employed in Lithotomy, the thickness of the sound, more than any other circumstance, seems to have escaped their attention.

With the view of obviating certain difficulties, which frequently occur when searching for the stone in the bladder, I am induced to make a few observations on the use and construction of the sound, as represented in the annexed plate; (Fig. 1.) which instrument I have been in the habit of using for several years past, and which is now preferred by many surgeons of this county. This instrument will be found to pass along the canal of the urethra, and be moved when in the cavity of the bladder, with greater facility by the surgeon, and ease to the patient, than those modelled in the ordinary way. Consequently, when there exist much disease and irritation of the parts, the calculus is more readily discovered, and becomes more tangible, than by one constructed in the ordinary way.

The whole canal of the urethra, even when exempt from disease, appears to possess a degree of contractile power, which prevents the involuntary issuing of the urine, and also slightly impedes the advancement of any instrument up the passage. In these circumstances, when the prostate gland is diseased, and inflammation has spread over the whole member of the urethra, whether produced by stone or other morbid affections, the patient experiences a more than usual desire to *micturate;* and thus the reiterated excitation of the sphincter muscles of the perineum, and adjacent parts, presents an obvious barrier to the introduction either of the sound, staff, catheter, or bougie.

The urethra being designed for conveying the urine from the bladder, is surrounded by a vascular cellular texture, named *Corpus Spongiosum*, and lined internally with an exceedingly delicate rugose membrane, endowed with great sensibility and some elasticity. The posterior, or prostatic portion of the urethra and neck of the bladder, is also encircled by a particular fasciculus of muscular fibrers, and is subject to great sympathetic irritation and contraction. This is exemplified by a variety of instances, both in health and disease; for in the latter case, when the urethra is in a state of inflammation or irritation, on attempting to pass a common sound, or bougie

along this sensible membrane, the extent of surface on which it acts, unavoidably excites the connecting muscles into inordinate action, which the will of the patient is unable to control. By the same law of excitement in any part of the system, inflammation, swelling, and distention are produced.

Thus it is easy to explain how inflammation of the mucous coat of the urethra tends to diminish the diameter of the canal, and cause retention of urine. The *levator ani; compressor prostatæ* and *accelerator urinæ*, so effectually embrace the canal of the urethra, that when this sensible internal membrane is influenced by the undue action of these muscles, and is either irritated by the passing of an instrument, or from any other cause, the diameter of the urethra is proportionably diminished.

The canal of the urethra presents different degrees of diameter at several points in its healthy state, and its lining also possesses great vascularity and sensibility of texture; but the irritation of this delicate membrane, is in some degree mitigated by the bland mucus excreted from the follicles of the different glands of the urethra, which lubricates the passage, defends it from the acrimony of the urine, and considerably facilitates the introduction of any instrument along the passage.

Sir Everard Home has published measurements, taken from casts, of the widths of the canal of the urethra, at different parts; but from the observations I have been able to make, there is reason to believe that he has much overrated its diameters throughout when applied to the living subject in its natural state. When affected with inflammation the canal becomes manifestly diminished; and a bougie, or catheter of the ordinary size and construction, if passed far into the urethra, will have a greater friction upon its sides than one of a less diameter with a small bulb, the chief resistance to which is almost wholly confined to that part. On gauging the caliber of the prostatic portion of the urethra in the adult subject, I find the average diameter to be from four to five lines; and as the structure of this part of the urethra is less capable of distention than the other, it is obvious that the diameter of the catheter should be proportioned to it.

The pain so frequently excited, and the perplexity attending the introduction of any form of instrument into the bladder, when the patient is tortured with calculus, have been noticed by most practitioners who are versed in this branch of surgery; and it is a matter worthy of attention, and which the junior practitioner should invariably bear in mind, that there is a considerable difference between passing the sound on the dead and

on the living subject, and therefore any inference drawn from the former to the latter operation must be inaccurate. The muscles subservient to the organs of urine, in the defunct state, have wholly lost their tone and power of contraction; and consequently oppose comparatively little resistance to the instrument in the passage.

I would not have it supposed from these remarks, that I by any means wish to discourage the anatomical student from exercising his talent on the dead subject, and I earnestly entreat him, to avail himself of every suitable opportunity of acquiring practical dexterity in this operation, but still to bear in mind the existing difference above alluded to; for the well regulated use of the sound, or catheter, as exercised by the surgeon, seems to require something more of dexterous movement, to enable the operator to accomplish his purpose with ease and propriety, than any other surgical operation. These acquirements, which result only from anatomical skill and practice, will greatly assist the surgeon in the mode of treatment, and plan of operating in the diseases incident to the pelvic cavity: nor, without these essential requisites can he comprehend the reason of the difficulty in the introduction either of the catheter or sound, or know the cause of his inability to discover the stone, in complicated cases.

In some instances of retention of urine, which have fallen under my notice, connected with morbid affection of the neck of the bladder, and prostate gland, the patient has suffered by the violent and ill directed efforts of the surgeon, occasioned by a negligent deviation in the position of the patient during the operation, or by rash and improper guidance of the instrument. The certainty of accomplishing this operation without embarrassment, arises from bearing in mind the relative curvature of the instrument, and canal of the urethra, as its point traverses along from the glans penis, to the entrance of the bladder.

The obstacles and perplexity connected with the treatment of the diseases of these organs, are often so peculiarly complicated, that it requires the greatest caution in the surgeon, to pass an instrument into the bladder without inflicting injury to the patient. Hence the catheter, staff, or sound, bear such affinity of construction and method of introduction to each other, that I wish these remarks to be considered as equally applicable to each respectively, unless otherwise specified.

To accomplish this delicate and sometimes difficult operation with ease and facility, the surgeon should be furnished with a variety of sounds of different degrees of curvature, length, and diameter, adapted to all ages.

It is obvious, that whatever instrument be employed, it should be proportioned to the size of the patient, and diameter of the urethra. With regard to the convexity of such instrument, every surgeon will perhaps find it most convenient to be governed by his own ideas and experience, as a dexterous operator will seldom fail of effecting his purpose whatever degree of curvature it may possess.

A calculus, by its own weight, may be lodged near the cervix of the bladder, immediately behind the prostate gland, in which case a sound with a less curve than ordinary will more readily come in contact with the stone, and if it be lodged near the fundus, or in its anterior part, one more bent will generally detect the stone sooner.

An indurated and enlarged prostate gland, produces symptoms occasionally much like those of stone in the bladder. There is, however, usually this difference, that riding in a carriage, or on horseback, does not increase the grievance when the prostate alone is affected, but it does so in a great degree, producing bloody urine and paroxysms of pain, when accompanied with a stone in the bladder.

Were the parts concerned in lithotomy always free from disease, and of equal dimensions in every subject, the operation would be more certain of success, and be determined on mathematical

principles; but this can scarcely be expected when the disease is of long standing; and as no two cases are in every respect exactly similar, it is indispensably requisite that the surgeon be fully acquainted with the anatomy and functions of the parts connected with the operation.

The following paragraphs, extracted from the works of two distinguished surgeons, may not be thought inapplicable on the subject of introducing the catheter into the bladder. "The catheter, in the hands of a surgeon, like the pencil in the hand of a painter, requires frequent use, and much practice to manage with facility and success. Rules may be laid down for the forming a rough outline, but those more delicate movements, which in many instances, are necessary to ensure success, can no more be described, than a painter can describe those finer touches of his pencil, which are necessary to the perfecting of some finished performance."*

"The elaborate descriptions given by some authors of the mode of passing the catheter, the allusions to the required delicacy of the hand, the great attention to the sweep of the passage, the *tour de maitre*, as it has been absurdly called, and the precise point where the handle of the catheter is to be depressed, that the other extre-

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* Weldon on Puncturing the Bladder, page 171.

mity may be elevated, are certainly useful to the student who has previously dissected; but to those who have not dissected, or seen dissection, these particular directions avail but little; they may produce a feeling in the mind of the reader, of the superior talents of the author who can describe the mode of so easily shunning difficulties in introducing the catheter, but they will convey very little real practical information to those who have not attended to the dissection of the parts themselves.

"This attention alone will teach him how to introduce the catheter safely, and to shun any error arising from misconception, into which reading, without dissecting, might possibly lead him.

"What man should dare to call himself a surgeon who has not carefully attended to this subject? Let such person consider, should his patient, labouring under retention of urine, die, he not being able to pass the catheter, and ignorant of whence the difficulty arises, that such death must for ever lie heavy at his door; and that not only the death of the individual is produced by his ignorance, but also the miseries which may be entailed, perhaps, on a numerous family, left by such death in indigence; and by him, the person in whom their confidence was placed, but which he had abused by undertaking

the case, although conscious that he was not equal to its proper management."*

I will briefly state the method I usually adopt when performing this operation on the male subject, which may be done in three different positions of the body, either when standing, sitting, or lying. Thus placing myself before the patient when in the first position, so as to have full command of the instrument, which is to be adapted to the size of the urethra, and previously warmed and besmeared all over, except the handle, with oil, I take a gentle hold of the *corona glandis* between the thumb and two fore fingers of the left hand, raising the penis a little upwards; and with the handle held in the right hand, between the index and fore finger, I then insinuate its point into the aperture of the urethra, with the convex part towards the patient, pressing it steadily onwards till it meets with some resistance *in perineo*, from the curvature of the passage that corresponds to the arch of the pubis. Keeping the point fixed in this position, as the centre of motion, and the penis at the same time raised on the instrument, I then, with the same hand, make a semi-circular turn upwards, over the left groin of the patient, which brings the hand parallel with the navel, and at the same time inclin-

* Wilson on the Urinary and Genital Organs, page 308 and 309.

ing the handle of the catheter forwards horizontally, by one continued and uninterrupted sweep of the hand, I depress the handle, by which its point will naturally, with a little force, ascend under the angle of the symphysis pubis, and enter the cavity of the bladder.

If the surgeon be not practically versed in this mode of introducing the catheter, which the French surgeons call "*tour de maitre*," he may, without this manœuvre, pass it by, introducing it in the first stage of the operation, with the concave part directed towards the patient.

On attempting to introduce the common formed sound into the bladder, I have frequently perceived the instrument so firmly embraced and arrested in its progress by the action of the muscles of the urethra, and neighbouring parts, that it was scarcely moveable without the whole body of the penis co-operating with the motion exerted by the hand, in attempting to ascertain the presence of the stone.

In some instances, where the natural action of the muscles appendant to the bladder is interrupted by irritation or spasm, and the point of the common sound has traversed to the anterior part of the prostate gland, its whole surface becomes firmly compressed, and permanently fixed, which wholly impedes its complete introduction into the bladder without manifestly incurring great

danger; whilst, on the other hand, a sound constructed similar to that represented in the annexed plate, with a small bulbous point, adapted to the natural diameter of the urethra, and that part of the instrument from the bulb to the handle, much reduced below the ordinary size, will manifestly distend the urethra as it passes along its course, with comparatively little friction, much more ease and safety to the patient, as well as freedom to the surgeon; and on having entered the bladder it can be moved in any direction, without exciting undue irritation, or being embraced and obstructed by the action of the urethra and its coajutant muscles. Consequently the stone is more readily found by this instrument, than one of an equal diameter throughout.

There are two methods of treating calculous affections of the bladder described by authors. One is *radical*, by the surgical extraction of the stone; this is the operation of Lithotomy. The other is *palliative*, by administering lithontriptic medicines in different ways, with a view of dissolving it in the bladder.

Notwithstanding the attention of the faculty to the method of chemical counteraction, it is but too true, that hitherto all attempts have proved ineffectual. Though the dissolution of calculi in the urinary bladder has been attempted long ago by means of medicines internally, as well as by

injecting solvent fluids into the bladder by the aid of instruments constructed for the purpose, experience has proved that the component parts of urinary calculi consist of very different substances in certain peculiarities of constitution; and consequently it is not easy to discover a solvent which might be applicable in all cases. What might sometimes succeed, might at other times be injurious; and though we are in possession of chemical liquids that will readily dissolve calculi when out of the bladder, yet the same menstruum when injected into the cavity of this viscus, would produce intolerable pain and inflammation.

The internal coats of this organ are so irritable, that scarcely any other fluid than what it is destined by nature to retain (except such as are of a mild nature) can be used, without producing pain or being instantly rejected. Though we cannot expect either to cure diseases of the bladder, or completely dissolve calculi* when once formed, by these means, yet I have frequently had recourse to the use of the *vesicæ lotura* with apparent benefit. The injections I have most generally used are *oil*, *warm water*, *solutions of opium*, or *belladonna in water* and *diluted muriatic acid*, with or without the addition of *mucilage*.

If a stone be once formed in the bladder of a

* On this subject, see Sir Everard Home, Jesse Foot, and Butter.

magnitude too great to be expelled naturally, it is highly probable that the present art of medicine is inadequate to effect a dissolution of its parts, without inflicting injury on the coats of the bladder: though in some instances of constitutional peculiarity in the chemical composition of calculi, I am inclined to believe that certain solvents, when taken internally or injected into the bladder, have so far counteracted the tendency to the formation of stone, as to prevent its further growth for a time; and have produced a change in the bladder or secretion of urine which has appeased the pain and irritation excited by the disease. On other occasions when certain lithontriptic fluids have been injected into the bladder, the pain excited and the injury inflicted on that organ, have been so great as to deter modern surgeons from attempting to dissolve urinary calculi by this process.

Still it is to be regretted, that we are yet ignorant of a specific chemical agent adequate to dissolve a stone in the living bladder when too large to pass naturally by the urethra; and till this arcanum has been discovered, lithotomy will ever remain an indispensable expedient.

It would be foreign to my present design, to enumerate the various preposterous medicines which have at different periods been administered to abate the distressing symptoms of this disease,

or to decompose the calculi in the bladder; it is sufficient to observe, that the hazard attending the use of lithontriptics, if not cautiously applied, may prove injurious to the bladder, as has actually been the case in numerous instances. Not only has the patient's health suffered irreparable injury, but the advantages that would have been derivable from lithotomy, have been prevented. This was verified in the instances of Lord Walpole and the Earl of Oxford, as well as on many other occasions.

The difficulty and danger attendant on lithotomy have been pointed out by most surgical writers, and from the earliest records of medicine, of which we have any account of this malady transmitted for our instruction, we are led to believe that the operation was principally confined to a select class of men who made it their peculiar business. This is confirmed by the solemn oath of Hippocrates, and to which Horace alludes,

"Quod medicorum est
Promittunt medici, tractant fabrilia fabri."

Among other interesting facts preserved by this venerable author, the following abjuration will shew the limited practice of lithotomy in his time, and the medical honesty of this father of the healing art.

"I swear (says he) by Apollo the Physician, by Esculapius, by his daughter Hygeia, Panacea,

and by all the gods and goddesses of the heathen mythology, that cutting for the stone I will not meddle with, but leave it to the operators in that way." Hence it is probable, that lithotomy at that early period was interdicted to all except empirics, who in all likelihood kept their mode of operating a secret, while the regular physicians made it no part of their studies. Among the ancients, and even in the time of the great Boerhaave, it was considered a very dangerous operation; for he asserts, that the event is always doubtful by reason of some things happening which no sagacity could foresee, nor art remove. See Aphorism, 1437. And the experienced Heister says, that if the structure of the bladder, and its true disposition, with regard to the adjacent parts be not first well known, and the *surgeon* be not well versed in *encheiresis*, or necessary artifices to be used for cutting, and extracting the stone, it is very possible that the patient may, through such defect, lose his life in the operation.

It will be allowed that no individual operation in surgery has attracted so much notice as that of lithotomy; and to enter into a detail of the opinions and modes of operating as described by every writer on the subject, would necessarily lead me beyond the limits prescribed to these pages. I purpose merely to present the reader with a short historical account of the chief methods of ex-

tracting the stone from the bladder, adopted by lithotomists at different periods and in successive order, interspersed with incidental remarks.

The perceptible and satisfactory proofs of a stone in the bladder are to be attained by the introduction of the sound; and every experienced lithotomist will acknowledge the embarrassment which sometimes occurs in this operation, when interrupted either by a morbid thickening of the coats of the bladder, an indurated prostrate gland or small particles of sand lodged in the passage. In these diseased affections, a sensation is sometimes conveyed to the surgeon when sounding, not very dissimilar to that imparted by a stone, in consequence of which many palpable errors have been committed by a too precipitate decision.

Prior to sounding the bladder, it is usual to require that the urine be restrained in order to distend its coats, so that the instrument may more readily explore the cavity and come in contact with the stone.

The sound being introduced in the manner before directed, the surgeon should hold the handle gently between the thumb and fore finger of the right hand; by moving the instrument quickly, but without much force, in every possible direction, and over every point of surface: whilst the urine is evacuating, and before the bladder gets contracted, he will generally be able to detect

the stone by the percussion of the two bodies coming in contact; and a slight shock or clank is communicated to the surgeon which can scarcely be mistaken.

Some surgeons prefer a hollow sound, supposing the escape of the urine through the tube will bring the stone more immediately in contact with its point; but if the bladder be empty, which is frequently the case during the process of sounding, the object in view is wholly defeated. Nevertheless the improved sound, as before recommended, possesses all the advantages of a hollow instrument, being much smaller in diameter than the canal of the urethra from the anterior part of its bulb to the handle; and if the bladder be distended with urine, it will generally pass off gradually by the side of the sound in a way which will afford the surgeon time to explore the cavity of the organ more advantageously, than by a hollow one through which the urine escapes more rapidly. If, on the introduction of the sound, the point should be interrupted in the passage by any of the furrows or *lacunæ* of the urethra, the surgeon should wholly (and not in part as is usually directed) withdraw the instrument and make a second effort, lest its point be inadvertently forced through the side of the urethra and a false passage be made; to avoid which the fore finger may be introduced into the anus to raise or guide the point

of the sound through the prostatic sinus, and over the ridge formed by the neck of the bladder: and by gently depressing the handle as it advances the apex will be elevated, by which manœuvre the difficulty will be overcome and the point gain admission into the bladder. Then the surgeon with the finger *in ano* may avail himself of the opportunity of ascertaining the size and position of the stone, the condition of the prostate gland and coats of the bladder, which enquiry should by no means be neglected.

No definite rules can be laid down, how the surgeon should on all occasions manage the sound when in the bladder to ascertain the presence of a stone; nor are we warranted in announcing the non-existence of calculi, merely because we fail in our first or second trial; as the detection of the stone will in some cases at one time frustrate the most expert and diligent researches, while at another it will be discovered with ease. Many instances may be found among surgical authors, of people having had stones in their bladder for many years without experiencing the usual symptoms or inconveniency. See *Bonetus's Sepulchre. Anatom.* Lib. 3. sect. 24. obs. 9. and *Skenk. de ves. urinaria,* obs. 269. Parag. 6.

The calculus may be small, situated in a cyst, or be entangled in the folds of the bladder when

in a collapsed state, in which case recourse may be had to the warm bath, and injecting tepid water into this viscus to distend its cavity, so that the sound may be moved with greater freedom by directing the point first to one side, and then to the other, then alternately depressing and elevating the handle, then withdrawing it a little and pressing its apex forwards to the fundus of the bladder. Thus it may be moved in all directions, and at the same time with sudden and repeated jerks to strike the stone, but not such as either to inflict pain or do injury to the bladder. Prior to sounding this viscus the surgeon should inform himself of its shape, size, structure and connection with the relative situation and alteration of its bulk from a state of repletion to collapsion, and likewise the extent of expansion of the peritoneum, as a wound of this membrane would permit the urine to pass into the abdominal cavity and expose the sufferer to great danger. When the bladder is fully distended, it raises the peritoneum along with it, till a space of nearly four inches is left free of that membrane above the pubes; it is in this space where the opening into the bladder is made in the *high operation*, without penetrating into the cavity of the abdomen. I am apprehensive the bladder is too generally described by authors as of a pyramidal form, resembling that of the

lower animals. If this were the true figure of this receptacle, when in a state of distention, a line drawn through its longest axis would pass from the fundus to its neck;* whereas, if a line be drawn through the longest axis it will pass from the fundus a considerable way below the neck and behind its connection with the prostate gland. Though the male bladder does not invariably exhibit the same oviform shape in every subject, yet this depression or bulging of the cervix is always more or less observable on each side of the rectum, and should be kept in view by the surgeon when employed in sounding the bladder or performing the operation of lithotomy; as calculi frequently lodge in this depending part of the viscus, and if disregarded, may elude the researches of the surgeon. To obviate the difficulty arising from the figure of the cervical portion of the bladder, when the stone is supposed to be lodged below that part, the patient should be placed in a supine posture, and the surgeon with the finger *in ano* may raise the stone till it comes in contact with the staff, provided it be only slightly curved.

On other occasions, where the stone is difficult

* The term neck of the bladder may appear rather vague, as its cavity, when distended, begins as soon as the urethra terminates in the prostate gland.

to detect, I have advantageously distended the rectum by injecting warm water to elevate the posterior part of the bladder, and bring the stone more immediately in union with the sound.

By these steps the surgeon will generally be able to discover the stone, or otherwise form a more correct idea of the cause and nature of the disease.

When a surgeon is called upon to perform the operation for the stone, without having previously seen the patient, he should make himself fully satisfied by passing the sound and actually feeling the stone himself, before he proceeds in the operation: for though the calculus may have been discovered by another practitioner, even the day before, yet this is insufficient to justify an operation. It has long been an established rule of practice, never to operate unless the stone could be distinctly felt by the surgeon at the precise time of operating, and the propriety of this valuable maxim has no doubt advantageously influenced the conduct of surgeons on many occasions. This has been manifested in some instances where the stone has been evidently struck with the sound on a first trial, and has eluded every possible research on a subsequent attempt; and after the patient's death, the calculus has been found protruded through the *fasciculi* of the muscular fibres

of the bladder, and lodged in a sack or pouch formed by the coats of that organ.*

Hence arises the danger of precipitation under these peculiar circumstances of concealed diseased structure, as the operation of lithotomy would in these circumstances, only tend to hasten the patient's death.

When the surgeon is employed in sounding the bladder in cases where the discovery of the stone is difficult; he should place the patient in different positions, and use every possible means with great diligence to reach the stone at the first attempt; as there is often a degree of reluctancy in the patient submitting to a second examination.

When sounding a patient for the stone under some indurated conditions of the bladder, the surgeon should not only make very accurate search, but be scrupulously cautious in deciding on the presence of a stone in this viscus, lest the

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* Sometimes the surgeon when passing the catheter or sound may encounter a calculus in the posterior part of the urethra; in which case he should not attempt to push it back into the bladder, but whilst the instrument is in the passage, he may pass the fore finger up the rectum, and by pressure on the prostatic and membranous parts of the urethra endeavour to press it forwards; then by placing the finger on the perineum behind the stone as the catheter is withdrawn, the calculus will follow. If these expedients fail, an incision may be made on the stone, and it may be extracted through the opening.

operation be attempted unnecessarily. We are informed that Cheselden, the celebrated lithotomist, actually operated on three patients none of whom had a stone in their bladders at the time. The eminent French surgeon Le Peyronie operated in similar circumstances. See also a fatal case of a patient cut for the stone where none existed, in *Desault's Parisian Chirurgical Journal.*

There are certain diseased affections and peculiarities of the system which render lithotomy either unfavourable for a certain time, or wholly improper, though we are fully assured of a stone in the bladder.

Children under two years old are irritable and subject to inflammation, fever and convulsions; in such cases I generally use the warm bath both before and soon after the operation.

The middle period of life pre-disposes to inflammation, and requires bleeding and purging in robust habits prior to the operation.

Advanced age in itself forms no objection to the operation, if in other respects healthy.

Corpulent persons, or those of a plethoric habit, are not favourable subjects for the operation, being liable to great constitutional irritation: such patients require free depletion before, as well as after the operation.

If the patient be afflicted with organic affection of the liver, lungs, kidneys, or any other viscera,

every possible means should be employed to cure the disease before the operation is attempted.

Asthmatic affections almost always forbid the use of the operation.

It is seldom advisable to proceed to the operation, whilst the patient labours under symptoms of fever, a quick vibrating pulse, arid tongue, or much constitutional irritation.

Persons afflicted with violent nephritic pains are not eligible subjects for the operation, as small calculi may be in the act of passing by the ureters into the bladder; in which case the purpose of the operation would be defeated and the pre-disposition to the disease would still exist in the system.

The operation is always improper during the severe paroxysms of stone, and should seldom or ever be undertaken till the violence of the fit and irritation produced subsides, and tranquillity has been some time restored to the system; though in some cases a low continued state of irritation, when exempt from much fever and visceral affection, may not wholly debar the operation; in which case it may be desirable to inject a solution of opium up the rectum at intervals, to mitigate the pain and irritation of the system.

When the presence of a stone has been distinctly ascertained and the operation determined upon, in some cases the practice of sounding the patient at intervals may be advantageously pursued; by

which means the urethra and *cervix vesicæ* will have become habituated to the action of the instrument; and the irritation diminished, during which process, the surgeon may avail himself of the knowledge of the size of the stone and state of the parts connected with the operation.

On some occasions where the patient's constitution is not much impaired by long continuance of the disease, and there is little fever present, though afflicted with the disease for a series of years, and by the reiterated contractions of the bladder propelled against the surface of the stone, there may be eventually produced a degree of inflammation and thickening of the coats of the organ, accompanied with *stillicidum urinæ;* yet under these apparently unfavourable circumstances the patient will bear the operation with safety; but if the bladder be in a thickened and contracted state, accompanied with incessant pain and constant discharge of flaky mucus mixed with the urine, and the patient much debilitated, there is reason to suspect a scirrhous affection of the villous coat of the organ, which will manifestly preclude the propriety of attempting the operation.

In most instances the patient requires a course of regimen, prior to the operation, if there exists a degree of plethora in the system. Bleeding, purging, and the warm bath, together with a vegetable diet may be requisite. Should the

patient appear healthy and not plethoric, bleeding may be dispensed with, provided a few doses of purgative medicines, of the saline kind, be given occasionally for a few weeks before the operation.

If, on the contrary, the patient be advanced in years, and greatly reduced by continued suffering, it may be proper to recommend a good nourishing diet joined with rest, and if there is much pain he should be kept in a recumbent posture, with the pelvis raised so that the stone may not press on the neck of the bladder and cause irritation, or retention of urine.

It is always proper, an hour or two before the operation, to administer an aperient enema to the patient to clear the rectum, lest its distention should expose it to injury.

Let me, in this place, remind the lithotomist, that his chief aim ought primarily to be directed to the safety of the patient, whose constitution and habits should be minutely examined, and every symptom be well considered, before he resolve on one of the most important and eventful operations in surgery, where even under the most promising circumstances there is always danger: and ultimately bear in mind, that the extraction of the stone is only one step towards effecting a cure, as the after treatment of the patient demands an equal share of attention from the surgeon as the former.

ON THE OPERATION OF CELSUS, OR THE APPARATUS MINOR, USUALLY CALLED THE LESSER APPARATUS, OR CUTTING ON THE GRIPE.

THE Celsian method of operating for the stone is the most ancient species of lithotomy with which we are acquainted; and though we are greatly indebted to this author for the minute description he has given of it, it is generally believed that he was not the original inventor. Yet it appears to have been the chief mode of operating practised by the Greeks and Romans, during the space of sixteen centuries, and till the apparatus major became known.

Various conjectures have however been advanced by authors, respecting the exact method in which Celsus operated, but he describes it nearly as follows: "Since (says he) after the body being duly prepared the patient must walk about, that the stone may descend towards the neck of the bladder, which will be known by introducing the fingers after the manner I shall hereafter mention in describing the operation: when thus assured that the stone has fallen down, the boy being made to fast for one day, the operation must be performed in a warm place as follows.

A strong man accustomed to the operation, being seated on a high chair, takes the boy in his arms, the boy's back inclining in a supine posture upon the assistant's breast, his hips resting upon the assistant's knees; his legs being then drawn up and his arms passed round his hams, the assistant takes hold of them and keeps the boy firm in this posture. But when the lad is grown up and strong, two men must sit on two chairs side by side, the chairs and the thighs of the assistants, where they touch each other, being tied fast together. When the boy is seated on their two knees thus joined, each takes hold of the arm and leg next him, holding by the hand of the boy and pulling back his hams; and whether one or two assistants hold the boy, his shoulders must be steadily held down by leaning hard upon them with the breast. By this extension of the thighs, the region of the pelvis is spread out without folds or wrinkles, while the bladder is so compressed as to make it easy to reach the stone; by the sides of those who immediately support the boy, there are placed two strong assistants, who steady them in their seats. Then the physician, having pared his finger nails, insinuates the fore and middle ones of the left hand gently, one after another, into the anus; spreading at the same the finger of the left hand over the lower part of the abdomen, to prevent the necessity of hooking his

fingers too rudely round the stone, by which the bladder might be injured. And this must by no means be rashly done, as too frequently it is, but with all possible prudence, for a hurt of the bladder in that way may cause convulsions and death: first of all, let the stone be sought for at the neck of the bladder, where, if it be discovered, it is more easily turned out through the wound; for unless the stone be thus distinctly perceived by its proper marks, the operation should not be attempted. But if the stone be not either at the neck of the bladder, or have receded from it, the fingers must be pushed deeper towards the bottom of the bladder, and the right hand also be carried behind the stone, must help to work it forwards; and when the stone is within the gripe it must be the more cautiously and carefully handled in proportion as it is small and smooth; for a small and smooth stone is apt to slip back, and to occasion much handling and teasing of the bladder. For these reasons, the fingers of the right hand are pressed in behind the stone, while with the fingers of the left hand it is wrought downwards to the neck of the bladder.

"If the stone be oblong, let it be presented, lying along with one end turned towards the wound; if flat, with one edge towards the wound; if square, resting upon two of its angles; if bigger towards one end, let the smaller end be

presented to the wound also. Whereas when the stone is round, there can, from the figure of the stone, be no difference in which position it is presented; but from its roughness there may; if in a rough stone there be one smooth part, let that part come foremost. Matters being thus prepared, the incision is to be made through the skin down to the neck of the bladder, of a lunated form, not far from the anus, and with the horns of this lunated incision looking towards the hips. Then, in the deeper and narrower part of the wound, is to be made a second incision, also transverse, into the neck of the bladder itself, till the flowing out of the urine shews the incision to exceed in some degree the size of the stone. Those who, for fear of fistulas, (which the Greeks call Uriades,) make their incision too small, fall another way into the same, or greater danger; for the stone, being thrust strongly forwards into the wound, must force an opening where it does not find one sufficient for its exit, a thing especially dangerous when the stone is rough or of an unfavourable form, for thence arise sometimes hæmorrhages, or convulsions of the nerves, which, although the patient may escape, yet the fistula must be much wider, when produced by laceration of the neck of the bladder, than by incision. The neck of the bladder being thus opened, the stone itself comes into view, which, if small, is to be got out

with the fingers alone, the fingers of the left hand pushing it forward from within, whilst the fingers of the right hand help to pick it out: but if it be larger, a hook, made on purpose, must be passed in behind it, the slender extremity of the hook should be flattened and bent into a semicircular form, smooth on its back part, where it presses against the parts, and rough within where it touches the stone; and it should be rather long, for a short hook has little power.

"When the hook is fixed behind the stone, it must be moved from side to side, to work the stone forwards; for the stone, if it be fairly embraced by the hook, moves along with it; whereas, if you merely press upon the stone without moving it thus from side to side, it will slip, and escape again into the bladder, and the point of the hook will strike against the edges of the wound, the danger of which we have already explained. Having obtained a good hold of the stone, you are to perform, at one moment, three several motions, viz: from one side to the other and directly forwards, but all quickly, taking care first to draw the stone a little downwards.

"Finally, the handle of the hook must be raised, that the lower end may pass deeper behind the stone, which may then be more easily extracted. The stone, if it be not easily catched from above, may be removed by slipping in the hook at one side."

Notwithstanding the antiquity of this mode of operating, I am induced, on a careful attention to the different steps and stages of the *apparatus minor*, as described by Celsus, to believe it in no respect an uneligible operation, when confined to young subjects.

The method is simple and less burthened with instruments than any other plan of operation by the lateral passage, and greatly resembles the mode adopted by Cheselden and Raw. The manner of cutting on the gripe has been much modified since the time of Celsus, for instead of making a lunated incision, lithotomists have cut directly on the stone, in a line approaching nearly to the method of the lateral operation, as practised at the present day with much success, and without exception to the patient's age. See *Groenevelt's Dissertatio Lithologica*, and the description of the operation given by *Albucasis*.

The valuable record which Celsus has left for our instruction, in every respect deserves our commendation and attention, both regarding the operation and after-treatment of the patient.* He

* "Proximo die, si spiritus difficilius redditur, si urina non excedit, si locus circa pubem mature intumuit, scire licet, in vesica sanguinem concretum remansisse. Igitur, demissis eodem modo digitis, leniter pertractanda vesica est, et discutienda, si qua coierunt: quo sit, ut per vulnus postea procedant. Non alienum etiam est, oriculario clystere acetum nitro mixtum per plagam in vesicum compelleri, nam si quoque discutientur, si qua cruenta coierunt."

appears to be well aware of the dangers arising from a small wound, and recommends the stone to be broken if too large, rather than attempt to extract it by lacerating the neck of the bladder.*

From the history of the Apparatus Minor, given by Celsus, it is probable that much anterior to his time, this, or some other mode of operating not very dissimilar, was practised by the ancient empirics, and never became general among regular surgeons for many centuries subsequent to the

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* The first account we have on record, of breaking the stone in the bladder, when too large to be extracted entire by the wound, is mentioned by Celsus, which operation was invented by Ammonius, whence he obtained the appellation of Lithotomus, or the Stone-cutter. He practised lithotomy at *Alexandria*, during the time of *Herophilus* and *Erasistratus*; about 150 years subsequent to the time of *Hippocrates;* and *Meges* likewise practised the Celsian operation at *Rome*, in the reign of *Augustus*. We are indebted to Andreas de Cruce, for the invention of a pair of Forceps, for the purpose of breaking stones in the bladder; this instrument, we are told, failed of effecting this purpose, in the deplorable cases of the celebrated Archieter, and Professor Borrichius, who were cut for the stone, but it being too large to be extracted, they died in less than three weeks afterwards.

"Si quando autem is major non videtur, nisi rupta cervice, extrahi posse, findendus est, cujus repertor Ammonius, ob id cognominatus est. In hoc modo fit, uncus injicitur calculo sic, ut facile eum concussum quoque teneat, ne is retro revolvatur: tum ferramentum adhibetur crassitudinis modicæ, prima parte tenui, sed retusa, quod admotum calculum, et ex altera parte ictum, findit; magna cura habita, ne aut ipsam vesicam per ferramentum perveniat, aut calculi fractura ne quid incidat."

Christian era; for we find Avenzoar, an Arabian physician of the twelfth century, exclaming against this and some other operations, as being too filthy and abominable for a man of character to meddle with, and that no religious man, according to the law, ought so much as view the genitals. And yet he treats pretty fully of operations relating to these parts as do all the rest of the Arabian authors.*

Albucasis, an Arabian surgeon, who lived in the twelfth century, has given a full account of this operation, particularly on women, yet there is some reason to believe that he did not practice lithotomy on the female; for in one part of his work he mentions as a proof of the chasteness of those times in which he lived, that a virgin was never to be touched by the hand of a surgeon when afflicted with this malady; nor would a chaste or married woman describe such an infirmity to a man. It appears probable that the operation was then practised on females by a midwife, or some such person who had been instructed in the manual part of the art of lithotomy. This accords with the oath of Hippocrates, and is described by most of the ancient writers who represent them-

* These notions are fully detailed by Avenzoar, in a work entitled, "Al Thaisser," which treats on all necessary rules for medicine and diet to be used in most diseases.

selves as mere spectators of the operation. This, however, was not exclusively the case, for during many centuries, operations for Hernia, Fistula, and various others were conducted by the same class of men, in different countries, about the same period.

ON THE APPARATUS MAJOR, OR SECTIO MARIANA.

THIS method of operating for the stone was invented by Johannes de Romanis, a surgeon of Cremora, in Italy, about the year 1525, and made public by his scholar Marianus, in a Latin treatise some years after, and which has acquired this appellation, because it requires more instruments than the Celsian method. This operation soon gained general notice, as being suited to persons of all ages, while that of Celsus was judged practicable only on young subjects under the age of fourteen. This induced regular practitioners to abandon it, and cutting on the gripe was afterwards practised only by itinerant lithotomists.

The patient being prepared for the operation, was placed horizontally on a table, and secured in the position usually adopted in the present mode of operating for the stone. A grooved staff was conducted into the bladder along the urethra, the handle of which was to be turned over the right *inguen* of the patient, by which the convex part of the staff would appear prominent in the urethra on the left side of the perineum. In this position it

was secured by an assistant with one hand, while he raised up the scrotum with the other. The operator then with a scalpel made an incision through the integuments four inches in length, (if an adult) from the termination of the scrotum, along the left side of the perineum, to near the anus. The urethra was next divided from its bulb to the commencement of the prostate gland; and this was usually done by reversing the edge of the knife, and finishing the incision, by dividing the canal of the urethra upwards in a direction towards the pubis of the patient. The urethra being thus laid open, the surgeon was to take hold of the staff with one hand, and with the other to push a male conductor along its groove into the bladder; the staff being then withdrawn, a female grooved conductor was guided along the other into its cavity. With these two instruments, the urethra, prostate gland, and neck of the bladder were dilated to an extent adequate to enable the operator to introduce the forceps and extract the stone without restraint.

On some occasions the surgeon dilated the parts with the fingers, or by means of a blunt gorget, or dilator made for the purpose, or by expanding the blades of the forceps in all possible directions, and to an extent which not unfrequently subjected the tortured patient to an incontinence of urine afterwards, or produced such a degree of

inflammation of the parts, that death was the inevitable consequence.

For a more particular account of the form and mode of using these horrid instruments, called *Dilators*, the reader may refer to the works of *Franco*, the *Collots*, *Scultetus*, *Tolet*, *Pare*, *Le Cat*, and *Mery*.

ON THE HIGH OPERATION, OR APPARATUS ALTUS.

In the *Apparatus Altus*, the surgeon makes an incision through the integuments of the lower part of the abdomen and anterior portion of the bladder, a little above the pubis and below the place where the peritoneum is reflected over the bladder, when in a relaxed state.

The operation has been performed in different ways, as best suited the genius of the surgeon, or condition of the patient.

The most ancient method was that of *Pierre Franco*, a native of *Turrière*, in *Provence*, who practised surgery with great reputation in the sixteenth century, and who in part adopted the plan of Celsus, (by directing an assistant to raise the stone upwards by means of two fingers passed up the rectum,) whilst he made an incision above the pubis and extracted the stone through the wound. Though this author was so fortunate as to succeed in his first attempt, on a boy of two years old at Lausanne, in Switzerland, he earnestly dissuades his professional brethren from imitating the practice, as the patient had a very narrow escape in consequence; and it appears from the history of the case, that he had

recourse to this mode of operating from necessity, and not from choice, for the stone appeared to him too large to be extracted by the operation in perinæo, as will appear from his own account of the case in the 33rd chapter of his book *Des Hernies*, published in the year 1561.

A boy of two years old was brought to him afflicted with a stone in his bladder about the size of a hen's egg. When Franco had done all he could to bring the stone downwards to the neck of the bladder, to no purpose; and the child was so grievously tormented by the existing stone, that the parents were much more desirous that he should die, than live in torture. Franco thinking it would be a disgrace to him that he could not extract the stone, at length resolved to cut in the upper part of the os pubis. Although the stone could not be brought downwards, yet he so raised it up by thrusting his fingers into the anus, (whilst one of the assistants on the other side compressed the belly, and forced the stone to the place of incision,) that he there cut for it, and the boy, though very much weakened, ultimately recovered. From the history of this fortunate case, as related by Franco, *Rousset*, a French physician, was induced to believe that this was the safest and most easy way of cutting for the stone, though he acknowledges he never performed the operation on the living subject, and

asserts that he was unacquainted with Franco's operation on the boy at Lausanne, when he first published his work under the title *De Partu Cæsario*, in the year 1590. In this he advocates the high operation, and endeavours to elucidate the project by powerful analogical reasoning, founded on a comparison of it with the *Marian* operation. In a subsequent edition of his work, sect. iii. chap. 6 and 7, he censures Franco for dissuading others from this mode of operating in the following manner: "I cannot forbear very much wondering why he should endeavour to discourage others from attempting the like. Does that good man envy mankind the happiness of the invention?" Rousset nevertheless made many experiments and dissections on the dead subject, from which he became convinced in his own mind, that wounds of the membranous parts of the bladder might be inflicted without proving mortal. Hence he was induced to become a zealous arbiter for the hypogastric section.

For an interval of more than twenty years from this period authors were silent regarding this important surgical discovery; and no surgeon ventured to imitate the practice of Franco, probably owing, in some degree, to his discouraging it, and to the sentiment of *Hippocrates*, who represents wounds of the bladder as being generally mortal.

Notwithstanding the ingenious arguments and

analogical reasoning advanced by Rousset, we find no examples recorded of the high operation till about the year 1719, except a few solitary instances.

Tolet, in his *Treatise* of *Lithotomy*, published in the year 1683, page 76, says that " Mr. Jonnot told me that Mr. Bonnet, a chirurgeon, who heretofore practised Lithotomy in the *Hotel Dieu* of *Paris* assured him, that he had cut in that manner.

" Mr. Petit, a master chirurgeon of that hospital, told me that he had seen Mr. Bonnet practise it upon a young girl, and Dionis likewise concurs in the same opinion." Greenfield, an English surgeon, in his *Treatise* on the *Stone* and *Gravel*, published in the year 1710, at page 152 says, " I once had a patient in *Long Lane*, in *Moorfields*, upon whom I was obliged to perform the *High Operation*, and very successfully extracted the stone, by making an incision near the groin, the patient soon recovering; which shews that wounds in the fibrous parts of the bladder are not always mortal." About the beginning of the seventeenth century this important discovery assumed a new era in *Lithotomy*, and we find Douglass, Cheselden, and Proby adopted this method in England, soon after which it became practised in France by the celebrated Morand.

ROUSSET'S METHOD OF PERFORMING THE HIGH OPERATION.

Rousset had the merit of being the first who recommended the bladder to be distended with a quantity of injected fluid prior to the operation, by means of a grooved or hollow catheter fixed in the urethra and bladder, so as to raise the peritoneum out of the way of the *Hypogastric* section; the bladder being amply dilated, the liquor was retained therein by means of a ligature tied round the penis.

In cases where the bladder would not permit a sufficient quantity of fluid to be injected or retained in its cavity, Rousset either applied a yoke on the penis, or an assistant grasped the part with his fingers to restrain the urine after it had accumulated in the bladder and distended it.

Preparatory to the operation, the patient was laid upon a table with his shoulders a little raised so as to relax the abdominal muscles, and his legs extending over the edge, with the feet resting on a stool elevated for that purpose. The pelvis was likewise to be raised in order to prevent the intestines from gravitating downwards, and pushing

this viscus out of its natural situation or the stone towards the neck of the bladder. The patient being thus placed, and the bladder distended; Rousset directs the external incision to be made nearly in a line with the *linea alba*, beginning about four inches and a half above the ossa pubis, (if an adult,) and carrying it down between the *recti* and *pyramidalis* muscles, to the junction of the symphysis; the bladder is then to be punctured at its anterior part, and the ligature at the same time removed from the penis, lest the fluid be extravasated in the cavity of the wound. The incision of the bladder is next to be completed downwards to the pubis, by means of a probe-pointed bistoury. in a line parallel with the external wound; the contents of the bladder being evacuated, it will necessarily become collapsed, the surgeon immediately passes one or two fingers, if a male, into the anus; or if a female, into the vagina to raise the stone, so that it may be more readily taken out either by the fingers or forceps. A silver catheter is to be conducted by the urethra into the bladder, and fixed there for the purpose of discharging blood, puss, or urine. The patient is then to be placed in bed upon his back with the thighs brought together and secured in this position, and the wound left to unite without the use of ligatures.

The *High Operation*, though greatly applauded at one time, has been long obsolete, insomuch that

it has not obtained a place in some late publications on surgery; the subject has nevertheless been taken up by *Professor Carpue*, of *London*, to which work I refer the reader for a circumstantial history, with observations on the advantages attending it, and *Dr. Souberbielle's* mode of using the Sonde-de-dard.

It is the middle of the anterior part of the bladder where the incision is usually made in performing this operation, between the place where the peritoneum is reflected over this viscus and the os pubis, and except the bladder be considerably distended, which is very seldom the case under affections of stone, there is much danger of wounding the peritoneum; to avoid which different methods have been proposed and adopted with a view of facilitating the operation, lest the contents of the bladder escape into the cellular or reticular membrane, and produce unhappy effects. Some authors recommend air forced into this viscus by a pair of bellows, prior to the operation; others prefer injections of warm water, to be retained therein by means of compression upon the urethra.

Another method has been practised, of allowing the patient a liberal use of diluent liquors for some time previous to the operation, and securing the urine in this viscus with a ligature upon the penis. This last mentioned mode of distending the bladder, appears to me the least objectionable, as there

is much risk incurred, by whatever means that organ is artificially distended; for if the tone of the muscular fibres be destroyed, all hopes from the operation of lithotomy must be abandoned.

Cheselden relates a fatal instance of the bladder being burst by injecting too much water into it; and with the view of avoiding this circumstance, he specifies the proper quantity of liquor to be injected to be about twelve ounces to an adult, and to a person of nine years old about eight, making allowance for the bulk of the stone. See his Treatise on the *High Operation.*

It is evident that there is much uncertainty in the capacity and retentive powers of this receptacle. In order, however, to ascertain the plenitude of the bladder, the finger of one hand of the surgeon may be introduced into the anus of the patient, and the other hand be laid on the hypogastrium; and by an alternate pressure from these two points, the surgeon may form a tolerable idea of the capacity of this viscus, and be enabled to ascertain, in some degree, the size and situation of the stone, the state of the prostate gland, and structure of the bladder; or by observing the quantity of urine voided by the patient at different intervals before the operation. This, I conceive, is the most certain way to ascertain the quantity of fluid which may be injected into this organ with impunity, for the capacity of the bladder will de-

pend on its morbid condition, the size and asperity of the stone, and the degree of irritability.

The celebrated *Morand*, in a Dissertation on the *High Operation* says, "Though I am convinced of the advantages and facility of this operation, compared with the method of *Marianus*, I think it would be imprudent to undertake it upon all without distinction; perhaps it may have been their performing it upon all indifferently, that has a little discredited it in *England*." He further remarks, "that the *High Operation* is the only sure method of extracting large stones, and those which are contained in some particular bag of the bladder, as has been often seen."

In an *Appendix* to the *Translation* of *Morand's* work by *Douglass*, is the following observation. "From all which I think I may justly infer, that we ought to make the High Operation in all cases from five to fifty years of age, when the patient is otherwise in a good state of health, because experience, the best of all arguments, shews that such patients stand a better chance of living after this than any other method; and above all, have no ground to fear being plagued during life with a fistula, incontinency of urine, or of being made impotent by it, one or all of which often succeed the other operation."

Heister has furnished us with no particulars of his cases; though he says, "I have extracted the

stone from two patients by the *High Operation*, when I could not effect the same in perineo, by the *Lateral Method;* and I never yet met with an instance where the *High Operation* was performed, and the patient could not be freed from the stone thereby, though it had in some cases been very large." M. Deschamps relates a successful case of the *High Operation* after a failure by the method in perineo.

The advantages attending the High Operation.

1.—It is attended with less pain, and generally performed in less time than the Lateral Operation.

2.—No danger from hæmorrhage or risk of wounding the pudical artery.

3.—No fear of wounding the *rectum*, or injuring the *seminal ducts.*

4.—No wound inflicted either on the prostate gland, or neck of the bladder.

5.—Whatever be the size or situation of the stone it may more readily be extracted by the *High* than by the *Lateral* method.

6.—No fear of being plagued with a fistula, or incontinence of urine.

The disadvantages attending the High Operation.

1.—The High Operation is not eligible on corpulent subjects, nor in cases where the bladder will not bear distention either by the natural accumulation of the urine, or by injections sufficient to raise the peritoneum above the place of incision.

2.—Danger from wounding the peritoneum and suffering the contents of the bladder to be diffused into the cellular or reticular membrane connected with the wound, and causing inflammation and sinuses, difficult to heal.

3.—Ineligible in cases where there is a schirrous affection of the bladder or prostate gland accompanied with stricture of the urethra.

From comparing the testimony of different authors of the greatest eminence, with the advantages and disadvantages resulting from the different modes of lithotomy, it is manifest that the High Operation claims an equal share of attention from the surgeon with the lateral method; for we are acquainted with cases both of ancient and modern times where the operation in the perineum, has been attempted, and the stone proved too large to pass through the space between the tuberosities of the ischii, and where it could not be broken by means of the forceps. Hence this method of operating under certain peculiar circumstances

above noticed, undoubtedly presents a resource warranted by success, and sanctioned by authors of great experience and candour.

As the High Operation has for a long time been abandoned, we can form our estimate of success only from the records of those times in which it was in repute, compared with the present mode of operating in the lateral way; and if I mistake not, the success attending the High Operation as practised both by the English and French surgeons at that period equalled, if not surpassed those of the same hospitals, in both countries at the present day, when performed under similar circumstances. As a proof of what I have advanced, let the reader make himself acquainted with the present average success of hospital practice, and compare it with the works of Franco, Collot, Middleton, Douglass, Morand, Cheselden, Thornhill, Deschamps, and Heister. The reader may further satisfy himself on this subject, by a reference to the late publications of Dr. Marcet, on *Calculus Disorders*, and Dr. Prout's *Inquiry into the nature and treatment of Gravel and Calculus*, wherein the mortality attending the *Lateral Operation* in most of the principal hospitals in the kingdom, is stated in a tabular form.

It becomes a question then, whether the *High* or *Lateral Operation* has a preference; and to decide in favour of either indiscriminately, and

on all occasions would, I conceive, be wrong, for each has its advantages (like many other surgical operations) of being peculiarly adapted to a distinct mode of operating, according to circumstances. It is evident that stones of a magnitude too large to be extracted by the lateral method, may, without difficulty, be removed by the Hypogastric section; and as the danger attending the former is generally in proportion to the size of the stone, I feel disposed to give a preference to the High Operation in all cases where it can be previously ascertained that the stone exceeds the bulk of a hen's egg. Should, however, the surgeon have proceeded inadvertently so far in the Lateral Operation, as either to be under the absolute necessity of breaking the stone in the bladder owing to its size; or of extracting it by undue force, and lacerating the contiguous parts; or if the calculus be found lodged in a cyst, or adherent to the inner coat of this viscus; he would afford the patient a greater chance of surviving the operation by abandoning his project; and immediately have recourse to the High Operation, or what is called the operation *en deux temps*, where the incision is made at one time, and the stone extracted at a subsequent period, after the inflammation has subsided; by this mode of proceeding the bladder would collapse, the wound in the hypogastrium heal, and the urine dribble through

that of the perineum; and be healed by the process of granulation; whilst on the other hand, by the surgeon persisting to extract the stone by the lateral method, under the circumstances above stated, such injury must unavoidably be committed on the patient, that death would be the almost inevitable consequence.

In order to expedite the healing of the wound, made by hypogastric section, a flexible *gum* catheter should be passed up the urethra, and be permanently fixed in the bladder, so that the urine may escape as it accumulates, and the receptacle remain in a state of contraction, till the wound is healed. This process will add greatly to the success of the operation.

Instances of stones being found sacculated or adherent in the bladder are very rare, as no such event has occurred to me; and though we frequently hear of cases in private practice of this description, I am induced to believe, that the incidental embarrassments sometimes attending the operation of lithotomy are too frequently imputed to such morbid occurrences, as an apology for inadvertence, or unskilful practice.

The presence of encysted or adherent stones in the bladder, has nevertheless been doubted by some surgical writers.* On this subject, the

* Among authors who embrace this opinion, are Rousset, Collet, and Tolet.

reader may consult the works of the following authors: *Schenkius*, *Hollereus*, *Tulpius*, *Marcell*, *Donatus*, *Hildanus*, *Mercurialis*, *Fernelius*, *Aretæus*, *Ambrose*, *Paré*, *Bauhin*, *Barbette*, *Heister*, *Sharp*, the *Philosophical Transactions*, and *Memoirs* of the *Royal Academy* of *Surgery* at *Paris*.

Couillard, a French surgeon, relates several observations of encysted stones in the urinary bladder; when the stone is adherent he proposes injections of tripe broth thrown into the bladder to detach them. The same author says, that in probing a patient, he found the stone encysted; notwithstanding which, he undertook the operation, being determined to tear the cysts, which he did with success, and extracted a stone as large as a hen's egg. The cyst was afterwards expelled through the wound, and contained two hundred small stones, after which the paitent recovered. See *Iatro-chirurg*. obs. 2, 3, 12. M. Desault in the *Parisian Chirugical Journal*, has given a plate, representing an instrument he has invented, called a *Kystitome*, for the purpose of extracting adherent or encysted stones.

The *Lever* or *Scoop* of which I have furnished a plate, appears to me to be better adapted for exploring the cavity of the bladder, with a view either of detaching enchased or sacculated stones, or of extracting them with safety, than any other instrument with which I am acquainted.

ON THE LATERAL OPERATION.

The Lateral Operation has acquired its appellation from the prostate gland and neck of the bladder being divided in a lateral direction.

The introduction of this operation by Frere Jaques, may undoubtedly be considered as a fortunate æra in surgery; and the evil consequences unavoidably attending the *Apparatus Major*, and the painful distention and laceration of the prostatic portion of the urethra, producing such frequent disastrous events, must have suggested the lateral method of operating.

"This surprising lithotomist, (Frere Jaques de Beaulieu, of Besancon,) appeared (says Dionis,) as a monk, in the year 1697, in the habit of a Franciscan, with this difference only, that he wore shoes instead of sandals, and instead of a caul, a hat. He assumed the name of Brother James, and appeared plain and ingenuous; his diet was very sober, he lived on pottage and bread only; he had no money, and never asked any more than a few sols to pay for the setting of his instruments, and mending his shoes. He formed to himself a religion according to his own fancy, backed with

vows, the liberty of dispensing with which he left to his ordinary at pleasure. Resolving to devote the future part of his life to travelling as an itinerant lithotomist; he set out from Besancon, the place of his ordinary residence, furnished with commendatory certificates, bearing testimony of his success as a lithotomist in several provinces of France, and announcing his wish to operate in the presence of the surgeons of Paris. These letters of introduction being presented at the Hotel Dieu, and De la Charite, he was rejected; it not being customary to expose hospital patients to the risk of experiments; nevertheless a dead body was procured, into whose bladder a stone was conveyed, and which *Frere Jaques*, extracted in the presence of many surgeons. But his method of operating, whether from prejudice or other causes, was not approved of; and Jaques finding himself coldly received by the faculty, resolved to leave Paris, and go to Fontainbleau, where he met with encouragement. Being allowed to operate on a boy from Versailles, the operation succeeded; he gained great applause, and so much was the public opinion changed in his favor, that he set out again for Paris the ensuing spring, where he was permitted to operate on patients in the Hotel Dieu, and La Charite. His success being various, a diversity of sentiment took place amongst the first surgeons in France. Jaques, however con-

tinued to practise gratuitously and with increasing prosperity.

"In the year 1702 he visited Versailles, at the intreaty of the Marshal de Lorges, who then suffered from the stone. Jaques performed the operation, and extracted seven small stones with difficulty; the bladder was diseased, and contained several fungous excrescences; and unfortunately the Marshal died the following day in great agony. This disastrous event induced Jaques to leave Versailles, and he afterwards travelled the greatest part of his life over the provinces of France, Holland, Switzerland, Germany, and Italy. During the whole of his travels he adhered strictly to his plan of charity, and maintained the simplicity of his habits. He was hailed with enthusiasm wherever he went, and regarded as one sent from heaven."

Mr. Sharp appears to have had a more favourable opinion of his mode of operating than most authors; for in his Treatise on the Operations of Surgery, he says, "Jaques knew more of lithotomy than is generally imagined; for he saw, when in France, a Treatise on this operation, published by Jaques in the year 1702, wherein his mode of operating is described as not being essentially different from the lateral operation practised in his time, to which work there is a certificate annexed, stating that Jaques had cut thirty-eight

patients successively at Versailles, without losing one, and had so much improved his apparatus as to make use of a grooved staff." This is in some measure corroborated by Dr. Martin Lister, physician to the British Embassy, in his journey to Paris, published in the year 1698, page 233. "I saw him (says this author) cut a second time in the Hotel Dieu; and he performed it upon nine persons in three quarters of an hour very dexterously. He seemed to venture at all; and put me in some disorder with the cruelty of the operation. However, I visited them all in their beds, and found them more amazed than in pain."

Frere Jaques used no preparatory regimen or medicines to his patients, nor troubled himself after the operation with any application to the wound, except a little oil and wine, on which he relied for the cure.

It is said he was so intrepid in his operations, and negligent with regard to his patients, that when he was entreated by them to continue his future attention, he would answer, it is sufficient that I have extracted the stone, God himself will heal the wound!

How this extraordinary man acquired the knowledge of the lateral operation is unknown, as he had been barely taught to read and write during his youth. Some authors suppose that he learned this mode of operating from an itinerant quack

named *Pauloni*, with whom Jaques travelled as an assistant for several years.

It is the opinion of several authors, and not without good ground, that Frere Jaques had greater success in his operations than most surgeons of the present day who use the gorget. This unlettered person cut nearly 6000 patients for the stone during the course of his travels, and though he was persecuted by many regular surgeons, his success was so great, that eventually he became imitated by others of superior judgment; such, for instance, were *Mareschal* at *Paris*, *Raw* in *Holland*, *Bamber* and *Cheselden* in *England*, and most of the celebrated lithotomists of that age.

Mauchart says, "Of this celebrated hermit, alternately extolled by his friends and derided by his enemies, what shall we say? Intrepid and fearless, his hand never trembled, nor did his courage faulter in the most unlooked for and perilous situations: modest, humble, covetous of nothing but glory, he presented himself in our city, as one sent from heaven, to alleviate the sufferings of his fellow creatures."

It is supposed, that during his travels, he had greatly improved himself by the friendly intercourse and anatomical demonstrations of Du Verney, and Felix; for at Amsterdam, a gold medal was struck in honour of him, of the value

of four hundred livres; on one side was the bust of Frere Jaques, and on the other, the arms of the city, with this inscription; "Pro servatis civibus." At the Hague, the chief magistrates had his portrait engraved, and they also presented him with a set of *golden sounds*. Jaques still continued to travel in the capacity of an itinerant lithotomist through various parts of Europe, till about the year 1719, and being then in the 69th year of his age, he returned to Besancon, where he soon afterwards died in the house of his old friend *M. Decars*.

It is said, that whatever presents he received from the rich, he gave to the poor, which accounts for his dying in extreme poverty; for the *golden sounds* with which he was presented at the Hague, he was known to have melted from mere necessity!

From a view of the anatomy of the pelvis, and its viscera, it is easy to perceive that the course of the prostate gland and neck of the bladder, is the most natural and eligible route by which surgeons have availed themselves for ages past, to penetrate this viscus, for the purpose of extracting the stone.

Before describing the way of executing the Lateral Operation, as practised with the cutting gorget, it may not be improper first to recite the boundaries prescribed to this method, in order to facilitate its performance with greater safety to the patient; particularly as the chief steps of the

operation are unavoidably directed by anatomical knowledge, and feeling of the respective parts, not being assisted by the aid of the eye, as in most other surgical cases.

The chief parts to be avoided in lithotomy, by the lateral method, are the symphysis pubis, raphe, tuberosity of the left ischium, anus, bulb of the urethra, pudical artery, rectum, vasa deferentia, and vesicula seminalis.

The parts to be divided are, the skin and integuments to the extent of nearly $4\frac{1}{2}$ inches, (if an adult,) transversalis perinei, erector penis, levator ani, accelerator urinæ, membranous portion of the urethra, prostate gland, and a few fibres of the neck of the bladder.

I am aware that the operation may be performed without wholly dividing the *erector penis* and *accelerator urinæ*, but as these muscles are frequently bruised and lacerated in extracting the stone when left entire, there is more propriety in dividing them with the scalpel, and if the stone be large, it will be extracted with much less violence, and the wound will heal more readily than if they were left uncut in the operation.

Previous to the operation, and during the different times of sounding the patient, the surgeon should endeavour to acquire a knowledge of the respective parts connected in lithotomy. By the introduction of one or two fingers up the rectum,

he will feel the curvature of the staff, the situation of the rectum, the condition of the prostate gland, and course of the membranous part of the urethra, and probably be enabled to estimate the size of the stone, so that he may apportion his incision accordingly. These are essential objects of practice; they secure inestimable advantages in an operation of such importance, and ought never to be omitted by the lithotomist.

The patient being previously prepared for the operation, and every necessary apparatus arranged, he is to be laid on his back on a firm table, three feet high, with a blanket spread under him; the head and shoulders a little elevated with pillows, and the breech reaching over the edge of the table: the patient is then to bend his knees, and bring his hands and feet together, placing the palms of each hand over the outer ancle of each foot, and grasping the soles with his fingers; they are then to be secured in this position by means of two flat ligatures. He must be supported during the whole operation by an assistant placed on each side.

The surgeon then seats himself in a chair before, and rather to the patient's right side; and having first warmed and besmeared the staff with oil, he introduces it into the bladder as before directed in the passing of the catheter, &c.

Having distinctly felt the stone, he leans the

handle of the instrument towards the right groin of the patient, and gives it into the right hand of an assistant, who keeps it steadily fixed, so that its point may continue in contact with the stone, and the convexity be felt near the line of the raphe, while with the left hand the assistant supports the scrotum, in order that the operator may have a full view of the perineum.

The surgeon then, begins the incision of the integuments with a scalpel a little below the termination of the scrotum, and rather on the left side of the raphe, dividing the skin and cellular substance downwards in an oblique direction, and in an equal line between the tuberosity of the left ischium and anus, to the extent of four inches and a half, (if an adult,) and ending the incision an inch below the approximation of these two parts. He next proceeds to divide the muscles of the perineum, as before mentioned, (p. 97,) and lays bare the whole of the membranous part of the urethra, without interfering with the bulb; he now searches for the staff, and on pressing the fore finger of the left hand against its *sulcus*, with the edge of the scalpel turned upwards, he divides this membrane completely from its commencement at the anterior part of the prostate gland to the bulb. This being accomplished, the finger nail will serve to conduct the beak of the gorget into the groove of the staff; the operator then takes hold of its handle from

the assistant, which he elevates to nearly a right angle with the body of the patient, and raising himself from his seat with the staff in the left hand, and the gorget in the right, he makes a uniform pressure with one hand against the other, to maintain their junction, gently pushing the gorget along the groove; at the same time gradually depressing the handle, so that its beak may be elevated in a direction with the axis of the bladder, till it has evidently divided the prostate gland, and passed into this viscus. This event is usually announced by a gush of urine escaping through the wound. The surgeon then keeps the gorget steady, lest its sharp edge should do injury, whilst he withdraws the staff, and passes a suitable pair of forceps along the surface of that instrument into the bladder. Or he may first cautiously withdraw the gorget immediately after it has entered this viscus, and conduct them along the side of the staff into the bladder: or what is preferable, the surgeon may insinuate his finger up the wound, on which the forceps may be slided into the cavity of this viscus, the stone be taken hold of and extracted carefully and deliberately in the axis of the outlet of the pelvis, by inclining the handles downwards in a direction with that part of the wound which opposes the least resistance, and in a way somewhat similar to the method employed by an accoucheur, when artificially delivering the head of

the fœtus with the forceps. If there should be much resistance from the action of the muscles of the pelvis and abdomen, the surgeon should desist from extracting, and wait a given time till the spasm be relaxed by rest, or the administering of a strong opiate; after which the stone will be more readily extracted, and less injury inflicted on the parts in its passage.

The opposing obstacle to the ready extraction of the stone, will in most instances be found to arise from the wound made with the gorget being too small, which defect, the operator is sometimes compelled to rectify, by extending the incision in a lateral direction, by means of the probe-pointed bistoury. Hence the transmission of the stone with the forceps, becomes dangerous to the patient, tedious and embarrassing to the operator, chiefly in proportion to its relative size and situation with the opening through which it has to pass.

The stone may be either situated at the fundus of the bladder, behind the prostate and below its neck, above the pubis, screened in a cell, or adherent to the coats of this viscus; so that if the surgeon cannot easily seize it with the forceps, I would recommend the use of the *Scoop* or *Lever*, as a useful adjunct, and one less liable to inflict injury on the surface of the bladder than the forceps. See Plate I. Fig. 3 and 4.

By this simple instrument, when employed in complex cases, the stone will in general be more readily found, and extracted with greater facility, and without the risk of its breaking; an accident which should always be avoided if possible, for, however well the bladder may be washed out with injections, there is always danger of fragments remaining, which may serve as nuclei for the future formation of stones.

Cases occasionally occur where the stone is too large to pass between the converging tuberosities of the ischii; in such instances, surgeons have sometimes succeeded in breaking the stone, and different instruments have been invented for the purpose. But a number of cases are recorded by authors, where the stone could neither be broken in the bladder, nor extracted by the incision in the perineum. The case of Sir Walter Ogilvie, as related by Sir James Earle in the Philosophical Transactions, is one among many others of this description.

Nevertheless, if the surgeon will avail himself of his knowledge of the size of the stone, by means of the finger passed up the rectum prior to the operation, he will not be brought into this dilemma, but select the high operation in preference to the lateral method; as instances have occurred where the surgeon has been foiled in this stage of lithotomy, and the stone has been after-

wards extracted by compounding the lateral with the anterior mode of operation above the pubis. Cases sometimes occur, where the advanced age of the patient, or certain organic diseases or peculiarity of circumstances, wholly debar the propriety of attempting the operation in any form.

On such occasions palliative means have been attended with advantage; and Dr. Douglas,* recommends making an artificial opening into the urethra through the perineum, by which aperture the patient may introduce a probe, and push back the stone to relieve the paroxysms and suppression of urine. In a project of this kind, and where the calculus is indentified to be small, the artificial opening might probably be dilated, so as to allow the stone to be extracted either in the way recommended, by distending the *meatus urinarius* on women, or by means of Mr. Arnott's dilator. See also the Medico Chirugical Transactions, vol. XI. page 349, where there is an account of a case in which numerous calculi were extracted from the urinary bladder, without the employment of cutting instruments, by Sir Astley Cooper.

It has been the practice of some ancient lithotomists in cases where the stone was either very large,

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* Phil. Trans. 1727, vol. 35, page 318. See also a project invented by Mr. Mudge, an ingenious surgeon at Plymouth, Phil. Trans. vol. 46, page 24. 1749.

encysted, or eluded the grasp of the forceps, to imitate the *en deux temps* of Franco, and postpone the completing of the operation till the inflammation had subsided, and the suppurative process taken place, during which interim, the stone was propelled to the orifice of the bladder, or appeared at the mouth of the external wound, on which the surgeon has resumed the operation, and extracted it with safety and without difficulty. For a more particular and interesting account of this mode of operating, see the works of *Franco*, *Albucasis*, *Heister*, *Deschamps*, *Tolet*, *Hildanus*, and *Collot's Traite des Tailles*, page 182.

After the stone has been extracted, the bladder must be explored, to discover if there be another, by means of the scoop or a female sound, and if none can be found, the operation is completed; and a piece of lint spread on both sides with cerate, may then be insinuated between the lips of the wound, in such a way that room may be left for the free evacuation of blood or urine, the whole being slightly secured by the T bandage; after which the patient may be released and conveyed to bed, and a small pillow being placed between the knees, they are to be brought near together and secured by an easy ligature.

If the patient should appear watchful and not disposed to sleep, in the space of half an hour after being put to bed, recourse should be imme-

diately had to the warm bath, in which he should remain as high as the neck for half an hour, or till syncope is produced; and on being taken out 80 or 100 drops of *Tinct Opii* may be given, (if an adult,) after which he may be left to repose between the *blankets*, with his knees placed as before directed.

This important branch of surgery began to be cultivated with unexampled ardour during the early part of the seventeenth century, and furnishes interesting lessons of instruction to the surgical enquirer.

The lateral operation, as promulgated by *Frere Jaques*, appears to be the natural result of successive improvements made by many ingenious lithotomists, among whom may be ranked *Morand*, in France, *Raw*, in Holland, and *Cheselden*, in England.

Subsequent to this epoch, Morand, a member of the Royal Academy of Surgery at Paris, reasons very dispassionately on the different methods of lithotomy, as practised in his time, and says, that "all of them may be used with propriety, as the circumstances of the patient require." He considers a variety of methods an advantage, rather than the contrary, and would reject no plan of operating which had reason and experience to justify it.

Professor Raw, was teaching anatomy at Amsterdam, when Frere Jaques made his appearance as a lithotomist in that city; and seeing him exhibit his improved mode of operation, with the aid of a grooved staff, Raw was induced to abandon the Marian method, and without hesitation, to adopt that of Jaques, by which he acquired great celebriety as a lithotomist, and cut in the course of his life, more than three hundred patients. Notwithstanding his exalted reputation, he had not the candour to impart his method of operating even to his best friends, and endeavoured disingenuously to impress upon the minds of those who saw him operate, that he actually cut into the body of the bladder behind its neck, through which incision he extracted the stone, and left the cervix entire. This act of dissimulation, was nevertheless promulgated to the world by his pupil Albinus, in the year 1725. About this time, the celebrated Cheselden, laid aside the high operation, and betook himself to Raw's method, as described by Albinus, but not being successful in this way, owing to the urine lodging in the cellular membrane surrounding the rectum, and exposing the patient to inflammation and danger, it was abandoned; and he endeavoured, by the aid of his anatomical knowledge, to improve Raw's method, by substituting more convenient instruments, and establishing the operation on

definite principles, founded on the anatomy of the respective parts. This desirable object, he at length secured, and raised his practice to a state of perfection scarcely excelled by any species of lithotomy at the present day. His success continued without variation till his death, which event took place in the year 1752.*

In justice to Cheselden's liberality of sentiment and transcendent merit, both as a professor of anatomy and practical lithotomist, I will transcribe his latest and most improved plan of operating, as described in his *Anatomy* of the *Human Body*, Edit. 9, Chap. 6, Page 325, &c. in order that the reader may be enabled to compare his practice and success with the various methods adopted by surgeons in performing the lateral operation at the present period.

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* Cheselden operated by the lateral method in three different ways, at three successive periods, but this is his third and most improved method.

CHESELDEN'S METHOD OF PERFORMING THE LATERAL OPERATION.

"THIS operation, (says Cheselden,) I do in the following manner: I tie the patient as for the great apparatus, but lay him upon a blanket several doubles upon an horizontal table three feet high, with his head only raised. I first make as long an incision as I can, beginning near the place where the old operation ends, and cutting down between the musculus accelerator urinæ, and erector penis, and by the side of the intestinum rectum: I then feel for the staff, holding down the gut all the while with one or two fingers of my left hand, and cut upon it in that part of the urethra which lies beyond the corpora cavernosa urethra, and in the prostate gland, cutting from below upwards, to avoid wounding the gut; and then passing the gorget* very carefully into the groove of the staff into the bladder, bearing the point of the gorget hard against the staff, observing all the while that they do not separate, and

* It is necessary to remark, that the gorget which Cheselden used was blunt, and only served to guide the forceps into the bladder.

let the gorget slip to the outside of the bladder; then I pass the forceps into the right side of the bladder, the wound being on the left side of the perineum; and as they pass, carefully attend to their entering the bladder, which is known by their overcoming a straitness which there will be in the place of the wound; then taking care to push them no farther, that the bladder may not be hurt, I first feel for the stone with the end of them, which having felt, I open the forceps and slide one blade underneath it, and the other at top; and if I apprehend the stone is not in the right place of the forceps, I shift it before I offer to extract, and then extract it very deliberately, that it may not slip suddenly out of the forceps, and that the parts of the wound may have time to stretch, taking great care not to gripe it so hard as to break it, and if I find the stone very large, I again cut upon it as it is held in the forceps. Here I must take notice, it is very convenient to have the bladder empty of urine before the operation, for if there is any quantity to flow out of the bladder at the passing in of the gorget, the bladder does not contract but collapse into folds, which makes it difficult to lay hold of the stone without hurting the bladder; but if the bladder is contracted, it is so easy to lay hold of it, that I have never been delayed one moment, unless the stone was very small. Lastly, I tie the blood-

vessels by the help of a crooked needle, and use no other dressings than a little bit of lint besmeared with blood, that it may not stick too long in the wound, and all the dressings during the cure are very slight, almost superficial, and without any bandage to retain them; because that will be wetted with urine, and gall the skin.

" At first I keep the patient very cool to prevent bleeding, and sometimes apply a rag dipt in cold water, to the wound, and to the genital parts, which I have found very useful, in hot weather particularly.

" In children it is often alone sufficient to stop the bleeding, and always helpful in men. The day before the operation, I give a purge to empty the guts, and never neglect to give some laxative medicine or clyster a few days after, if the belly is at all tense, or if they have not a natural stool.

What induced me to try this way, if I may be allowed to know my own thoughts, was the consideration of women scarce ever dying of this operation; from which I concluded, that if I could cut into the urethra, beyond the corpora cavernosa urethræ, the operation would be nearly as safe in men as women.

" What success I have had in my private practice I have kept no account of, because I had no intention to publish it, that not being sufficiently

witnessed. Publicly in St. Thomas's hospital, I have cut two hundred and thirteen; of the first fifty, only three died; of the second fifty, three; and the third fifty, eight; and of the last sixty-three, six. Several of these patients had the small pox during their cure, some of whom died, but I think, not more in proportion than what usually die of that distemper; these are not reckoned among those who died of the operation. The reason why so few died in the two first fifties, was, at that time few very bad cases offered; in the third, the operation being in high request, even the most aged and most miserable cases expected to be saved by it; besides, at that time, I made the operation lower, in hopes of improving it, but found I was mistaken. But what is of most consequence to be known, is the age of those who recovered, and those who died.

" Of these, under ten years of age, one hundred and five were cut, three died; between ten and twenty, sixty-two cut, four died; twenty and thirty, twelve cut, three died; thirty and forty, ten cut, two died; forty and fifty, ten cut, two died; fifty and sixty, seven cut, four died; sixty and seventy, five cut, one died. Of those who recovered the three biggest stones, were twelve ounces and a quarter, and eight grains, and the greatest number of stones in any one person, was thirty-three.

" One of the three that died out of the hundred

and five, was very ill with a hooping cough; another bled to death by an artery into the bladder, it being very hot weather at that time; but this accident taught me afterwards, whenever a vessel bled that I could not find, to dilate the wound with a knife till I could see it."

It would be incompatible with the design of this undertaking to describe all the minor modes of lithotomy, which have at different æras been recommended by surgical writers. The many disastrous events which have resulted from the use of the gorget, have led some modern lithotomists to discard it from practice, and substitute the knife, or some other cutting instrument in its place. Hence I have been induced to describe the method of using it.

ON OPERATING WITH THE KNIFE.

THE method of performing the lateral operation, is now conducted by some eminent surgeons, somewhat on the following plan, by which the external incision, prostate gland, and neck of the bladder are all divided with the same instrument.

The patient being prepared for the operation, and secured on a table, the surgeon seated, and the staff introduced, and fixed as before described, (p. 98.) he commences the incision with a scalpel, opposite the arch of the pubis, nearly an inch below the termination of the scrotum, and a little on the left side of the raphe, which he carries downwards to the extent of three inches and a half, (if an adult,) in an oblique line, between the tuberosity of the left ischium and anus. He next dissects the fat, cellular substance and ligamentary fibres, and completely divides the transversalis perinei and alter muscles, together with the membranous part of the urethra. Then feeling for the groove in the staff, through the opening, with the fore finger of the left hand, he takes hold of the staff from the assistant, and raising its handle forwards, he then turns the knife aside and places its

point in the sulcus, pushing it forwards through the substance of the prostate gland, in a lateral direction, and enlarging the incision of the neck of the bladder to a given extent, as he withdraws the instrument. The staff is then to be taken out, and the fore finger passed into the opening on which the forceps are conducted into the bladder, the stone taken hold of and extracted.

On comparing the result of *Cheselden's* practice with the *knife*, and the present method of operating with the *gorget*, we are led to draw this galling conclusion; that his success surpassed that of most modern lithotomists. "Let (says a modern author,) surgeons search the records of hospitals, for the operation of lithotomy since the invention of the gorget; let them recall to mind the number of cases in which the gorget had slipped betwixt the rectum and bladder; in which the incision had never reached the stone; in which the unsuccessful operator had imputed his miscarriage to the stone being engaged in a sack;—let them recall to mind the operations of the present day, and say, if they ever heard of, or experienced success like this?"—*Allan on lithotomy.*

ON LITHOTOMY ON WOMEN.

The female sex are much less liable to stone in the bladder than males, and consequently seldom require the operation. The reason is obvious; for the neck of the female bladder is not surrounded with the prostate gland as in men, and the urethra is much shorter, less curved, and more extensible. These circumstances render the spontaneous expulsion of calculi a more common occurrence: and hence we can account for numerous instances of very large stones having been naturally voided through the urethra, or extracted by that passage, after being artificially dilated.

The chief symptoms of stone in the bladder of women, are, a burning heat at the extremity of the *meatus urinarius*, a bearing down of the uterus, with frequent inclination to go to stool; in other respects, the symptoms are similar to those in men.

To the danger and inconveniences attending the Marian operation, and the advantages deduced by the lateral method on men, may be ascribed the present mode of relieving women from the stone by means of the gorget, instead of that by dilatation.

The stone may be extracted from women either by the high, or the lateral operation; but the lateral method being comparatively easy, when contrasted with that in men, it is usually preferred.

It may be performed in various ways; but the most usual method consists, in passing through the *meatus urinarius* into the bladder a grooved director or staff, nearly straight; the grooved side is turned obliquely downwards and outwards, in a direction almost parallel with the ramus of the left os ischium. The operator then holds the staff firm in his left hand, whilst he conveys the beak of the cutting gorget into the sulcus of the staff, and makes the necessary incision by gently pushing it along, till it has entered the cavity of the bladder. The stone is then to be extracted either by the fingers of the surgeon, or by means of the forceps; some surgeons make use of a conductor, on which the forceps are conveyed into the bladder.

The records of surgery, furnish us with instances of stones of an enormous size being either naturally voided, or artificially extracted from the urethra, by means of dilatation of the *meatus urinarius*. Such, for example, is the case related by *Borelli*, (cent. 2, obs. 22.) of a stone coming spontaneously from a female, the size of a goose's egg. *Kirkringius* and *Bartholin* have each described one as large as a hen's egg.

Morand relates the case of a girl eighteen years old, who, by the efforts of nature alone, voided a stone from the bladder weighing four ounces. *Middleton* records a case where a stone weighing four ounces was expelled in a fit of coughing, after lodging in the urethra several days.

In the Philosophical Transactions, *Dr. Molineux* relates an instance of a woman voiding a stone, the circumference of which measured $5\frac{3}{4}$ inches, its weight near $2\frac{1}{2}$ ounces troy. *Collot* gives an instance where a stone the size of a goose's egg was discharged from the *meatus urinarius*, after having lodged there seven or eight days.

For more instances of a similar nature, the reader may consult the works of *Celsus*, *De Graff*, *D. Hieronymus*, *Tulpius*, and the *Philosophical Transactions*.

The structure of the female urethra and neck of the bladder, being surrounded by a tissue of very extensible substance, will admit stones of a considerable size to be voided naturally by the canal of the urethra. This circumstance has induced surgeons to adopt the gradual method of mechanically dilating the passage by different means; such as prepared sponge, the gut of animals, eel skin, gentian root; or quickly by instruments called Conductors, Dilatators, or Speculum Vesicæ, to give free access to the passage of

the stone. See *Paré* and *Scultatus's Armamentarium Chirurgicum.*

The dilatation of the neck of the bladder and canal of the urethra, were the method exempt from the danger of causing incontinence of urine, would appear at first view preferable to all others for extracting the stone from females: but this disgusting infirmity so frequently happening when the stone proves of considerable magnitude, outweighs every other advantage attending dilatation.

An interesting case of this description is recorded by *Mr. Bromfield*, which terminated successfully; he effected the dilatation of the urethra by introducing into the *meatus urinarius* of a young girl, the closed extremity of the appendicula intestini cæci of a small animal in a collapsed state. Into the open end of the appendicula, warm water was injected by means of a syringe, and secured externally by a ligature. The piece of gut thus distended was twisted round, and gradually drawn out as the cervix vesicæ dilated; and in a few hours the stone passed out without further assistance. See Chirurgical Obs. Vol. 2, page 276.

Prosper Alpinus, in the 14th chap. of his third book, entitled *Medicina Egypt.* mentions a practice adopted by the Egyptian physicians, of inflating the male urethra, to effect the exit of the

stone, by means of wooden pipes eight fingers long, and about the thickness of a person's thumb at one end, and smaller in proportion at the other; the end of the pipe being introduced into the urethra, the operator, (Haly) an Arabian, blew into it with great force, and at the same time made a pressure with the hand upon the perineum to prevent the wind from entering the bladder: then he stopped the mouth of the pipe, to make the urethra swell and stretch. This being done, an assistant introduced his finger into the anus, and brought the stone forwards into the urethra. Haly then suddenly withdrew the pipe from the passage, and dexterously extracted the stone, which was about the size of an olive stone. "I was present, (says this author,) at this operation, which was performed upon a Turkish commander, and also saw him practice it upon two Jews; one of which was a little boy, from whom he extracted eight small stones, and the other was grown up, from whom he took one as big as an olive." The Arabian physicians make use of another method to draw out stones from the bladder, which they accomplish with hollow pipes of different sizes introduced in succession. They extract the stone by placing the mouth to the open end of the pipe near the penis, and forcibly sucking and drawing thereat, till the stone enters the other end in the

bladder; the pipe is then drawn forwards with the stone concealed therein, and extracted.

The various projects adopted by authors, of mechanically dilating the urethra for the purpose of removing calculi from the urethra or bladder may no doubt be practised with safety within certain limits, where the circumference of the existing stone and the diameter of the canal of the urethra bear no great disparity to each other; but in cases where the size of the stone far exceeds the capacity of the urethra, the method of dilatation has sometimes proved insufferably painful and tedious and an irreparable incontinence of urine has been the consequence.

Douglas nearly a century ago recommended the extraction of small stones by dilating the urethra, but if the stone be known to be large, he proposes in preference the *High Operation.*

Morand seems to embrace the same opinion for he says, " as for the woman, I believe, that if the stone be small, the common method is preferable to the high operation; but, if large, the *apparatus altus* is better than the ordinary method, because of the incontinency of urine, which happens through the laceration, and extravagant dilatation of the sphincter caused by the passage of a large stone." See also a case related by Mr. Thomas, in the Medico Chirurgical Transactions, Vol. I, page 123, 129.

Cases of an uncommon nature will sometimes occur, where, from necessity, the surgeon may be induced to deviate from the common plan of operating. Under such circumstances some authors have adopted the project of making an opening directly into the bladder from the vagina; by which route the forceps is conducted into that viscus, and the stone extracted. Though *Gooch* relates three successful cases of this mode of operating for the stone, it has not been admitted into general practice; and it is to be observed, that by cutting through the vagina into the bladder, these parts are so situated in the pelvis, that in all probability the incision will either leave a fistulous opening, or produce a cicatrix in the vagina. Should the woman afterwards become pregnant, this unyielding condition of the passage, would prove a material obstacle in delivery; and a laceration of the vagina and an incontinence of urine be the result. The infrequent occurrence of the disease in females, and the few examples on record of this mode of operating, wholly deprive us of estimating its comparative success, with that of dividing the urethra; nevertheless these successful cases, at least convince us, that wounds of the body of the bladder made through the vagina, are not incurable. This fact is established by the testimony of different authors. See *Rousset*, *Hildanus*, *Ruysch*, and *Tolet*.

The Recto-vesical operation of lithotomy has been practised in a few instances with success, both in this country and on the continent. Professor Dupuytren, of Paris, has performed it with success as also an Italian surgeon, Dr. Barbantini, who has published a pamphlet on the subject. On a reference to the anatomy of the parts concerned in this mode of operating, it is evident that the incision of the rectum does not encounter any blood vessels or parts directly interesting to life; and the converging rami of the ischium oppose less resistance to the extraction of the stone, than when the opening into the bladder is made in the usual place, below the pubis where the space is more limited. The recto-vesical fistula presents the most valid objection to this method of operating either on the male or female.

The female urethra will permit a more free motion of the sound when searching the bladder, than that of the male, which enables the surgeon to judge more correctly of the size, situation, and shape of the stone, and greatly tends to point out the most safe and easy method of extraction. For unless the stone be of such a size as to afford a prospect of passing through the *meatus urinarius* by simple dilatation, without the use of undue force, I should be induced to make a lateral division of the urethra, by means of the Bistouri Caché; as an incontinence of urine is less likely

to happen than after the urethra has been distended beyond its muscular power by artificial means.

On reflection, it will appear evident that by making an effectual opening into the bladder, in a lateral direction with the gorget for the easy transmission of a large stone, there will be some risk of either cutting deep into the vagina, or dividing the pudic artery on the left side; in the first instance, an incontinence of urine will follow, and in the latter, the patient will be exposed to danger from hæmorrhage; to obviate these disastrous events, the use of a gorget constructed with a double cutting edge, by which the canal of the urethra may be equally divided transversely on both sides, will form a greater opening for the exit of the stone, leave the vagina untouched, and the pudical vessels exempt from injury.

It is in reference to these parts, that the success attending the lateral operation on women chiefly consists: and it must be confessed, that there is always difficulty in avoiding them when we are compelled to make an incision to a certain extent, sufficient for the admission of a large stone with facility and safety.

ON THE METHOD OF USING THE BISTOURI CACHE ON WOMEN.

THE most safe and simple mode of extracting the stone from females, in almost all cases appears to me to be by the *Bistouri Caché*,* which must be introduced shut along the urethra till the apex be fairly in the bladder. When the surgeon has found the stone with the point of the instrument, he inclines the blade a little obliquely downwards, in a direction nearly parallel with the ramus of the left ischium, and with the thumb presses down the elevating part of the handle upon the head of the screw, which raises the blade out of the groove. Then pressing the back part of the bistouri against the pubis, he withdraws it in this direction, and completes the division of the parts to an extent sufficient to admit the mouths of the forceps, and to extract the

* The Bistouri Caché may be made of any size proportioned to the age of the patient, and prior to its use, whether on the male or female. The surgeon should always adjust the screw which regulates the blade, so as to predetermine the extent of the intended incision in proportion to the age of the patient, and supposed magnitude of the stone.

stone without lacerating or bruising the passage. This method of operating I have adopted on females, and it appears so manifestly simple, that it wholly supersedes the use of the sound, grooved staff, and gorget, and is less liable to expose the patient either to incontinence of urine, or fistulous opening of the vagina, than by the common mode of operating with the gorget.

The vesico-vaginal fistulas and incontinence of urine incident to females subsequent to the use of the gorget in this operation, are always distressing to the patient, and troublesome to the surgeon. This is sufficient to inspire a dread of its use; and the attempts made by the faculty to obviate so disastrous an occurrence, have in a great measure failed of effecting so desirable an end.

The late Mr. Hey recommends a cylindrical piece of linen formed into a tent and introduced up the vagina, with a view of supporting the incised edges of the wound during the progress of the cure. With the same intention recourse may be had to the introduction of a canula fixed in the passage, made of elastic gum, and resembling in shape a clyster pipe, but somewhat thicker (if used on an adult.) This instrument I have likewise found occasionally useful when employed on men, during two or three days after the operation, or till the inflammation of the wound subside. It greatly facilitates the dis-

charge of the urine or blood by dribbling through the tube, and thus prevents distention of the bladder and subsequent inflammation.

The diversified alterations which the gorget has undergone at different periods since its introduction into notice by Sir Cæsar Hawkins, with the view of obviating certain difficulties attending its use, and the elaborate disquisitions by many modern surgeons, respecting its advantages compared with the knife are a sufficient apology for novelty of invention.* On this subject I feel no inclination to enter the list, particularly when so much has been advanced to so little purpose; for almost every young surgeon becomes wedded to the opinions and precepts advanced by the Professor, whose surgical and anatomical lectures he has attended; no wonder, therefore, that such a discordancy of opinion and success should universally prevail throughout the kingdom on this important subject, when there are scarcely two Professors of surgery in the whole metropolis, who either use the same form of instrument, or operate exactly in the same way.

The chief object to be attained in lithotomy, by whatever form of instrument it be accomplished,

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* For a circumstantial discussion of the comparative merit of the gorget and knife, I refer the reader to Mr. John Bell's Principles of Surgery, Vol. 3. Part I. Quarto Edition.

is to make the incision from its commencement in the integuments below the scrotum to its termination below the anus, and through the intervening muscles, prostate gland, and neck of the bladder, to an extent proportioned to the size of the patient, and sufficiently to admit the forceps, and extraction of the stone without bruising or lacerating the contiguous parts. But this cannot be effected unless the whole of the incision be made more extensively than what most modern operators are in the habit of doing, and hence I am persuaded, results the disparity of success.

An ample division of the parts concerned in the operation always facilitates the extraction of the stone, discharge of urine, or blood, from the wound, prevents subsequent inflammation, and greatly expedites the patient's recovery.

On comparing the cutting part of most gorgets now in use, with the extent of the prostate gland, from its apex to the base, where it surrounds the cervix vesicæ, it will be evident that such construction is inadequate to effect a complete section of this organ even in its natural state; but when enlarged by disease, as it frequently is in calculous affections, such defect is still more manifest and the danger resulting is proportionably greater. Under such circumstances is it possible without incurring danger to the patient to extract a stone from the bladder, the dimensions of which, together with

the blades of the forceps far exceed that of the wound through which it should pass with freedom? I have more than once seen great violence used in extracting the stone through an inadequate incision, and was present at an operation in St. Bartholomew's Hospital in London, where the operator, used such force in extracting the stone, that he would have fallen backwards had he not been supported at the time by his assistants. It is easy to foretel the fate of a patient so unfortunately circumstanced.

These reflections are intended to lead surgeons to pause on the propriety of using the gorget, and to induce them to select an instrument, (let its name be what it may,) which will invariably make a section of the prostate gland sufficiently extensive for the free extraction of the stone, without going beyond the limits of safety; for it should always be remembered, that the edge of the gorget can never be made to cut the substance of the gland freely, owing in part to its receding by the impulse of the instrument, and leading the surgeon to suppose that he has completed a section of this organ, when in reality he has merely divided its apex.

It is much to be lamented that human ingenuity should ever have been so variously exercised in the construction of an instrument so diversified in its form as the gorget, particularly when intended

to substitute mechanism for anatomical knowledge, or manual dexterity. This may be sufficiently exemplified by an inspection of the multiplicity of gorgets displayed at *Savigney's* Surgeons' instrument maker, London.

I acknowledge that an expert surgeon, well acquainted with anatomy, may perform this operation with the gorget with safety, if the stone be small; but if its bulk equal that of a hen's egg, the wound will be obviously inadequate to admit the stone and mouth of the forceps without lacerating the cervix visicæ or wounding the adjacent parts. These accidents have been known to occur in the hands of surgeons of the first eminence, and on dissection after the patient's death; such disastrous events have been known to follow the use of this dangerous instrument more than any other.

Some staffs are constructed with a stop at the termination of the groove, in order that the point of the gorget may not pass further into the bladder and do mischief. This contrivance will no doubt in ordinary cases answer the purpose for which it is intended; but if the bladder be collapsed and the stone fixed at its neck, I am apprehensive that the gorget when passed on such a staff will only effect a partial division of the left portion of the gland, and in such a position of the stone if a

gorget be used with an open groove at its point and be pushed up to the hilt, as is usually done, it will be liable to transfix the posterior part of the bladder, penetrate the rectum and expose the patient to imminent danger; an accident which has occurred to lithotomists of the first celebrity.

ON THE USE OF THE BISTOURI CACHE ON MEN.

The instrument I have mostly used in lithotomy is the Bistouri Caché of Frere Come, with an additional beak to prevent its injuring the bladder. I have operated on upwards of sixty patients for the stone with this instrument (and the one hereafter mentioned as a substitute for the gorget) out of which number, only two have not survived the operation.

Objections have been advanced by writers regarding the simplicity and form of the bistouri, and manner of dividing the parts concerned in the operation. Truth, however, urges me to state, that I have neither found difficulty nor danger attending its application; as the success I have experienced will best decide. I have operated with it both on men and women, from little more than two years old, to upwards of seventy and extracted stones more than five ounces in weight. It will not then, I trust be hereafter said, that the bistouri caché is an instrument in any respect less eligible or safe than either the gorget or knife when used with judgment.

The bistouri caché has also been objected to on

the ground of its being liable to wound the *vesiculæ siminales*, an imputation by no means tenable; for on a retrospective enquiry, and examination into the reality of this alleged circumstance, from patients on whom I have operated, I have found neither *impotency* nor *atrophy* of the testes to have occurred in any single instance. Allowing the seminal duct to be divided in the operation, either with the bistouri or other instrument, it is more than probable that it would heal along with the rest of the wound, and its functions be restored after the operation. And if the cells should be obliterated, I am induced to believe from observation and facts recorded, that the seminal vessels on the opposite side being perfect, will alone be found adequate to supply the deficiency.

Heister says, "though the vesiculæ seminales may be, and very often are, wounded both in the *Apparatus Minor*, and in the *Lateral Operation*, as Le Dran, and others have observed; yet it is not generally attended with any bad consequence, as the parts readily heal up with the rest that are divided."

Objections of this sort, relative to the use of the bistouri caché, appears to be merely founded on hypothetical principles unsupported by facts.

A knowledge of the physiology of the *duplicate* organs subservient to the secretion of semen and phenomena of generation, so wisely provided by

nature for perpetuating the species, warding off evil, and supplying casual defects irresistibly lead us to this unquestionable deduction, that a *spado*, or person with only one testicle, possesses the procreative power in a competent degree. For corroborative evidence on this subject, see Gordon Smith's valuable work on Forensic Medicine, page 447. Male on Juridical Medicine, second Edition, page 255 and 278. Vaughan's Anatomy, Vol. II. page 153. Wilson's Lectures on the Urinary and Genital Organs, page 425, and Jones's Surgical Lectures, page 349. "One of the testicles, (says he) may be lost without producing any very perceptible effect upon the virile powers, though both, of course, will entirely destroy it. A curious case, illustrative of this, occurred in *Guy's Hospital* some years ago."

ON THE USE OF THE BEAKED LITHOTOMY KNIFE OR BISTOURY, AS REPRESENTED IN Plate I. Fig 2.

PERCEIVING such a degree of prejudice to prevail among surgeons of the first eminence in favour of the gorget, and being myself fully convinced of its imperfections, I have invented a substitute which appears to combine in itself all the advantages of the *Gorget*, *Knife*, and *probe pointed Bistoury* without their imperfections. When used as a gorget the surgeon will perceive its cutting edge to be so far elevated above the groove of the staff, that it makes its way through the prostatic part of the urethra into the bladder with greater facility and less danger to the patient than either the common gorget or bistoury; and on withdrawing it in a horizontal direction the section of the prostate gland and neck of the bladder may be extended to whatever space it may be judged requisite.

I have operated with this instrument several times both on young and old subjects with perfect ease and success; and, from its simplicity and manner of dividing the necessary parts, I have little doubt but upon an impartial trial, it will be found hereafter to supercede every other instrument yet brought to notice.

ON THE AFTER TREATMENT OF THE PATIENT.

THE primary objects of attention subsequent to lithotomy, are generally hæmorrhage and inflammation, and these should be watched with great vigilance by the surgeon.

The wound being dressed two or three times each day, in the way before directed, till the inflammation subsides, and the urine begins to be discharged by the urethra, the surgeon should at frequent intervals inspect the state of the bladder, and see that it does not become distended, for on this favourable sequel the fate of the patient frequently depends. A low diet is to be adopted, and a cool apartment selected for the first six or eight days, and a stool should be procured by clyster the day after the operation, and purgatives be given at discretion. Notwithstanding the greatest precaution, unfavourable symptoms will occasionally occur, and the patient be assailed with restlessness, anxiety, quick pulse, thirst, pain and tension on the region of the bladder.

On the approach of such symptoms every means of abating inflammation must be promptly pursued. The bowels should be immediately

emptied by a brisk purgative, and the patient immerged to the neck in a warm bath for the space of half an hour, or till syncope appears; and when taken out he should be placed in bed between blankets, and an anodyne sudorific draught be given to promote perspiration and rest. If, however, these means fail in subduing the inflammation, and pain and tension of the abdomen continue, it will be expedient to repeat the warm bath two or three times a day, together with bleeding both locally and generally. Blisters and fomentations of the abdomen, aided by the free use of emollient clysters and purgatives, must be assiduously employed to repel the attack. On some occasions frequently bathing the wound and neighbouring parts with cold water may be useful, and tend to abate inflammation and prevent hæmorrahage.

In the treatment of patients subsequent to lithotomy, the practitoner should bear in mind that a feeble pulse is a frequent attendant on all abdominal inflammations; and he ought not to be deterred from the use of the lancet, by such fallacious symptoms, but on all occasions keep in view the age and plethoric state of the patient, and regulate the treatment accordingly; for in old emaciated subjects the antiphlogistic mode should be pursued with great caution, particularly after a tedious operation, lest the patient should sink from exhaustion.

ON HÆMORRHAGE.

HÆMORRHAGE, Peritoneal Inflammation, and Ischuria Vesicalis, are the chief sources of danger resulting from the operation of lithotomy.

Hæmorrhage I consider a rare occurrence, as such incident has never happened in my practice,* though I often hear surgeons relating such events as not being unfrequent in their operations. This circumstance can only be attributed either to an improper mode of operation, or an ill constructed gorget in the hands of an unscientific practitioner, unless where there is an unusual distribution of the vessels.

The internal *pudic artery*, and that of the *bulb* of the urethra or body of the penis, are each liable by inattention to be divided in the respective stages of the operation. The *pudic artery* may be wounded by the gorget being too broad in the cutting part, or directed too much sideways towards the ramus of the left tuber ischii of the

* I have never seen a patient exposed to danger from hæmorrhage, nor have I had occasion to tie a vessel with a ligature, either during or after the operation in the last thirty cases in which I have operated.

patient, and if turned much downwards the rectum will be in danger of being wounded.

The division of this artery is always a formidable accident, and has sometimes proved fatal. It may generally be secured by means of the needle and ligature after the stone has been extracted; but if this expedient fail, compression must be applied by inserting into the wound a canula from three to five inches in length, adapted to the size of the patient, and depth of the wound; with a piece of dried sponge slightly tied round it so as to allow it to swell by imbibing moisture: thus serving to compress the divided ends of the vessel under the edge of the os ischii, while the tube may answer as a vehicle for the free discharge of the urine or blood which may have accumulated in the cavity of the bladder. The *transversalis perinei* is always divided in the operation, because its course is directly across the perineum, and cannot escape the knife, and immediately on its division blood is profusely discharged; but if the surgeon will pause a few seconds, the artery will retract among the cellular substance, and the hæmorrhage cease spontaneously. Sometimes the arteries about the prostate gland are augmented by disease, and when divided the blood is apt to make its way into the bladder: this species of hæmorrhage is only discovered some hours after the operation by the patient appearing rest-

less and complaining of pain, and an inclination to pass urine, in which case, as well as on all other occasions where any vessel of importance has been wounded in the operation, the state of the bladder should be minutely investigated, and if any coagula be lodged therein, it should be evacuated by means either of the finger or *scoop;* and if the bleeding continue, recourse may be had to the application of the canula and sponge, by way of compression as before directed. In cases threatened with hæmorrhage it may be advisable to apply cloths successively moistened in cold water, both to the wound and the genital parts, to abate the bleeding and check the tendency to inflammation.

A CASE OF LITHOTOMY, ATTENDED WITH UNUSUAL SYMPTOMS, TO WHICH IS SUBJOINED OCCASIONAL REMARKS.

In the year 1806, I was consulted by Richard Holden, of this neighbourhood, a stout, corpulent, robust man, then about 60 years of age, on account of great pain when passing his urine, accompanied with very frequent provocations to propel it. He informed me, that for some years past, he had occasionally discharged both blood and mucus from the urethra, and that any violent bodily exercise was usually the forerunner of the former indication of calculous affection. These, together with other ordinary symptoms, led me to suspect a stone in the bladder, and I proposed passing a sound into that viscus, in order to determine the question. This proposal was, however, rejected, from an idea entertained by the patient of the pain, which the introduction of an instrument into the bladder, must unavoidably occasion. In this state of incertitude, my patient absented himself from me, and continued with frequent intermissions of pain till the sixth of November, 1811, a lapse of five years; when I was requested to visit him. On my arrival at his house, I was informed that

he had not been able to evacuate his urine for nearly two preceeding days and nights.

On laying my hand on the abdomen, the patient complained of a considerable degree of pain in the region of the bladder, which was accompanied with tension, and the scrotum and surrounding parts were of a dark lived colour.

The catheter was immediately introduced, and my former opinion fully confirmed, by the point of the instrument striking against a stone; which was notified by the sound emitted to the ear very distinctly.

Nearly two quarts of dark coloured urine were drawn off, which afforded temporary relief; the warm bath was recommended, a laxative clyster was administered, and an aperient mixture directed to be taken in divided doses, which produced several copious evacuations by stool, reduced the tension, and considerably relieved the soreness of the abdomical region. Still the retention of urine continued, caused I apprehend from a calculus lodged in the vicinity of the neck of the bladder; for every time the catheter was passed, it was resisted by the presence of a stone, and little or no water could be extracted, without first pushing the point of the instrument against it, raising the stone from its situation, and keeping the catheter in this position till the bladder was emptied. By this manœuvre the impediment was

surmounted, and the urine evacuated once or twice every twelve hours, during several succeeding days, by the use of the common silver catheter, until I prevailed on my patient to be removed to Blackburn, where I had an opportunity of paying more particular attention to the case. Soon after his arrival, I introduced a flexible metallic catheter into the bladder, fitted with a small cork to plug up the end: the fore finger being passed up the rectum, served to bend the apex of the instrument behind the ach of the pubis, where it was permanently fixed, so that he could remove the cork, and evacuate his urine, *ad libitum*.

The use of the finger in the rectum, whilst passing the instrument, afforded me an opportunity of ascertaining the morbid indurated state of the prostate gland, which was greatly enlarged, and in a very rigid condition.* Not-

* The symptoms of stone in the bladder, and a morbid condition of the prostate gland being in some respects similar, it is highly necessary that the surgeon should invariably pass the finger up the rectum prior to the operation, and if the gland be enlarged, it will be discovered by this means with much facility. By such timely investigation, the surgeon will be governed in the various stages of the operation, and be enabled to form a pretty accurate idea of the determinate extent of the incision of the neck of the bladder and necessary distension of the blade of the bistouri caché, prior to its introduction into the organ, provided the surgeon uses this instrument.

The presence of a stone in the bladder may generally, by

withstanding the antiphlogistic mode of treatment was rigourously adhered to, there remained a considerable degree of soreness on the region of the pubis, attended with quick pulse and fever, insomuch that I did not then propose the operation of lithotomy, being aware of the consequences that might ensue from the attendant symptoms, excited by irritation, and the effects of calculi, on the coats of the bladder; nevertheless, the tension and soreness of the abdomen gradually abated, and the operation appeared admissible;* after being determined on, and the preparitory regimen adopted, I performed it on the 17th instant

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attention to the symptoms, be distinguished from an irritable or indurated state of that viscus; for in the former affection, and during the discharge of urine, the pain increases at the glans penis till the last drop is voided and subsides gradually; while in the latter case, relief is observed to take place in a reverse ratio, for as soon as the water begins to flow the patient is somewhat relieved, and when the whole is evacuated there is comparatively little pain left, and the expansive functions of the bladder are sooner restored.

* It does not appear from the result of practice, that simple irritation excited by calculi in the bladder, is an insuperable objection to lithotomy, when performed during an interval of cessation from pain; but if there exist in the system any nephritic affection, or insidious morbid action lurking in any organ, either remotely or immediately essential to life, the danger becomes manifestly increased, and the operation should be undertaken with great caution, and deferred, if possible, till such symptoms wholly cease, and the irritation of the system subside.

(November,) in the presence of two assisting surgeons and the necessary attendants. The patient being placed and secured in a horizontal position upon a steady table of commodious height, and supported by pillows under the shoulders with the breach projecting a little over the edge of the table, the first stages of the operation were conducted in the usual manner, and with tolerable facility. On the membranous portion of the urethra being laid open with the scalpel to the commencement of the prostate gland, the beak of the bistouri caché was inserted into the groove of the staff, the handle of which was taken hold of with the left hand, and raised from the right groin of the patient to nearly a right angle with the body; the bistouri was then pushed gently forwards into the bladder and the staff taken out; the cutting edge being raised from its sheath and turned rather laterally towards the left ischia of the patient, it was withdrawn nearly in a horizontal direction; and in executing this step of the operation, I perceived an unusual resistance and grating, as if cutting through a cartilaginous substance.

The fore finger of the left hand was now passed as high as possible into the bladder, through the opening made by the bistouri, and with difficulty the surface of a stone was felt; for owing to the patient's state of corpulency, the chief part of the hand became buried in the wound.

The forceps were then carefully introduced by the side of the fingers, which served as a guide to seize the stone in the bladder. The fingers being withdrawn, the stone was taken hold of by the blades; but from the great expansion of the handles, I was led to believe that the calculus was either very large, or otherwise seized in an unfavourable direction. To ascertain the fact, I endeavoured to reach the stone, by insinuating the finger betwixt the extended blades of the forceps, but was prevented by the bulk of the prostate gland; for it appeared to occupy so considerable a space, that its extent could not be wholly traced by the finger in any direction. I therefore judged it expedient to quit the stone, and attempt to seize it in a less diameter, and after using every possible means in my power, I was obliged to abandon this project; and the extent and rigidity of the prostate, and its unyielding structure, induced me to enlarge the incision. On every attempt to extract the stone, the body of the gland was brought forwards into sight, and appeared to completely wedge up the space betwixt the two *rami ischii*. Thus situated, and while the left hand was employed in drawing forwards the forceps along with the stone, the right was engaged in dilating* the wound with the

* Though in this instance, the incision made by the bistouri caché was inadequate to effect a complete division of the prostate

scalpel, in a line with the external incision, where the resistance opposed the greatest obstacle; in this manner sufficient room was made, and the transmission of the stone effected. It was of an oval shape, and its long diameter 2.25, and its short 1.75 inches. A female sound was then passed into the bladder, and another stone detected larger than the first, and which was extracted with proportionate difficulty. It was also oval, but measured 2.6 inches one way, and 2.1 the other. From the different situations in which I had an opportunity of recognising the prostate gland of this patient, both by the finger passed up the rectum, and through the wound in perineo, its lateral lobes evidently pressed considerably on the rectum, and appeared the shape and size of the gizzard of a goose. Several arteries were divided in the operation, which required the ligature, and there remained a considerable oozing of blood, which appeared to come from the divided edges

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gland, to afford the stone a free exit; yet its extent was far greater than what could be made with the gorget; hence may be seen the advantage which the bistouri possesses over the gorget; for the surgeon has it in his power to adapt the blade of the bistouri to the exigency of every individual case, prior to its introduction into the bladder, and should the stone be found either of unusual magnitude, or less than what was suspected prior to commencing the operation, the screw of the handle may be elevated or depressed whilst the apex is in the bladder, and the cutting edge regulated to any given extent.

of the prostate gland: to suppress which a canula, with a piece of sponge wrapped round it, was introduced into the wound, and by its pressure on the incised portions of the gland, prevented the blood from making its way into the bladder, and soon stopped the bleeding.

A plaster of lint, spread with cerate, was applied to the wound; the patient was then conveyed to bed, and his knees brought together, and secured by means of a tape passed round his thighs. A draught composed of sixty drops of *Tinct Opii* was administered, and the patient left to take repose. On calling in the evening I was informed that the medicine had not produced sleep; he appeared restless, with quick pulse. There was no tension or pain about the region of the bladder, nor any hæmorrhage from the wound, and the urine passed *guttatim* through the canula without interruption.

A warm bath was immediately procured in the room, into which he was put, and remained twenty five minutes, which afforded some temporary relief, without producing syncope or diminishing the vibrating force of arterial action. After being removed to bed, the opiate draught was repeated, but did not induce the least inclination to sleep the whole of the night.

In the morning the canula was removed and the wound dressed as before. A saline mixture with

antimonial wine was directed, an aperient clyster administered for several succeeding days, and occasional purgatives exhibited to stimulate the torpid action of the intestines, all which produced their medicinal effects. The warm bath was repeated twice every twenty-four hours for ten days successively, and the antiphlogistic plan strictly enjoined till the symptoms of fever and irritation subsided.

On the 20th instant, three days after the operation, a degree of soreness and tension manifested itself in the lower part of the abdomen, which extended along the urethra, and assumed the appearance of peritoneal inflammation. But on a minute investigation, I was convinced that the tension of the abdomen was caused by the parts of the wound connected with the operation being distended with inflammation, which wholly prevented the evacuation of the bladder, and the voluntary power of the abdominal muscles from propelling the urine through the aperture.* With-

* I am induced to believe, that *Ischuria Vesicalis*, subsequent to the operation of lithotomy, is not a very rare occurrence, but is frequently the primary cause of Peritoneal Inflammation, though scarcely noticed by authors who have written on the after-treatment of patients. As the symptoms at first view bear much analogy to each other, it is incumbent on the surgeon, in every instance of abdominal affection to investigate the state of the bladder, and witness the discharge of urine, either from the

out hesitation, I passed a female catheter up the wound in perineo into the cavity of the bladder, and evacuated more than a quart of limpid urine, of healthy appearance. This mode of assisting nature in relieving herself, was found necessary to be repeated every eight or ten hours for several succeeding days, until the tension and inflammation of the parts connected with the wound had subsided; after which the urine passed through the artificial aperture with comparative freedom. About three weeks from the time of the operation, a little urine made its way, at intervals, by the channel of the urethra, and the man seemed gradually recovering, when suddenly a new train of symptoms came on, accompanied with inflammation and swelling of the right testicle, attended with violent obtuse pain, which produced a slight degree of fever and constitutional irritation of the system. Ten leeches were ap-

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wound, or by the urethra. By this mode of enquiry, the morbid retention of urine may be distinguished from abdominal inflammation, and if no urine has passed by either of these apertures, a female catheter should be introduced through the wound into the bladder and the water evacuated, by which means the symptoms will subside, and by omitting this mode of relief, inflammation of the abdominal viscera and bladder would inevitably follow, and there is reason to believe, that serious effects have sometimes ensued from this species of retention of urine, being overlooked.

plied to the inflamed scrotum, and cloths moistened in a solution of *ammonia muriata* in vinegar and water were kept constantly applied to the affected part; a brisk purgative draught was administered, and a scanty regimen enjoined; yet every precaution used to disperse the swelling and inflammation proved unavailing, and suppuration was announced by frequent rigors, and the structure of the testicle becoming less tense and more swelled. A poultice was then applied, and renewed three times a day, till a fluctuation of matter became perceptible, which was let out through an opening made with a lancet; the part soon healed, and the tension of the testicle gradually subsided; soon after which the left testicle became enlarged and painful, and assumed one smooth tense substance.

Leeches, and other topical applications were assiduously applied, as in the former affection, and a mixture apparently of puss and urine, was regurgitated* by the urethra, which continued for

* This affection of the testes I conceive to be a rare occurrence, as I find no such incident mentioned by writers on lithotomy. It is not improbable that some irregular particles of calculi might produce the inflammation, by getting entangled behind the veru montanum, obliterate the orifices of the seminal ducts, and excite irritation of the contiguous parts, or the vas deferens might participate therewith, and the inflammation be communicated to the testes, and cause a retrocession of the matter from the testicle to the urethra.

the course of eight or ten days, when the inflammation and swelling gradually disappeared.

From this period, the wound assumed a granulating and healthy appearance, and the urine was voided voluntarily through the urethra in increased quantity; in the space of ten weeks, from the time of the operation, the wound was completely healed, and the man returned home in a state of apparent good health, being able to retain his urine in considerable quantity, and propel it at pleasure. On a minute examination of the state of the prostate gland at this period, by the finger in ano, its size appeared very much diminished from what it was prior to the operation.* This man lived many years after the operation, during which period he enjoyed a tolerable state of health though the pre-disposition to the formation of stone still existed in the system; for he informed me that he had passed two small calculi by the urethra, and his urine was mixed with sabulous matter.

* It is very probable, that if the gorget had been used in this case, it would not have divided more than half of the left portion of the prostate gland, consequently the incision must have been quite inadequate for the free extraction of the stone, and probably too small to admit the blades of the forceps without much violence; and owing to the indurated structure of the gland opposing such a degree of resistance to its introduction into the bladder, it is very likely that, during the attempt to accomplish this step of the operation, the prostate gland must have been severed from its connection with the membranous portion of the urethra, and the posterior part of the bladder become transfixed.

A CASE OF LITHOTOMY ON A FEMALE, COMPLICATED WITH PROCIDENTIA UTERI, PROCIDENTIA VESICÆ, AND INVERTED VAGINA.

MARY BARNHILL, aged 52, an inhabitant of Blackburn, is the subject of this interesting case. In the 24th year of her age, she bore an illegitimate child at the full period of gestation, about 32 years ago; and whether to impute the cause of her affliction, which commenced soon after delivery, to some improper interference of the attending accoucheur during that process, or to a relaxed state of the ligaments of the uterus, it is not at this remote period easy to determine; more particularly, as this part of the history of the existing malady, is taken from the woman's own narrative. She states, that a few days after labour, she was seized with a painful pressing sensation about the groins, which eventually produced a tumour that descended through the vagina, and appeared protruded at the external parts, and kept advancing downwards between the thighs and increasing in size, without interruption, to nearly the dimensions of the annexed Plate, in less than two years subsequent to the time of parturition.

The structure and size of this tumour, together with the appearance of the rugæ of the vagina, on its external surface, and the menstrual discharge issuing periodically, from the os uteri, at its dependant part, in a few months after delivery, incontrovertibly demonstrated this to be a complete prolapsus, or procidentia uteri, vesicæ, and inverted vagina.

During the early stages of the descent of these viscera, they were accompanied with very considerable uneasiness, and irritation about the meatus urinarius, and hypogastric region, resembling stranguary; with a frequent propensity to void the urine, which involuntarily flowed over the exposed surface of the tumour, and a discharge of viscid mucus exuded from under the *Labia Pudendi*, that produced a considerable degree of suffering and excoriation for the space of four or five years. After this period the secretions gradually abated, and the whole exterior of the Procidentia began to lose its florid hue, and soon acquired the appearance and structure of perfect cuticle, which has remained to the present time with occasional, though trifling, abrasion. It is somewhat remarkable, that she lingered for the space of seven years in this state, without consulting any medical practitioner; though she attended to her domestic concerns during this interval, with occasional interrup-

tions of painful indisposition. After this lapse of time, she applied to an eminent surgeon of this town, who made several fruitless attempts to reduce the protruded parts, but the length of time since their descent, together with the magnitude of the tumour, rendered it wholly impracticable. These inefficient endeavours occasioned much pain to the woman, and excited a degree of inflammation which caused a return of the exudation of mucus on the external part of the tumour, and a slight denudation of the recently formed cuticle; notwithstanding which breach of surface, the ulceration soon healed, and acquired its former colour, and has continued so to the present period. About twelve years ago, (though strange to relate) she entered into the matrimonial state with her present husband, James Barnhill, from which period she dates the origin of her calculous affections, and has at different times passed a number of small calculi from the urethra, to the amount of many hundred, some of which have been preserved, and are now in my possession; and what is rather remarkable, on a minute inspection, many of these calculi bear a great affinity in figure to those that were extracted by the operation, and which are of the Tetrædron form, with triangular, pyramidal, and equilateral faces.

I was first called to this patient on the 28th of

December, 1813, and on enquiry, found her in a state of great pain and misery, apparently occasioned by calculous irritation about the *meatus urinarius*. She appeared at first averse to my inspecting the parts, or making any manual attempts to mitigate her sufferings; but on reasoning with her on the necessity of introducing the sound or catheter into the bladder, she yielded to my request; and on placing her horizontally on the side of the bed, and the parts being exposed to view, (not being in the least previously acquainted with the state and nature of the case) I was not a little surprised to perceive a pendulous tumour projecting from the vulva, and suspended to the middle of the thighs, the bulk of which appeared equal to an ordinary sized melon, of an oval shape, suspended at the labia, and so closely attached, that there was no space by which the finger or probe could be introduced, and the tumour caused a disagreeable straddling when the woman walked. After making several attempts to introduce the female catheter into the urethra, I found its point would not pass under the arch of the symphysis pubis, as in the usual way, I then took hold of the tumour, which felt elastic, and by gently pressing it between both hands, a sensation was communicated to the touch, which left no doubt on my mind, of the

presence of a number of calculi contained in the cyst. This circumstance led me to pursue a contrary route, by introducing the point of a male sound into the orifice of the urethra, with the convex part directed towards the pubis; by which manœuvre, I easily succeeded in passing it down into the bladder, which viscus I ascertained was enveloped within the cavity of the vagina and uterus, and had formed a *cul de sac.* By making a gentle varied motion of the sound, I was able to identify the stones, and could also press the point of the instrument against the interior and anterior part of the cavity, so that its point was distinctly perceived through the parietes of the bladder and uterus, which organs seemed in close contact with each other.

From the present position, and the appearance of the organs connected with the prolapsus, and the narration of the patient herself, it appeared that the uterus and vagina were first propelled downwards from their natural situations; and by some unknown and adverse circumstance, had thus formed a receptacle *out of the body* for the admission of the bladder and its contents. From the symptoms accompanying the early state of the disease, it is not very improbable that the weight of the stones had facilitated in some degree the descent of this viscus, the cavity of which

contained the urine, and which passed *guttatim* involuntarily by the *meatus urinarius* in a retrograde direction, and spread over the exposed surface of the tumour.

On attentively examining the situation and cavity of the bladder within the uterus, by means of the sound, when introduced as before stated, I was enabled to perceive that the bladder did not descend quite to the bottom of the uterus. In order more fully to ascertain this circumstance, I passed a probe nearly two inches up the os uteri at the bottom of the tumour, and distinctly felt the fundus of the bladder contained within the cavity. The dimensions of the Procidentia taken prior to the operation, were nine inches longitudinally, and in circumference fifteen.

On the 1st of January, 1814, and three days after first detecting the stone in the bladder and receptacles before mentioned, I undertook the operation, in the presence of Dr. Chew, then of Preston, but now of this town, and my pupil, Mr. Meanley. After having placed the woman in a convenient situation, I began the operation by making a longitudinal incision of rather more than three inches in extent, commencing about the same distance below the *meatus urinarius* on the anterior part of the prolapsed tumour, and by a few gentle strokes with the scalpel, the bladder

came in view, and the muscular fibres rather receding before the edge of the knife, induced me to make a small puncture at the upper part of the wound, through the parietes of this viscus, from which flowed a portion of urine. By dividing the bladder with a probe pointed bistoury downwards to the corresponding extent of the incision of the uterus, I was enabled to pass the forefinger of the left hand into the cyst, wherein the stones were lodged; along which I conducted a small pair of forceps, and in the space of a few minutes extracted ten stones, all of which, except one, were alike, both in size and form; presenting a peculiar porcelain polish, with their triangles as neatly rounded off, as if executed by an artist.

There was scarcely any blood lost during the operation; nor did the woman appear to suffer much pain.

Before the wound was closed, I was anxious to ascertain whether the uterus and bladder by their long contact had become united by the adhesive process of nature; and on attempting to insinuate the point of the probe by the wound betwixt the edges of the incised organs, they appeared to have formed so complete a coalescence, that it became quite impracticable to effect a separation at any part of the incision.

After the stones were extracted, a canula was introduced, and fixed in the wound by means of the T bandage, made of narrow tape for the purpose of conveying the urine over the lower part of the tumour, to prevent excoriation. At the end of three days after the operation, the instrument was taken out, and granulations were observed to shoot from the edges of the wound. A pledget of lint spread with cerate was applied occasionally on the part, and on the 11th day subsequent to the operation, the woman walked down stairs, and in part pursued her domestic affairs.

The orifice kept gradually diminishing by means of the granulating process, and the urine became in part evacuated by the *meatus urinarius* and the opening of the wound, till it was healed, which was completed in the space of two months from the time of the operation.

The prolapsed tumour varied in size at different times on being measured subsequent to the operation, owing to the quantity of urine contained in the cyst. The dimensions at present are 14 inches in circumference, and $6\frac{1}{2}$ longitudinally from the *meatus urinarius* to a little below the os uteri, near the pendent part of the prolapsus.

It is worthy of observation, that I had frequent

opportunities after the operation of witnessing the menstrual evacuation from the os uteri at the bottom of the tumour, which evacuation has been natural and periodical, with few interruptions from the above mentioned event, till the usual period of their cessation; during which interval no calculi have been formed in the urinary cyst, and the woman now enjoys a good state of health.

A CASE OF

TUMOUR ON THE NOSE,

WITH PHYSIOLOGICAL REMARKS.

The peculiar character of this anomalous affection, together with some preliminary observations on the physiology of tumours in general, on the difficulty attendant on their classification, and on their affinity to certain protuberances observable on the bark and leaves of trees, may not be unacceptable to the reader. These hints may probably suggest an enquiry into the analogy which exists between the animal and vegetable kingdoms, in the production and structure of superfluous parts, and be the means of instituting a more rational mode of treating such morbid affections, than what at present is adopted amongst practitioners of surgery.

The structure of tumours is so diversified, that no true outline can easily be formed to assist the nosologist to arrange them with precision into distinct genera and species; nor do such attempts to form a systematic classification appear

to me either useful or practicable. Their production is effected by the various actions and secretions of the superabundant particles in the circulating vessels, which become deposited, and form organized tumours from which no part of the body is altogether exempt. Under such varieties of diseased structure, how can these affections be possibly defined and systematically arranged, when they depend on so many incidental changes, and where every stage of morbid deposition must furnish collateral distinctions?

The painter, when engaged to produce a picture, may possess such skill and acquaintance with his art, that the colouring may be appropriate, the shading correct, and the piece display unquestionable proof of talent: yet if that essential property, the likeness of its object be wanting, whatever are the advantages of light in which it is displayed, the value of the painting lessens as we contemplate it. Equally questionable appears to be the exercise of genius displayed by nosological authors, in ~~the~~ the artificial arrangement and classification of tumours, as in many other corporeal diseases.

It is nevertheless to be acknowledged, that the subject has been lately discussed with ability by Mr. John Bell and Mr. Abernethy; yet the nature and treatment of tumours appear still involved in

much obscurity, as the latter-mentioned author confesses in his observations on this disease; and in which he seems also to lament the want of a systematic arrangement of these morbid affections. "If an arrangement (says Mr. Abernethy*) of tumours was once made, so that the history of each species could be particularly marked, we might perhaps be able, from this circumstance, to form a probable opinion of the nature of the tumour, and of the mode of treatment which it would require."

Here then we may pause, while so able a physiologist is left to doubt on the possibility of classification. Hence I am disposed to believe, that the distinguishing characters of most tumours are so equivocal in their nature and structure, that they can only be determined and arrested in their progress by an attentive observation of their situation, texture and symptoms; consequently any mode of treatment founded on mere classification must be precarious and uncertain.

Thus situated, let us then seek for information by an observance of the physiological analogy which exists between the exuberances in the vegetable, and those of the animal kingdom, and en-

* Mr. Abernethy, in his work on tumours above alluded to, has nevertheless attempted a classification.

deavour, if possible, to acquire from thence a more rational and correct mode of treating this disease, than what the present province of surgery has hitherto offered.

Whoever surveys the structure and functions of the animal and vegetable creation, will find a much greater and nearer resemblance than at first would appear to be the case; for if we look at the stamina of plants, they will be found to consist of fine capillary tubes, which run parallel with each other, and the bark of trees is double, like the skin of animals. On viewing the interior parts, there will be found distributed the parenchymous, resembling the fibrous, and in the centre the pith or medullary substance, as also air vessels, lymphatics and lacteals.

On a retrospective view of the great difficulty of exactly ascertaining the respective boundaries which appear to separate the animal from the vegetable kingdom, and considering the uniformity of the structure and functions of the relative organs destined for nourishment and growth, from their infant state to the period of old age and decay, it will appear evident from such research, that both these departments of nature are influenced by similar laws; and that the Deity, in the exercise of his agency, has been governed by the same model in each system.

It is a fact known to physiologists, that the animal and vegetable actions are supported and carried on by a process of living and active vessels not very dissimilar from each other; consequently we occasionally witness monstrosities and deformities in each kingdom, while the different states of infancy, maturity, and decay, are marked with as much seeming regularity in vegetables as in the most perfect animals. A plant can no more live without leaves and air vessels, than an animal without cuticle and lungs. Is not then the motion of the sap in plants like that of the blood in animals, produced chiefly by the action of atmospheric air, combined with external heat?

The deformities we behold in vegetables can frequently be traced to some accident, or chemical fault in the soil; and those preternatural deviations from nature belonging to the human subject may not unaptly be exemplified by the analogy of the vegetable kingdom, in the process of healing of wounds in trees, &c. &c.

We have many important facts to corroborate this opinion, which shew that the fibres and vessels of animals and vegetables are possessed of a wonderful capacity of expanding and inosculating themselves into each other, of carrying on a reciprocal circulation and becoming endued with the power of either restoring lost parts, or causing

supernumerary ones; to this degree of redundant fluid circulating in the vascular system, may be ascribed the production of tumours on animals, and like deformities on plants; and by a similar process of the functions of vegetable action, buds and branches or shoots of one tree may be implanted into another by grafting or innoculation, the fibres of which are insinuated and incorporated into those of the original stock, so that they form only one being.

In like manner fractured bones are united, and the sutures of the infant's skull and epiphysis of bones become totally obliterated in advanced age, and every breach of parts, whether in the vegetable or animal system, is repaired by the same inherent process of living inosculating action. The mortality of plants, is chiefly caused by incidental circumstances, as there internal diseases are always few, when compared with their external ones, which is reversed in animals, and are unavoidably more exposed to the vicissitudes and inclemency of the seasons, and depredations and devastations of noxious animals, than man.

Some species of plants, as well as animals, possess the power of acquiring longevity to a certain degree, to which nature has limited others, and though the prophylactic means in each kingdom of nature are not very dissimilar, and may be

used with advantage in various vicissitudes of morbid condition, yet all must eventually give way to time.

Let us, however, for a moment compare the faculty of regeneration and self-preservation which vegetables possess with those of man, and the superiority of the former will be easily perceived.

It is manifestly evident that vegetables suffer great violence and destruction of parts with apparent impunity. The inherent power which they possess of cicatrizing wounds made in the bark of trees, and restoring branches lost from various causes, is so certain and wonderful as to induce us to believe that there is scarcely any bounds prescribed by nature to this living and almost inexhaustible faculty of reproduction. But the human species, though at the head of the creation, is not indued with such efficient influence to the same extent.

By a wise and immutable law of nature (though to us mysterious) our animal economy is so constituted that our constant wants and necessities require perpetual supplies, and in many cases rendered greater by the depravation of our nature, subject us to many physical evils, dispose us to various diseases, and cause us to be in some points of view less capable of self-preservation than the vegetable tribes around us. Though this is appa-

rently humiliating still there exists an analogy in respect to growth, so that the occasional excrescences of trees, and the preternatural tumours sometimes formed on the human body are produced and generated by a vital action in both cases similar.

When a plant, for instance, is wounded by some external cause, there takes place a copious exudation of lymph from the wounded part ; and if the injury be not mortal, granulations shoot out from the surrounding vessels, the part becomes healed, and a cicatrix is formed, similar to what takes place in the bodies of animals.

Little as these crude remarks may appear to possess, either of novelty or interest, yet if we take a glance at the organization of the lower order of the living system of nature, and compare the simple with the more complicated and exalted animals, we shall invariably find the wants of the former more limited and supplied with greater facility than the latter.

It will appear useless in this place to enter into an enquiry respecting the functions and economy of organized beings in general ; suffice it to say, that all the varied actions of the animal and vegetable creation may be referable to some physical law. Hence it follows, that there is no apparent distinction between the natural and unnatural

process of vascular action of the living system except in degree; for the deposition of the coagulable part of the blood, whether caused by accident or an undue excitement of inflammatory and morbid action, either of the whole or part of the circulating system, or by a rupture of the lymphatic vessels, may, if not taken up in time by the absorbents, be the primary cause of the production of tumours distinguished by various appellations: and in this manner it is presumed all animal and vegetable monstrosities and irregularities of structure, are generated. Such, for instance, are warts, corns, wens, nodes, and gallæ-quercus. These varieties of diseased structure, appears too ambiguous in their nature to admit of any regular classification, and consequently can lead to no systematic method of surgical treatment, founded on such hypothesis.

The excrescences of plants most certainly bear a near relation to the phenomena and growth of tumours on the human body, and a minute attention to the treatment of diseased structure in vegetables, may enable the surgical enquirer to institute a more rational and scientific mode of treating tumours of the human body.

It is worthy of remark, that in the economy of tumours they rarely continue in an insulated state for any considerable length of time, but by ac-

celerated arterial action, and a tardy disposition of the absorbents, they perpetuate their growth when uninterrupted by surgical aid, as long as the system to which they are connected, yields them support. This observation will also apply generally to vegetable exuberances.

It is evidently the nature of all morbid phenomena to be liable to a change of structure, thus a tumour when bearing in itself no appearance of malignity in its primary state, will eventually assume a more formidable and alarming aspect; and if its removal be too long delayed, will often prove a source of regret to the patient, whilst he, on the one hand, from motives of timidity, and the surgeon on the other, through a mistaken fear of risking his reputation by the hazard of an operation, lulls the patient into a state of supineness: thus they implicitly conspire to deceive each other from day to day, during which time, their minds are agitated by a succession of alternate hopes and fears, till by the slow, but unnoticed lapse of time, the disease becomes inveterate and incurable. This lamentable effect of surgical procrastination I have witnessed in a great variety of instances.

Mr. Blakey, a respectable schoolmaster of this town, (Blackburn,) consulted me respecting a morbid rubicund tumour seated on his nose, which

had been increasing in size for the space of thirteen years.

He informed me, that he had consulted several eminent surgeons on the propriety of its being extirpated; none of whom seemed desirous of undertaking such an hazardous operation lest a fatal hæmorrhage might ensue.

The tumour extended from the superior part of the nose over the *alæ nasi* and apex on both sides down to the lower part of the upper lip to such an extent, that the nostrils and mouth were nearly closed, and when laid down to sleep his breathing was greatly obstructed, unless the tumour was supported by a folding of the pillow placed under it; and when attempting to drink, it became in part immersed in the liquid unless it was raised by the hand.

At the lower part of the tumour, rather parallel with the septum narium, the cuticular surface of one projecting tubercle was excoriated, from which there was an offensive exudation.

I was informed that about six years prior to this time, an irregular surgeon removed a large and troublesome tubercle from near the left *alæ* by means of a ligature, an operation which proved both tedious and painful.

On deliberate consideration, I was induced to propose a total eradication of this disgusting ex-

crescence by means of the scalpel, to which my patient readily assented.

On the gentleman being seated steadily on a chair, and keeping the natural figure of the nose in my mind, I began the dissection at the superior part of the tumour, as high as the dorsal arch, continuing the incision along the alæ down to the apex on both sides, close to the periosteum and perichondrium, steadily pursuing this project till the whole of the morbid mass was eradicated.

The operation did not occupy much time, nor did my patient complain of the least pain during the removal of the tumour. The wound was allowed to bleed without interruption, and after the lapse of a few minutes the hæmorrhage ceased except in one small artery, which was easily checked; and this circumstance of no supervening bleeding (which had been dreaded by other surgeons) taking place, together with the success of the operation, I am disposed to attribute solely to the tumour being disparted so closely to the cartilage of the nose. The whole surface of the sore was completely healed in three weeks, and no traces of the cicatrix could be observed, unless by a very near and minute inspection.

This anomalous tumour, on dissection, exhibited a vascular appearance, and assumed a deep red and livid hue, and its structure did not cor-

respond in appearance with any distinct species of tumour which I had seen described by authors.

The annexed plate will furnish the reader with an accurate drawing from life, of the size and figure of the tumour prior to its removal; and also of the benefit which Mr. Blakey derived from the operation. See Plate IV. Fig. 1 and 2.

Since the above-mentioned operation on Mr. Blakey, I have extirpated three tumours of a similar description; and with the same favourable result in each instance; one from Mr. Hardy Measure, of Spalding, in Lincolnshire, another from Mr. Riding, of Malham, Yorkshire, and the third from Mr. Charles Robinson, Timber-merchant, of Hull. This latter gentleman informs me, he is now in the fifty-ninth year of his age, and that it is upwards of thirty years since the commencement of the disease. Though the nature of the tumour appeared the same in all the instances, yet there was more hæmorrhage during the operation in Mr. C. Robinson's case, than any of the former, and the morbid structure had become so firm, that its removal could scarcely be effected either by the scalpel or scissars. It is now three weeks since the operation, and the cicatrization of the part is nearly completed.

It may be necessary to remark, that the appearance of the new cuticle so nearly resembles

that of the adjacent parts in all the cases, that it is scarcely discernible, and a reference to Plate V. Fig. 1 and 2, will shew the advantage which Mr. C. Robinson has experienced from the extirpation of the protuberance.

Fortunately this description of tumour is comparatively a rare occurrence, as I have only met with two similar cases recorded by surgical authors.*

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* See Hey's Surgery, and the New Progress of Surgery in France, by Delonnes.

Plate V.



Fig 1.

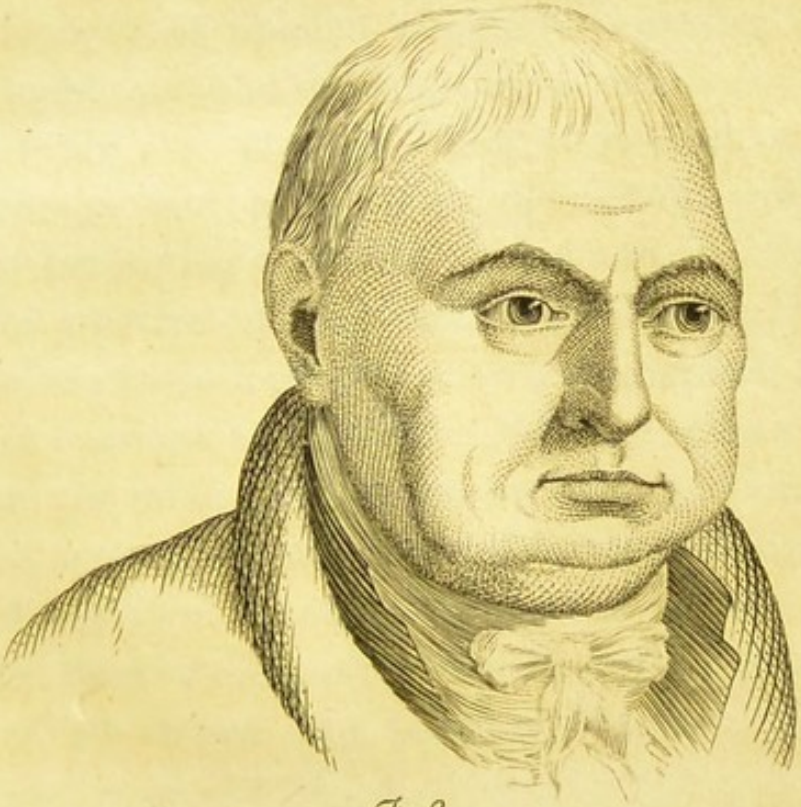


Fig. 2.

Drawn by Ja' Shee, Blackburn.

Engraved by Ja' Parry, Manchester.

ON MIDWIFERY.

AN ENQUIRY INTO THE VARIOUS OPINIONS ADVANCED BY WRITERS ON MIDWIFERY, RESPECTING THE MANAGEMENT OF THE PLACENTA.

On taking a retrospective view of the progressive state of the obstertic art, from the time of Hippocrates, the father of Physic, to the present age, it appears that there has been a considerable diversity of opinion adopted respecting the most eligible method of removing a retained placenta from the uterus, when connected with hæmorrhage and consequent difficulties. The hope of instituting a more uniform and judicious mode of practice on this branch of parturition, has induced me to collect into a narrow compass, the different opinions and precepts, handed down to us, from the infancy of the obstetric art; in order that the accoucheur may be enabled to investigate the subject more minutely and with greater advantage, than by tedious research amongst authors, many of whom are now become obsolete. The

records of midwifery exhibit to the reader three different opinions, respecting the present question: one advising invariably, manual extraction immediately after the birth of the child; while another relies wholly on the expulsive efforts of nature, and a third pursues a middle course.

Those authors who have attempted to harmonise these discordant modes of practice appear to have too much generalized their precepts, and omitted drawing a line of distinction sufficiently explicit, between cases of *Abortion*, and the parturient process after the full period of gestation, as well as in other incidental instances: for the manual extraction of the placenta is in importance equal to that of parturition itself.

Hence it appears probable, that these different modes of proceeding have been implicitly adopted from one age to another, without a sufficient investigation of the respective views and principles on which they are founded. It is not therefore surprising, that there should be such diversities of opinion on the subject, nor can we wonder at the varied result of modern practice.

In every *civilized* country on the face of the globe with which we are acquainted, the parturient state of woman excites a high degree of sympathy and commiseration; and as luxury and refinement have spread their baneful influence amongst so-

ciety, this mutual sensibility has proportionately increased; and diseases have become multiplied* and morbid predispositions propagated through all ranks of civilized society. The pains of labour appear to be commensurate with the deterioration to which civilized communities are subject.

The obscurity which hangs over the history of the *first birth*, leaves the medical enquirer to mere conjecture respecting the method adopted with regard to the placenta in the case of the first offspring and during the antediluvian ages; and were it possible to discover this, such research would not satisfactorily elucidate the present subject. For as the first woman existed in a state of uncorrupted simplicity, it is reasonable to conclude that little or no manual assistance for the extraction of the *secundines* was necessary; and if the human race had continued in its primitive state, it is very probable that there would have required no other aid for the expelling of the placenta than what is natural to the inferior species of the animal creation.

Hence we might on a slight view of the subject

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* It is a remarkable fact and should not be overlooked, that there have been no bodily deformities observed among the native Indians of North America; and also that fevers constitute the only diseases of importance to which they are liable. Vide Dr. Rush's Medical Inquiries, Vol. I.

be led to conclude, that no difficulty or danger would result from its retention; since quadrupeds approach nearer to a state of nature than the human species. Yet on a more careful attention to their wants and afflictions in the various stages of their parturition, we shall find them occasionally involved in difficulties and dangers, proportioned to their respective habits and state of domestication, perhaps in a degree similar though not equal to what has fallen to the lot of woman.* Parturition in the most remote and simple ages of all nations appears to have been performed chiefly by nature, and we read of only two women who died in labour in the whole Jewish history. How widely different is the event of labour at the present day, when contrasted with the success of former times, though aided by the advancement of modern improvements in the art!

The female of every order of animals in a state of gestation, is possessed of an umbilical cord, and placenta, or substance analogous thereto: and it

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* This circumstance is illustrated in Scripture by the difference which the Egyptian Midwives observed between those females that belonged to the Court of Pharaoh, and the Israelitish women in a state of bondage; and it is a lasting testimony to their honour and humanity displayed on this peculiar occasion; and particularly at that early period when women were the only practitioners who exercised this art among the Hebrews. See Exodus, Chap. I.

is a fact worthy of notice, that woman expels this organized mass with less facility and a greater proportionate loss of blood than any other parent; and though nature is in most instances, sufficient to perform a safe and spontaneous expulsion in the present corrupt state of society, nevertheless many casualties occur during gestation and parturition, which interrupt the ordinary course, and evince the necessity of extraneous interference.

On contemplating the natural history of man, and the different degrees of intellectual capacity and improvement in the civilized and uncivilized parts of the globe, we observe a corresponding difference of suffering in the parturient condition.

It has been observed by various authors who have had opportunities of visiting the most uncivilized and remote parts of the known globe, where the inhabitants live in a great measure in a state of nature, that the women suffer little when compared with those of European countries.

The proximate cause of the pain and difficulty attendant on parturition appears more imputable to the habits of dissipation and voluptuousness and the deterioration of physical strength, than to any *immediate* infliction at the fall.

A late author, (Dr. Osborn) in his Essay on Midwifery. has taken great pains to prove a contrary doctrine; for (says he) "the erect position of the human frame, that singular mark of pre-

eminence, exposes woman to pain and difficulty in natural parturition, from which the subordinate quadruped is almost entirely exempted, by the horizontal position of her body," and the same author adds, "according to the *Mosaic* account of the creation of the world, human parturition was distinguished by the severity of its pains, by its difficulties and dangers, from the same operation in other animals, as a curse annexed to the fallen nature of man, and that 'in sorrow shalt thou bring forth children,' was announced to our first parents as a punishment which it was the intention of the Deity, should continue to afflict human nature, as long as the world endured." See Page 7 and 8.

Granting that these difficulties alluded to by Dr. Osborn, were the consequence of the edict at the fall, might it not be inferred that they would be applicable in an equal degree to every parturient human female in all quarters of the globe?*

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* We read in Wafer's Description of the Isthmus of America, Page 151, that "when a woman is delivered of a child, another woman takes it in her arms within half an hour or less after it is born, and takes the lying-in woman upon her back, and goes with both of them into the river and washes them there."

Newhoff in his Voyages, Page 152, says the Brazilian women have very easy labours, for as soon as they are delivered they go to the river and wash themselves without harm. Lery in his voyages, chap. 16, relates the practice of the savages of Brazil

Thus we see from these quotations how this respectable author has, by a too superficial and inaccurate view of the subject, slided imperceptibly into error, and being also a teacher of midwifery, has propagated opinions which have become very general, and more necessarily require refutation; for if we advert to the history of the

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imitating the instinctive designs of the quadruped and pulling the placenta away from the mother with the teeth. See also Hufeland on the Art of Prolonging Life, Vol. 2, Page 9, chap. I. and Dr. Gregory's Comparitive View, section 1st.

Long in his History of Jamaica, Vol. II. Page 380, says, that "their women are delivered with little or no labour; they have therefore, no more occasion for Midwives than the female Ouran Outang, or any other wild animal, a woman brings forth her child in a quarter of an hour, and goes the same day to the sea and washes herself."

Stedman in his Narrative of South America, Pages 413, 414, says, "their women are delivered without any assistance, and with so little inconvenience or suffering that they seem exempt from the curse of Eve. They go about their menial services for their husbands the day after their delivery; this however ridiculous and incredible it may appear is an absolute fact, that every one of those gentlemen lie in their hammocks for about a month, groaning and grunting as if they had been themselves in labour, during which time all the women must attend them with extraordinary care and the best food. This the Indian calls enjoying himself and resting from his labour."

It appears also from Sonnini's Voyage in Greece and Turquia, that the Grecian woman suffer very little during labour. It is asserted by Aristotle, that the women of Ligustria bring forth children without pain, and that they return to their business as soon

inhabitants of different nations who dwell in the *torrid* and *frigid* zones, and most unpolished parts of the globe where luxury has found no abode, we are informed it is not very uncommon to observe labour terminate with little or no appearance of pain, or indication of sorrow on the countenance; and in such uncivilized states of society

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as they are delivered. Dr. Bancroft says "that child bearing is attended with so little pain in Guinea, that the women seem to be exempted from the curse inflicted upon Eve." See also an interesting account of the customs of the North America Indians in Dr. Rush's Medical Inquiries, Vol. I. "during pregnancy (he remarks) the women are exempted from the more laborious parts of their duty: hence miscarriages rarely happen among them. Nature is their only midwife, their labours are short and accompanied with little pain, each woman is delivered in a private cabin, without so much as one of her own sex to attend her, after washing herself in cold water she returns in a few days to her usual employment; so that she knows nothing of those accidents which proceed from the carelessness or ill management of Midwives; or those weaknesses which arise from a month's confinement in a warm room." The London Practice of Midwifery contains a case of a woman being delivered in her sleep. See also Baynard on Cold Bathing, Page 173, and Brooks's Natural History, Vol. I, Page 175.

It may appear strange, (though true) that it is at the present time, the custom among many nations of North America, for the husband to betake himself to bed the moment that his wife is delivered. This ridiculous custom is now practised in the Canton of Bern, and is called *faire couvade*. Mark Paul observed this among the Tartars, and Herodotus, also found it practised among the Scythians.

(if upon any) it is presumed physical causes might be expected to operate with the most powerful influence. And even in the intermediate latitudes there is great disparity of suffering manifested in the different classes and condition of females, when equally exempt from bodily deformity. Though it be allowed that a warm climate may possibly exert some influence on the state of the parturient female, in modifying the process of labour by means of relaxing and dilating the muscular system; yet in the most northern latitudes, from the nature of acquired habits, the rigidity and firmness of the muscular fibre and power of exertion are greater during labour, and on this principle the influence of temperature in different climates becomes counterbalanced. Hence it is reasonable to infer, that the mental sufferings will be proportionately less, and their physical energy greater; for it is well known to every accoucheur, that the faculties of the mind have great influence over the uterine system.

It appears a remarkable fact from the history of the *Native Indians* of North America, before alluded to, that there have been no bodily deformities (exclusive of accidents) observed among them; and also that they are exempt from almost every class of disease except *fever;* nevertheless, as luxury, dissipation, and intemperance have become prevalent by promiscuous intercourse with

other nations, so in a certain ratio has disease spread its baneful influence in that continent. Hence may be seen the pernicious effects resulting from an ungoverned and licentious mode of civilization, in forming the outline of the physical character of man, which is to be feared but too feebly compensates for those diseases which inevitably become entailed on posterity. These facts lead me to believe, that they in no small degree exemplify what I am attempting to establish, namely, that parturition was originally intended by the Deity, to be effected with facility and safety.

It might on a cursory view of the subject, be thought irrelevant in this place, to attempt to refute Dr. Osborn's arguments, but he seems to have carried his premises farther than what appears warrantable; and to have drawn conclusions which, if allowed to prevail without refutation, might prove a barrier to future improvements in the obstetric art, and lead practitioners to indulge in a kind of apathy in prosecuting their studies; thus obstructing all future progress in this important department of science, than which nothing demands greater circumspection in the accoucheur, or exhibits a more striking display of the wise economy of nature. Similar sentiments to those above stated, have been entertained by various Commentators on the Old Testament; but I see no

just ground for inferring any *immediate* physical infliction from either sacred or profane history. The language of Scripture may admit of a more satisfactory explanation, by supposing that it is merely a *prediction of the future effects of depravity in this particular instance of the animal economy; a prediction which has been abundantly verified in the sufferings of females, notwithstanding the exceptions that may be found to the general fact.* But without any further remarks, I would just observe, that Dr. Osborn, for the purpose of substantiating his reasonings and demonstrations, as he chooses to call them, should have proved that there was some absolute change made by the Deity in the structure of the human female pelvis or cranium of the fœtus at the time of the fall, which no one except himself ever yet supposed, in order to explain the text.

The structure and adaptation of those parts of the human female, and cranium of the fœtus which are essential to parturition, are, in the opinion of most physiologists, as manifest indications of uniformity and design in the arrangements of Providence, as is observed in any other part of the corporeal system. Hence it becomes extremely arrogant and repugnant to reason, to attempt to arraign the wisdom and attributes of the Deity, on the ground of existing maladies, when there is no doubt, that, in a great degree, they arise from

the enervating effects of luxury, and modes of education and civilization, connected with circumstances of a more adventitious nature, and not from any "pre-eminence of posture, or inevitable physical evil." It is no doubt to a combination of errors arising from a too sedentary course of life, and modes of refinement perpetuated from the earliest periods of history to the present time, that we should ascribe the chief difficulties attendant on every stage of tedious labour, except such as are occasioned by accident.

These causes of depravation sufficiently account for the origin and duration of the principal calamities in this department of human suffering.

Such instances particularly exemplify the difference between the savage and the civilized state; it is not, however, my intention to infer that in the present habits of *European* society, such conduct as that of the Brazilean women (before mentioned) ought to be tolerated. I only wish from hence to intimate, that as art and refinement lead to every species of langour and imbecility, the female who exposes her system to debility, by yielding to the luxurious and enervating effects of affluence in polished life, must expect a share of its evil consequences.

To acquire a competent knowledge of the parturient operation, let us keep in view the natural structure of the female pelvis, and the facility

with which the fœtal head descends through its apertures during the process of natural labour; the cranium of the fœtus being composed of several distinct and separate flexible bones connected by *synneurosis*, its membranes become compressed and overlay one another, consequently the volume of the head is materially reduced in its dimensions, in proportion to the force of uterine action, and the opposing obstacles which accompany labour. This agency is accomplished by the reiterated action of the uterus, which forces the edges of the bones of the cranium over each other without injury to the child or mother; which effect in the reduction of bulk, could not possibly take place, if the cranium had been formed of one solid bone, or the pelvis had been differently constructed. The distinctive marks which so manifestly characterize the difference between a male and female pelvis, must arise from the intentions of Providence in furnishing the female with a frame so admirably adapted for the safety of the child during labour, as well as her being qualified in other respects to become a mother.

The cavity of the female pelvis, when exempt from disease, is much more capacious than that of the male, the perpendicular dimensions greater, as also the transverse diameter.

The crista of the *ilia* and the tuberosities of the *ischia*, are likewise more expanded outwards,

the concavity of the sacrum more extensive, the symphysis pubis is wider in the female, and the angle of the arch more obtuse, consequently the os coccygis is at a greater distance from these points, and the space greater. This invariable peculiarity of formation in the female pelvis, appears admirably adapted by the author of nature for the more easy reception and egress of the fœtus during the process of parturition. If not designed for this wise purpose, whence arises the sexual difference in this respect?

Thus labour is evidently facilitated and not retarded by the adaptations of Providence. Daily observation likewise evinces the peculiar and appropriate proportions which exist throughout the quadruped creation, between the capacity of the male and female pelvises, and the respective size of the fœtal head; and sufficiently prove by analogy the intentions of the Deity in this particular instance, in assigning a free exit for the fœtus at the time of birth.

Among the pre-eminent and concurrent circumstances in human parturition, is the number of sutures and flexible bones, which form the cranium of the fœtus, compared with those of the adult, together with the favourable presentation of the head of the fœtus almost invariably corresponding with the longest diameters of the pelvis, as it winds through the cavity at birth.

On this subject, it is remarked by Dr. Denman, that "it is evident beyond all doubt, if this provision had not been made, that many children must have been destroyed at the time of birth; or their parents must have died undelivered." These observations will appear confirmed by adverting to the fact, that the parturient process of the lower classes of animals, which continue in their *natural* condition, has deviated comparatively little, from the state in which they were originally placed by Providence; while those which have been brought into a state of domestication, have had their sufferings proportionably increased. Hence we are led to infer from analogy, that the parturient process is greatly deranged both in the higher and lower orders of animal creation, by artificial modes of living among brutes, and a relaxed state of moral discipline in human society.

This diversity in parturition may be further exemplified, by referring to the inhabitants of foreign countries where women exist in comparative simplicity, and where labour is easily achieved. This remarkable fact being known, shews that the difference in the event of child-birth does not wholly depend on the effects of climate, or the diversities of bodily structure. For example, let the uncivilized female be removed to this land of luxury, and her easy process of labour would readily convince the observer of the fact. Or let

the refined European be conveyed to a less civilized part of the globe, where voluptuousness is unknown, and she will undergo the same degree of suffering, as though she had remained in her native clime. Hence we may look in part to moral causes for an explanation of this sexual phenomenon, and not altogether to anatomical structure and conformation.

These analogical facts and observations, indubitably prove that the influence of climate and organic structure, are alone inadequate to produce so direful a calamity on the female race, unless associated with long established habits of luxury and refinement, and the undue excitement of the mind, from which it appears manifest, that this morbid affection of the system, has for ages past been transmitted by hereditary association and disposition from parents to their offspring. In this way many constitutional diseases have been engendered, and bodily deformities produced in both sexes. Hence we may be led to draw this general conclusion, that the chief difficulties connected with labour,* are primarily excited by morbid predispositions in the female system, by asso-

* In Barrow's account of the Arctic Regions, it is said, that notwithstanding the coldness of the climate, the women seem to suffer little from child-bearing, resuming their occupations almost immediately after delivery. See also Crantz's History of Greenland, Vol. I.

ciations, or sympathies of bodily and mental susceptibility produced on the state of society, influenced by artificial habits, and eventually impressed on the constitution. In concurrence with the foregoing remarks on the difficulty of parturition, and the degeneracy of the human race, though they relate chiefly to the process of labour, and to female habits, yet we must acknowledge, that *man* has in an equal degree participated with woman in the enervating effects of luxury and refinement, produced by similar causes ever since the antediluvian age of the world. The evil tendency of dissipation and effeminacy in generating and aggravating the forms of disease has been long known to the medical enquirer, and have not escaped the observation of the poet Dryden, in the following emphatic lines:—

> "Our ancient fathers hardly earn'd their food;
> Toil strung their nerves, and purify'd their blood;
> But we their sons, a pamper'd race of men,
> Are dwindled down to three-score years and ten."

Though man participated at the fall with woman in the general denunciation, the occupation and duties allotted to him in this part of the globe, render him equally liable to attacks of disease with the other sex; and the *curse* inflicted upon the earth, as the consequence of his trangression, has like other sublunary things, been variously

modified ever since the antediluvian epoch, either by the spontaneous agency of nature, or artificial modes of economy. Thus we see that the Deity has not entailed on either sex, or on the earth all those evils which were at first threatened; but has in reference to both, displayed his benevolence and compassion. We see his justice in what is suffered, and his goodness in what is enjoyed.

The first authentic precepts relative to our present subject, are in the writings of Hippocrates, who lived 460 years before the Christian era; from which source we learn, that it was the practice at that early period, to leave the *funis umbilicalis* undivided till the placenta was expelled; and if the uterine efforts were inefficient, recourse was eventually had to administering forcing medicine by the mouth, and the introduction of medicated substances up the vagina to promote its expulsion. But the passing of the hand into the uterus, for the purpose of extracting the *after-birth*, is scarcely hinted at by this author; and in the book *De Superfœtatione*, he says, "if the secundines come not away easily, the child must be left suspended to them, whilst the woman is seated on a high stool, that the fœtus, by its weight, may pull them along; and lest this should be too hastily effected, the child may be placed on soft wool, or on two bladders filled with water, and covered with wool;

the bladders being punctured, and the water evacuated, they will subside, and the child sinking gradually, will gently draw the secundines away: but should the navel string happen to be broken, proper weights must be tied to it, to answer the same purpose: these are the safest methods of extracting the placenta." Such were the earliest precepts of this venerable author, for promoting the expulsion of the placenta.

Little or no information is extant of the progressive state of midwifery, from the time of Hippocrates to that of Celsus,* a cotemporary of the Emperors Augustus and Tiberius. This author, however, (though probably not an accoucheur,) claims the merit of being the first who directed the introduction of the hand into the uterus with the view of extracting a retained placenta; but at what precise time, or on what particular occasion, this method of practice was founded, we are at a loss to conjecture; nevertheless, it is evident, from the subsequent records of the obstetric art, that very opposite methods of conducting the operation, were countenanced by different writers, in most parts of the civilized globe, for the space of several centuries.

The reasons assigned for this contrariety of proceeding are chiefly founded on the following principles.

* See Lib. 7. Chap. 29. Celsus has no such claim in his writings

The advocates for immediate extraction, consider the placenta, an inanimate substance, and suppose it would produce dangerous effects to the mother, if allowed to remain in the uterus, after the birth; or if the os uteri should contract before it was extruded, manual attempts would then be wholly impracticable: and also that it is an extraneous mass, which if left in the uterus, injurious effects would follow.

Experience however, the most unerring guide, has proved each of these opinions to be incorrect, as far as relates to their being invariably relied on, and adopted as general methods of practice.

Impressed by a conviction of the efficacy of nature in most instances, I am led to believe, that when art is unnecessary, manual interference becomes injurious; this is manifested on no occasion more clearly, than when the membranes are artificially ruptured during parturition, which generally induces a premature suspension of uterine action, before its orifice is disposed to yield naturally. Protracted labour is thereby incurred, together with a train of subsequent evils, inseparably connected with the whole parturient and puerperal condition; hence it is evident, that no officious interposition should take place between the expulsive action of the uterus, and the advances of the head of the child in the passage, during the regular process of a natural labour, and where the

cavity of the pelvis presents no barrier to its course. On all occasions, it is best to watch this guide attentively, to discern her procedure, to support and aid her efforts when inefficient, and when assistance is not requisite, to withhold every unseasonable interference, and forbear to subvert her endeavours by any obtrusive or precipitate attempts either to hasten labour, or extract the placenta by the hand.

Serious difficulties and embarrassments often arise from the over officious efforts of an accoucheur during labour, by a too frequent examination, rupturing the membranes, irritating and distending the os uteri and vagina, which invariably produce a derangement of uterine action, uniformly retard the advances of the head of the fœtus, and prevent the spontaneous expulsion of the placenta, exciting constitutional irritation, and being not unfrequently the cause of *puerperal fever*.—After the birth of the child a certain portion of blood is always discharged during the natural extrusion of the placenta, in proportion to the contraction of the muscular fibres of the uterus upon the substance contained within it, and the extent of separation of the vessels which pass from this viscus to the ovum; but during this process, if a considerable detachment of the uterus and placenta take place, and a state of uterine torpor ensue, so as to pre-

vent a diminution of the diameter of the uterine vessels, a degree of hæmorrhage will necessarily follow, which indubitably calls for the aid of the accoucheur.

If the accoucheur, immediately on the termination of labour, and before having waited to ascertain the inadequate functions of the uterus, instantly begin to pull at the funis, or force his hand into that organ, and drag the placenta out hastily, he will frequently hazard the life of the mother, by inverting the uterus, or inducing hæmorrhage by a disruption of the cord, or partial separation of the cake from the uterine surface.

This mode of practice, though formerly much pursued, has, it is presumed, among rational and enlightened practitioners, for some time past been yielding to more judicious measures.

The parturient condition inevitably exposes women more frequently to uterine hæmorrhage than to any other incidental disease; and when the discharge is excessive, it becomes exceedingly alarming to the accoucheur and dangerous to the patient, in proportion to the extent to which the bond of union between the placenta and the uterine surface is affected, and the quantity of blood lost in a given time.

An accurate knowledge of the anatomy and physiology of the *uterus*, and its inherent action in the different stages of gestation and parturition,

together with a competent idea of the diameters of the pelvis, form the basis of the art of *midwifery*, present the best resources to the practitioner, and govern his steps in every pressing emergency and danger. An intimate acquaintance with the functions of the uterine system, and the management of the placenta, undoubtedly constitutes a most important acquisition to the accoucheur in every case of exigency. The consternation excited by hæmorrhage is usually great, and a completely torpid state of the uterus occurring immediately after delivery, attended with flooding and syncope without cessation, no contraction of its fibres being perceptible on passing the hand into its cavity, evidently give cause to suspect approaching danger.

When the efforts of nature have been uninterrupted during the course of a natural labour, the interval between the birth of the child and expulsion of the placenta, rarely exceeds ten or fifteen minutes, and though this period may occasionally be surpassed, yet it is more prudent to wait the recurrent action of the uterus, than to have recourse to the interposition of art, unless induced by some other and more urgent cause.

The impressions produced on the system by uterine hæmorrhage, should always be watched with great vigilance, as the danger incurred is not altogether in an equal ratio with the sanguiferous

discharge; nor can we possibly limit our interference to any determinate space of time, or rule of practice; therefore the period selected for extracting the retained, or adherent placenta, must be regulated by the existing circumstances of every case, cautiously steering between the two extreme points of *precipitation* and *procrastination.* From this view of the subject, it will appear evident, that the most effectual means of preventing hæmorrhage, is to preserve a due action of the uterus, without exciting the force of the circulation, and our primary object is to incite this inherent action, before we proceed to extract the placenta by the introduction of the hand.

I conceive this part of the subject cannot be placed in a clearer light than by quoting the following passage from White's Treatise on Lying-in Women, 5th edition, page 312.

"The advocates for leaving the placenta intirely to nature, certainly act upon a laudable plan, and no person has a higher opinion of the powers of nature than myself; but they have ended where they should have begun. They set out with art, and end with nature.

"It would have been well if they had reversed their practice. We do nature great injustice, if by taking the reins into our own hands, we first interrupt her, put her out of her course, and then leave her to herself. Woman, in a state of nature,

was never delivered in a hot room, nor with many clothes upon her: by heat, and a multitude of clothes, the muscles lose their contractile power. Woman in a state of nature, would not think of being delivered in an upright posture, or upon the knee of an assistant. Woman in a state of nature, would not have the child dragged from her, it would be gradually expelled by the contractile power of the uterus: the same progressive contracting power would expel the secundines; and woman in a state of nature, would not after delivery, lie in an horizontal posture, in a warm bed, drinking warm liquids for a week, or even a day.

"We should be consistent in our practice; we should imitate nature through her whole progress, and not in the latter part only; but we must also make proper allowance for these times, and this country where women are so far removed from a state of nature."

It may not, perhaps, be thought useless in this enquiry, to give the reader a chronological sketch of the principal authors who have treated on the subject; from which arrangement, the different authorities will be more easily ascertained by those whose engagements may not allow a particular reference to the works of the respective writers, some of whom are now obsolete.

I.

Authors who recommend that the expulsion of the Placenta should be left to the efforts of nature.

RHODION	RUYSCH*
TURNBULL	ANDRE PASTA
RAWLINS	RAYNOLD†

II.

Authors who recommend the immediate extraction of the Placenta.

HIPPOCRATES	PORTAL
CELSUS	M. DE LA VAUGUION
AETIUS	MAWBRAY
PAULUS ÆGINETA	DAVENTER
AVICENNA	CHAPMAN
ALBUCASIS	HEISTER
ROCHEUS	BURTON
PARE	MANNINGHAM
GUILLEMEAU	COUNCELL
MAURICEAU	PERFECT

* Ruysch supported this mode of practice during the latter period of his life, in a Treatise published at Amsterdam, entitled De Uteri Placenta, 1725, wherein he describes an orbicular muscle attached to the fundus uteri, the office of which, he supposes, is to exclude the Placenta by its own inherent efforts.

† The original author of the work translated by Raynold, is supposed to be Eucharius Rhodion. This was the first book published on Midwifery in England, and is entitled "The Byrthe of Mankynde, or the Womon's Booke."

III.

Authors who adopt a middle course of Practice.

ROUSET	MOORE
LA MOTTE	WHITE
RIVERIUS	DENMAN
DIONIS	LOWDER
ASTRUC	BAUDELOCQUE
SMELLIE	OSBORN
PUGH	BLAND
OULD	YOUNG
DEASE	HAMILTON
JOHNSON	BURNS
HUNTER	HOGBEN
FOSTER	MERRIMAN
COOPER	RAMSBOTHAM
SPENCE	CONQUEST

In this Synoptical Table, it will be perceived by the reader, that contrary opinions necessarily demand consideration; and on reflecting impartially on the data offered, it would be no easy matter to determine the best mode to be universally adopted, as the authors of each opinion seem entitled to some share of credence; more especially when it is considered that the state of society, and the different countries in

which they respectively lived, must have greatly influenced their methods of practice. For it is evident that women inured to the European modes of life, cannot with impunity during labour, use the same exertions as those whose habits have been more consonant to the dictates of nature.

The expulsion of the placenta and its membranous attachment is generally the work of nature, which is indicated soon after the termination of labour, by a continuance of the inherent paroxysms of uterine action, aided by the powers of the abdominal muscles and diaphragm which expel the child; and this is usually completed in the space of ten or fifteen minutes after the birth.

It will nevertheless be acknowledged, that the powers of nature are sometimes inefficient, and that the placenta becomes preternaturally retained in the uterus, beyond the usual time: on this account artificial assistance is requisite: and under the following heads may be included the chief difficulties connected with the present enquiry.

I.—Atony of the Uterus attended with flooding.

II.—Irregular and Spasmodic Action of the Uterus and Encysted Placenta.

III.—Morbid adhesion of the Placenta and Uterus to each other.

I purpose in the subsequent pages, to point out the practice which appears to me the most eligible in the order now stated ; but as the process of parturition has great influence on the whole system, when associated with retained placenta and uterine hæmorrhage in all its diversities, it will be indispensibly requisite to subdivide the subject as I proceed, in order more fully to elucidate the most appropriate mode of treatment.

I.

ATONY OF THE UTERUS, ATTENDED WITH FLOODING.

THIS affection of the uterus may be excited by a variety of causes, such as the following:—

By dilating and irritating the os uteri and vagina to expedite labour.

By rupturing the membranes artificially.

By a too confined apartment during labour.

By imprudently attempting to extract the head of the fœtus with instruments or other means.

By rash and precipitate efforts to drag the body of the child through the apertures of the pelvis, without the co-existence of uterine action to propel the shoulders forwards by its inherent efforts. Every officious attempt as above enumerated, under whatever specious pretext it be applied during the economy of natural labour, is reprehensible, and not unfrequently produces irregular action of the uterus and hæmorrhage, with a train of subsequent mischief inseparably connected with the process of parturition.

On the contrary, when labour has been natural and uninterrupted, by the interference of the wo-

man herself, or her attendants, the placenta is generally found presenting itself near the cervix uteri or in the vaginal orifice soon after the birth of the child; in which case nature will in most instances accomplish her office without assistance, though the expulsive uterine action will be found more languid or active according to the condition of the woman, the duration and difficulty of the labour, or where rash attempts have been made to extract the child. After waiting some time and no hæmorrhage has taken place, the uterine efforts being evidently suspended, and assuming a passive condition incurred by some of the causes above mentioned, in this state the woman should be placed for a while in a recumbent position, to appease tranquillise the system and expedite the expulsion of the placenta. After this, the following means may be resorted to, such as giving her a mild cordial, admitting cold air into her apartment, soothing her mind, preserving quiet around her, friction and gentle pressure on the hypogastric region: and every attempt should be made to recover her from her state of exhaustion, by the use of mild stimulants given inwardly and applied externally. If these efforts fail to rouse the energy of the uterus, and promote the ejection of the placenta, the accoucheur should then introduce one or two fingers cautiously up the vagina uteri, whilst with the other he takes hold of the funis

and makes a gentle distention; thus he will be enabled to ascertain the state of the orifice; and if its mouth be found in a favourable condition and the lobulated surface of the after-birth be within reach of the finger, though situated over the promontory of the superior aperture, its expulsion may generally be accomplished by pressure on the abdomen with one hand, and gently pulling at the funis with the other in a direction different from the axis of the apertures of the pelvis, at the same time slightly stimulating the uterus, by passing the fore finger a few times around its orifice, or by grasping it from without and exciting it through the relaxed parietes of the abdomen. These simple modes of proceeding will generally promote such a degree of uterine action as will secure a favourable result; and will seldom fail to expedite the extrusion of the mass from the uterine cavity into the vagina. The funis should be previously coiled a few times round the finger of one hand, while the cake is received by the other, and at the vulva the ejection will thus be usually completed without further interference. But if any portion of the membranous fillaments of the ovum remain unexpelled, it is proper they should be immediately and completely removed before the woman is changed from her situation or left by the accoucheur; as it has sometimes happened that practitioners have incautiously left a

part of the fillamentous membranes either in the vagina or suspended at the vulva. This will frequently produce constitutional irritation and fever, and if allowed to remain unremoved for several days, will become offensive, and malignant symptoms be the consequence.

The detrusion of the placenta, in ordinary cases, may be managed by the above gentle mode of practice; and it is essentially requisite when engaged in this operation, on no occasion to exert a greater force upon the funis, than what is adequate to support its own weight, lest the cord should be lacerated or ruptured, or the uterus inverted.* This event has in the latter instance

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* Various instances are recorded of the *uterus* being *inverted*, and much injury done to the parts subservient to generation, by the incautious proceeding of the accoucheur forestalling nature's efforts, and rashly dragging away the placenta immediately on the birth of the child, however firmly attached to the surface of the uterus. See the works of *Smellie*, *Denman*, *White*, *Spence*, *Perfect*, *Mangetus*, *Bartholin*, *Ruysch*, *Johnson*, *Giffard*, *Chapman*, and *La Motte*.

I have witnessed three entire cases of this kind, in one of which the labour had been conducted by a female practitioner; and on my arrival at the patient's house, I found the woman dead, the uterus wholly inverted without the labia, and the placenta in part attached to that organ. This woman died of profuse hæmorrhage in the space of an hour from the birth of the child.

I was lately called in great haste by Mr. Bailey, a practitioner of this town, (Blackburn,) to a case of complete inversion of the

sometimes proved fatal and in the former, presented a serious embarrassment to the accoucheur;

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uterus; the woman, on my entering the room, appeared in a state of syncope. He informed me that the uterine pains were very violent during labour, and after the birth of the fœtus, on pulling slightly at the funis, the whole volume of the uterus became instantly inverted. On inspecting the state of the parts, I observed the uterus lying without the vulva, and the placenta firmly attached to its fundus, which organs reached midway to the woman's knees; fortunately, their adhesion to each other was so complete, that little hæmorrhage had ensued, this may be accounted for, by the inversion taking place so soon after birth, and before the uterus was allowed to act and separate from the placenta. Upon reflecting a few moments on the nature of the case, and the impossibility of a body like this, the magnitude of which exceeded that of the head of the child, repassing through the neck of the uterus, I, without delay, grasped the whole substance between my hands and by uniform pressure, continued for a few minutes, the blood oozed out, and it became considerably diminished. I then separated the placenta from its attachment to the uterus, and effected its reposition, by placing the points of my fingers against the fundus, and pushing it through its neck, and the inverted vagina, till the whole hand had completely passed the superior aperture of the pelvis, and entered into the proper cavity. Little or no hæmorrhage followed, and in order to prevent a future descent, a piece of sponge was introduced up the vagina, and retained in this situation by means of a T bandage.

On removing the plug, and passing my finger up the vagina the following day, I found the cavity of the pelvis nearly occupied by the partially inverted uterus, as it were in a strangulated state of its neck: notwithstanding this disastrous occurrence by

as in cases of adherent placenta, hæmorrhage not unfrequently takes place from the disruptured

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the introduction of the hand, the organ was soon reverted to its natural situation, and the vagina filled as before; the sponge was removed and replaced once every day, or as often as it became offensive, and the woman during several days, strictly kept in a recumbent posture, a cooling plan of regimen was enjoined, the bowels kept open by means of aperient clysters, occasionally administered, and she completely recovered in a few weeks without any material interruption, or return of the complaint. It is lamentable to remark, that I have been consulted in a considerable number of cases of *inverted* and *prolapsed uteri*, of the chronic kind, which, on enquiry, I have traced to the mismanagement of the placenta, and it is probable, that such maladies are more frequent than at first view would be supposed in the present improved state of the art, though I suspect numbers are, from motives of female delicacy, screened from professional notice.

Few events happen to the accoucheur so alarming, or which are fraught with more danger to the woman, than the inversion of the uterus immediately after birth, and there is reason to believe, that an undue and untimely force exerted on the funis or substance of the placenta when attempting extraction is almost always the cause of such occurrence.

The mode of replacing in these cases, as usually recommended by authors when the placenta is adherent to the inverted uterus, is to return both organs at the same time without first separating one from the other. This counsel, though resting on high authority, should be received and acted upon with great caution, as the bulk of the two protruded organs when surcharged with blood, will present such resistance to the exertions of the accoucheur in attempting reduction under these circumstances, that it cannot be

funis, and partial disunited surface of the retained mass from the uterus. On all occasions where the introduction of the hand into the uterus is required, it is necessary that the contents of the bladder and rectum be previously emptied; and though I believe it contrary to general practice, it is more eligible either when extracting the placenta, or turning the fœtus in utero, to introduce the hand in such a way that the palm be directed towards the pubis and abdomen of the woman. On whatever side the woman be laid, by this means the hand is with greater facility conducted to the feet of the fœtus or placenta, particularly in women with pendulous bellies where the uterus is pushed out of the axis of the apertures of the pelvis. The hand of the accoucheur thus conducted into the

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effected without using great violence and exposing the woman to imminent and unnecessary danger; and supposing it to be accomplished in this way, the placenta will have to be disparted in the uterus and afterwards extracted, and great risk incurred of a second inversion, which presents a material objection to this mode of proceeding. The more rational and less injurious method appears to be in all cases, whether the placenta be attached to the uterus, or otherwise, to compress the whole substance between the hands like a sponge, by which the blood will escape, and the uterus be diminished in size; and the placenta, if adherent at the same time, will be separated, so that its reduction may be safely and readily accomplished without further interference by the method above adopted.

uterus will be better able to effect the extraction through the axis of the brim, cavity, or outlet of the pelvis, than when employed in a contrary direction.

When the separation and detrusion of the placenta do not yield to these simple cautious means, and the secondary pains fail to recur at the usual period, and the os uteri is contracted, it is better to desist from further attempts for a given time, lest a partial detachment should take place, and an unintermitted hæmorrhage ensue, which might urge us to introduce the hand into the uterus, when otherwise there would have been no necessity for such interference. This degree of depletion might reduce the patient to a state of langour before the placenta could with propriety be extracted; so that should she survive for a period, it is more than probable a state of debility would supervene, and dropsy take place, either soon after or posterior to the usual term of gestation. We ought, therefore, to proceed with the utmost deliberation and caution, and not to hasten the removal of the placenta, unless led to such efforts by a profuse or insidious hæmorrhage before the usual tokens of uterine action be manifested, which propitious event will generally, in due time, realize our expectations, and crown our future proceedings with success.

The active state of the uterus in these cases,

is an essential point for the accoucheur to keep in view, and not unfrequently holds out a cheering prospect, even when danger appears approaching.

When no flooding or other urgent symptoms occur, and the uterus assumes a state of permanent torpor, we may with safety withhold these manual means, and wait even two or more hours before attempting extraction by artificial efforts,*

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* Mr. Turnbull, in his history of a case of Extra Uterine Gestation, Page 22, says, " I have not, as yet experienced any mischief from allowing the placenta to remain in uterine cases; but I have often been a witness to much injury being done, in precipitating its expulsion by rash introduction of the hand, for the purpose of tearing and extracting this substance from the extremely tender and irritable interior surface of the uterus. It is a standing and invariable rule with me, and a wish I expressed to the midwives employed in the Eastern Dispensary, that they should use the gentlest efforts in delivering the after-birth; if this did not succeed, to leave its separation to nature. And in the course of the five years I have been surgeon to that institution, there has not been a less number than 1500 women delivered, and I can honestly declare, during that period, neither in private nor in public practice, have I experienced any inconvenience from its retention; although in some instances, it has been retained two, three or even four days before it was entirely expelled."

This passive mode of conducting the expulsion of the placenta, was pursued by the celebrated Dr. Wm. Hunter, during the earlier period of his practice, and strenuously taught to his pupils: hence there is reason to believe, that opinions sanctioned by such high authority became widely diffused among accoucheurs, which has been in a great measure the cause of many practi-

during which interval the accoucheur should occasionally ascertain the state of the os uteri, lest internal hæmorrhage, or a contraction of the cervix takes place. Gentle frictions may be used with advantage on the hypogastric region, and mild cordials cautiously administered into the stomach, to excite the vital functions, and promote the extrusion of the placenta.

Should the uterus shew no disposition to contract, on the extraction or natural expulsion of the placenta, and syncope and hæmorrhage ensue, the accoucheur should immediately pass his hand into the uterine cavity, where it may be moved about until its contractile functions are restored, after which the hand may be gradually withdrawn, together with any remaining portion of coagula or loose fillaments of the chorion or amnion.

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tioners advocating the propriety of leaving the expulsion of the placenta wholly to nature.

Nevertheless we are informed, that on two or more occasions the placenta was retained after birth for the space of one or two weeks, and was afterwards expelled in a state of putrefaction, and the women died the same day. And in other instances it remained adherent with comparative impunity for more than twenty-four hours.

On a dispassionate and retrospective view of the subject, these deplorable incidents ultimately determined Dr. Hunter to adopt a contrary course of practice during the remainder of his life; since which period the mode of submitting the exclusion of the placenta wholly to the agency of nature has been greatly modified.

Syncope, though apparently alarming, is often a salutary symptom in uterine hæmorrhage, by abating the action of the arterial system, and lessening the diameter of the blood-vessels which open on the inner surface of the uterus; during this natural process coagula may form in the ends of the vessels, and check the further tendency to hæmorrhage. In these perplexed cases, attended with syncope and depression of the vital energy, it requires much discrimination and judgment to determine the precise time, and to what extent the administering of cordials may be requisite; for it is to be feared that they are often used indiscriminately and to an injurious degree, both externally as well as internally.

Opium given in very large doses has been recommended on high authority as being almost a specific in uterine hæmorrhage, but an implicit reliance on its efficacy does not, from my experience, warrant such conclusion; it is nevertheless a valuable adjunct in many affections of the uterus, particularly in convulsions and irregular spasmodic contractions of its muscular fibres; but in cases of syncope, connected with flooding, if intended to produce a sedative effect on the system, it may so far retard arterial action as wholly to suspend the vital functions and expose the patient to imminent danger.

It is the peculiar lot of some females to be

predisposed to uterine hæmorrhage and detention of the placenta subsequent to parturition, arising from a passive state of the muscular fibres of the uterus; and when from former occurrences there is reason to suppose such an incident likely to happen, a broad bandage applied steadily, and tightened immediately on the termination of labour, will greatly support the existing laxity of the abdominal parietes, and be a probable means of preventing or lessening hæmorrhage or the extravasation of blood which might otherwise accumulate in the cavity of the uterus, and also obviate that tendency to *syncope* which is so frequently consequent on a state of uterine depletion and torpor. We may look upon a passive state of the uterus as a frequent cause of flooding and which requires unceasing attention in the accoucheur.

Notwithstanding this precaution, the placenta will sometimes be eventually retained in the uterus and a part of the mass become putrid, which may be known by the fetor of the discharge and distention of the uterine region, in which case the hand may be conducted into its cavity, and the whole of the placenta scooped out of its recess.

In order to excite uterine contractions and prevent hæmorrhage, the hand should be still retained in the cavity, as a stimulus, and kept moving against its internal surface till that organ has fully

resumed its natural contractile functions, and as it were, forced the operator's hand into the vagina; after which, the use of antiseptic injections cautiously thrown up the passage, will be serviceable in preventing irritation and fever, and also washing out any putrid coagula that might otherwise be offensive. In some instances the placenta may be lodged in the uterus and not adhere to its surface, or it may be retained in the vagina; in the former case, an atony or want of contraction is the immediate cause, and sometimes a protracted labour attended with debility and fainting. Such occurrences also may not unfrequently be the consequence of mal-practice. In this species of retained placenta and inert condition of the uterus, it has been recommended for the woman to blow into an empty bottle, take a pinch of snuff, or attempt to cough; but these are hazardous expedients and should never be resorted to in a passive state of the uterus, as the expulsion of the placenta when thus retained, may be best promoted by adopting the forementioned methods and waiting the recurrent action of the uterus. In the latter case, when the placenta is wholly or partially retained in the vagina (and this circumstance is not unusual after abortion) and is associated with syncope, and no flooding occurs; while the placenta thus remains enveloped in the membranes, little or no absorption can take place to injure the system

from the extraneous mass; but when it becomes disunited and gets impacted in the vagina for several days, it may retard the discharge of the lochia and absorption ensue: in which case, an early removal of the substance by means of the hand appears the most judicious practice, as its egress wholly prevents the process of decomposition and the absorption of the concealed fluids, as well as inflammation and fever. These are maladies, always attendant with danger, when connected with the puerperal state.

In some instances, the placenta is partially detached from the surface of the uterus, and we may naturally expect a greater or less discharge of blood to follow, in proportion to the extent of the disunited portion, than if the whole cake adhered to that viscus; consequently it will be more prudent to wait for the natural exclusion in the latter instance, than in the former. And although the putrefaction of this glandular substance, when impacted in the cavity of the uterus, for an undue time, is a matter of considerable moment, and is apt to create alarm; yet, while the whole of that redundant body remains firmly attached to the interior of this organ, that process can only take place slowly, nor will there be much hæmorrhage prior to the accession of uterine action.

When the accoucheur is anxious to know the

position and degree of adhesion existing between the uterus and placenta, he may ascertain this by gently pulling at the funis; and if there be an elastic resilient sensation communicated to the hand, it is a certain proof of such attachment. In this case, if neither hæmorrhage nor other unfavourable symptoms appear, no danger will ensue from waiting the recurrence of uterine action before attempting to extract the placenta by manual efforts.

If after a considerable interval the detention of the placenta denote a state of decomposition and putrefaction, at this period it may happen that a natural separation, or exfoliation from the uterus takes place, and the fungous mass will be discharged spontaneously and hæmorrhage follow. If, however, the substance should be loosely detained either in the uterus or any part of the passage, it ought to be brought forth without delay by means of art; at the same time cautiously extracting every portion of the membranes, and allowing the hand to remain constantly moving in the organ till its cavity be amply diminished by muscular contraction, while the remaining coagula will be propelled along with the retraction of the hand, by which means the hæmorrhage will generally cease.

In cases where the uterus is in a relaxed condition, and hæmorrhage threatened soon after

the birth of the child, this mode of artificially exciting the organ to contract by the interposition of the hand, without increasing the action of the sanguiferous system, (by the use of active stimulants) should never be dispensed with, as it is usually attended with advantage, and may sometimes even in the most alarming and urgent circumstances be the means of rescuing the patient from imminent danger, when other efforts have been found unavailing.

A passive state of the uterus and retained placenta, is sometimes accompanied with insidious hæmorrhage; in which case, our conduct must be governed by the quantity of blood lost in a given time. When such an occurrence takes place immediately after the delivery of the child, and continues without intermission, till its effects are obviously manifested on the general system by a weak fluttering pulse, pallid countenance, clammy sweats, cold extremities, fainting, with *tinnitus aurium, &c. &c.* the patient becomes exhausted and would soon expire if the symptoms were not instantly counteracted. In these alarming instances, the most prompt and decisive measures should be employed effectually to remove the contents of the womb, by promoting its muscular contractions in the way above-mentioned.

To aid our efforts in this perilous situation of uterine hæmorrhage, I have frequently witnessed

the most powerful and desirable effects from an opiate clyster thrown up the rectum, composed of four or six ounces of cold water, and eighty or one hundred drops of Tinct Opii: and an astringent injection of the same temperature may be also injected into the vagina or uterus, to moderate the inordinate discharge of blood, by producing coagula in the mouth of the vessels that open into that organ.

The injection for this purpose may be composed of ten ounces of cold water, or a decoction of oak bark and fifteen or twenty grains of alum, and be repeated at discretion.

A recumbent posture should be strictly observed, and a cool apartment selected for the patient till the flooding has entirely ceased, after which a more nutritious diet may be allowed, and mild cordials indulged in, adapted to the debility to which the woman has been reduced by hæmorrhage.

If these means fail in arresting the flooding, recourse may be had to the internal application of the following medicines with beneficial effect:

℞. Plumbi Superacetatis gr, iij,
Opij Purif—gr. ij.
Confec Aromat q. s fiat
Massa in Pilulas vj. dividenda, quarum capiat una tertia vel quarta quaque hora.

℞. Potassæ Nitratis gr, x.
Tinct Fol. Digital gutt x,
Tinct Opij.—gutt xv.
Infus Rosæ—℥i.
M. fiat haustus tertia quaque hora sumendus.

In conjunction with the above remedies, I usu-

ally make use of topical applications, such as cloths wrung out of a solution of common salt in vinegar and water on the region of the abdomen; or if the season of the year produce ice, a bladder may be filled with it bruised and laid on the same part, and renewed as occasion may require.

It will nevertheless be always necessary to bear in mind the equivocal nature of uterine hæmorrhage, as every discharge of blood from the uterus is not an invariable and sufficient justification for the immediate extraction of the placenta.

Sometimes a passive discharge of blood or vent of coagula will at intervals take place, in which case, it becomes necessary to keep in view the strength of the patient, and the quantity and quality of the evacuation,* before manual as-

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* In a few instances of profuse hæmorrhage from the uterus, I have adopted the use of cold water injected into its cavity with advantage, by means of an apparatus similarly constructed to the one described by Jesse Foot, in his cases of the practice of Vesicæ Lotura, with the addition of a bladder fixed to the end of the flexible tube or catheter, which may be conveyed in a collapsed and empty state into the uterus, where it is to be retained as a receptacle for the cold water when forced from the elastic gum bottle previously adapted to the other end of the catheter.

This mode of suppressing hæmorrhage, by the application of cold to the internal superfice of the uterus, may be repeated as often as deemed necessary, by alternately evacuating and renewing the contents of the bladder, and without withdrawing

sistance be attempted. In some instances a person will scarcely bear the loss of a small portion of blood, without incurring danger, while another under apparently similar circumstances will lose many pounds with comparative impunity; and in some plethoric habits, where the circulating system has been much accelerated by tedious labour, there is frequently a considerable flux of blood immediately succeeding the birth of the child, and before the uterus has had time to contract, and eject the placenta; which discharge, if neither profuse nor incessant in a full state of body, may be attended with advantage to the patient, by unloading the turgid vessels of the uterus, and preventing subsequent fever, &c.

If, however, the woman be debilitated by active hæmorrhage without intermission to an alarming extent, exhibiting the usual symptoms of danger, we must in this case proceed to extract the placenta without delay, as a trifling loss of blood when uninterrupted, may eventually prove fatal in a robust as well as in a delicate constitution.

We cannot always draw a certain prognosis from the cause of the hæmorrhage, nor judge

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the instrument, by which process the temperature of the uterus and vagina are reduced below their ordinary standard, and the distended bladder pressing on the extremities of the bleeding vessels of that organ, the hæmorrhage may be further restrained.

how the case will terminate from the quantity of blood lost, as young persons bear depletion better than those more advanced in life.

A woman may be cheerful and apparently bearing the loss of blood without danger, with a pretty strong pulse, not exceeding ninety strokes in the minute, and die instantly; while another may have a pallid ghastly countenance, attended with sickness, dimness of sight, coldness of the extremities, loss of memory, and pulse scarcely perceptible, and still recover.

Another may have these alarming symptoms, and yet linger several weeks or months, and eventually die of dropsy.*

It is difficult to prescribe positive rules on so abstruse a subject, where necessity either obliges us to decide on the propriety of passing the hand into the cavity of the uterus to detach the placenta from its *parietes*, or resign the office wholly to nature. In such ambiguous cases, where gestation has been completed, the os uteri will generally be found more relaxed and dilated, than after premature births; under which circumstances, and free from hæmorrhage, manual

* I wish to impress on the mind of the accoucheur, that his attention ought not to be limited altogether to the quantity of blood lost, but keep in view the impression made on the system, as a more certain prognostic, for this will *cæteris paribus* be in proportion to its violence.

attempts to promote the expulsion of the placenta are more likely to prove successful, and be also productive of less irritation and fever to the patient, than after abortions where similar exertions have been unnecessarily employed.

When uterine hæmorrhage takes place from the period of the termination of labour accompanied with retained placenta, distention, laxity, and torpitude of the uterus, it almost always assumes an inauspicious appearance, unless timely checked by artificial aid; and it is scarcely possible to bring the whole of our auxiliary means into operation, or lay down any definite and determinate mode of practice to be invariably adopted on every emergency.

Yet it will be acknowledged that some general rules of practice may be useful in aiding the judgment, and directing the steps of the accoucheur; actuated by this principle, a prudent practitioner will seldom be at a loss how to proceed, if he bear in mind, that in cases of retained placenta there is a period of *necessity* as well as of *election*; indications which should govern us in determining the precise time when to proceed, and the path we ought to pursue in the operation, lest by indecision, the life of the sufferer be forfeited. When once the accoucheur has engaged in a case of midwifery, whatever danger may assail the patient, his responsibility is at stake, and though

a temporary suspension of hæmorrhage occurs, we are not in this situation to look at the bright side of the case, but steadily apply whatever remedies we may think proper, and watch every change of symptom with unwearied attention, foregoing all other interested views and engagements, whatever may be the result.

It is however on the whole desirable, and what I wish to inculcate, that the expulsion of the placenta should follow the delivery of the child in the space of from one to two hours, according to the exigency of the case, rather than be left entirely to the efforts of nature, or be extracted immediately on the birth of the child.

Should a profuse uterine hæmorrhage take place on the delivery of the child, and before the exit of the placenta, and continue without restraint to discharge florid blood from the uterine vessels opening into its cavity, it is truly alarming, and calls for immediate assistance. Thus situated, the urgency of the case justifies the propriety of promptly removing the contents of the womb, without delay. Hence we should not halt at this stage, nor hesitate and falter between the contrariety of opinions on this obstetric question, as the os uteri may by delay, become permanently contracted on the placenta, and defeat our attempts to introduce the hand, and thereby expose the woman to much hazard. Pursuant to

the forementioned instructions, and during this important crisis, the accoucheur ought watchfully, and at frequent intervals, to inspect the actual state of the neck of the uterus and extent of discharge, so as to ascertain every change which may take place, lest its contractile power be lost and a duluge of blood supervene, and the woman be thereby exposed to a fatal catastrophe.

Guided by a knowledge of the agency of this viscus, we shall be able to ascertain on most occasions, the cause of the retention of the placenta, and thereby be led to adopt the best expedient for its removal which the art suggests, before the uterus and vagina become contracted to a degree which would render the introduction of the hand impracticable, without incurring danger to the patient, and perplexity to the operator. At the same time we must remember that the woman will unavoidably suffer further depletion by the efforts used in extracting the placenta, however dexterously effected.

Sometimes the navel string is implanted near the edge of the placenta, and a partial separation from the uterus is the consequence; during which a portion of it may get wedged in the axis of the pelvis, or cervix uteri, so as to block up the passage, and an hæmorrhage take place into the uterine cavity, and produce fainting and distention of the abdomen. Such an occurrence should not

be overlooked, and it requires an early investiga tion of the state of the parts, as well as of the time during which the extravasated fluid has existed in the uterus, lest putrefaction and absorption take place. By this enquiry the accoucheur will be enabled to regulate his proceedings. Thus situated, it may be prudent to accomplish delivery by taking hold of the funis with one hand, and keeping it distended, while the fingers of the other are insinuated along the cord; by which means the position of the placenta may be adjusted, and if no other obstacle intervene, it may be extracted without delay as before directed. If, nevertheless, its detention in utero arise from a temporary defect or suspension of the contractile powers of that organ, in consequence of being harrassed by officious interference or exhausted by protracted labour, in either case, by gentle pressure on the abdomen with the hand, the substance of the uterus in the region of the pubis will convey an uncontracted and flabby feel to the touch, and not that tense globular sensation which is usual in cases where art has not interposed, and where nature is able to effect her own purpose. On these occasions, it but too often happens that hæmorrhage immediately follows labour, and the accoucheur should scrupulously avoid pulling at the funis, lest a disruption or detachment of the placenta, from its connection with the surface of

the uterus, or an inversion of this viscus follow; which event might, through temerity or inattention, expose the woman to imminent danger.

The connecting medium between the inner surface of the uterus and the ovum, is supported by an innumerable multitude of small vessels, and where the placenta is attached they are much larger than at any other part.

It is a general opinion, that every discharge of blood from the uterus during gestation, proceeds from the detachment of a portion of the placenta or its membranes from the superfice of the uterus; but in some peculiar instances, where the cake has been fixed to the fundus uteri, doubts have been entertained on this point.* These opinions may be reconciled by supposing that a line of detachment exists in the *decidua*, continued from the substance of the placenta to the cervix uteri, by which channel the blood may escape, or the connecting vessels possibly be ruptured by accident, or a preternaturally increased velocity of the circulation in a plethoric state of the system. For the developement produced will affect chiefly those parts of the uterus which are most vascular and least passive, and consequently those in the vicinity of the os uteri, and that part where the placenta is situated.

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* Andrea Pasta was of this opinion.

Sometimes slight discharges of blood will at intervals occur during gestation, and yet the woman go to her full reckoning; this species of hæmorrhage is not directly uterine, but may be rather imputed to a rupture of the vessels of the *false chorion* of the ovum, and not to any detachment of the placenta itself from the uterus. Rest and a recumbent posture are the chief remedies in these cases.

There are instances of *concealed* uterine hæmorrhage, which I have reason to believe merit more attention than what is usually bestowed on them. In this obscure affection, a circumscribed portion of the placenta is detached from the uterus during gestation, whilst the membranes adhering around,* the blood is empaled in this local space between them and the *parietes* of the uterus. It is probable that this separation of the two surfaces is frequently the consequence of some sudden and unexpected jolt or concussion of the body, by which an effusion is produced; and on remaining in this situation for a time, inflammatory action is excited, a deposition of coagulable lymph

* Albinus relates a case of this kind. Vide Acad. Annot. lib. I. page 56. See also M. Baudelocque and Leake, on child-bed fever, vol. II, page 294.—Noortwyk, in his History of the Gravid Uterus, has, though contrary to the opinion of most Authors, asserted that the parts will adhere again and gestation be completed, see page 21.

or morbid affection of the placenta is the consequence, and a disparting of the connecting blood-vessels of the two organs the result. Such an occurrence may be ascertained on an enquiry into the proximate cause, by a careful examination of the uterine region, which on pressure will give pain to the patient; and the distended *parietes* will sometimes also disclose the part of the viscus where the collection is seated, as though it were in a bag from which no discharge takes place externally to forewarn the accoucheur of danger.

If the breach is considerable and the fluid be pent in this enclosure for a space of time sufficient to produce a vitiation of its contents the expulsive action of the uterus will probably be excited prematurely and labour follow; during this event clots of collected blood will be occasionally forced out, and should this evacuation be accompanied with active hæmorrhage in the early months of gestation whether proceeding from fluid blood escaping outwardly or from internal disruption of the vessels which communicate with the maternal portion of the placenta, the os uteri being at the same time rigid and but little dilated, the course to be pursued ought to be first directed towards checking the hæmorrhage, by securing a recumbent posture, cold applications to the abdominal region, plugging the vagina, and injecting a cold opiate clyster up the rectum, which will be

generally sufficient to secure the woman's safety. On the other hand, where gestation is completed and these means fail in suppressing the flooding, or preventing increased tension of the abdomen, and the uterine action recurs at regular intervals, and the woman exhibits symptoms of multiplied danger; we may first rupture the membranes and if the hæmorrhage be not soon suppressed, it may be prudent to proceed to deliver by cautiously insinuating the fingers successively through the os uteri by the side of this viscus, till the whole hand has gained admittance. The feet of the fœtus may be seized by the hand, the body turned, and delivery effected in the usual way.

It is manifest that in cases of hæmorrhage during gestation, unless the volume of the pregnant uterus be either wholly or in part disburdened of its contents, the diameter of the lacerated vessels cannot be diminished; consequently, the flooding will be uninterrupted, and delivery, under these circumstances, could not be dispensed with, without exposing the woman to great danger.

The immediate removal of the placenta after the birth of the child, in this complex state of concealed uterine hæmorrhage, becomes absolutely necessary whether the cake be attached to the fundus, or implanted near the cervix, for

though the separation be only partial, and the extent of detachment trifling, or the hæmorrhage slight, much of the vital fluid may pass away insidiously, and inattentively the woman may suffer harm particularly if that part of the uterus be diseased, where the blood has been enclosed.

Uterine hæmorrhage and convulsions may be ranked among the most alarming and dangerous occurrences which befall a state of parturition; and from the construction and functions of the female system, it will appear probable that she can sustain depletion only to a certain extent, proportioned to the quantity and rapidity of the discharge. If the flooding be accompanied with convulsions or other morbid affections of the system, the maladies become exasperated, though possibly the sufferer might have endured the affliction with comparative impunity, if there had not been a complication of dangerous symptoms.

Another species of extravasation, though of less importance than the forementioned, is one of a *Capsular* nature which has sometimes been discovered;* but the true diagnostic of this peculiar affection is involved in much obscurity. It is supposed to originate in consequence of an exudation of fluid into a cavity formed by a separa-

* For a more particular account of these diseases, see the works of M. Baudelocque, Levret, De La Motte, and Albinus, Lib. I, chap. 9, pages 34 and 36.

tion of a part of the membranes which enveloped the fœtus, without having any direct connection either with the internal surface of the uterus or vascular part of the placenta.

It is manifest that in this kind of concealed extravasation, no blood can escape externally prior to a rupture of the membranes, whether induced incidentally, or caused by some morbid affection of the *involucra*, under which circumstances no alarming hæmorrhage can assail the patient, and the mode of treatment must be consonant with the directions already noticed in the foregoing pages.

In some instances, though no hæmorrhage follow either the spontaneous expulsion, or the artificial extraction of the placenta, a portion of the membranes of the ovum, or clots of coagulated blood may be retained for several days in the passage, and become putrid and occasion an offensive *lochial* discharge from the vagina, attended with constitutional irritation, quick vibrating pulse, dry skin, parched tongue, tympanites, and eventually diarrhœa. In such cases, the frequent use of antiseptic injections thrown into the vagina and os internum, together with saline medicines joined with ipecacuan wine, given in the act of effervescence, a blister applied on the abdomen, with a liberal supply of subacid fruit, and a careful attention to the state of the skin, and

varying condition of the bowels, rank among the most appropriate remedies for abating the febrile symptoms so frequently occurring during the puerperal state. In these adverse cases, where coagula is formed in the cavity of the uterus, its successive extraction appears more advisable, than permitting it to remain and become putrid; and its removal may be effected with the finger, without denuding the ends of the vessels leading into the uterine cavity, for by abrading their surface, a recurrence of the hæmorrhage might be produced.

On all occasions after the extraction of the placenta, when attended with hæmorrhage, the patient should be kept in a recumbent position, till syncope and every appearance of flooding cease, and after a lapse of some time when the vital energy has returned, she may at intervals be allowed to sit up in bed for a little while, by which the *lochia* will be prevented from becoming stagnated in the passage.

Her spirits and state of exhaustion should be supported by light cooling cordials, and all active medicated stimulants be strictly debarred; all wet cloths must be removed from the bed, and a gentle compression made on the abdomen, by means of a broad bandage passed round her body.

During the period of lying-in, quietude should

be rigidly enjoined, and the patient's room freely ventilated, particularly during the summer months. The bed linen should be frequently changed, and her diet consist chiefly of caudle or oatmeal gruel well boiled and given free from spirituous liquors. Tea or coffee is also a useful beverage, and may be indulged in *ad libitum*. The state of the bowels should be attentively watched during the whole confinement, and a motion invariably procured within twenty-four hours subsequent to the event of child-birth.

The long disused project of resuscitation by Transfusion, in cases of animals apparently dying from sudden depletion of the vital fluid, has been lately revived in this country, and it is presumed with reasonable prospect of success.

This expedient was practised by many able physiologists as far back as the year 1664, both on the Continent and in this country; during which period a warm controversy existed between the French and English physicians, each claiming the merit of the discovery, as due to his own country; though it must be acknowledged the Parisian physiologists were certainly the first who tried the scheme upon the human subject.

There has however nothing of importance transpired on the question, till the late interesting experiments published by Dr. Blundell, of London, from which it appears very probable that re-

suscitation, may be advantageously produced by means of human venous blood being transfused from a syringe into the veins of a patient, whose life is threatened by violent hæmorrhage, and where death would be inevitable without such expedient.

For a particular account of the numerous experiments which have at different times been made by physiologists, on this interesting subject, the reader may consult the works of Dionis, Permannus's Chirurgia Curiosa, Etmuller, Heister, and the Medico-Chirurgical Transactions, Vol. 6.

II.

ON THE IRREGULAR AND SPASMODIC ACTION OF THE UTERUS AND ENCYSTED PLACENTA.

THE uterus, like other muscular organs, is occasionally liable to irregular actions of its fibres, either during the period of parturition, or afterwards; and this is a frequent and important circumstance attendant on uterine hæmorrhage.

The spasmodic action of the uterus may, I conceive, be very properly classed under two distinct heads, namely, *simple* and *compound*. The simple spasmodic actions are such as only partially affect the neck of the uterus. Under the compound may be included all those irregular morbid constrictions acting on the middle as well as on the cervix uteri, and which bear the appellation of the hour-glass contraction. The premature separation and expulsion of the ovum from the uterus, is an invariable prognostic of abortion or miscarriage, and its approach is always indicated by uterine action, and sometimes attended with hæmorrhage.

It is a fact meriting the attention of the accou-

cheur, that women are more liable to miscarriage than any other species of animals,* probably owing in some measure, to the physical deterioration arising out of a depraved state of the social economy in their respective stations of society: and though our knowledge of the physiology of generation and gestation may not equal that attained in the other departments of natural science, yet from observation, there is ground to believe that abortions increase in equal proportion to the habits of voluptuousness.† The most frequent irregular and partial contractions of the cervix uteri occur during or after abortions, about the middle period of pregnancy, and are sometimes accompanied with flooding.

When these inordinate contractions of the neck of the uterus happen soon after the birth of the fœtus, (though seldom strictly spasmodic unless excited by agitations of the mind, or untimely interference during labour) they usually oppose the spontaneous expulsion of the placenta in an inverse ratio, to the advancement of gestation; and nothing is more likely to excite the almost uncontrollable agency of this viscus, than the precipitate act of artificially rupturing the mem-

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* Vide Edinburgh Medical Essays, Vol. 2. Page 233—234.

† It is no less deplorable than true, that inebriety forms one of the most frequent causes of this malady.

branes, with the view of facilitating the progress of abortion. But at this premature period of gestation, unless hæmorrhage or convulsions occur, we need not be over-solicitous about the deliverance of the placenta. I would rather leave it to be expelled by the efforts of nature, which will generally be effected with perfect safety in less than twenty-four hours after the birth of the child. When there is a partial detachment of these two organs, accompanied with flooding, spasm, and rigidity of the os tincæ sufficient to preclude the admission of the hand with safety under these adverse circumstances, it has been the practice of some authors to extract the placenta by means of instruments constructed for that purpose; but this dangerous and unnecessary expedient is now exploded.*

If the patient should appear much exhausted by a continued emission of blood from the uterus, I would, in the first place, earnestly recommend palliative measures, such as injecting a full stream of cold water into the vagina, the application of a solution of ice or nitre in cold water, put into a bladder and laid on the region of the uterus and pubis, together with the use of such medicines as have been already mentioned.

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* See Burton's System of Midwifery, and Levret's L' Art des Accouchmens.

Plugging the vagina and mouth of the uterus completely with lint, tow, or sponge soaked in a strong solution of alum, with equal portions of cold water and vinegar firmly supported by the T bandage, and by allowing the plug to remain a few hours in this position, keeping the patient cool and quiet in a horizontal posture. Thus a coagulum will probably form, and the hæmorrhage cease. The bandage may then be removed, and the placenta and plug will be generally expelled at the same time, by the united efforts of the abdominal muscles and uterus. Should any flooding ensue, recourse may be had to replacing the plug, and adjusting the bandage as beforementioned, and from its utility in checking hæmorrhage, (particularly after premature births) I have frequently witnessed the most decided benefit.

But when this is adopted after delivery at full time, much caution will be required; for the uterine *parietes* being more expanded and less disposed to contract after gestation is completed, than in cases of abortion, and the blood vessels having poured out their contents into the uterine cavity, should the plug be fixed in the vagina, the uterus would be again distended, if the hæmorrhage be profuse, and thus its contraction would be prevented whether the evacuation proceed from arterial or venous sources, or both.

This may be obviated chiefly by the application of a steady and well regulated counter-pressure, uniformly continued on the hypogastric region, prior to the introduction of the plug, by means of a broad roller passed a few times round the body, and over the lower part of the abdominal region: although by this mechanical mode of treatment, the womb may not have permanently contracted so as to shut completely the mouths of the vessels on the surface, from which a part or the whole of the placenta had been disparted. Yet the discharge will be repressed, and in this way profuse uterine hæmorrhage may be restrained; and in cases of great exhaustion, during the formation of coagula in the ends of the bleeding vessels, immediate danger be frequently averted. Hence uterine hæmorrhage subsequent to the middle period of gestation and parturition, in whatever degree it presents itself, or however insidious its nature may be, requires from the accoucheur the most unremitting attention. It may be venous, as well as arterial, so that the application of the plug, assisted with the bandage and pressure on the abdominal region, with the view of promoting coagulation of the effused fluid, appears an eligible and probable means of affording relief. It frequently gives time for the woman to recover from the state of apparent exhaustion, to which she has been by depletion exposed,

as the flux of blood if suffered to pass away with impunity, might eventually prove an harbinger of danger.

The extent of uterine hæmorrhage in abortive cases, is not always commensurate with the stage of gestation, but is dependant on a combination of contingent and constitutional causes peculiar to the sex; and particularly imputable to the imperfection of the connecting *media* between the placenta and uterus.

Hence our endeavours to control any profuse discharge, should be chiefly directed to abate the general circulation of the system, excite the contractions of the uterus, and diminish the extent of surface formed by the disunion of the placenta from its site of the uterus, and the diameter of the blood vessels which enter the cavity of that viscus.

It is a well known fact, that some females are constitutionally predisposed to abortions and retained placenta; from which incidents we may sometimes be enabled to date the cause of morbid uterine affection, especially where powerful deobstruent medicines indiscriminately given, or manual attempts have been rashly made to extract it on former occasions.

In cases of miscarriage at an early period of gestation, attended with hæmorrhage, where the passing of the hand into the uterus is either

unnecessary or impracticable to effect the transmission of the contents of the ovum, and when the sanguineous discharge has been unabated for a long time, the accoucheur may, with propriety, in addition to the fore-mentioned measures, have recourse to opium, astringent injections thrown up the vagina uteri, and cordials as auxiliary resources; particularly if the sufferer be advanced in years, and the system much reduced.

Spasmodic affections of the uterus present various degrees of irregular contractions, and often prove embarrassing to the accoucheur, when occurring during the extraction of the placenta. In the longitudinal form of contraction, the fundus uteri assumes a state of atony, whilst the intermediate muscular fibres of that organ support a spasmodic action, and it becomes constricted in the middle in the hour-glass form; by which irregularity of contractile power and structure, the placenta, when attached to the fundus, gets encysted or lodged in the upper chamber beyond the second entrance. This compound and oblong form of contracted uterus, may be ascertained to extend its fundus upwards above the umbilicus, by the application of the hand on the hypogastric region, and its structure will appear to the touch as though it was encircled with a tight ligature, leaving a transverse sulcated impression on the part.

The compound hour-glass form of contraction may enclose the substance of the placenta, so that one portion of the mass I have known situated in the upper, and the other in the lower cavity of this organ; this is the most dangerous and perplexing species of spasmodic affection of the uterus, and always requires greater caution and judgment in the mode of conducting the placenta, than the *ovi-form* contraction.

If the woman be not much affected with syncope, a strong opiate may be given to relax the spasm, and induce a corresponding action of the uterine fibres; after which the accoucheur may proceed to introduce his hand cautiously up the vagina uteri, taking care not to separate any portion of the placenta from its surface as it passes along, till it gets beyond the encircled part of that viscus, lest hæmorrhage be produced; and having gained access into the upper chamber, he may then commence the operation, and effect the separation from above downwards. By these means the fundus will have liberty to contract on the hand as it is withdrawn along with the placenta. If the extraction be attempted by commencing the operation near the cervix or lower cavity of the uterus, and before the spasm of the column uteri be removed, an hæmorrhage will inevitably ensue, and the patient be thereby exposed to imminent danger in the interim, or during the removal of

the remaining portion of the mass from the upper recess of the womb.

In some instances, where gestation has not been completed, the os uteri is found contracted like the mouth of a purse upon the funis, anterior to the substance of the placenta, immediately after the birth of the fœtus, and before the uterus has extruded its contents.

In this simple spasmodic condition of the organ, there is fortunately little or no hæmorrhage; therefore any attempt to extract the placenta either by means of drawing at the funis, or the introduction of the hand, is too obvious to require any comments. When the spasm which affects the funis is relaxed and flooding ensues, the operator may have recourse to extracting the placenta at discretion, being governed in his steps by the urgency of the symptoms, and state of the patient. If on the other hand, the spasm continue unabated, the accoucheur may try the use of opiates given internally, and friction assiduously applied on the uterine region, and eventually trust to time and the efforts of nature, before attempting to extract the placenta by manual efforts.

These different forms of spasmodic action of the uterus, have been observed by most writers on midwifery; and I am induced from long observation to believe, that this morbid uterine ac-

tion is liable to attack some constitutions more frequently, and in a greater degree than others.

Profuse uterine hæmorrhage occurring immediately on the termination of labour, whether the placenta be expelled or not, is always alarming; and many sudden deaths have happened before means could be used to check the flooding, or restore the vital energy of the system. On other occasions, convulsions and syncope have either accompanied or succeeded labour, and their impressions on the vital functions have sometimes announced a sudden and fatal catastrophe.*

With respect to diseases so alarming in their nature, authors appear to entertain very discordant notions, particularly regarding their proximate cause. I am nevertheless disposed to believe that those females who are predisposed to hysteric affections, cramp, or spasm, either prior to or during gestation, are more liable to con-

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* An unexpected and violent impression operating on the female mind during parturition, has no doubt great influence over the system. I have witnessed more than one instance of sudden death succeeding labour, from such cause, and many more are recorded by obstetrical writers. The wife of Phinehas, as narrated in the I. Book of Samuel, chap. 4, verses 19 and 20, is the first interesting history we have recorded which bears any affinity to affections of this nature.

vulsions, and what may be termed *suffocatio matricis* than others, and when excited by the peculiarities consequent on a state of gestation or parturition, the vital energy becomes more readily suspended. Some authors suppose that suffocation of the uterus is caused by a morbid affection of all the natural, vital, and animal functions, proceeding from a disaffected state of the womb.

Sudden death may also take place in consequence of other causes, where the means of art are either not at hand or unavailing in their effects;* such as aneurisms of the aorta, ossification of its valves, rupture of the pulmonary vessels, organic lesion of parts, and affections of the brain. I have known several melancholy instances of death taking place immediately on the birth of the child, or the exit of the placenta, when such event was wholly unexpected, and the proximate cause perfectly obscure.

Two cases of suffocation during labour have also occurred in my practice, one of which was caused by a stricture of the œsophagus, and the other from a large bronchial tumour pressing on the trachea; in both these cases I was called in

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* The much lamented and disastrous occurrence which lately overwhelmed with sorrow the *British Empire*, appears to have had some alliance with this obscure disease.

too late, or the life of the fœtus might, in each instance, have been preserved by means of the Cæsarean operation.

The mode of treatment pursued by the ancients, appears to have been greatly diversified, when compared with that of the moderns; for it is obvious from their writings that they adopted with unwaried exertion the use of the most stimulating antispasmodic remedies, both externally and internally; whilst practitioners in this enlightened age, seem to possess no determined course of practice, and stand aghast as mere spectators, whilst the unfortunate patient on some occasions, it is to be feared, sinks under the disease without prompt and decisive means being used.

Many interesting accounts of resuscitation in cases of suspension of the vital principle, incident to parturition, might be adduced. Pliny says, that women have apparently died under afflictions of the uterus, and been afterwards restored to life after a lapse of several days, and adds, that on such disastrous events, it was not, in his time, allowed that the person should be interred before the expiration of three days.—Forestus relates a case somewhat similar, and Ambrose Pare mentions a lady who after being considered dead, revived again, on the surgeon making an incision into the body, for the purpose

of dissection. In a treatise on this subject by Dr. Engleman, there is a case of a woman who soon after delivery, lay for upwards of a quarter of an hour apparently dead. A maid servant anxious for the recovery of her mistress, applied her mouth to her's, and blew with all her force, and in a little time the woman revived. The reader can scarcely help being struck with the coincidence of this method of resuscitation with that adopted by Elisha, in the case of the Shunammite's son, as recorded in the 2nd Book of Kings, chap. iv, verses 34 and 35.

Without recapitulating the various remedies which have been pointed out by writers, as applicable to cases where the vital principle* has been suspended, or attempting to establish a criterion of death,† under such complicated affec-

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* Galvanism, in my opinion, ranks among the most promising agents for reanimation.

† It is a melancholy reflection to read of instances where persons have apparently died suddenly, and been prematurely committed to their graves; such facts, however, may be found in the works of different authors. See Hildanus, Diembraeck, Vesalius, Morgagni, Peter Zacchias, in his Q. Med. Leg. Tom. 3, Tully's Narrative P. 90, Curry on Apparent Death, Granger's Biographical History of England, Vol. I. Page 330, and an interesting work entitled, The uncertainty of the Signs of Death and the danger of Precipitate Interment with Dissections, written by a Physician, illustrated with Copperplates, dated 1746, also Taylor on the Danger of Premature Interment.

tions, I may be allowed to suggest the propriety of establishing it as a general rule of practice, that every possible means of resuscitation be assiduously employed for some time, after all visible signs of life have disappeared, or as long as the body retains the least degree of warmth.

In some perverse instances, I have found the adhesion of the placenta to the uterus so firm and complete, as to appear on examination to be only one viscus, in which case, if neither flooding nor other untoward circumstance occurred, I deemed it proper to withdraw my hand and wait till the natural contractions and expulsive efforts returned, after which the placenta might be in some degree disengaged from the uterus. If in such circumstances, extraction be found necessary, the operation will be more easily accomplished, and the patient will be exposed to less risk, than if undertaken in the first instance, prior to the recurrence of uterine action, and while the two organs are so firmly connected together.

Philip Pue, a celebrated accoucheur of Paris, in his Prax. Obstetr. 2. Chap. § 2, relates an instance which happened in his own practice, when being called to perform the Cæsarean Section on a pregnant woman, whom he supposed to be dead, on cutting the integuments of the abdomen, he perceived, though too late, a trembling of the woman's body, and evident motion of her legs, and grinding of her teeth. This mistake he observed, so filled his mind with terror that he vowed never in future to attempt the like operation.

When the uterus manifests its natural contractions, at regular intervals during labour, or subsequent to that event, the expulsive powers are alone usually sufficient to dislodge its contents, without artificial assistance; but in those morbid cases, where the detention of the placenta arises from the permanent contraction of its muscular fibres, the rational and prudential interference of art becomes necessary, after a lapse of time, according to the symptoms and circumstances of the case.

In those more complicated affections resulting from a full parturient state, and where the neck of the uterus spasmodically contracts on a small portion of the substance of the placenta, before it is allowed time to be expelled from its recess, or the funis becomes embraced by inordinate action, we meet with an important barrier to its natural ejection; and when hæmorrhage is a prominent symptom, the accoucheur should be guided in his proceedings, by the distension of the uterus, state of the os tincæ, and the fluidity, and quantity of blood lost in a given time. In these cases, a circumspect mode of treatment, and extraction, should be promptly adopted, according to the nature and urgency of existing symptoms, as an apparently trifling delay may sometimes expose the woman to irretrievable debility or imminent danger.

But prior to artificial means, it may be prudent to attempt to subdue the inordinate vascular action of the uterine system, by the administration of an *Enema* up the rectum, composed of six ounces of cold water, and 120 minims of Tinct. opij, with a drachm of assafœtida, and a draught may also be given containing 60 drops of Tinct. opij. If under such inauspicious circumstances, the exclusion of the placenta do not take place in a quarter or half an hour, whether it be connected with hæmorrhage or aggravated by the lapse of time, subsequent to the event of parturition; it is satisfactory to know that such preparatory steps will tend greatly to facilitate the manual attempts; as this dernier resource, on such pressing occasions, should be undertaken with the utmost deliberation and caution, and not before the influence of the opiate be perceptible on the system. Previously to this, the patient should be placed horizontally on the bed, on her side, and the accoucheur's finger nails being first pared, and his hand and arm as high as the elbow smeared with oil or lard, the fingers and hand should then be modelled into a conical shape, and gently introduced into the vagina.

If the spasm of the cervix uteri be so powerful as wholly to environ the funis, the operator should proceed by introducing one finger first, and the others in succession, gently pushing on-

wards by the side of the funis through the os uteri, with a semirotatory motion, till the whole hand has passed this contracted resistance.

In this situation it should be kept moving for the space of ten or fifteen minutes, or till the spasm of the cervix uteri be overcome. The stimulating motion of the hand will, in some degree, expedite the operation; if the adhesion should be complete, the disunion is much facilitated by a gentle pressure made with the other hand upon the hypogastric region, to steady the uterus.* The separation of the placenta from the upper part, must be first gradually and cautiously attempted by insinuating the ends of the fingers betwixt the membranes and uterus, and sliding the hand from side to side; a disunion will thus be produced, as though it were done by a cutting instrument, through the whole extent of the attachment; and the cake, if possible, should be preserved entire and brought to the cervix uteri, where it may be allowed to remain till the cooperating efforts of the fundus assist in propelling it forwards; by which action, the whole placenta will be excluded, and the operator's hand may then be withdrawn along

* This proceeding is indispensably necessary on all occasions which require the hand to be passed into the uterus, whether in cases of adherent placenta, or in preternatural presentations of the fœtus when employed in turning.

with any coagula remaining in the passage. In this, as well as in the compound species of retained placenta, when lodged in the superior recess, whether adhering to, or totally detached from the uterus, forms no cogent objection to the propriety of manual extraction, when aided by antispasmodic medicines as has been before recommended, and keeping in view the state of the patient, and not removing the placenta during a state of *deliquium animi*.

In cases of uterine spasm, the effect of small doses of *opium* on the system proves generally very fugitive, and it is necessary to observe in this place, that on all occasions where this viscus is spasmodically affected, the dose administered should be proportioned to the urgency and degree of the existing symptoms and state of the patient.

Were it necessary, I could adduce a considerable number of cases of spasmodic affection of the uterus, both from my own practice, and the works of different obstetrical authors; but it will be perceived by referring to the *Chronological* record of authorities at page 200, that those writers who invariably adopt immediate extraction, must have likewise practised the indiscriminate introduction of the hand through the os uteri, for the purpose of extracting the placenta, whether this organ was then in a lax or spasmodic condition,

without either trusting to the expulsive efforts of nature, or attempting to counteract irregular morbid action, by remedies appropriate to the constitution: hence there is reason to believe, that such a mode of practice must have been frequently attended with hazard to the patient; and it is one on which we can found no rational or satisfactory criterion of success.

Though I am ready to acknowledge that the conducting of this process of parturition requires more than ordinary promptitude and resolution, without incurring risk to the patient; I would however, by no means be considered as countenancing any undue and abrupt efforts to surmount the difficulties in question, even in the most adverse cases. Yet I am persuaded it sometimes becomes necessary (even when assisted by the use of medicine) to use very considerable manual force and perseverance, to overcome the resisting power of the uterus. There is also reason to believe from the circuitous manner in which its muscular fibres are arranged, that it possesses a greater degree of elasticity of texture, than most other organs of the human body, and is also less liable to injury; for it is by the combined influence of these muscular powers, that the natural and permanent contractions of the womb are produced, and hæmorrhage suppressed. This phenomenon, when fully understood by the ac-

coucheur, will tend to explain the important fact, that woman in a parturient state, will bear a greater loss of blood from the uterus, without suffering death, than from any other cause.

Notwithstanding the utmost caution and promptitude in cases of morbid retained placenta and uterine hæmorrhage, the system sometimes becomes exhausted, and the patient inevitably sinks from debility or dies from convulsions. I am therefore induced to remark, that no situation connected with parturition, involves greater danger to the woman, or puts the talents of the accoucheur more to the test than this; for on the one hand, either a scientific knowledge of the resources of nature and art is exhibited to the anxious spectators, or on the other, there is a display of timidity and ignorance, which may accelerate the fate of the patient entrusted to his care.

Menorrhagia lochialis, as well as leucorrhœa, are diseases often consequent on uterine hæmorrhage. The use of gentle exercise in the open air, sea bathing, topical applications on the region of the uterus, the use of bitters and tonics, such as the preparations of iron with Extr. Cinchonæ, Tinct. Lyttæ, Sulphuric Acid, and the injection of astringent and antiseptic liquids, two or three times a day into the vagina, are amongst the most appropriate remedies for these diseases.

III.

ON THE MORBID AND PRETERNATURAL ADHESIONS OF THE PLACENTA TO THE UTERUS.

THE morbid attachment of the placenta to the uterus is fortunately not a frequent occurrence. From its peculiar vascular structure, and suspension in a cavity, exposed to the vicissitudes and evolutions consequent on the phenomena of menstruation and gestation, it is less subject to disease than at first view would appear probable; nevertheless it occasionally happens that the functions of this organ become interrupted, and assume a scirrhous or cartilaginous state; and in some more rare and inveterate instances, an ossification of the blood vessels takes place. Where these maladies exist during a state of gestation, the placenta may be suspected to partake in some degree of the same diseased structure and condition; in which state it is obvious that so formidable an obstacle, opposed to the separation of the placenta, will be proportionate to the extent and degree of the diseased attachment.

In some instances of morbid adherent placenta

to the uterus, the two surfaces have appeared to the touch so strongly agglutinated to each other, that they indicated only one uniform structure. In these cases I have more than once been able to retrace the cause to an injury inflicted on the uterine region during gestation, or from some more obscure cause. Under these afflicting circumstances, every attempt to effect a disunion should be the result of great deliberation and care. To whatever extent such attachment exists, and after the accoucheur has waited the appropriate time for the efforts of nature without prospect of advantage, he may commence the operation by conveying one hand cautiously into the uterus, whilst the other is applied on the hypogastrium to stay that organ. If only a few lobes of the placenta be identified with the surface of the uterus, the extraction may generally be accomplished by beginning at the in-edges, and peeling off the morbid adhesions from the uterus, thus gradually separating the different portions in succession, till a complete disunion be attained, and the substance of the placenta being grasped in the hand, the whole may be brought forth without further trouble.

By this delicate mode of proceeding subsequent hæmorrhage will generally be prevented; but if the mouth of the uterus should remain in a flaccid and extensible condition, it announces a more

unfavourable result, and is an obvious prognostic of fainting and flooding; to obviate which, the operator may pass his hand again into the uterus, where it should be kept in motion till an evident contraction be perceptible to the touch, during which cold air should be freely admitted into the patient's apartment, a compress soaked in vinegar, repeatedly applied cold on the abdomen, and after the operator's hand be withdrawn, quietude and a recumbent posture strictly enjoined.

In some dangerous cases, where the disease has made great progress, and a permanent and extensive union of the uterus and placenta appear to have taken place, and evidently resist every prudential attempt to break through the cohesive attachments,* under such pressing exi-

* The Ergot of Rye has been exhibited as an active stimulant in certain indolent and passive conditions of the uterus, by some American Physicians, and its effects are said to be exclusively confined to this organ, without increasing the action of the sanguiferous system. The cases in which this article has been given, are chiefly where the os uteri remains in a rigid state during protracted labour, or where it is complicated with difficulties which would render delivery immediately necessary, and when the placenta has been prevented from being separated from the uterus, also in cases of moles, dysmenorrhæa, and hæmorrhage, where the uterus remains in an inactive state. But I have had no experience of its medicinal powers. This vegetable production, though introduced to notice of late as a new discovery, was used for the same purposes nearly half a century ago. See Dict. Rais. Univers. d' Hist. Natur.

gency a question naturally presents itself to the accoucheur, whether it be most prudent to hazard a separation of these organic adhesions and bring the whole of the placenta away by force, or wholly abandon the expulsion to the exertions of nature; for while a rash interference is censurable, an implicit confidence in the powers of nature may be equally improper. Hence the accoucheur will no doubt act in the most prudential way, by viewing these existing difficulties in a general and relative light, and proceed accordingly, for experience leads me to draw this inference; that where in one instance the protracted retention of the placenta has been attended with fatal consequences, its extraction by *rash* and precipitate measures has proved destructive to many. From these premises, and the limited resources of the art, it appears obvious that whether one or the other of these means be pursued, considerable risk and danger will be unavoidably incurred to the woman: yet if the whole, or even a portion of the placenta remain detached in the uterus for any undue space of time, putrefaction and absorption will generally take place, and its detention eventually prove a source of much evil; such as distention of the abdomen, fever, inflammation, fetor of the lochia, constitutional irritation diarrhoæa, putrefaction, and not unfrequently death. Under these circumstances the accoucheur will

yield to the lesser evil, by passing his hand into the uterus at frequent intervals, and scooping out any extraneous and offensive coagula from its abode, or otherwise by the more eligible method of antiseptic injections, as before mentioned. The retention and adhesion of the placenta to the uterus, are sometimes complicated with polypi, or hydatids, somewhat resembling a bunch of grapes, or perhaps some more vascular compact substance attached to this organ and pendant in its cavity; and though it is a rare instance that some part of the circumference of the placenta is not disengaged from the uterus, still I would suggest to the practitioner the propriety of steering cautiously between the two fore-mentioned extreme points of practice, by introducing the hand into the uterus, and removing as much of the pendant tubercular portions as possible, without exciting hæmorrhage or inflicting injury on the inner surface of the uterus by undue violence. By this cautious method of proceeding, constitutional irritation will be comparatively little excited, and subsequent inflammation and hæmorrhage in a great degree prevented. The uterus will be allowed more freedom to perform its contractile functions, than if the whole diseased mass were left to the expulsive efforts of nature. In some rare and less propitious instances, the diseased adhesions are constructed of so compact a nature, and the

placenta and its uterine surface so interwoven* with each other, that prudence dictates, under these insurmountable obstacles, we should rather resign our efforts to nature, and rest our subsequent hopes on palliating the afflicting symptoms by a strict adherence to the antiphlogistic regimen, to promote the formation of coagula in the ends of the patulous vessels, which open into the uterine cavity. To assist these indications, rest and a recumbent posture, a light diet, tranquillity of mind, the admission of cold air into the patient's apartment, and avoiding the exhibition of medicated stimulants, except such as are of a mild quality; if the deluge of blood be still profuse without intermission, cold detergent injections may be occasionally conveyed into the *vagina uteri* till the hæmorrhage abates; and when it has entirely ceased, the woman's state of exhaustion in some degree restored, the uterus contracted, and danger averted: these injections may be changed for others of an antiseptic nature with much advantage, by washing out the extravasated offensive fluids two or three times a day, and thus exciting the further contractions of the uterus, and emission of the relics of the fungous mass by checking the process of putrefaction, and preventing absorption and fever. Experience has

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* Parey mentions a case of this kind.

abundantly proved, that by these means, and the occasional assistance of the hand, superabundant coagula may be speedily and effectually removed as often as they form in the vagina, and putrefaction and absorption prevented, and the assiduous application of antiseptic injections may likewise be beneficial after the cessation of hæmorrhage, by correcting the fetor and ichorous state of the lochia, which frequently follows a state of parturient depletion and debility.

It deserves to be further remarked, that on some occasions, from organic disease, an unusual degree of cohesive attachment of the uterus and placenta to each other takes place, insomuch, that it is wholly impracticable to effect a complete disunion by means of art without incurring great danger to the patient: but should a partial disparting be effected by the endeavours of the accoucheur some degree of hæmorrhage will unavoidably follow, and either shew itself externally or internally. If in the latter case, the most unerring diagnostic is redistention of the abdomen by the portion of disunited cake being entangled in the aperture of the pelvis, and shutting the passage so completely that no blood can escape outwardly. This is a case which involves much deliberation and watchfulness in the accoucheur as his presence is indispensably necessary, and the precise time

and mode of removal of the detached and adherent portions of the placenta by means of the hand should be regulated according to the extent of union and degree of hæmorrhage whether internal or external. For if the internal effusion be so trivial that no distention of the abdominal parietes be perceptible to the touch, nor the discharge outwardly so copious as to produce any obvious effects on the system, the loosened part of the mass may be allowed to remain for a time in the passage with impunity, and its presence may tend to the formation of coagula, or compress the apertures of the blood vessels which open into the uterine cavity, and thereby diminish the impetus of the discharge till a more favourable opportunity offer for extracting the remaining adherent portion by art, or the uterus resume its action and disburden herself by the efforts of nature. When this is accomplished, the use of detersive injections as before mentioned may be beneficial, and a solution of alum, or an infusion of galls, or oak bark, and a portion of port wine are amongst the most useful articles for suppressing hæmorrhage, or preventing the putrefactive process when administered in this form.

The uterus and placenta, from their vascular structure and peculiarity of functions; are organs unavoidably exposed to a variety of morbid af-

fections, such as Hydatids,* Polypus,† Moles, Tympanites, spongy Tubercles, Scirrhus and Cancer: but genuine sarcoma‡ of the body of the womb is not so frequent an occurrence as in the neck, or cervix, and such disease more commonly invades this part of the viscus in advanced life, about the period of the final cessation of the *menses* than at an earlier period. This may perhaps depend on the cervix uteri being more glandular than other parts of the organ. Coagula of blood or fungous excrescences formed in the vagina, or uterus have been frequently distinguished by the term mole, or polypus, and have in some instances acquired such a degree of firmness and apparent vascularity, that, when implanted in the uterine cavity, they have so far distended its parietes as to exhibit the appearance of a state of gestation.

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* A case of hydatids in a woman three months advanced in pregnancy, occurred to me some years ago. The fœtus appeared in a shriveled state, and the placenta less vascular than usual, and the quantity of hydatids expelled amounted to more than a gallon. These pellucid hydatids bore a great affinity in structure, size, and general appearance to the vesicular congeries of frog spawn produced during the spring season.

† See M. Herbiniaux's Traité sur les Polypes de la Matrice, and also Levret on the same subject.

‡ I have attended a case of sarcoma of the uterus, as large as the head of an adult.

The appellation of mole is frequently employed by authors to describe very dissimilar productions. That form which is ingrafted in the uterus, and attached by a pedicle analogous to the umbilical cord, and which is also possessed of a regular series of vessels, frequently producing symptoms in common with a gravid state of the uterus, and assumes more immediately the character of *ovum deforme*, and in reality may be nothing but an imperfect embryo supported by vegetative influence. By many writers on midwifery, almost every coagulum of blood which has remained a certain time in the uterus, and which has the slightest appearance of fibrous structure, has gone by the name of mole. I have attended many cases of this kind, and frequently examined the structure of these erratic productions of nature. On making an incision into their substance, some have exhibited an organized mass of flesh, similar in shape to the gizzard of a large fowl. In others the texture appeared nothing more than coagulated blood, which assumed the shape or model of the uterine cavity in which it had been lodged. In a few instances I have been able to trace a more regular distribution of vessels, and some parts of an imperfect fœtus, with an appendage somewhat analogous to the placenta and umbilical cord, which evidently appeared to have been united by a congeries of vessels to the

uterus, by which medium, the circulation was carried on, and their growth and feeble vitality supported.*

When these incongruous productions have remained in the uterus, for the space of one, two, or more months, the ordinary symptoms of abortion usually commence, and their spontaneous detrusion are sometimes followed by hæmorrhage, constitutional irritation, derangement of the uterine system, and subsequent debility. The most appropriate remedies to restore the vigour and health of the patient are, in the first stage, the administering of febrile medicines, and eventually of the tonic form, such as chalybeates joined with cicuta and sea-bathing, a generous diet with plenty of subacid fruit, a liberal allowance of wine, and a careful attention to exercise, and the state of the bowels, lest indurated fœces should be lodged therein, and impede the patient's recovery.

The mode of treatment adopted for the removal of these unnatural substances and diseased affections of the uterus, has been greatly diversified by authors, and the chief means appears to be by medicaments, and manual operation. Fric-

* Figures of this species of mole, with a description, are given in the Acta Parisina, 1735, Mem. 770, 778, and Clarke, in his treatise on the Diseases of Females, Vol. I. describes these vascular and fleshy tubercles of the uterus.

tion on the region of the uterus, and the use of detergent injections thrown up the vagina, or conveyed into the cavity of the uterus itself, have been recommended for the purpose of exciting the propulsion of its contents, and of rendering the application of ligatures more manageable. If these indications fail, obstetrical writers have had recourse to a variety of uncouth instruments, the construction and management of which appears equally incommodious and dangerous, whether exercised on the os uteri, with intent to dilate its orifice, or employed in abstracting the exuberant contents of the womb. Some of these antiquated inventions, I am happy to say, are now discarded, and modern authors have substituted instruments much better adapted for the purpose. Those chiefly used on these occasions by the ancients were, Forceps, Ligatures, Hooks, Probes, Pinchers, Dioptra, Speculum Matricis, Gryphon's Talon, &c. For a sight of such inventions, and an account of their respective uses and modes of application, the reader is referred to the works of Celsus, Paulus, Scultetus, Avicenna, Hildanus, Roonhuys, Levret, Sigusmunda, Paré, Mauriceau, Dionis, Heister, Astruc, Clarke on Female Diseases, Bibliotheca Anatomica, Medica Chirurgica, Vol. 3d, Bonetus Sepulcret. lib. 3, sec. 37, Forestus de morbid Malierum, lib. 28,

and Cooper's First Lines of Surgery, Vol. 2, Page 319.

The diseases incident to the uterus, for which these formidable instruments were devised, have each their characteristic symptoms; yet it must be confessed, that during their incipient stage it becomes no easy matter to discriminate between a state of gestation, and some of the morbid affections alluded to.

In some instances of Polypi, or other diseased substances occupying the cavity of the uterus or vagina, a degree of irritation and inflammation has followed manual operation, and the disease has become exasperated by futile attempts to accomplish their effectual removal. In such disastrous circumstances, practitioners have had recourse to a class of stimulating medicines, under the title of Emmenagogues, as being possessed of a specific action on the uterine system: but I know of no medicine that is purely uterine, or that acts directly upon this viscus, independently of the rest of the body. The practice so prevalent on this occasion, of administering forcing remedies, can scarcely be too much reprobated; for instead of producing the desired effect, they only tend to irritate the uterus, and produce febrile action on the system. It has, I am persuaded, been more the practice to provoke the expulsion of the pla-

centa, by the use of this class of medicines, than to prevent its retention by rational measures; for of all the remedies which the Pharmacopœia presents for our use, none are of more dangerous consequence than those of this class when imprudently used.

When manual attempts to extract such substances from their recess, have proved unsuccessful, or otherwise unavailing, great attention to the general health of the patient is required; and by way of preventing the absorption of any acrimonious fluid secreted during the disease, the use of antiseptic injections as before-mentioned, frequently thrown up the vagina, may be attended with beneficial effects in either instance. In all cases of hæmorrhage, connected with the present subject, however alarming, if there should appear only the most remote prospect of affording relief, we should not despair, or be induced to abate our endeavours; but keep in view the resources which *nature* so often presents to aid our well directed efforts in producing a favourable result.

It may appear unnecessary to caution the accoucheur against omitting to secure the unbilical cord, at its maternal end, in cases of supernumerary births; or to point out any different mode of treatment, when succeeded by hæmorrhage. Nevertheless if the funis be left insecure,

after the birth of the first child, an hæmorrhage may follow and prove dangerous to the uterine fœtus, or if one placenta be detruded, whilst the the other remains in the uterus, the woman would be exposed to flooding, and danger might follow; because, occasionally the placentæ adhere to each other, in which case, they have generally the chorion as a common investment. But each fœtus possesses its distinct amnios, and they are most frequently united together by intervening membranes, so that the vessels of the one, anastomose with those of the other. In twin cases, when the term of gestation is completed, the uterus is usually more distended than when occupied by only one ovum and fœtus, and if the extrusion of the placenta be artificially accelerated, and the secondary contractions of the organ do not follow in due time, hæmorrhage will be the consequence; as the diameter of the uterine vessels in these cases are more distended and cannot so readily contract as in single birth, where the uterine surface occupies a less space, and the muscular fibres have not been too much expanded. The measures to be pursued on this occasion, must have for their object, the re-excitement of uterine action, and the adoption of the forementioned remedies both externally and internally, according to the exigency of the symptoms.

In order however to obviate all hazard resulting from hæmorrhage of the funis by this omission, in twin or triple cases, it may be laid down as a practical rule, on all occasions, to guard against precipitation, relative to the egress of the placenta, and invariably to tie and divide both the fœtal and maternal ends of the cord, on the birth of every child, immediately after it has breathed freely, and proclaimed itself to the world by crying.

A CASE OF LABOUR IN WHICH THE EXPULSION OF THE PLACENTA PRECEDED THE DELIVERY OF THE CHILD.

More than 20 years ago I was called to the wife of William Pilkington, in the neighbourhood of Chorley. She was then in labour of her second child, and in the last month of her pregnancy, she had been seized the preceding day with uterine pains, accompanied by a slight discharge of blood at intervals, from the uterus.—The weather being warm, I recommended her to be placed in an horizontal posture upon the bed, with a light covering over her, and the admission of fresh air into the room, which, in a short time, evidently abated the evacuation.

The os tincæ I found in a rigid condition, and so much contracted as not to admit the point of the fore-finger with freedom.

After waiting a few hours, and no hæmorrhage recurring, I left her, with a strict injunction to inform me as soon as any material change took place. Early the morning following, I was requested to see her again, and on entering the house, I found her seated on a chair, in a state of great alarm. I was informed by her attendants,

that a profuse discharge of blood succeeded every pain, on requesting her to be conveyed to the bed on which I left her the day before, she attempted to walk up stairs, and before she could reach the bed, a violent pain seized her, which instantly expelled the placenta, and disparted the funis about six inches from the child's navel. A great effusion of blood followed, and the woman fainted ere she could be laid down on the bed. In this alarming situation, and without hesitation, I determined to effect the delivery of the fœtus by turning, and on passing the hand up the vagina, I found the *orificium uteri* in a lax and dilated state, and the shoulder presenting at the brim of the pelvis, and by conveying the hand past the projecting part of the fœtus, I laid hold of its feet, and brought them down through the pelvis, whilst the shoulder receded backwards into the cavity of the uterus, and thus accomplished the delivery in a few minutes. The child appeared feeble, but soon recovered on being placed in a warm bath. A considerable hæmorrhage followed the birth, on perceiving which, I returned my hand into the uterus, and by keeping it moving therein, for a short time, its contractions were renewed, the hand was then withdrawn, and the flooding abated, and though the woman appeared much reduced by the loss of blood, she soon recovered.

Cases of twins, with the intervention of several days between the births of the children, are recorded by most writers on midwifery; but a similar interval happening betwixt the delivery of the two placentas, subsequent to the fœtuses, is a more uncommon occurrence. Such a case I met with some years ago. The woman had been delivered, during my absence, of two fine healthy children. On my return the next day, I found her restless and labouring under much pain, and slight hæmorrhage at intervals; I prescribed an aperient mixture, which produced three evacuations from the bowels, and at bed time a draught containing 30 drops of Tinct. opij.

On the following day, I called again, and perceiving her much in the same state as on the preceding, I was induced to lay my hand on the abdomen, which appeared uniformly distended as high as the umbilical region, and rather tender on the application of pressure.

These symptoms led me to suspect the uterus was distended with coagulated blood, and I gained permission to pass the hand up the vagina; and to my surprise, found the *orificium uteri* wholly occupied with a *placenta*, which I readily extracted, and a large gush of offensive coagula immediately followed.

Soon after this event the woman expressed herself as being much relieved by the change.—

For several succeeding days, there were occasional discharges of grumous blood from the uterus, accompanied with incipient symptoms of puerperal fever, which, after a lapse of two or three weeks disappeared, and the woman ultimately recovered.

ON THE ADVANTAGES AND DISADVANTAGES OF INDUCING

PREMATURE LABOUR,

WITH A VIEW OF SUPERSEDING EMBRYULCIA, THE SECTION OF THE SYMPHYSIS PUBIS, AND THE CÆSAREAN OPERATION.

Nec Deus intersit nisi dignus vindice nodus.—HORACE.

IT is a circumstance well known amongst accoucheurs, that owing to a morbid structure of the female pelvis, the efforts of nature are sometimes inadequate to the accomplishment of parturition, without incurring danger either to the mother or child.

This impediment to labour is occasionally connected with a variety of contingent and unavoidable casualties; such as the extraordinary size of the fœtal head, the unyielding state of the bones of the cranium, uterine inaction, and uncertainty as to the precise stage of gestation, and the degree in which the pelvis is distorted. Yet in these peculiar difficulties, the testimony of experience, and the necessity of acting right both on moral and scientific grounds, warrant our utmost cau-

tion in every instance where there is a natural deformity in the female pelvis; and as the present discussion unavoidably embraces some of the most important interests of the community, it is presumed that no apology will be thought necessary for entering upon this enquiry. It appears requisite, that in such cases, every practicable expedient be tried, the results of which should be laid before the public, in order that uniformity of practice may be established in the treatment of those difficulties which occur during parturition, and which so frequently harrass the females of every civilized country.

Though the morality of premature induction has been questioned by some foreign authors, its propriety appears pretty generally admitted in this country, as a substitute for Embryulcia, and it has been occasionally practised by accoucheurs of the greatest eminence, since the year 1756* with varied success; but the circumscribed limits of deformity prescribed for its necessity and safety, have not hitherto been pointed out with that degree of precision which the importance of the operation demands. How far I have been able to illustrate the subject, so as to attain this desirable end, must be left to the decision of the

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* Premature labour was first induced in this country, with success, by Dr. Macaulay, of London, about this period.

experienced accoucheur. Premature delivery is practised under certain peculiar circumstances of deformity, for the purpose of giving the mother a chance of bearing a living child which would otherwise have eventually perished under the hand of the operator, at the full period of gestation.

On this obstetrical subject, it is essentially necessary for the accoucheur to attend to the distinctive form, diameter, axis, depth, and obliquity of the female pulvis. On the various methods of delivery, in cases of deformity, it will be indispensably necessary as I proceed in this enquiry, to make a few observations, without examining minutely, the advantages and inconveniences resulting from these respective methods of operation as generally practised.

The diversities of distortion incident to the female pelvis, are frequently such as to involve the accoucheur in some degree of perplexity respecting the best mode of delivery to be adopted, for the safety of the mother and child; and various are the resources which have been recommended for that purpose.

The cruelty too frequently inflicted on the fœtus, by the use of the crotchet, and the danger attendant on the mother, under certain degrees of distortion, are reasons for the induction of premature labour, with a view of preserving the

life of the former, and lessening the risk of the latter.

On a superficial view of the subject, it would appear to be attended with few difficulties; but on more minute enquiry, we find that many obstacles present themselves, some of which are of considerable moment. Whether the removal of these lie within the sphere of the obstetrical art, or demand in certain cases, the interference of the legislature, is a question of importance to society; it is nevertheless incumbent on every accoucheur, before he attempts the operation, to weigh well in his own mind the moral propriety of the practice, and when fully convinced on the subject, to exert his utmost efforts to extricate the environed fœtus from impending danger.*

It is manifest that premature labour should never be attempted before it has been proved by

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* Though the illicit induction of artificial *abortion* is inconsistent with the dictates of nature and humanity, it has been sanctioned and made subservient to objects of *legislative* policy, as a means of abridging the number of the human race, by various nations. This crime was at one time practised to a destructive extent by the *Romans*, as is alluded to by Juvenal Sat. 6, versus 595, as also by Ovid.

" At tenere faciunt sed non impune puellæ,
Sepæ suos utero quæ necat ipsa perit."

Vide also Aristotle de Republica, lib. 7, chap. 16.

the event of one or more destructive fœtal births, that the pelvis was so much distorted, that life must have been unavoidably sacrificed before delivery could be accomplished, because a single fatal instance is not always a sufficient warrant for the operation.

As the female pelvis is liable by disease to be contorted into different shapes and to suffer various degrees of distortion, so that delivery *per vias naturales*, is, in some instances, utterly impracticable; in these diversities of morbid curvature, art has furnished us with means of accomplishing delivery in several ways, according to the exigency of each deviation from the natural standard. Authors, however, even in the present improved state of midwifery, differ in opinion on many important points of practice, relative to the difficulties in question. It is therefore to be hoped that every laudable attempt to lessen the intricacy and danger of parturition, will excite free enquiry and eventually promote the general good. Before I proceed further, let me call the attention of the reader to the powers of nature in cases of labour, and request him to keep in view the relative proportions which the fœtal head present to the respective apertures of the pelvis, in every individual case. The success of an accoucheur in the case before us, requires a knowledge of the structure,

dimensions, positions, and relative proportions which the mother's pelvis and the cranium of the child, bear to each other. It seldom happens indeed, that the size of the fœtal head is so exactly adapted to the capacity of the pelvis, as to require no force to squeeze it along; but although the head should be a little too large for the passage, yet the sutures suffering the bones to lap over each other, the head thereby lengthens, so as to be forced through the space by the pains, unless the pelvis happen to be very much distorted, or the bones of the cranium unusually ossified. But supposing these circumstances to occur, let us see what will be the consequence of a large head in the event of labour. In the first place, it will require longer time, and greater efforts to force it through the upper part of the pelvis; but by means of the sutures crossing each other, its bulk will be so diminished, that at length it will be forced down to the middle of the cavity of the pelvis. Here the space becoming again somewhat more contracted, the head will be retarded and cannot advance till such time as it is further lengthened, after which, however, if the pains are strong, it will be gradually pressed down to the lower part of the aperture, and be protruded through the os externum. The overlaying of the bones of the cranium, is a fortunate

circumstance in protracted labours, where the apertures of the pelvis are abridged, and much time and pains required to effect a birth; we cannot then be surprised if when the head is large, the case should prove very lingering. It must necessarily be so in the nature of things; whenever therefore we find the integuments of the fœtal head protuberant in the passage, though we may conclude the head is large, yet if the pains are powerful, or should be gone off, if the woman has not been so long in labour, that it would be dangerous to wait for a return of them, we ought to refrain from the use of instruments of any kind, and trust the delivery to nature, till we are fully convinced of her inefficacy.

In general, however, we cannot in these cases, leave the event wholly to nature with safety, where we suspect the head large and firmly ossified (as in cases of mere remission of the labour pains) though neither the head of the child, nor soft parts of the mother, are so much pressed upon, as greatly to endanger either. Yet, when the head is large, and the pains at the same time strong and frequent, the pressure both upon the mother and the child, if continued for a long time, is so powerful, as frequently to endanger them both. The child may suffer by violent pressure upon the brain; and the mother may incur much

harm by the impulsive force exerted on the head of the child, against the neck of the bladder, vagina, and the soft parts of the lining of the pelvis, and inflammation and mortification with sloughing ensue. For the same reason, the danger of waiting in this case, will be in proportion as the pains happen to be stronger or weaker, or as they return at longer or shorter intervals; on this account, when the pains are extremely strong and recur very frequently, and the head nevertheless does not advance, it may be prudent to take away a pound of blood from the arm,* and give an opiate in order to restrain them for a while, otherwise the uterus might be in danger of being ruptured.

But upon the whole, if the head be not absolutely too large and over-ossified, or the pelvis much distorted, there are very few cases in which the child may not be forced along and delivered with safety by the pains alone.

It is therefore advisable, in all cases where the head presents, (except in extreme degrees of distortion) to try first what the powers of nature will do, and never have recourse to instruments till we are manifestly certain that nature is inadequate to perform her office, and that the woman

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* I have long been in the habit of bleeding in protracted cases with evident benefit, particularly where the woman appeared plethoric and robust.

cannot be delivered with safety. And it ought to be remembered, that by waiting in this manner we gain a double advantage; first, from the lengthening of the fœtal head, and next from its being forced low down into the pelvis, so as to render its extraction by instruments more safe and easy. In cases where the pelvis is considerably distorted, the head of the fœtus, if not too firmly ossified, will generally be lengthened more than in any other instances, and sometimes the labour will terminate unexpectedly by the efforts of nature; in other cases, though apparently similar, the head may be firmly ossified and get locked in the pelvis, (if the diameters are equally contracted,) insomuch that it can neither be forced down by the pains, nor be extracted by instruments, without first evacuating the brain and diminishing the volume of the cranium.

Since, therefore, the advantages of waiting are so very great, and since nature often does the business when we should have least expected it, we ought not to have recourse to the use of instruments, till from the circumstances of the case we are fully convinced that they are absolutely required.

It is a nice point to determine on these occasions how long we ought to withhold our assistance; if we are in too great haste to deliver, and the mother or child should suffer injury in con-

sequence, we shall incur the danger of precipitation; or on the other hand, if we leave the case wholly to nature, perhaps the injury inflicted on the brain by delay, may prove fatal to the child, and the mother exposed to danger from long continued pressure of the head, on the neck of the bladder, vagina, rectum, or perineum, and inflammation and sloughing follow.

Upon the whole, therefore, we should avoid a too precipitate use of instruments on the one hand, and exposing the mother or child, or both, to imminent danger, by waiting too long on the other; all these circumstances must be maturely considered and compared with each other, such as the nature and power of the uterine pains, the length of time the woman has been in labour, the symptoms which may arise, the advances the head has made, the nature of the presentation, the form of the pelvis, the state of the soft parts, &c.

From such a variety of circumstances which may be variously or unfavourably blended with each other, it is difficult to lay down any general rule that can be applied to all cases. This however, ought always to be remembered, that so long as there are well founded hopes of the woman being safely delivered by her own efforts, we ought patiently to resign the case to nature; but, if after having waited as long as is con-

sistent with the safety of the mother or child, and the pains strong, with the head either not advanced at all, or resting in the middle, or at the lower part of the pelvis, we must then endeavour to assist the delivery in the best manner we are able, either by the hand alone or otherwise, by the use of such instruments as the nature of the case seems to warrant.

In order that the induction of premature labour should effectually supersede the use of the Crotchet, the accoucheur should be well acquainted with the existing degree of distortion of the pelvis, in every individual case where instruments have been used on prior occasions, as it is manifestly requisite that such deficiency of structure, and dimensions of the pelvis, be not overlooked; for by omitting this indispensable enquiry, the lives of both mother and child may suffer in every succeeding case where gestation is completed.

From the foregoing remarks it is evident, that much discrimination and judgement are required in all difficult cases; for if the head of the fœtus be permanently fixed at any stage of its descent through the cavity of the pelvis, and the pains frequent and violent, it may be prudent to have recourse to manual assistance, to overcome these impediments with either the

Forceps or Lever,* and if these fail, and the woman appears in danger, the Crotchet may be used as a dernier resource.

It is also allowed, that cases will sometimes occur in which the head gets immoveably fixed, and cannot possibly be brought through the pelvis with either of these instruments, so that the Crotchet becomes indispensably necessary, when in the succeeding birth, a much less obstacle may exist, and the child be born alive, even without manual assistance.

In these ambiguous cases, some practitioners are in the habit of turning, but from the difficulty of bringing the child alive, and the danger to which the mother must be frequently exposed in a strait pelvis by this operation ; I should rather trust to the application of the Lever or Forceps, and if these fail, Embryulcia will be requisite.

It is in cases of this description, that the accoucheur should avail himself of the opportunity of becoming acquainted with dimensions of the pelvis, by tactile means, in order that premature labour may be adopted on future occasions, pro-

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* It is necessary to observe, that throughout this essay, I invariably allude to Lowder's lever, and the method of using it as an *extractor*, rather than that of a lever, as its name appears to designate.

vided the degree of distortion be found to be such as renders it the most eligible expedient.

To become sufficiently acquainted with the fundamental principles of midwifery, and to ascertain the exact dimensions of the various apertures of the pelvis, is a matter of the greatest moment to the accoucheur, before he determines on any artificial mode of delivery. The want of the necessary knowledge acquired by the touch, may unwarily involve the practitioner in irretrievable mischief, when the extent of the deformity of the pelvis does not in reality warrant the application of instruments.

The distortions of the female pelvis are generally induced by Rachitis,* in the infantile state, or by Malacosteon and Exostosis in the adult, and sometimes fracture or dislocation of the bones of the pelvis, occasioned by accident, may produce an effect equally afflicting or unfortunate in its nature.

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* It is asserted by Dr. Osborn, that Rachitis or Mollities Ossium, is a disease "to which quadrupeds under no circumstances, are ever subject." On this account I may be allowed to differ in opinion from this author, for I have known many young pointer dogs afflicted with this disease chiefly in their legs, in consequence of being starved, when on having been indulged with warmth and better food, they have acquired a degree of strength equal to others of the same species, though their legs were visibly bowed afterwards, and their speed much impaired.

Malacosteon, is that species of deformity which chiefly affects females in advanced life, sometimes in a degree beyond what usually takes place in other diseases of the pelvis, and is supposed to be occasioned by a morbid disposition of the absorbent vessels imbibing the earthy particles of the bones which are then conveyed into the circulating system, and eventually pass off with the urine, and leave the fabric of the pelvis in a flexible state, so that the chief weight of the body, when in an erect position, bears perpetually upon the base of the vertebral column, and causes the bones which form the pelvis to yield and project inwardly, and so much abridges its apertures that parturition, at the full period of gestation, is rendered dangerous both to mother and child.

These different morbid affections and degrees of distortions incident to the female pelvis, the accoucheur should keep in view, when making the admeasurement *per vaginam* by the touch, or with the callipers.

Under such a variety of distortions to which the pelvis is subject, it is no easy matter for the practitioner to ascertain on all occasions, whether the defect be so great as to preclude the possibility of the head of the fœtus from passing through its apertures with impunity. Impressed with a sense of this difficulty, accoucheurs have exercised their ingenuity, and invented different

instruments to accomplish this desirable end, which are used both externally and internally. But the hand, or fingers, when properly applied in the respective apertures of the pelvis, is the most eligible and accurate *Pelvimeter* which we possess, and every practitioner of the art should make himself fully acquainted with the dimensions of his own fingers, when placed in every possible direction. When making this indispensable enquiry respecting the capacity of the female pelvis, and on passing the fore and middle fingers up the vagina, if the os coccyx, or any part of the sacrum or lumbar vertebræ be perceived to project unusually into its cavity; or if the rami of the ischia approach so near each other, as to admit no more space than two fingers to be placed edgewise betwixt them, we may conclude that some degree of primary mal-conformation exists in the bones which compose one or both of these apertures. Yet it not unfrequently happens that the brim of the pelvis is inconsiderably abridged, and the inferior aperture or outlet, is even wider than natural, and to obtain an accurate estimation of the contour of the two straits of the pelvis in every direction, when one or two fingers are inadequate for this purpose, it is necessary when admissible, to have recourse to the passing of the whole hand by the vagina into its concavity, the first three fingers of which are

to be conducted to the brim, where the admeasurement may be generally ascertained, to the space of a few lines, by alternately placing them diagonally in the superior strait in the following manner:

I.—If when the hand* is conveyed through the vagina to the brim of the pelvis extended, and the fingers kept close together, the side of the fore-finger touch the os pubis, and that of the little one, the projecting angle of the sacrum; the distance will be about three inches.

II.—If on moving the little finger out of the way, and placing the other three conjunctively, in the same diagonal direction as before directed, and their sides come in contact with the pubis and promontory of the sacrum; we may conclude that the space betwixt these two opposing points, is little more than 2 inches, an opening through which no mature fœtus can possibly be extracted alive, nor even if we suppose the space to be $2\frac{1}{2}$ inches.

III.—When only two fingers can be placed edgewise in the fore-mentioned manner, and betwixt the two angles of the short aperture of the pelvis, the extent will not exceed $1\frac{1}{2}$ inches.

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* A tolerable sized hand methodically directed up the vagina, will readily pass through the apertures of a pelvis, the small diameter of which does not exceed $2\frac{3}{4}$ inches from the pubis to the sacrum, even if the lateral dimensions are contracted.

From this last limited extent the accoucheur may feel assured that when the period of gestation is completed, except a greater distance can be obtained, in either of the lateral diameters of the superior aperture, no other mode of delivery is so eligible for the safety of the mother, as either the Crotchet or Cæsarean section. If the accoucheur be not primarily acquainted with the measurement of his hand, and fingers when placed in conjunction with each other, he may after having explored the different apertures of the pelvis, apply his hand to a graduated scale, and he will thereby be enabled to supply the deficiency. In some peculiar conformations of the pelvis, it happens that where the projection of the sacrum is by disease or accident, contorted inwardly and laterally, that the opposite aperture offers a larger space for the reception of the fœtal head than what is the case in a natural state; and when using the fingers as a pelvimeter it is indispensably necessary to attend to this circumstance, as a knowledge of such irregular conformation may govern our future plan of conduct. If ignorant of this, by such an avenue left for the entrance of the fœtal head, delivery will in some instances be terminated with safety to the child without manual assistance; and in others if the Lever or Forceps be necessary, when used with caution, the lives of both may be preserved.

This tactile method of proceeding, will generally furnish the accoucheur with an adequate knowledge of the dimensions of the pelvis, in almost every degree of morbid and mal-formed structure. In such adverse and distorted cases, it requires more than ordinary circumspection to select the most eligible resources for ensuring a happy event both to mother and child; and it is incumbent on the accoucheur in every preceding instance, where he has been under the necessity of terminating delivery with the Crotchet, to procure the precise dimensions of the pelvis in all its diameters before he leaves the woman, in order that he may be armed with every requisite auxiliary in future labour, and this information may be most satisfactorily acquired by means of the touch as has been before mentioned.

As the pelvic cavity is completely lined with fleshy texture, the apertures will, it is presumed, be varied a few lines less or more in proportion to the extent of difficulty, and the duration of labour; and these essential circumstances the accoucheur is particularly requested to bear in mind as he proceeds in this enquiry, in order that our adjustments may agree as to the relative proportions between the capacity of the fœtal head, and the cavity of the mother's pelvis during labour. To acquire with mathematical precision by means of the touch, the diversities and disproportions of mal-

conformation incidental to the different diameters of the pelvis during parturition, to resolve in every exigence, how long we ought to rely on the powers of nature, and when these are deficient, to select the best means which art can suggest, in order to accomplish the delivery with becoming expedition, are essential requisites in every accoucheur competent to exercise the obstetric art.

Though in this country *Pelvimeters* are rarely used for gauging the pelvis, yet on an occasion of such vast importance, every means should be employed to attain this point with as much accuracy as possible; for on our decision rests both the fate of the mother and unborn fœtus entrusted to our protection. To those whose opportunities of practice have not furnished them with a sufficient faculty of discrimination by the touch *per vaginam*, to be enabled to ascertain to a tolerable degree of exactness, the various characters and degrees of distortion to which the female pelvis becomes liable by disease, I have thought proper in this place to describe the mode of using the Callipers,* an instrument used by Baudelocque, as being more easily applied to the patient than any other with which I am acquainted.

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* Mr. Coutouly, of Paris, invented a Pelvimeter so constructed as to be applied in the cavity of the pelvis, a plate of which may be seen in Aitkin's Midwifery.

"To determine how much the superior strait is defective in the diameters, and measure it by means of the compasses, we take the thickness of the woman from the middle of the *mons veneris* to the centre of the depression of the base of the sacrum posteriorly, by applying one of the points of the instrument before, against the symphysis of the pubis; and the other behind, a little under the spine of the last lumbar vertebra: and deduct three inches from that thickness in women that are thin, for the base of the sacrum, and the anterior extremity of the ossa pubis; the thickness of these latter being at most but six lines, and that of the base of the sacrum two inches and a half; and so constantly so, that I have not found a difference of a line in about five and thirty pelves, distorted and contracted in all manner of ways, and in all possible degrees. This subtraction of three inches from the external thickness of the pelvis, in the said directions, is also sufficient when the lustiness is moderate; and we may add one or two lines more, when it is excessive, because the fat which forms the *mons veneris*, easily shrinks under the lenticular extremity of the compasses. The result of this procedure is so exact, that the pelvis measured with the common compasses after opening the body, was not above a line over or under my estimation in any one of my experiments. A greater precision, if we could obtain

it, would be useless, since the choice of the most proper methods for terminating the delivery in a given case, cannot depend on a line more or less in the diameter of the pelvis. According to these data, the knowledge of this diameter is easily obtained.

"It is four inches when the external thickness of the pelvis measures seven; it is but three when the latter only measures six; and but two when it does not exceed five, &c. I suppose the woman to be thin, as most of them are who have been ricketty."

Though by the use of the Callipers a tolerable accurate gauge may generally be attained of the distance between the pubis and promontory of the sacrum at the superior strait; yet it must be acknowledged that this instrument affords very little advantage to the accoucheur, when applied to any other of the pelvic diameters: and in cases of *exostosis* the admeasurement will be equally uncertain when attempted at any given point of the concavity. Hence may be seen how much more limited this mechanical invention is in its application and use, than the fingers of the accoucheur when properly adjusted.

In considering the descent of the fœtal head through the extended apertures of the pelvis, it will appear manifestly necessary that the dimensions of the one should bear some mathematical

proportion to the other. To obviate certain difficulties, nature has wisely ordained a peculiarity of structure to the fœtal cranium, the mechanism of which is so admirably formed, that its head is less compact than that of the adult, the cranium being connected by synneurosis or ligamentous sutures, forming fontanels which are more yielding and numerous, consequently are better adapted for the head passing through the windings of the pelvis, than if they had been firmly joined together.

The growth of the fœtus varies very much during the different stages of utero-gestation. The embryo increases more rapidly in size in the first weeks of conception, than after it acquires the fœtal state, though this increase is supposed to have various stages of irregularity till gestation be completed.

Few accoucheurs have had opportunities of ascertaining with precision the diversified growth of the fœtus in the earlier periods of its developement.

According to Soemmering, we find that the increase of the fœtus does not observe any uniform ratio. During the first weeks after conception its increase is most rapid, during the second month a little arrested in its growth; increased during the third, and in some degree retarded at the commencement of the fourth; from the latter end of the fourth to the sixth increased, from which period till gestation is perfected, the growth is not

so rapid. Burns states, that "in the fourth month the fœtus is about five inches long; in the fifth month, six or seven inches; in the sixth month, eight or nine inches; in the seventh, eleven or twelve; in the eighth about fifteen inches." See page 116, first edition.

M. Gardien, an eminent accoucheur of Paris, in his Traité dè Accoûchmens, Tom. 1, Page 481, remarks, that "at two months, the fœtus measures rather more than two inches long; at three months, three inches and a half; at four months and two weeks, four inches and six or eight lines; at five months, seven inches and a half; at six months, nine inches six lines; at seven months, eleven inches."

This diversity of opinion may arise in part from an inaccuracy in the measurement of the fœtus, as there is usually much resistance opposed by the muscular actions of the living child, in attempting to distend the legs and body for the purpose of measurement, for unless this circumstance be attended to, whether the fœtus be alive or dead, the result will be different. I have nevertheless taken some pains to acquire a knowledge of the mean weight, and length of new born fœtuses at different periods of gestation, and the average has at full time rather exceeded twenty inches in length, and near seven pounds and a quarter in weight: at other premature pe-

riods my observations coincide chiefly with those of Burns. See on this subject Mauriceau, Schurigius, Kerkringius, Ruysch, Riolanus, Burton, Hunter, Johnson and many others.

Abstinence and depletion of the system have been proposed as a means of retarding the growth of the fœtus in utero, with a view of rendering labour less difficult where the pelvis is faulty, but unless this project be scrupulously enjoined by the mother during the whole time of pregnancy, there is reason to believe that its effects would be wholly abortive, and might in certain conditions of the constitution do harm if carried to this extent; nor is it in the power of the accoucheur to discriminate in which cases such forbearance might be advantageously pursued, even if it was found efficacious: for in the lowest orders of society where women subsist invariably on a spare diet, we find their offspring in no respect reduced below the ordinary size of those females who live in a state of uninterrupted affluence; therefore this scheme appears too uncertain in its effects to be relied on as an expedient in cases where the diameters of the female pelvis are much abridged.

The walls of the pelvis are firmly connected together, and the change which the fœtal head is constantly undergoing as gestation advances, always presents an obstacle to the safety of premature delivery, owing to the uncertain magnitude

of the cranium, and the degree of resistance opposed by the pelvis, and the irregular action and power of the uterus during its passage through that cavity.

Without enumerating the various positions which the fœtal head assumes on the approach of labour, it may be necessary to state, that the general and most natural presentation, is the vertex nearly in the axis of the pelvis, with the ears rather in a diagonal direction between the pubis and sacrum, and the occiput inclined towards one *ilium*, and the face towards the other.

The cause of this part of the head descending first into the brim of the pelvis, may be owing in some measure to the *foramen magnum* being situated nearer the occiput than the face, consequently is more mechanically inclined to be first pushed into the superior aperture of the basin, by the action of the uterus on the commencement of labour; sometimes, however, the anterior *fontanella* may, on the approach of parturition, be perceived by the touch to present in the axis of the superior strait; but this trifling deviation is generally rectified by the repeated efforts of the uterus, which force the vertex into the centre of the cavity, whilst the chin becomes reclined upon the breast, and the face turned into the hollow of the sacrum, and thus the natural process of parturition is accelerated. If this fortunate curve

in the course of the head through the pelvis did not take place, and the *fontanella* were pressed out of its natural direction, the labour would prove tedious, and probably might terminate in a face presentation.

The *Forceps* and *Lever* are instruments well calculated for extracting the fœtus alive, within certain degrees of difficulty and deformity, and claim a preference over other mechanical inventions when used with judgment and caution. If the superior strait of the pelvis from the *symphysis pubis* to the *os sacrum*, or in any part from the anterior to the posterior point, exhibit a space for the reception of the head equal to three inches in diameter, we may not altogether abandon the hope of extracting a living mature child through such contracted limits with either of these instruments: and if the child's head be small, and the bones not too firmly ossified or connected by synneurosis membrane, to move a little over the edges of each other, while at the same time the volume of the head becomes lessened by the combined power of the uterus and abdominal muscles; in these cases, by the united aid of these natural agents, delivery may be sometimes effected, if the superior diameter of the pelvis does not in any part exceed $2\frac{3}{4}$ inches.* On the contrary,

* In a case of this description I had once the curiosity to measure the head of the child soon after birth; its longest dia-

when the pelvis is ascertained to measure no more from pubis to sacrum, or in any other direction of the aperture at the brim than 2½ inches,* I am persuaded from long experience, that no mature fœtus can possibly be extracted by any known mechanical power, through a space of these dimensions without inevitable destruction to the child, and consequent risk to the mother. It will be evident from these facts, that it is in this intermediate degree of distortion (comprising not more than a quarter of an inch) betwixt the possibility of effecting delivery without injury to the mother or fœtus with the *Forceps* or *Lever*, and that extent of deformity which requires the application of the *Crotchet*, that premature delivery seems most likely to be advantageously produced. In such cases this method is preferable to the sacrifice of a mature fœtus by Embryulcia, whilst unavoidably endangering the life of the parent.

Here a question naturally presents itself to every accoucheur who deliberates on the subject;

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meter was 7½ inches, and the distance from the protuberance of one parietal bone to the other was reduced by pressure to nearly 2½ inches. Notwithstanding the degree of compression which the brain must have sustained by long continued action of the uterus, and though delivery was effected with the *Lever*, both mother and child recovered. Cases of this kind are very rare, and form no general rule of practice.

* Vide Synoptical Table at the end.

what degree of compressibility is the mature fœtal cranium capable of sustaining without destruction, during its passage through a pelvis of given dimensions, and what is the proportion of difficulty in this case compared with the delivery of a premature fœtus of seven months? This question is not easily solved, owing to our inability to determine the bulk of every fœtal head, and the dimensions of the cavity of every individual pelvis, as well as the power of uterine action during labour. We may have a general idea of the figure and extent of the child's head, both before and after birth; but as no two heads nor pelvises are found in either state uniformly alike, the difficulty of forming a previous judgment becomes unavoidably increased.

The solidity of the fœtal head, and the reaction of the bones of the pelvis upon that body, are so variable in different children and in different stages of labour, that no exact criterion can be formed before birth. However, I will venture to hazard an opinion that the component parts of the mature fœtal head when exposed to the risks attendant on *natural* parturition, will bear a reduction in size by pressure during its evolution through the pelvis, from $\frac{1}{4}$ to $\frac{1}{2}$ an inch without proving fatal; but when the volume of the head becomes diminished beyond this, either by the use of the *Forceps* or *Lever*, or other mechanical power, their applica-

tion becomes proportionately dangerous both to the child and mother.

If the bulk of the head be reduced in its dimensions further than the extent above mentioned, by one of the *parietal* bones passing over the other, and the pericranium and *dura mater* become detached, while pressure on the brain is continued for an undue time, a degree of plethora and internal extravasation will take place on that delicate organ, and death ensue either during labour or soon after it. Yet, under these precarious circumstances, the natural spheroidal figure of the fœtal head may sometimes by pressure be changed into another more favourable form, and pass with impunity through a pelvis, the conjugate diameter of which at the brim, does not exceed $2\frac{3}{4}$ inches, if the mother be strong and the uterine action powerful. Hence will appear the impropriety of using the *Crotchet* without great circumspection, on the presumption that the child cannot be otherwise born alive.

In some peculiar forms of distortion, where the projecting angle of the sacrum is contorted in a lateral direction, there is a greater space left on the contrary side. In this diverse structure of the pelvis, and where the most favourable part of the head of the fœtus rests at the widest part of the aperture, I am induced to believe that the *Lever* has a decided preference over the *Forceps;* for I

have succeeded with safety both to mother and child with that instrument in several instances, where the *Forceps* had been previously tried without effect: and in others, where the preceding births had been terminated with the *Crotchet*, in which cases no part of the superior aperture of the pelvis presented a space equal to three inches.

I consider the living fœtus a merely passive body during its passage through the pelvis; though after death, when putrefaction has taken place, it is well to bear in mind that the bones of the cranium and their connecting membranes will give way more readily, and pass through a less space than when alive.

However, I am well aware that examples may be adduced where the head has undergone a greater reduction by compression than what has been above stated, without proving fatal; nevertheless I would have it understood, that though there may be exceptions from this rule, yet the danger incurred will be proportionate to the yielding condition of the sutures, and length of time which the fœtal head occupies in the passage: hence it is indispensably requisite to view the admeasurement and dimensions of the pelvis and cranium of the fœtus in conjunction with each other, in every state and under every modification of artificial assistance.

Some difference may nevertheless result from

the reduction of the size of the head of a fœtus of seven or eight months, and one of nine, as it is probable that the volume of the head of the latter will not admit of the same degree of flexibility with the former; yet perhaps less danger will take place betwixt the two fœtuses during their course through the pelvis, than what at first would appear probable, owing to the greater impelling power of the uterus during labour upon the body of a mature fœtus of nine months, than upon an immature one of seven; and our judgment on this head must be governed in every individual instance, by the comparative casualty to which the child is inevitably involved in the birth.

On consulting the works of different writers on midwifery, there is a considerable difference in their respective statements of the mean dimensions of the heads of children at the time of birth; and on comparing the measurements I have taken, I find that they accord the nearest with the statement given by Burns. "The longest diameter (says this author) of the head is from the vertex to the chin, and this is near five inches. From the root of the nose to the vertex, and from the chin to the central portion of the sagital suture, measures four inches. From the one parietal protuberance to the other, in a transverse line, mea-

sures from three inches and a quarter, to three inches and a half. From the nape of the neck to the crown of the head, is three inches and a half. From the one temple to the other, is two inches and a half. From the occiput to the chin, along the base of the cranium, is four inches and a half. From one mastoid process to the other, along the base, is about two inches; from chin to cheek is three inches."

It is well known that the natural figure of the fœtal head, whether *male* or *female*, at birth is elliptical, and the average dimensions of the former usually exceeds the latter by nearly a thirtieth part. This difference of sex cannot be known before the child is born, and the disproportion being trifling, could not influence the proceedings of the accoucheur, were he previously acquainted with the fact.

The next question which presents itself, is in what degree of distortion of the pelvis it becomes expedient to have recourse to this operation?

This point will not be easily ascertained with mathematical precision, unless the accoucheur be allowed to make an examination *per vaginam*; and as this delicate step is not altogether attainable during the earlier months of gestation, and before the propriety of premature induction has been determined on, it becomes requisite in this

place, to state the circumscribed dimensions of the apertures of the pelvis, wherein it is most likely to meet with success.

Under these incidental constructions of female deformity, I presume that a pelvis, the small diameter of which measures from pubis to sacrum, about $2\frac{1}{2}$ or $2\frac{3}{4}$ inches, appears to favour the utility of this mode of delivery more than any other given dimensions. For on the one hand it is sufficiently evident, that where the pelvis measures $2\frac{3}{4}$ inches, the *Forceps* or *Lever* may be advantageously used; but a mature fœtus cannot be born alive, when the extent of space is under $2\frac{1}{2}$ inches, in which case the *Crotchet* becomes necessary; and should the superior aperture measure only $1\frac{1}{4}$ inch in the widest part of its conjugate diameter, the only resource for the safety of the mother and fœtus, is the *Cæsarean Operation;* and, in this high degree of difference, premature delivery can avail nothing towards preserving the life of the fœtus. See *Synoptical Table.*

If it be proved that this operation cannot be performed with safety to the child, except where there is a space existing in some part of the superior aperture, adequate to what has already been stated, then it will follow that this mode of delivery must be very much limited, insomuch that a considerable degree of hazard to the fœtus will always attend it, owing on the one hand to a

want of accuracy in discriminating between the relative size of the fœtal head, and the dimensions of the apertures of the pelvis, through which it must necessarily pass; and on the other to the various contingent events unavoidably linked with malformed pelvis and uterine passivity. I have thus pointed out with as much precision as I am able, the minimum or intermediate diameter of $\frac{1}{4}$* of an inch as the most warrantable space allotted for the success of this species of operation, when performed about the end of the seventh month of gestation; before or after which period it appears from these *data*, an unjustifiable procedure, and not likely to be attended with success to the fœtus.

When this operation is determined on, and the dimensions of the pelvis are such as promise success, we ought to select the time for its completion with the utmost care, in order that the child may derive every possible advantage for acquiring an uninterrupted birth, for the nearer the recurrence of the operation to the period decreed by nature, and the greater will be the prospect of a successful issue. It is evident that premature delivery, like many other operations, requires a suitable time to be selected for performing it.

* (Viz.) When the short diameter measures from $2\frac{1}{2}$ to $2\frac{3}{4}$ inches. See Synoptical Table.

It has been proposed to excite premature labour at an earlier period of gestation, than at the end of the seventh month; and no doubt, a few exceptions may be opposed to the general advice above stated; but if we consider the puny condition of such ephemeral beings, and the misery to which their premature birth subjects them, we shall have little reason to prefer such a state to a mere nonentity, while the community derives no benefit from such precipitate proceedings.

It is much to be lamented, that authors who have had recourse to this operation, had not been more explicit in their statements respecting the exact period of gestation, the premature fate of children, and how long they survived that event, for it is not justifiable on moral grounds, to perform an operation merely to bring a being into existence which must inevitably perish soon after birth.

Besides this immature mode of delivery, repeated during subsequent pregnancies, would be the means of subjecting the mother more frequently to a state of gestation, than if she were allowed to complete the period of nine months; and by such illicit practice, wantonly destroy a number of children to preserve one woman, which on a more deliberate appeal to circumstances, and the history of the *Cæsarean Section*, the child might also have been sometimes saved, had the parent

been allowed to complete her term of gestation, by having recourse to *hysterotomy*, a project which has perhaps produced a greater assemblage of impetuous and determined opponents on one side the question, and exhibited more rational and enlightened advocates on the other, than any surgical subject whatever; nevertheless, the continental writers on midwifery appear more discreet and humane with regard to the use of the *Crotchet* than the British practitioners, and seldom recommend its application during the life of the child in utero.

If we were fully acquainted with every circumstance connected with the history of all the victims which have fallen a sacrifice to the *Cæsarean Section* and *Embryulcia*, since their first introduction into practice, whether the children were dismembered in the womb, and extracted with *Crotchets* variously constructed, such as the *Tire Tetes* of *Mauriceau*, the *Extractor* of *Levret*, or other instruments used for that dire purpose, a measure of success might be ascertained as a rule of practice, to guide the future steps of the accoucheur. But it is to be regretted that the records of obstetric experience at present are insufficient to furnish such a criterion, nor will the limits prescribed to this enquiry, permit a full discussion of so formidable a question. But admitting the prevalence of custom in our own country, in the

use of the *Perforator*, though but an apology for *Embryulcia*, the advocates for the *Cæsarean Section* on the continent, unquestionably triumph over British accoucheurs, both on the score of humanity and legislative authority; for we have to lament the numerous instances of living children mutilated and extracted through the pelvis, by means of the *Crotchet*, who have survived their births only for a short space of time in apparent misery, and who, by a contrary mode of practice, might in all probability have been preserved. *See Hamilton's Letters* to *Osborn*, Page 153. *Mauriceau*, obs. 584. *Peu La Pratique*, Page 346. *La Motte*, case cxc. *Crantz de Instrument, &c.* sect. 38, &c. &c.

The inevitable death of the fœtus, and the well known danger to which the mother is exposed by the application of the *Crotchet* in the third degree of distortion of the pelvis,* when contrasted with the success of the *Cæsarean Section*, where the life of the child is almost always preserved, are circumstances sufficiently important to lead the accoucheur to pause on the propriety of selecting either of these modes of delivery.

Yet, on a long and dispassionate view of the subject, I am induced to declare, without reserve, that were I at full liberty to exercise my own

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* See Synoptical Table.

judgment and discretion on this momentous question, I should decide in favour of *Hysterotomy*, rather than *Embryotomy*, within the above specified limits of distortion, and where no morbid disease affected the system.

It is not to be wondered at, that the horrid use of the *Perforator* in these circumstances of difficulty, should have been so reluctantly acceded to by Continental practitioners, when it is known that formerly both the *Physicians* and *Clergy* of France, were legally authorized to induce the mother to submit to the *Cæsarean Section*, for the sake of having baptism administered to the child. This custom continued until the Doctors of the Sorbonne,* in the year 1755, decreed that the sacramental rite would be equally efficacious if performed before birth! To effect this, a syringe was filled with warm water, the pipe was conveyed up the vagina till it came in contact either with the head of the fœtus, or its investing membranes, and the piston being pushed forwards, the water was forced against the child, during which process the usual formula of the service was duly pronounced by the operator! The uterine fœtus was then considered truly baptized! This expedient the Continental accoucheurs pursue at the present time,† when an impediment occurs which

* See Astruc's Art of Midwifery, Pp. 216—219.

† See Traité sur divers Accoûchmens, par M. Herbiniaux.

would prevent the child from being born alive. These circumstances will account for the *Cæsarean Section* being less frequently performed since the above-mentioned period; and also for *Embryulcia* being now adopted by Continental accoucheurs in cases of pelvic deformity. See M. Guenin Historie de deux Oper Cæsariennes. Cargiamila Embryologia sacra, passim. Herbiniaux Traité sur divers Accoûchmens, &c. Baudelocque's Memoirs on the Cæsarean Operation.

Presuming that no accoucheur can be unacquainted with the manner by which premature labour is effected, I shall omit all description of the operation, in order to guard against any unjust or immoral abuse which might arise from its publication.

When the membranes of the ovum which envelope the fœtus are ruptured, or a slight denudation of the connecting chain of vessels between the *decidua* and uterus be in any way produced, labour will eventually follow, though the time which elapses before the commencement of uterine action is so variable, that I have known in some instances several days pass, before that organ has completed its evolutions.

When the *liquor amnii* is primarily withdrawn from the ovum, and the fœtus left in close contact with the womb during its repeated contractions, I am disposed to consider the life of the child

during its exit through the pelvis involved in some danger; and that danger is proportionable to the degree of distortion, duration and force of labour pains, and date of gestation. And though premature induction be attempted by disparting the *decidua* from the *os uteri*, or its *cervix* without rupturing the membranes, hæmorrhage may ensue, and the woman become reduced before the evolution of labour be completed. Nevertheless, in such cases where the uterine efforts are defective, the labour protracted beyond due time, and the vital continuity between the placenta and uterus destroyed, it may be advisable to employ the *Lever* to facilitate the birth, provided the mouth of that organ be amply extended, and the presentation natural.

The ancient opinion why more children survive the birth at the period of the *seventh*, than at the eighth month of pregnancy, may be traced as far back as the time of *Hippocrates;* yet no rational explanation has to my knowledge been attempted in reference to this prevailing doctrine. Whether it may be traced to the absurd notion ascribed to *Pythagoras** of *Septenary Mutations* is not very

* The number *seven* has long been acknowledged a perfect and ominous number. Hence *Cicero* calls it *Nodus Omnium*, or the knot of all things; and the *Pythagoreans* term it the *Vehicle* of *Man's Life*. This Philosopher was so much enraptured with this numerical doctrine, that he applied it to all

easy to determine. *Hippocrates* embraced the idea that at the seventh month of gestation, the fœtus invariably makes an effort to extricate itself from the uterus, and if not successful it makes a second attempt at the expiration of the eighth month, and if effective at this period, the fœtus is consequently rendered weaker than if it had been born by the first efforts!

It is sufficiently notorious that the ancients imbibed many superstitious prejudices with regard to odd numbers, imagining that the number *seven* had a peculiar reference to the human body. This irrational sentiment was promulgated by the Chaldeans, under the appellation of *Climacterics*, and these tertian and septenary days have been regarded to an injurious and ridiculous extent by many physicians of the present age, particularly in certain cases of fevers. Such a numerical doctrine cannot be too contemptuously censured; for the living organized system appears to me endowed with an almost endless variety of properties, and its functions so numerous and

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sciences, physical as well as divine. Some authors are of opinion that *Pythagoras* had no faith in numbers separately considered, but merely employed them as types or signs to explain the principles of his philosophy; but afterwards his disciples introduced into his doctrine the mystery of numbers portending some extraordinary and revolutionary change in the human body, at certain petiods of time which he never believed.

fluctuating by the interposition of casual agents under such contrary circumstances, that it is altogether improbable that it should be influenced by the power of such periodical seasons.

It is probable from the physiology and history of utero gestation, that the fœtus makes constant and progressive advances towards perfection and vigour, from the time of conception to the full period of pregnancy.

It may however, be proper to advert to the probable causes of a fœtus born at the eighth month of gestation, being more feeble and less likely to survive its birth than one of seven months, as Hippocrates and many other Physicians maintain.

It is granted that there are more seven months children reared than those of eight, and daily observations sufficiently prove that abortions take place more frequently about the seventh month than at any other period of gestation. To account for this fact, it may be remarked, that there is comparitively a greater yielding of the cervix uteri at this time, than at the eighth month. The functions of the uterus manifest less resistance to the causes which oppose parturition, and its neck unfolds its contractions with greater facility. The fœtal head is also somewhat less, and parturition is rendered easier. During no stage of gestation does the uterus perform its per-

turient office with more irregularity than at this latter period; consequently the bulk and firmness of the fœtal cranium opposed to uterine resistance, and connected with a variety of casual and operative causes in severe and protracted labour, will unavoidably subject the fœtal head to a state of undue compression, and its neck sometimes to strangulations. These are accidents to which it would be less exposed at an earlier period of pregnancy under similar circumstances during its evolution from the womb. On these grounds we may account for the greater probability of rearing a premature fœtus of seven, than one at eight months. There is therefore no reason for believing any thing ominous in numbers; nor can I imagine any other method of elucidation, than what is thus supported by observation and experience.

It may perhaps be regarded by some practitioners a matter of more curiosity than utility, to enquire into the history and success attendant on premature induction, and the prospect of rearing children born before the completion of the term of utero-gestation; but the importance of the attempt will be readily acknowledged by every accoucheur who contemplates the subject in a moral point of view; and it is hoped that the instances on record of premature births hereafter adduced, in support of the operation, will tend to

excite additional ardour in the practitioner, to rescue these puny beings from an untimely grave.

In the *Second Book* of *Esdras*, chap, 6. ver. 21, there is a pointed allusion to the present subject, "The women with child shall bring forth untimely children, of three or four months old; and they shall live and be raised up."

Avicenna, an Arabian Physician, declares he has seen lively children born and reared in the sixth month.

Hieron Mantuus, says he knew a Butler of *King Henry's* of *France*, that was born in the fifth month, who when he wrote was alive and of a good age. See Lib 4, chap. 41. *Hieronymus Cardanus* asserts, that he knew an instance of one *Clara* of eighteen years of age, who was born on the one hundred and forty eighth day from the time of conception. See Lib 1. *Alphonus Caranza* cites several authors who allow that children may be born alive and survive as early as the sixth month, such authors for instance are *Johan Brodeus*, *Jacobus Segarro*, *Henricus Salmuthus*, *Horatius Augenius*, and *Claudius Geardinus*. Vide chap. 9.

Alphonsus de *Sancta Cruce* gives his testimony to successful births under six months.

We have an instance recorded of a fœtus living at the early period of five months. See *Brouzet* Essai sur l' Education Medica, Page 37 & Seq.

Monsieur Rochfort in his Memoirs says, he was born as early as some of those before mentioned.

The *Mareschal Duc de Richelieu* was born in the sixth month of pregnancy. It is likewise said on good authority, that *Licetus* a celebrated Physician and Philosopher of Italy, came into the world in the sixth month of his mother's pregnancy, and lived to be 77 years of age, his Father being also a Physician, cherished him with great care and managed to rear him by means of a furnace artificially heated after the Egyptian method of hatching eggs.

Peu, *Maubray*, *La Motte*, and *Van Swieten* relate several examples of successful premature births.* One of the most authentic and extraordinary instances of prematurity on record, is that of *Lewis* the second, King of *Hungary*, who it is said, was born without skin. In his second year he was crowned, in his tenth year he succeeded to the throne; in his fourteenth year he had a complete beard; in his fifteenth he married; in

* A remarkable instance of the varieties of gestation, is related by Pliny, lib. 7. chap. 5, of Vestilia, a Roman Lady, who by three successive husbands had four children. The name of the first was Sempronius, whom she bore in the 7th month of her pregnancy; Suillius Rufus at the 11th; Corbulo at the 7th; and Cæsonia at the 8th. All of them lived and became noble Citizens of Rome. Cæsonia it is well known was wife to the Emperor Caligula. See also A. Spigel de Formato Fœtu. chap. 20, folio edition 1645.

his eighteenth he had grey heirs, and in his twentieth he died! On referring to the *Edinburgh Medical* and *Surgical Journal*, Vol. 11th, for the year 1815, the reader will find an interesting case related by Dr. Rodman, of a child born between the fourth and fifth month and brought up.

I know a Gentleman now living, 60 years of age, who never had either teeth, or nails on his toes or fingers, and from his appearance and what I have been able to learn respecting his birth, there is reason to believe that he was born in the sixth month.

From the works of obstetrical authors, and my own observations, I am convinced, that there are as many instances of successful births at the seventh as at the eighth month; owing probably to the causes before stated. Hence it is indispensably necessary for the accoucheur to bestow as much attention to procure living children in the former as the latter period; and to adopt the mode of resuscitation in the early as in the more advanced births. On no occasions should he remit his exertions without the most decided conviction that his efforts will be unavailing; and however improbable and remote success may appear in the case of a fœtus under seven months, his perseverance may at length be rewarded. Premature children are often born without visible signs of life owing to a variety of causes during,

or immediately after parturition: several such cases have occurred in my own practice, which prove that reanimation may be effected after the lapse of half an hour or more from the time of birth; and it is probable that in cases of Asphyxia where the vital action of the system is suspended, and the lungs not having been inflated with air, that animation may be restored sooner than if respiration had once taken place, and from some cause or other ceased.

It will scarcely be disputed after the instances recited, that a seventh month child may frequently by proper attention be reared, and attain nearly the usual strength and size, as if it had remained in utero nine months. Hence it would be highly improper to abandon premature children, for a child born wanting nails on the fingers and toes, or without hair on the head, is not to be regarded as in a state in which resuscitation is impracticable. The infant should be kept in a room constantly warmed by means of a stove, and laying it in a bed of wool, or wrapping it in fleecy hosiery; it should be fed with good milk sweetened with brown sugar; and thus the lives of many children may be preserved which would otherwise have perished for want of timely and vigorous measures. The warm bath, galvanism, and friction are also among the remedies which promise a happy result.

On referring to the works of continental authors

it will be observed, that they do not generally sanction the moral propriety of this practice, and allege in support of their opinion, that the induction of premature labour, whatever may be the fate of the child, frequently subjects the mother to subsequent cancerous affections of the uterus; and in these marked cases of distortion of the pelvis, they give a decided preference either to Embryulcia or the Cæsarean Section. How far we are justified in giving assent to these opinions, an examination of the records of the operation in this country, compared with those on the continent will best decide; and it may be requisite to remark, that the most accredited authors on the continent acknowledge they have seldom had recourse to this operation, and we are not furnished with a single instance of such disastrous uterine affections resulting from the operation in this country. Hence we ought not to be governed by their opinion in this question, as it cannot be put in competition with that of this country, seeing that our experience has been more extensive than that of other nations.

It may subject me to the charge of credulity, to have brought forward instances from ancient authors of births, the prematurity of which far surpasses those of modern times; yet, as writers of every age and country claim an equal share of credence, I can scarcely be thought reprehensible

on this account, though some of those already adduced may be viewed as questionable. It augurs more judgment than what I pretend to possess, to determine how far all of them are entitled to belief.

Notwithstanding the authorities cited, however credible or accurate they may be, they ought rather to be viewed as rare instances of success, than as guides by which our practice should be regulated.

It is by no means evident that premature labour should be indiscriminately produced during the sixth month of gestation; for every attempt made at this early period, with the intent of superseding Embryulcia, or any other manual expedient for the mere purpose of preserving the life of the fœtus, will, in most instances, avail nothing more than *jugulare mortuos!* Such are the uncertain results attendant on premature induction, that every delivery excited by art or otherwise, taking place casually or earlier than the termination of the seventh month of pregnancy, unless the pelvis can be ascertained either by the *touch*, *Callipers*, or the event of one or more prior births to measure from pubis to sacrum, or other of its apertures more than from $2\frac{1}{2}$ to $2\frac{3}{4}$ inches, will generally prove destructive to the fœtus, either during the time of labour, or soon after the completion of that process. In some peculiar morbid

affections of constitution the fœtus dies in utero, about the eighth month of gestation. In such circumstances of bodily imperfection this operation has been sometimes attended with the happiest results; but as the death of the fœtus while in the uterus is almost always concealed from us, this expedient must ever be attended with much uncertainty.

The inadequate augmentation of space gained by the *Sigultian Operation*, and the uncertainty of reunion of the *sacro iliac* symphysis in extreme deformity of the pelvis, and the manifest danger attending that operation, are circumstances sufficient to preclude its adoption as a substitute for any of the above-mentioned modes of delivery. It affords little hope of preserving the life of the child in extreme degrees of distortion of the pelvis, and subjects the mother to imminent danger. The chief objections to this operation may be stated under the following heads :—

I.—The cartilage which connects the symphysis pubis, may be so much ossified as to prevent a separation by means of the scalpel; so that a reunion may not take place after the operation.

II.—The space obtained by a division of the symphysis pubis in a pelvis greatly distorted, would be inadequate to permit the head of the child passing with safety.

III.—There is always great risk of the neck of

the bladder being wounded by the knife, or lacerated by the separation of the bones of the pubis.

IV.—The internal ligaments which unite the *ossa ilia* and *sacrum* may be lacerated, and a reunion may not be effected.

V.—Inflammation has sometimes succeeded this operation, and the patient suffered death in consequence.

VI.—In some instances where the section has been made, the ossification of the *sacrum* and *ilia* has been found so firmly united, that no separation could possibly be obtained by a division of the symphysis pubis for the extraction of the head of the child, and delivery has afterwards been effected by mutilating the fœtus with the *Crotchet;* or as a dernier resource, the operator has finished the delivery* by the *Cæsarean Section,* thus cruelly and unnecessarily compounding the two operations.

It has been doubted by some respectable writers, and with apparent reason, whether the *Sigultian Operation* has ever been successful both to mother and child, in cases where the superior aperture of the pelvis, from pubis to sacrum measured less than 2½ inches.

It might appear at first view, from these pre-

* For an account of some shocking instances of this description, the reader is referred to Vol. III. of Heath's Baudelocque.

mises, that the section of the pubis and induction of premature labour are equally eligible, so far as respects the circumscribed limits of the pelvis; but when we dispassionately consider the uncertainty of augmenting its apertures, and the consequent risk incurred to the mother, the comparison of success between the two modes of operating will rest on the side of premature practice. Hence will be seen the inadequateness of the Sigultian project ever superseding any other known mode of delivery, and the reason of its being in a great measure abandoned by the profession.

Few operations ever met with a greater number of advocates in the same space of time, or were sooner relinquished by the profession; and the unhappy result of the practice ought to discourage in future every inconsiderate innovation in the obstetric art. It is to be lamented, that an indiscriminate regard for such project should ever have influenced the conduct of accoucheurs in its favour.

It is a matter of the greatest practical consequence for the accoucheur in cases of distorted pelvis, to discriminate between those of *Exostosis* and *Malacosteon;* as in the latter disease the bones will yield considerably, either by the introduction of the hand, or the impulse of uterine action on the body of the child during labour, by

which the head becomes impelled against the angles of the superior aperture of the pelvis, and acts like a wedge in forcing the passage open, while in affections of Exostosis no such change is produced.

Eight cases of this species of progressive deformity have fallen under my notice; in one of which the projection of the last lumber vertebra, at its union with the angle of the sacrum was so much bent forwards into the cavity of the pelvis, that on the introduction of the fore-finger up the vagina, a protuberance was presented to the touch very much resembling the head of the fœtus, pretty far advanced into its cavity.* On carrying the finger a little higher anteriorly past the projection, I could with some difficulty ascertain the head of the child; but on moving it around, the distortion appeared so great, that the whole circumference did not exceed that of a half crown piece.

This occurrence was on the 29th of April, 1792, at which time I delivered the woman with the Crotchet, and the bones of the pelvis receded considerably to the impulsive efforts, during the

* This protuberance had been mistaken for the presenting part of the child's head by the attending practitioner, who had previously to my being called in, been in attendance two days and nights, and had determined on perforating the head with the scissars before my arrival at the patient's house.

extraction of the head of the fœtus; yet, notwithstanding the flexibility of the bones of the pelvis, and the debilitated state of her constitution, she recovered speedily and without interruption.

On the 22nd of February, 1794, being in the neighbourhood where this poor woman resided, and learning that she was still alive, I was induced to pay her a visit, and if possible obtain permission to examine her *per vaginam*. This request was readily granted. I found her unable to walk without assistance, and as she sat, her breast and knees were almost in contact with each other. The superior aperture was nearly in the same state as when I delivered her with the Crotchet, but the outlet appeared more contracted, and the rami of the pubis over-reached each other, leaving a small opening under the symphysis barely sufficient to admit the finger to pass into the vagina by that passage, and another aperture below, but rather larger and parallel with the junction of the inferior tuberosities of the *ossa ischia*.

From what I afterwards learned respecting this decrepit female, she survived this period about two years, at which time she was become still more distorted in the spine, and after her death it was with difficulty she could be put into the coffin. This woman bore nine children, and died in the 39th year of her age. I attended her in

the preceding labour to that above-mentioned, which was lingering and tedious; the disease then appeared to have produced considerable distortion of the pelvis, in consequence of which I terminated the delivery with the Lever, and preserved the life of the child.

In another instance, the woman was in a dying state before I was consulted. On examination I found the pelvis very much distorted in its apertures, and suspecting the deformity to arise from a state of Malacosteon, I was induced from the circumstances of the preceding case to attempt delivery; and this more particularly as the poor woman expressed an earnest desire to be released from her present misery, rather than die undelivered. On enquiry, I was informed that she had only just completed the seventh month of gestation.

Reflecting on her premature condition, and observing the deficiency of uterine action, I determined on introducing the hand into the vagina uteri, which was adequately dilated; and discovering it to be a case of twins, I availed myself in this instance to deliver by the feet; but the whole contour of both apertures of the pelvis was so much contracted in their dimensions, that turning the fœtus was with considerable difficulty accomplished. The children were both alive, and survived their births several days; and the woman

lived about twelve hours after being delivered. Having obtained permission to inspect the body, I found on dissection the dimensions and structure of the bones of the pelvis as follows:—The conjugate, or *antero-posterior* diameter, from the symphysis pubis to the promontory of the sacrum, measured barely two inches and a half, and the *antero-posterior* dimensions on each side of the *sacro-iliac* symphysis between these two points, were in some places under, and in others a few lines more than two inches and a half, and the transverse diameter $3\frac{1}{4}$ inches.

The *rami ischia* approached so near each other, that the space left betwixt them would scarcely admit one finger in any part; and on the introduction of the hand into the uterus when proceeding to turn the fœtuses, these bones receded from each other very considerably; and the same yielding effect was observable in the superior strait, though in a much less degree.

The spongy texture of the bones of this pelvis appeared to have very little cretaceous matter in their composition, and their fabric was so soft that they were easily pierced with the point of a knife.*

* It is a circumstance meriting attention, that *Malacosteon* has shewn itself to be hereditary in this family; for besides the mother I have attended two of her daughters, who were afflicted with distorted pelvis occasioned by the same disease; and it is

The distortion and structure of the bones of the pelvis of the other women above alluded to, bore such a similarity to those just described, that it is unnecessary to detail the respective circumstances of their parturient condition.

Many advantages may result to the accoucheur, as well as the patient, from an accurate knowledge of the diseases, and structure of the bones of the pelvis prior to delivery. It is, I am persuaded, from a want of this indispensable information that the Cæsarean Section has often proved fatal in this country; for there is reason to suppose that most of the women on whom that operation has been performed, have been afflicted with *Malacosteon*, and consequently were in an irrecoverable state, independent of any injury inflicted by the operation itself; and perhaps if the nature of the disease and extent of distortion had been better and sooner understood, delivery in a natural way might in some instances have been accomplished with safety to the child, and the life of the mother prolonged.

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further remarkable, that a brother of the sisters, just mentioned, is now labouring under a state of *Friabilitas*, of the bones of the lower extremities. About two years ago this man had the misfortune to fracture his thigh bone whilst attending his employment as a weaver. Some time after a union was effected the other thigh bone was fractured during his being engaged at the same occupation, since which accident he has been obliged to go on arm-hole crutches.

In the 4th degree of distortion of the pelvis, where *Malacosteon* has made such dreadful ravages in the female constitution, and in which the aid of medicine is inadequate to re-establish it, it would be needless with the view of merely preserving the life of the mother, to have recourse either to the *Sigultian Operation* or the *Cæsarean Section*, as the woman would inevitably die of the disease, even if she were not in a state of gestation.

If we advert to the numerous cases of *Cæsarean Section* performed with success on the continent, compared with those of this country, it will be obvious that the instances of fatality have been chiefly owing to *Malacosteon* existing before the operation; for in no instance where the *Cæsarean Operation* has been performed in *this kingdom*, has it proved successful* to the mother, except in the case of *Jane Foster*, of *Blackrod*, on whom I performed it with success, and on which occasion it became necessary, on account of a deformity of the pelvis, incurred by an accident in the early state of pregnancy, and not from any constitutional disease.

When *Premature delivery* is attempted with a view of superseding the *Cæsarean Section*, it can

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* This woman is now living, and for a particular account of her case see the latter part of this Essay.

only become justifiable when the dimensions of the pelvis are such as preclude every other mode of delivery *per-vias naturales*. Upon this ground the propriety of this operation will be confined to the embryon state, or at least soon after it has arrived at the fœtal period.

In the last mentioned extreme degree of distortion of the apertures of the pelvis, the solicitude of the accoucheur is wholly directed to the preservation of the life of the mother, as every endeavour within the limits of our art during the embryo period, when designed to procure fœtal existence in these adverse situations will prove wholly abortive.

It may be a question of importance to know how far the morality of the practice may be justified when performed with the intent of preserving the life of the mother, and sacrificing that of the fœtus at so premature a stage of gestation. The problem is not easily solved ; the well known aptitude inherent in a woman to conceive, the consequent frequency of this occurrence in these situations, and the number of fœtuses eventually distroyed with the intent of sparing the life of the parent, are incidents of the utmost importance to the community, and claim a proportionate share of humanity and consideration from every accoucheur concerned on these unfortunate occasions.

As the *Cæsarean Operation*, and *premature in-*

duction in this calamitous situation may be made a matter of choice, may it not be allowable on dispassionate reflection, for the mother to exercise her own judgment on the occasion, after being made acquainted with the probable result of each operation?

It is incumbent for the accoucheur always to ascertain, if possible, the true cause of deformity in the pelvis, as there is more reason to expect a favourable result to the woman when this impediment to delivery is occasioned by an accident, or injury inflicted on the bones of the pelvis from which the woman has recovered; and also in cases where the deformity is caused by *Exostosis*, than from a state of *Malacosteon* where the system is morbidly affected. In cases of this nature, and where the diameter of the superior apertnre measures no more than 3 inches from pubis to sacrum, or in either of its lateral diameters the head of the fœtus will generally, by the repeated action of the uterus upon its body, be forced to a certain distance within the brim of the pelvis.

When this process is so far advanced, and the head remains permanently fixed in the superior strait, it will be prudent to attempt delivery with the *Lever;* for I have in many instances succeeded with perfect safety both to mother and child with this instrument, even in cases where the *Crotchet* has been used in the preceding births.

It must be allowed that a living mature fœtus may occasionally be born, where the conjugate diameter of the brim of the pelvis does not reach 3 inches. To corroborate this fact, I am confident that in several cases the lives both of mother and child have been preserved by means either of the *Lever* or *Forceps* within this given space.

On one woman I employed this mode of delivery by the Lever with success, in seven succeeding births, where the *Crotchet* had been used by other practitioners three or four times in preceding cases. Yet it is to be acknowledged that like all other rules there are occasional exceptions to the propriety of its adoption, owing to the varying structure and capacity of the pelvis, the flexibility of the cranium, and the expulsive power of the uterus.

I am nevertheless inclined to believe, that the majority of mature children will perish either during labour or soon after birth, when the *antero-posterior* diameter of the superior aperture of the pelvis is not more than 3 inches. Much however will depend on uterine action, and the reduction of the bulk of the fœtal head.

I have before remarked, that the size of the head of a *male* child is generally greater, and more compact than that of the *female*; and in cases where the pelvis is contracted only a very few lines, this trifling variation, when combined with

other circumstances, may render labour lingering and tedious to the mother, and sometimes dangerous to the child, by the pressure affecting the brain, even when the superior aperture exceeds 3 inches from pubis to sacrum.

Hence the propriety of using the *Lever* as soon as the os uteri is dilated, and the head of the fœtus has advanced a little way into the brim of the pelvis, provided its application be admissible with safety, rather than involve the life of the child in unnecessary danger, either by the use of the Crotchet, or the act of turning and delivering by the feet; a practice too much followed in cases of deformed pelvis, and which in the most promising situations is always attended with risk to the child. It may further be remarked, that this unscientific method has not in every circumstance, and mode of presentation, been clearly explained by its advocates.

Fœtal life under certain conditions of parturition is very precarious and soon destroyed; while in other instances apparently dangerous, the vital principle is extinguished with greater difficulty. Premature delivery may be advantageously obtained in cases of violent uterine hæmorrhage, when the woman's life appears in jeopardy; in this situation it may afford the best means of relief both to mother and fœtus, as the nature of the case tends to dispose the soft parts for the safe

exit of the child, while the birth leaves the uterus in a more fit condition to perform its contractile powers, by which a recurrence of hæmorrhage is resisted. From the result of cases of this description we become enabled, in some degree, to draw a parallel of success between abortions and cases of premature induction, at similar periods of gestation.

Another situation wherein premature delivery has been recommended, is in certain cases of habitual or periodical miscarriages happening at that period of gestation, from which there might otherwise be a probability of the fœtus surviving its birth. The use of this operation while there remains a prospect of the fœtus being born alive, will involve the accoucheur in much ambiguity, particularly as the exact date of impregnation cannot clearly be ascertained, nor can we altogether be assured of the life of the fœtus in utero, or whether the woman might not go to her full reckoning. Till the art of midwifery has arrived at that degree of perfection which will secure a knowledge of these data, I think no one excusable who inconsiderately attempts this species of delivery; for there are not wanting instances of women, who, after a number of successive immature births, have at length gone to the full period of nine months, and become mothers of families. To corroborate this assertion, it is

necessary to remark, that I have witnessed in my own practice many who have miscarried at a given period of pregnancy; in some instances this event occurred as often as six, eight, or ten times, to the same woman, who has afterwards produced healthy mature children; and in one instance the woman had fifteen successive untimely births, and eventually was blessed with a living mature child, who is now advanced to manhood.

Authors appear divided in opinion respecting the danger incurred by this operation; but this will in a great measure depend on constitutional affection existing at the time, together with the extent of distortion of the pelvis; so that under a diversity of incidental circumstances combined in this operation, some of which will always remain concealed from us, we are at a loss how to advise in every case. But when the accoucheur has made himself acquainted with every possible opposing difficulty connected with the subject, it is presumed he will not err materially in making his own selection respecting the propriety of premature induction, and the most eligible time for its commencement, with the view of insuring a prosperous result to the fœtus. On the other hand, the hazard should not be overlooked which results from this operation to the woman, at the period of the seventh month, as

it may vary in proportion to the mischief incurred by subverting the natural uterine functions, and because long continued exertion of the powers of the constitution is often required to accomplish the expulsion of the child at this period of gestation. And if the accoucheur has not availed himself of the most favourable time for the operation, difficulty will be thereby increased, and other assistance required, which will expose both the mother and fœtus to danger. In cases where the pelvis is greatly defective from rickets, and gestation is completed, the practice of Embryulcia, though much used in this country, is always fatal to the child, and frequently proves a source of danger to the mother. This fatality, I am persuaded, might sometimes be averted by having recourse to Hysterotomy, a mode of delivery sanctioned by continental accoucheurs ;* and it is to be lamented that a universal rule of practice is not altogether observed, in every country, consonant with the true principles of the art, founded on the nature and judgment of existing difficulties, matured by a sense of duty, and aided by reading and reflection on the works of eminent authors. Such practical results when

* See Hull's Translation of Baudelocque's Memoirs on the Cæsarean Operation.

established on a true basis, would tend to guard the accoucheur from timidity on the one hand, or temerity on the other. "Quem non servasti cum potuisses, eum occidisti."

Were we to hazard an opinion of the event of a miscarriage at the above-mentioned period, it would be too problematical, as thereby we might inadvertently be led to conclude that little danger to the mother would follow this mode of delivery; but as the uterus is an organ in no respect governed by the will, and the efforts of that viscus are most regular when left uninterrupted, no accurate comparison can be established between an *abortion*, and delivery *artificially* produced at the seventh month of gestation; nor between the event of a labour at the full period of pregnancy, where the pelvis is known to be rather under the natural standard.

Such then are the diversified modes of practice in cases of distortion of the pelvis, and such the uncertainty of the results, that the generality of practitioners have been deterred from having recourse to premature induction.

Having been in the habit of frequently exciting premature labour in cases of distorted pelvis, since the year 1803, with success to the mother in every instance, and generally with safety to the child, it would be swelling this essay to an un-

necessary length, to recite the whole of the cases at length, particularly as they bear so much affinity to each other.

I have, in consequence, been induced to select one case out of the number, and shall close the subject by adding a few general remarks; being persuaded from experience, that the eventual success of the operation requires great circumspection and discernment, in selecting the most advantageous and opportune period for protecting the fœtus from danger, and the mother from harm.

Ellen Pickles, resided in the village of Rishton, about three miles from Blackburn; she was a woman of low stature, and when a child was afflicted with Rickets. She had three children; two of the first I was obliged to extract by means of the Crotchet, owing to a distortion of the pelvis; the life of the third child, which is the subject of the following narrative, was fortunately preserved by exciting premature labour. The time for this operation being selected, I visited her on the 15th of January, 1803, and requested on leaving her, after the necessary procedure, that she would dispatch a messenger for me whenever the pains of labour commenced. On the evening of the following day I was sent for; and on examination *per vaginam*, perceived the os uteri was dilated to the circumference of a crown; the pains were strong, and had been increasing in force and

frequency the greatest part of the day. The head of the fœtus was moveable by the pressure of the finger against the presenting cranium, and consequently was not then become fixed in the superior aperture. In about two hours I repeated my examination, and found the os uteri had completed its full dilatation; the head of the child was advanced some way in the superior strait, where it remained stationary for the space of about two hours, though the uterine action was very considerable. I now began to fear the child would suffer unless some mechanical assistance could be afforded. Thus situated, I was induced to apply the Lever, by which in a few minutes the birth was effected with tolerable ease, and perfect safety both to mother and child.

The period fixed upon for exciting premature labour in this woman, was as near that of the latter end of the seventh or beginning of the eighth month of uterine gestation, as could possibly be ascertained.*

The child when born appeared lively yet imma-

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* I am well aware of the uncertainty and difficulty of ascertaining the exact term of impregnation in the human species, from causes too obvious to mention; but the date of the event in the present case, appears more clearly established than some others, as the woman's husband had returned from military service about the time fixed upon for the commencement of her gestation.

ture, and is now grown up; the mother's recovery was interrupted, in a slight degree, by a swelling of one of the lower extremities; she, however, died in a subsequent delivery, after the use of the Crotchet by another practitioner.

I had taken repeated and very accurate admeasurements of this female's pelvis after each of the two preceding labours, by means of the introduction of the hand as a pelvimeter, in the way recommended in the commencement of this essay, and uniformly found the superior aperture from pubis to sacrum, to measure rather more than $2\frac{1}{2}$ inches, and on both sides the space was also perceptibly diminished below this gauge, and the inferior aperture appeared somewhat less than natural.

The opinion of the spontaneous separation of the bones of the pelvis during labour, is now by most authors exploded,* and the diameters of the

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* For the satisfaction of those who wish to see the influence which this doctrine occasioned, together with the evil tendency it had on the obstetric art, I refer them to the works of *Hippocrates, Galen, Vesalius, Harvey, Avicenna, Morgagni, Roederer, Riolanus, Scultetus, Ambrose Parey, Mauriceau, Denman,* and *Baudelocque. Severinus Pineus,* a *French Surgeon,* who lived about the middle of the fifteenth century, collected the opinions of all the authors anterior to his time, and formed a small treatise on the subject.

This supposed separation of the bones of the pelvis, in all probability, gave rise to the *Sigultian Operation,* for *Pineus* recommended baths, and emollient lotions, and unctuous substances

female pelvis (except in cases of *Malacosteon*, or under some very peculiar circumstances) acquire little or no augmentation during the process of labour, therefore our hopes must rest chiefly on uterine action combined with the degree of compressibility in the fœtal cranium; and this is so variable that scarcely two fœtal heads will be found to yield with the same facility to an equal degree of expulsive uterine power when passing through the pelvic passage. Yet this body will sometimes become modelled in a wonderful manner to the winding apertures of the pelvis; and in some instances of distortion, I have observed after birth an evident depression of a portion of the cranium and denudation of the integuments which had been caused by the projecting angle of distortion, opposed against the head of the fœtus during labour: but such injury alone, except in very long and tedious labours, will seldom become dangerous. *Nature* has imparted to the bones of the cranium such flexibility, that they will sustain considerable pressure without any palpable marks of injury either to the cranium or the functions of the brain. Perhaps this important

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to be applied to the pubis, to relax the symphysis of those bones with the view of affording the child a free passage by their giving way during labour.—Vide Chap. 10, Opuscul. and Physiolog. and Anatom. lib 2. S. Pineau.

organ is comparatively less affected by injury during parturition, or in early infancy, and before it has acquired the faculty of associating the different impressions of sensation, than at a more advanced period of existence; nevertheless, if the scale of disparity between the diameter of the pelvis and the head of the fœtus be very considerable, so that the existing disproportion at any parturient period of gestation amount to $\frac{3}{4}$ of an inch, it is highly probable that not only a depression of the cranium of the fœtus may take place, but a detachment of the pericranium and dura mater; hence internal extravasation and consequent derangement of structure will ensue, and the vital functions of the brain be either greatly impaired or wholly destroyed: particularly if either the *Forceps* or *Lever* have been used to facilitate the birth. I am much mistaken if I have not, in many instances, been able to trace to this source some lamentable instances of deranged intellect and hydrocephalic affections in children thus barbarously used during delivery.

It is the opinion and practice of some accoucheurs, that in cases of distortion, as above specified, some advantage may be obtained by reversing the fœtus, and attempting delivery by the feet; but the difficulty of effecting this with safety will very seldom authorise such a procedure. Many shocking instances are recorded by authors

where either the pelvis was distorted, or some imprudent and officious steps of the accoucheur eventually produced the loss of the fœtus by this clandestine mode of delivery.* Such, for example, are those related by *Smellie*, *Giffard*, *Dease*, *Nihell*, *Portal*, *La Motte*, *Perfect* and *Ambrose Parey*, where the head of the fœtus was separated from the body, and left in the uterus, or cavity of the pelvis. *Fielding Ould* gives an example well worth attention, of a woman whose pelvis was much distorted, in which case he turned the fœtus with a view of facilitating delivery; unfortunately, he adds, "after many vain endeavours, I was at last obliged to separate the body from it (the head) by turning it round, whereby the neck was dislocated."

Though the extent of distortion in this case is not precisely mentioned by the author, yet it must have been considerable; and had he availed himself of a knowledge of the diameters of the pelvis, together with the relation it bore to the fœtal head, prior to turning the child, in all probability he would have saved its life, and spared himself some unnecessary fatigue, and doubtless,

* This fact I have been abundantly convinced of in those cases of distortion of the pelvis where the presentation has been preternatural, which occurrence I am induced to believe takes place more frequently where the pelvis is distorted than otherwise.

the woman much pain, by waiting a due time and attempting delivery either with the *Forceps* or *Lever:* and if inefficient, recourse might have been had to the use of the *Crotchet*, though it is to be observed, that in every case these instruments ought to be used with prudence and discrimination.

When the pelvis measures barely $2\frac{3}{4}$ inches in the superior strait, it would be extremely hazardous to attempt to turn the fœtus, and in most cases utterly impossible to accomplish delivery without lessening the volume of the head by evacuating the brain; and should the small diameter of the superior aperture reach 3 inches, the head of a mature fœtus may under certain favourable conditions of structure and position, occasionally become moulded to the passage, and pass uninjured either by the efforts of nature or manual assistance.

Still I am disposed to conclude, that were a just estimate to be formed of the fatality attendant on the fœtus, in this last stated degree of distortion of the pelvis, the balance would preponderate on the destructive scale, even under the most skilful management.

Granting this inference to be just, does it not appear that premature delivery offers a more favourable resource, when the superior aperture of the pelvis measures from pubis to sacrum, or in any other of its diameters, between $2\frac{1}{2}$ to $2\frac{3}{4}$ inches,

for the preservation of the fœtus, than any other mode yet adopted?

Manual assistance sometimes becomes necessary, even where the capacity of the pelvis bears a favourable relation to the head of the fœtus.* This may be caused by the head becoming propelled into an improper axis of the pelvis; though the expulsive efforts of the uterus, even when continued for several days, would scarcely be sufficient to effectuate delivery without the aid of instruments. Yet in such instances, where the head has become thus permanently locked in the passage, the *Crotchet* may be eventually requisite; when it is to be particularly observed, that the succeeding labour may terminate without instrumental aid with perfect safety both to mother and child. Hence it appears manifestly absurd to conclude, that on all occasions where the *Crotchet* has been once used, a similar obstacle may obtrude, and render the same means necessary in every subsequent instance. This circumstance undoubtedly demands the strictest attention from the accoucheur, lest the life of the fœtus be wantonly sacrificed, through the indiscriminate adoption of a former mode of operation.

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* This mal-position of the fœtal head, is frequently occasioned by the inadvertance or importunity of the accoucheur rupturing the membranes before the head has become engaged in the brim of the pelvis.

Were it necessary I could adduce several cases to which I have been called, which sufficiently illustrate the evil of this oversight. An instance not very dissimilar to some above mentioned, occurred to a practitioner of my acquaintance. The woman had been repeatedly delivered by the Crotchet, by different accoucheurs, and her pelvis, it is said, was so much distorted on the left side* from exostosis as not to admit any material part of the child's head to pass through it.

In one of her labours the practitioner was induced to turn the fœtus ; but this expedient was attended with the usual fatality of her former labours, and the child became mutilated in the attempt, by his exertions, and the head severed from the body. Fortunately, however, the head was afterwards extracted, and the woman recovered.

At the full period of her next state of utero-gestation, it was my lot to attend this unfortunate female. On my arrival I found the os uteri completely dilated, and in less than fifteen minutes a mature living child was expelled, without the aid of any instrument. This successful event surprised me no little, and this more particularly on

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* For a detailed account of one of this woman's labours. See Dr. Hull's Observations on the Cæsarean Operation, Part 2, Pages 246—7.

the introduction of the hand, for the purpose of ascertaining the cause of so unexpected a phenomenon, for on the most accurate examination, I could not trace the smallest line of distortion to exist in any of the apertures or cavity of this female's pelvis, nor on the most minute enquiry was I able to learn that she had ever laboured under any previous accident or disease, either of *Rickets*, *Exostosis*, or *Malacosteon*.

In about sixteen months from this parturient confinement, I was requested to attend this woman a second time in labour, but being at that time pre-engaged, another practitioner now resident in this town attended her, and delivered her of a fine healthy mature child, without the least difficulty. This case, together with two others of a similar description, to which I have been called, proves in a striking manner the absolute necessity of ascertaining by the touch, the dimensions of the different apertures of the pelvis, in every possible instance, prior to any mode of artificial delivery, and of not implicitly relying on any former mode of practice, however highly it may have been sanctioned.

I trust, from what I have advanced in the preceding pages on this important subject, that the propriety of exciting premature labour will appear in a great measure established, when performed within the given restrictions in the second

degree of distortion of the pelvis, as specified in the *Synoptical Table.*

Though well aware that the success of premature induction depends much on accurate tactile admeasurement of the apertures of the pelvis, I must acknowledge that the acquisition of this indispensable requisite in the obstetric art, owing to inattention and the fallibility of human judgment, is liable to occasional errors. To facilitate future enquiry on this subject I have thought proper to add a *Synoptical Table* of the various degrees of distortion incident to the female pelvis, which are likely to occur to the accoucheur in his practice. To these variations of deformity are annexed different methods of delivery, as distinctive guides for the practitioner. Still he should bear in mind the absolute impossibility of determining the mean degree of compressibility which the cranium of the fœtus may undergo by the efforts of the uterus, exerted upon that body during labour, and also the difficulty of fixing, in a *tabular* form, within a fraction, every possible deviation betwixt the natural dimensions, and the greatest degree of distortion.

THE SYNOPTICAL TABLE.

	The distance from the upper edge of the Symphysis Pubis, to the superior part of the Os Sacrum, or conjugate diameter of the Pelvis.	
Well formed Pelvis.	From 5 to 4 inches.	Delivery by the efforts of nature alone.
I. First degree of deformed Pelvis.	From 4 to 3 or $2\frac{3}{4}$ inches.	Delivery by the efforts of nature, or assisted with the Forceps or Lever.
II. Second degree.	From $2\frac{3}{4}$ to $2\frac{1}{2}$ inches.	Premature Delivery.
III. Third degree.	From $2\frac{1}{2}$ to $1\frac{1}{2}$ inches.	Embryulcia, or Delivery with the Crotchet.
IV. Fourth degree.	From $1\frac{1}{2}$ inch, to the lowest possible degree of distortion.	Cæsarean Operation.

THREE

CASES OF CÆSAREAN OPERATION.

JANE FOSTER, of the village of *Blackrod*, was in the fortieth year of her age, of a robust constitution, and mother of several living children.

She had the misfortune, on returning from Wigan market, to fall from a loaded cart, the wheel of which passed over her pelvis as she lay on her back. The injury she sustained from this accident made confinement to her bed necessary, for about six weeks. She was attended on this occasion by the late Mr. White of Manchester, Mr. Hawarden of Wigan, and some others.

From enquiry of Mr. Hawarden, I learned that one of the ossa ilei was fractured, and much injury done to the whole pelvis, particularly to the ossa pubis. This information was confirmed to me afterwards by Mr. White, in a conversation I had with him on the subject. The woman being then in great misery from the accident, was very adverse to an accurate examination, yet the above statement seems highly probable, both from an irregularity at the part, and from the elevation

of the head of the thigh bone, on the left side. This produced a shortening of the limb, and of course a limping.

Soon after her recovery from this injury she became pregnant, and on Friday, November 22nd, 1793, she was seized with labour pains, being then at the full period of utero-gestation.

The midwife who attended her in her former labours was sent for on this occasion, but having waited with her several days, without the least prospect of delivery, she thought it advisable to have more assistance, especially as the waters were discharged on the second day of the labour, and no part of the child could be ascertained to present within reach. On Tuesday the 26th, I was desired to meet Mr. Hawarden of Wigan, upon a consultation on this case, but arriving a little before him, I examined the parts per vaginam, and was extremely surprised to find that I could barely pass my finger between the ossa pubis and the last lumbar vertebra, so great was the narrowness at the brim. Besides this, the outlet was so much contracted that it was with some difficulty I could introduce three fingers at that part.

After asking some questions, I was informed of the accident. This information induced me to repeat my examination with more exactness, in order the better to ascertain the precise dimensions.

Having introduced my finger again, I perceived a very evident depression of the ossa pubis, with a protuberance in a direction somewhat more towards the hollow of the sacrum, than in an exact line with the last lumbar vertebra. From this I was led to suspect, that there had been besides the fracture, a separation at the symphysis pubis, and that the protuberance just mentioned was the consequence of a deposit of bony matter at the separated part: and some idea may be formed of its quantity, from knowing that it projected to within half an inch of the os sacrum. With some difficulty I carried up my finger sufficiently high to judge concerning the degree of dilatation of the os uteri, which appeared to be considerable, as far as I could judge from feeling its anterior edge, which was thin and flabby; but no part of the child was within reach.

Her pains had left her the night before; her anxiety was very great, her pulse full, and respiration difficult. This last symptom was moderated by the loss of ten ounces of blood from the arm.

On conversing with Mr. Hawarden, he concurred with me concerning the nature of the case, and the impossibility of bringing the child away by the natural passage. Some little conversation passed on the propriety of a division at the symphysis pubis, but it appeared to us both, that the

narrowness at the brim was too considerable to allow much advantage from such an operation, therefore that project was soon abandoned. The only alternative was the Cæsarean Operation; but the well known danger of this, induced Mr. Hawarden to decline taking any part in it, and he immediately returned home.

Convinced, therefore, of the impossibility of effecting delivery by any other means, it was proposed to her attendants but was not then assented to. Indeed the idea seemed so dreadful that I did not urge it much, especially when I recollected that of the nine or ten instances then on record, in which that operation had been performed in this country, not one had furnished a voucher for its success. In this forlorn and dangerous situation she was left to the care of the midwife, and desired to make up her mind as soon as possible concerning the operation.

On the morning following, (Wednesday 27th,) I was again sent for, and found her lingering in the same situation.

She consented to the operation without the least hesitation. I immediately called in an assistant in the operation, Mr. Hawarden, a practitioner in the village (Blackrod,) and brother of Mr. Hawarden of Wigan, before mentioned.

The patient being taken out of bed, and placed upon a table, lying on her back, with her head

raised by pillows, I began by making a longitudinal incision five inches and a half in length, as high as the navel parallel to the linea alba, and about two inches to the left of that line.

The integuments and the left rectus muscle being cut through, a small opening was made through the peritoneum at the upper part; and by means of a probe-pointed bistoury, this membrane was dilated to the same extent as the external parts.* The uterus was now exposed to view and an incision of the same length was continued through it. The child presented with its breech, and was extracted through the artificial opening, but unfortunately was dead, yet did not shew any material signs of putrefaction. The placenta and membranes were then extracted with the greatest ease. The uterus was very thin, scarcely exceeding that of the peritoneum, and equally so through the whole extent of the incision. No attempt was made to examine the pelvis from the abdominal wound. The hands of a female assistant were applied on each side of the abdomen, to prevent the admission of external air, and to press out any blood that might be diffused among

* It may be requisite to state, that at the commencement of the operation Mr. Hawarden was suddenly seized with a violent fit of syncope, which wholly incapacitated him from attending to the steps of the operation, and having no other professional person present, I was obliged to be assisted by a female attendant.

the intestines, after which the sides of the wound were brought together and secured by seven sutures, over which slips of adhesive plaster were applied, and the dressing completed by a few turns of a flannel bandage round the body.

The peritoneum was not included in the sutures, and no part of the viscera protruded during the operation, neither were there any blood vessels divided which required to be secured by ligature. It was a fortunate circumstance that no hæmorrhage followed the extraction of the placenta, as was to be apprehended from an atonic condition of the uterus, the effect of long distention. The womb contracted properly, the lochia were about the usual quantity, and continued as in other cases. The poor woman scarcely complained during the operation, so great was her fortitude. Soon after she was put into bed, she slept without taking any medicine for that purpose, and passed a good night. On the 29th she complained of a fulness about the region of the stomach, with an inclination to vomit, and on laying my hand on the abdomen, a degree of tension was distinguishable. Her tongue had a whitish appearance, and her pulse about 120. A laxative clyster was administered with the desired effect, and the painful tension of the abdomen yielded to the stimulating effects of a blistering plaster. In short, all the symptoms which had before indi-

cated irritation, now suffered a very obvious remission. Four days having elapsed since the operation, it was thought eligible to remove every other suture; on the sixth the remaining ones were taken away, and the wound appeared perfectly healed.

Though she had been a nurse to her other children, she experienced no uneasiness in her breasts on the present occasion. Her health continued in an improving condition until December 4th, when it received some interruption for a few days from a diarrhæa, but which was checked by an astringent mixture. On the 10th she ventured out of bed, on the 17th she began to attend to her domestic employment, from which time, to the present, (an interval of 28 years) she has enjoyed a good state of health, menstruated with regularity to the usual period of life, but never been pregnant.

CASE II.

Ann Hacking, of Blackburn, a married woman, in the 42nd year of her age, and at the full period of gestation, was seized with labour pains no Thursday, July 24th, 1817, at 2 o'clock in the morning.

Mr. Cort, surgeon, of this town, was called to her assistance, at 7 o'clock, A. M. and on making

an examination per vaginam, he discovered the apertures of the pelvis to be so extremely distorted, that delivery by means of the Crotchet appeared to him manifestly impracticable. Thus circumstanced, Mr. Cort called upon me, and solicited my opinion on the case; and I accompanied him to the patient. We were informed that the membranes had ruptured spontaneously soon after the commencement of labour; and the liquor amnii kept dribbling away during the repeated action of the uterus. Her pulse was 94 strokes in a minute, and rather full. The force and frequency of the labour pains rapidly increasing, it was judged proper to allay the inordinate action of the arterial system by the loss of a few ounces of blood, taken from the arm; which was done by Mr. Cort, about 12 o'clock at noon.

On enquiry into the previous history of the woman's situation, I learned the following particulars from herself and attending friends. She had been married 12 years, and given birth to two living children; the younger is now about 7 years old; from this parturient period she dated the origin of her present indisposition. She had been troubled with partial prolapsus uteri ever since the delivery of her first child (except during the terms of pregnancy) and become so exceedingly lame, that for the last seven years she was

obliged to walk with the assistance of a crutch. Subsequent to this period, her health by continual suffering and long confinement, had been gradually declining, and eventually she was rendered unable to walk or stand without support, and subjected her to the necessity of being carried to and from bed for 4 years past, and it was apparent that even in a recumbent position, the least motion of the body occasioned exquisite pain.

On a careful examination per vaginam, I found the dimensions of the apertures of the pelvis very much diminished, as had been previously represented to me by Mr. Cort. The two rami of the ossa ischia approached so near each other, that I was not able to pass my fore finger betwixt them, except in the space just under the symphysis of the ossa pubis, which appeared rather larger, though not sufficient to admit the point of more than one finger, in any direction. In the superior aperture, I readily perceived a prominence of the os sacrum, and inferior lumbar vertebræ; the approximation of which was so near to the anterior margin of the pelvis that two fingers could not be placed edge-wise between these projecting points in any part of the brim, except in a line with the ossa pubis. Hence I became compelled by professional duty to declare, that it was manifestly impracticable to effect delivery by Embryotomy; and that the

Cæsarean Section was the only alternative for the preservation of either the mother or the fœtus.

After some deliberation, and on conversing with Mr. Cort on the invincible nature of the case, we both repeated our examinations with much circumspection; and he fully concurred with me in opinion, that delivery by the natural passage was quite impossible.

The prominent and pendulous state of the abdomen very much arrested my attention, and in order, if possible, as a further expedient, to ascertain the precise nature of the presentation of the fœtus, I pressed with one hand on the prominence of the abdomen, during the labour pains, whilst with the fingers of the other in the vagina, I endeavoured to bring the presenting part of the fœtus into the axis of the pelvis; yet neither Mr. Cort nor myself, by this means, could possibly distinguish by the touch the os uteri volume of the uterus, or any part of its contents. Our unanimous sentiment was stated to the woman, who without hesitation cheerfully consented to undergo the Cæsarean operation. Though the bowels had previously been kept in a lax state, yet an aperient clyster was judged expedient, by means of which a plentiful evacuation was procured. The poor woman's strength and spirits were supported by tea and ripe fruit, and as free a ventilation of air was admitted as

her confined apartment would permit. We now retired for a while, after which Mr. Cort obligingly called upon me, and I again accompanied him to the patient's house, where we arrived about three o'clock, P. M. The management of the case unexpectedly devolving upon me, I immediately introduced the Catheter and evacuated the contents of the bladder. She was now cautiously removed from the bed and placed upon a table, lying on her back, with her head supported by pillows, and her legs suspended over the edge of the table opposite the window. Having every thing in readiness necessary for the occasion, I commenced the operation by making a longitudinal incision, 7 inches in extent, beginning about three inches above, and near two inches on the right side of the umbilicus, extending it downwards parallel to the linea alba through the skin and adipose membrane; and the parietes of the distended abdomen being very thin, I made a small cut through the tendinous expansion of the right recti muscle and peritoneum, opposite the navel, in a corresponding line with the first incision, and passing two fingers into the opening, thus using them as a director, the division of the parts was completed upwards and downwards to the extent of the first incision above-mentioned, by means of the probe pointed bistoury.

At this period of the operation the woman was seized with a violent labour pain, which threatened a prolapsus of the uterus and its contents through the abdominal wound; to prevent which, I placed both hands steadily against the propelled parts and desisted from proceeding in the operation till the uterine action ceased. An aperture was next cautiously made with the scalpel through the substance of the womb, sufficient to admit two fingers, and dilated with the bistoury in a similar manner and direction, with the outward wound of the integuments.

The placenta was fortunately not in the way of the incision of the uterus. The nates and scrotum of the fœtus presented at the artificial wound; and Mr. Cort pressed the obtruding intestines backwards, whilst I passed the fore finger of each hand beyond the groins of the child, and extracted it by the breech as far as the neck, around which the uterus quickly contracted, so as to retard the delivery of the head; I then made rather a powerful extension of the body, (with the fingers placed as before-mentioned) which soon detached it, whereby a fine healthy male child was extracted alive. On the accession of air into the lungs it cried loudly, as is usual when born in the natural way; the umbilical cord being then tied and divided the child was handed to the nurse.

The placenta was extracted with facility, but a portion of the membranes adhering to the cervix uteri caused some delay in removing; during which time a profuse hæmorrhage ensued, and I became anxious for the fate of the patient. I endeavoured to excite the action of the uterus by the motion of the hand in its cavity, but to no effect; and another and more efficient expedient occurred to me, which I immediately adopted, by passing both hands over the external surface of the uterus and endeavouring to bring in contact its interior surface, together with the incised edges of the wound Thus applying a uniformly continued pressure for a considerable time, I was able to perceive its bulk evidently lessen, and the hæmorrhage greatly diminish, as though I had been compressing a sponge.

Whilst waiting for the natural contraction of the uterus, I observed several vessels still pouring out a quantity of blood from the incised edges of that organ which did not wholly yield to the pressure, however applied, and fully aware of the danger attending the effusion of blood into the cavity of the abdomen, and being unfortunately at this critical period of the operation wholly deprived of Mr. Cort's aid, in consequence of indisposition, I was induced, in this dilemma, to pause for a short time. During the interval I fortunately recollected a successful case on the

continent, related by M. Lebas, where the incision of the uterus was closed by sutures, I therefore determined to avail myself of this suggestion, and without further delay, and assisted by two female attendants, I sewed up the whole wound of the uterus by means of the Glover's suture, leaving a portion of the ligature out at each end of the wound for the purpose of withdrawing or tightening it, if deemed requisite. After clearing the cavity of the abdomen from the blood unavoidably effused during the operation, the lips of the aperture in the abdominal integuments were brought together and secured by the interrupted suture, care being taken to avoid as much as possible, including any portion of the peritoneum. The integuments were so extremely thin, that the sutures were made not more than an inch distant from each other, and an opening left at the bottom of the wound to permit the discharge of any fluid which might subsequently collect in the abdominal cavity. A few shreds of adhesive plaster were then applied, to support the sutures, over which was placed a pledget of lint, and the whole secured in apposition by means of a light roller passed a few times round the body, fixed in the manner of the T bandage, to keep the uterus and parietes of the abdomen steady, and the incised wounds of the respective parts in perfect juncture with each other to promote a speedy union. The

poor woman never shrunk during the operation, notwithstanding the unavoidable loss of much blood; and expressed her happiness on the occasion, in which state she was without delay removed from the table and laid on her back in bed. Her pulse was tolerably firm, at about 120; an opiate was administered by the mouth, which was soon rejected. She did not complain of much pain, and seemed tranquil and disposed to rest; and during the whole time of the operation, she manifested no symptoms of disquietude, but behaved with becoming fortitude and patience. I saw her the same evening with Mr. Cort, the practitioner before-mentioned, and found her free from pain and fever, and though she had had little or no sleep, her pulse remained about the same.

The antiphlogistic regimen was assiduously pursued through the whole course of treatment.

Friday, July 25th, nine o'clock, A. M. we met again; she had got some natural sleep and seemed refreshed, pulse 120, a trifling discharge had taken place from the opening left at the bottom of the wound. The abdomen appeared a little sore in the vicinity of the sutures on the application of pressure, and she was teased at intervals with troublesome eructations. No thirst, tongue clean and moist, and free from fever.

At 4 o'clock, P. M. and 24 hours after the operation, I was informed that she had

not had an evacuation by the rectum, consequently an aperient clyster was injected, which produced a plentiful discharge. The urinary emissions had been copious during the night.

Pulse 118 and soft. A plentiful oozing of bloody serum came from the wound. The lochial discharge rather scanty, to promote which a canula of moderate size was introduced up the vagina as a likely expedient, and which appeared to facilitate the process of nature.

At 11 o'clock, P. M. the same day, one of the sutures was removed to allow a more free discharge from the wound. Pulse 120, skin moist and no febrile symptoms.

The eructations still troublesome, but no vomiting. As no *natural* evacuation by the bowels had taken place subsequent to the operation, ten grains of calomel with half a grain of opium were given and retained on the stomach; but not producing the desired effect in due time, a clyster was injected and a plentiful discharge of fæces followed. No thirst, tongue moist, and not coated with fur, pulse 120.

Saturday, 26th, at 9 o'clock, A. M. we found her much in the same state as the preceding day, part of the dressings was removed and the lips of the wound appeared in contact, and presented a favourable appearance. The canula was removed from the vagina and the lochia seemed

much more abundant and free from fetor. Pulse 120, soft and regular; little or no thirst, with clear and moist tongue. As the discharge from the wound was considerable, the whole of the plasters and also the ligatures of the uterus were removed. The dressings were applied on the part as before, with the addition of a little cerate spread on lint. She had made urine in the night, and slept at intervals; spirits good, free from thirst or fever. There appeared a slight degree of tension on the abdominal region, and she expressed a sense of pain when pressure was applied near the margin of the incision. At two o'clock P. M. pulse 120, and appeared doing well. At 10 o'clock P. M. no evacuation from the bowels had occurred since the day before, five grains of Calomel were prescribed, and an aperient clyster administred which soon produced two passages. The discharge from the wound was increased, but not fetid, and that per vaginam in due quantity, pulse 120, and regular, accompanied with a gentle moisture on the skin, no thirst, tongue moist and free from fur, a continuation of the same plan of regimen was directed to be pursued with the addition of a little light gruel, and occasionally a small portion of wine and water.

Sunday 27th, at 9 o'clock A. M. she informed us she had slept at intervals during the night, but appeared restless, pulse 130 and more feeble than

before, accompanied with frequent retchings. Had made water freely in the night. The discharge from the wound as usual, and the lochia rather less in quantity.

At 2 o'clock P. M. she appeared to labour under some degree of disquietude, but did not complain of any fixed pain, pulse 130, rather irregular and feeble, attended with inclination to sickness. Tongue moist, no thirst, skin rather dry and the extremities inclined to coldness; yet perfectly sensible, although through depressed spirits the usual vigour of her mind seemed little abated. To allay the irritation of the stomach, a blistering plaster was applied on the vicinity of that region, and a clyster administered which produced a copious stool.

At 5 o'clock P. M. I saw her again, the pulse 136, and appearances much more unfavourable; the extremities rather cold, little or no thirst, nor the tongue in the least arid or foul, but quite moist throughout, still sensible and expressed no perception of pain, except what was excited by frequent retchings. No secretion of milk in the breasts.

Stomach began to be more irritable, and reject its contents, which had a coffee coloured appearance.

The arterial action at this period had become very feeble and irregular, and the symptoms so evidently inauspicious, as to preclude all hopes

of her recovery; and in this restless, but sensible condition she languished till about 7 o'clock in the evening, when she quietly expired, without the least convulsive motion.

APPEARANCES ON DISSECTION.

Permission being obtained to inspect the body, I solicited the united attendance of Messrs. Cort, Brooks, and Bailey, surgeons of this town, who readily accompanied me the same evening to the house of the diseased; and Mr. Bailey committed to writing the morbid appearances, which presented during the dissection.

On carefully removing the dressings and taking out the sutures of the abdominal integuments, the edges of the wound receded a little way from each other almost throughout, which brought the uterus, and a portion of the omentum and intestines into sight. There appeared a slight blush of inflammation on several parts of the small intestines, with an adhesion between the convolutions of the ilium and edge of the divided peritoneum, on the right side and in a line with the incision of the abdominal parietes, to the extent of two inches, but so trifling that the connecting medium was easily separated with the fingers. On a more extended inspection of the wound, there were

noticed also some marks of inflammation spread over the greatest portion of the omentum, but more distinguishable on the inferior margin. There was no distension of any of the abdominal viscera, neither flatus nor accumulation of fæces in any of the intestines.

On viewing the uterus in situ, it did not seem much larger than what is presumed usual at the same period, subsequent to delivery on ordinary occasions. The incised edges of the wound of the uterus, assumed a healthy appearance, but were not in close contact, nor was the cavity wholly closed ; though the incision was reduced by the contractile powers of the organ to about one-third in extent to what it was before the wound was closed by the sutures, soon after extracting the placenta. In order to inspect the internal lining of the uterus, an incision was extended downwards to the cervix, the margin of the wound appeared about an inch in thickness, and exhibited throughout a uniformity of texture.

The os uteri seemed in circumference equal to a half-crown piece, or sufficient to admit the points of two fingers. There was no inflammation existing either on the anterior or posterior surface of the uterus, except a few small specks, surrounding some of the punctures made with the needle by sewing up the wound at the time of the operation.

The left ovarium was inflamed, whilst the right was wholly exempt from disease.

There was no coagulated blood in either the cavity of the abdomen or uterus; but about two ounces of bloody serum were observed in the former venter and no lodgement of fluid in the latter. A portion of the tunica decidua to the extent of a crown-piece, near the cervix, appeared to have disunited from the interior surface of the uterus, but in other respects the internal superficies of this viscus presented a healthy appearance.

CASE III.

The following case of Cæsarean Operation occurred to Mr. Dugdale, surgeon, of Blackburn, by whom I was called in consultation, the history of which I will give in his own words.

"Early on Friday morning, April 6th, 1821, I was desired to visit the wife of George Ridgedale, in the 42nd year of her age, and in labour of her child at the full period of gestation.

"Her general health, I was informed by Mr. Barlow, who had attended her in several of her preceding labours, had suffered much for the last two or three years, during which period she had become much reduced in stature, and had not for some months past been able to walk without assistance, owing to a state of general debility of

the system, induced by an anasarcous affection of both legs, and a state of Malacosteon of the bones of the pelvis.

"On my arrival I was informed, that she had had uterine pains upwards of twelve hours, which now recurred at regular periods every ten minutes.

"On examination per vaginam I found the os uteri dilated to near the extent of half-a-crown, the membranes protruding into the vagina, but could not feel the presenting part of the child.

"At 6 o'clock, P. M. her pains returned more frequently, the os uteri appeared to the touch somewhat more dilated than on my former visit, and the membranes so filled the vagina as rendered it hazardous to reach the brim of the pelvis without rupturing them.

"At 9 o'clock, P. M. the pains were unabated in frequency, but the membranes on examination were so flaccid during the interim of the action of the uterus, that I determined to rupture them, which was done by introducing my hand within vagina, and I found the head of the child presenting at the brim of the pelvis, and resting on the edge of the pubis; it was moveable and easily receded out of the reach by pressure with the point of the finger.

"The projection of the sacrum and lumbar vertebra into the cavity of the pelvis, together with the pendulous state of the abdomen, rendered

it wholly impossible for the head to enter the brim of that aperture.

" After rupturing the membranes, the pains returned every five minutes, and on waiting an hour, I repeated my examination; but finding the head not advanced, and considering her life in great danger, I thought of introducing the *Perforator* with the view of opening the head and lessening its bulk by evacuating the brain. To this I was induced on reflecting that in this species of diseased affection of the pelvis, the bones frequently yield and allow the head to pass with greater freedom; which circumstance I was since informed by Mr. Barlow, had occurred in two or three of her preceding labours. But on passing the perforator up the vagina uteri, and on making the least pressure on the scalp with the point of the instrument, the head receded beyond the reach of the finger, and this project was of course abandoned.

" The extent of distortion of the pelvis, together with the debilitated state of the woman's system, convinced me that she would die in whatever way delivery was accomplished, I was therefore unwilling to destroy the child, particularly as she assured me that she had felt it move very lately.

" Thus situated I judged it prudent to consult my friend, and late preceptor, Mr. Barlow, before mentioned, and waited upon him for that pur-

pose. Mr. Barlow readily yielded to my solicitation, and accompanied me to the patient's house about twelve o'clock the same evening, when we found her in a state of delirium; after waiting for some time she became sensible and more composed.

"Mr. Barlow now made the necessary examination per vaginam, and remarked that the pelvis was more distorted by a state of *Malacosteon* than on her preceding labour, on which occasion he had been compelled to deliver with the Crotchet.

"On consulting together on the propriety and mode of delivery most proper to be adopted, it was our united opinion that the possibility of effecting this purpose with the Crotchet was doubtful, and if attempted she might expire under the operation, and as there was reason to believe the child to be alive, we concluded the Cæsarean section to be the most justifiable mode of proceeding.

"Our sentiments were immediately communicated to the woman and her friends, who expressed a wish to have the aid of Dr. Chew on the occasion; a messenger was immediately dispatched, and in a short time he arrived, and on having made a minute investigation of the state of the pelvis and condition of the woman, he coincided in our decision on the propriety of the operation, and she without hesitation submitted to our proposal.

"Mr. Barlow having attended her in most of her former labours, she expressed a wish that he would undertake the operation, to which he assented.

"Every thing necessary for the operation being prepared, Mr. Barlow, about half-past 3 o'clock A. M., performed the operation in the following manner.

"The woman being laid on a bed in a horizontal position, with the head and shoulders a little raised by pillows, he commenced by making a longitudinal incision 7 inches in length, beginning 3 inches above the umbilicus and 2 inches on the left side, carefully cutting through the muscles of the abdomen in a line parallel to the *linea alba*, by which the uterus came in view and appeared in close contact with the abdominal parietes through the whole extent of the wound, from which a small quantity of cerous fluid escaped.

"A corresponding incision was then made through the parietes of the uterus, which did not equal the edge of a shilling in thickness in any part, and to which the placenta firmly adhered throughout; in consequence of this attachment, it was thought prudent, rather than expose the woman to hæmorrhage by detaching the placenta from the uterus, to continue the incision directly through its substance, which was soon effected,

and the nates of the child exposed to view; the babe was then extracted alive, and on the umbilical cord being tied and divided, was handed to a female assistant.

"The placenta and membrane were then brought away, and during the contraction of the uterus the bowels protruded at the wound, but were soon returned into their natural situation, and preserved there while the incised integuments of the abdomen were closed together by means of the interrupted suture about the space of an inch from each other, and secured with stripes of adhesive plaster and pledgets of lint applied over, and a roller passed a few times round the body in the form of the T bandage.

"During the operation, and before the wound was closed, there was a quantity of blood discharged from the vessels of the uterus, which might probably amount to ten or twelve ounces.

"The woman never complained during the operation, nor seemed disposed to syncope. She was now removed and laid in bed, and appeared much fatigued and sickly.

"April 7th, 7 o'Clock A. M. pulse 120 in the minute, pain of the abdomen, slight discharge per vaginam with nausea and inclination to vomit. ℞ Tinct Opij gutt xx.

"At 9 A. M. pains and nausea abated, pulse 120, 11 o'clock A. M. pulse 130. Tongue a little

furred and dry; has very little pain, sickness or retching.

"Not having made water since the operation, the Catheter was introduced, and about a pint of urine drawn off. At 8 P. M. pulse 150, tongue moist, sickness and vomiting troublesome; does not complain of much pain, had no stool.

Catheteris Introductio.

℞ Enema Cathart statim infund.

℞ Tinct Opij gutt xv. Sumantur post dejecerit alvus.

11 P. M. pulse 150, relieved by the Tinct Opij, &c. copious discharge per vaginam and also from the wound.

Repetatur Enema Cathartica

℞ Mistura Cathartica ℥vj. capiat coch. duo magna omni hora donec alvus respondeat bis, et dein sumatur Tinct Opij gutt xv.

April 8, 8 o'clock A. M. pulse 130, and weaker, tongue furred and dry with thirst. Abdomen tense and hard with sickness and vomiting, profuse evacuation per vaginam; some discharge from the wound on removing the dressings; had only one small stool.

Catheteris Introductio.

"At 12 o'clock merid., pulse 150; stomach rejects every thing she takes; other symptoms as before.

Repetatur Enema Cathart.

Half-past 2 o'clock P. M. pulse 150; no stool;

vomiting continues. ℞ Hydrarg. Submuriat gr. x Opij. gr. j ½ Mucilag. q. s ut fiat Pil ij sumatur statim.

"At 8 o'clock P. M. pulse 150; tongue furred and dry, with thirst and vomiting; abdomen tense; no stool.

Catheteris Introductio.

Repetatur Pilulæ Catharticæ.

"April 9, died about 8 o'clock A. M. 52 hours from the time of the operation.

"Eight hours after death the abdomen appearing much distended. I obtained leave to evacuate its contents with the intention of examining the state of the viscera and pelvis, but was prevented from making so correct an inspection as I could have wished, owing to the interruption of some of her friends.

"The incised edges of the integuments of the abdomen had not adhered in any part.

"On removing the sutures and enlarging the opening, a small quantity of limpid fluid passed off, similar to what was discharged during the operation.

"The stomach appeared much distended, from which near three quarts of dark-coloured liquid was evacuated.

"The liver was small and light coloured.

"The intestines presented no appearance of inflammation.

"The uterus seemed free from inflammation except a slight degree round the edge of the wound. The incision of this organ was contracted to about $2\frac{1}{2}$ inches in extent, and its volume seemed of the usual bulk at the same period after delivery in the natural way.

"The dimensions of the pelvis were as follows.

"The conjugate or antero-posterior diameter from the symphysis pubis to the nearest point of the sacrum or lumbar vertebra $1\frac{3}{4}$ inch.

"The greatest space to be gained on the right side of the brim of the pelvis 2 inches and near $\frac{1}{4}$, (viz.) from the anterior part of the acetabulum to the projecting part of the sacrum.

"The greatest distance to be obtained on the left side, between the corresponding points of the right aperture, $1\frac{1}{4}$ inch.

"The difference between the diameter of the two sides of the superior aperture is manifested by the last lumbar vertebra projecting inwards and forming a considerable curve in the cavity of the pelvis, induced by a state of *Malacosteon*, which opposed the chief obstacle to Embryulcia."

OBSERVATIONS ON DELIVERY,

IN DIFFICULT CASES OF THE PRESENTATION OF THE SHOULDER OF THE FŒTUS; AND WHERE ONE OR BOTH ARMS PRESENT ALONG WITH THE HEAD.

On taking a cursory view of the history of Midwifery, it is evident that it was the practice of the ancients in every variety of preternatural presentation, to reverse the part presenting, and substitute the head in its place; and various uncouth expedients were adopted to accomplish this object.

We find *Hippocrates*, who lived 460 years before the *Christian* era, (and from which period the most authentic and important improvements in the obstetric art may be dated,) recommending for this purpose, if the arm or leg of the fœtus presented, among other absurd customs,* to shake

* "Concutere autem hoc modo oportet: super tenui linteo substrato mulier reclinanda, alio superinjecto, quo ejus pudendum obveletur et utrumque crus tenui linteo tegendum et utraque manus. Duæ autem mulieres utrumque crus apprehendant, et aliæ duæ utramque manum; deinde eam ipsam non minus quam decies valide concutiant. Postea vero mulier in lectum reclinetur, ita ut caput deorsum, crura autem sursum habeat, & mulieres

and roll the woman and make her jump on the bed; and if these means failed, he further advises to dismember the fœtus, and extract it with instruments; for he allows no species of presentation to be natural except that of the head alone first presenting. This sentiment was so generally adopted that *Pliny** established it in his time as an axiom, that the order of *Nature* is to enter into the world by the head, and to go out of it by the feet. *Aristotle* and *Galen* were of the same opinion, and regarded the delivery by the feet as foreign to nature.

Among other authors who embraced the same doctrine, are *Mercurialis, Galeatius, Lazarus Pe, Eucharius Rhodion, Marcetus, Varundus,* and *Perdulcis*; and *Riverius,* a Physician of great reputation, even in the year 1657, condemned delivery by the feet.

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omnes dimissis manibus crura apprehendant, eamque crebro in lecte concutiant, facta in humeros rejectione ut in ampliorem locum concussus fœtus convertatur et naturaliter prodire posset. De fœtus in utero mortui exsectione.—Tom. 12, Pag. 551. Ibid Pag. 768.

* *Pliny* was cotemporary with the *Emperors Vespasian* and *Titus,* and though not himself a Physician, yet in condemning the delivery by the feet as being unnatural, we may from hence form a pretty accurate knowledge of the general practice of the times in which he lived; for he expressly says, "That they called the children which were born in this manner AGRIPPAS; as importing that they were born with much pain."

In allusion to the practice during the earlier ages, when the art of midwifery was in a state of comparative infancy, we are not surprised that such rude expedients should have been adopted in order to rectify the position of the fœtus. But it is scarcely credible that we should find similar measures adopted so late as the time of Smellie, and more particularly down to the present period; for I have noticed precisely the same rude means used by female practitioners.

It was an established opinion of the ancient physicians, that the fœtus in utero possessed great influence in aid of parturition, by its own efforts, which notion led them to embrace many erroneous ideas regarding this process; but it is very probable that whether the fœtus be alive or dead it contributes nothing towards its own liberation, except what may arise from its stimulating action exerted on the surface of the uterus during labour.

On enquiring into the prevalence of the practice of turning the fœtus in utero among the earlier writers on midwifery, it appears probable that this important question was agitated for a long time; that the more enlightened physicians would not suffer themselves to be led away by ancient prejudices or mere authorities; and that they eventually adopted the contrary method of practice; such, for example, are *Celsus*, *Aetius*,

Moschion, *Paulus Æginetta*, *Seraphion*, *Avicenna*, *Philomenes*, *Marinello*, and *Albucasis*, who all recommend delivery by the feet in certain preternatural presentations. Hence it appears that this contrariety of proceeding was disputed till nearly the close of the sixteenth century, and together with some rude and uncouth projects in the art was the mode chiefly adopted till the time of *Ambrose Parey*, who about this period published his work on the *Generation* of *Man*; wherein he boldly rejects the preposterous customs so long established by preceding authors, and expressly points out, with much precision, the great improvement in the obstetric art by turning the fœtus and delivering by the feet, in all unnatural presentations.*

During the latter part of the fifteenth century this important art assumed a new era. But im-

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* *Parey* may also justly be ranked amongst the first who introduced the practice of turning the fœtus in cases of uterine hæmorrhage; though his work is silent on that head, yet his pupil *Guillemeau* acknowledges this when attending Mad. Simon, daughter to *Ambrose Parey*. *Louisa Burgeois*, who published a *Treatise* on *Midwifery*, about the year 1609, mentions this mode of delivery in cases of flooding during pregnancy.—See Chap. 4 and 5.

Puzos, a celebrated accoucheur of Paris, likewise claims our early acknowledgment for having so ably illustrated this subject. See the *Memoirs* of the *Royal Academy* of *Surgery* at *Paris*.

provements in this, as in other departments, met with much opposition from writers at different periods; and in consequence, they never became universally adopted till the time of *Mauriceau* who seems to have given positive injunctions on this head.

On reflection it seems a little extraordinary that these modes of delivery should have remained so long fluctuating and undetermined among accoucheurs; for *Celsus*, as well as some other early writers, was aware that children presenting wrong might be turned in the uterus, and extracted by the feet.*

Perhaps this discovery might have met with less opposition anterior to the time of *Parey*, if the practice had not been too indiscriminately adopted; and there is just reason, even at the present day, to censure the indiscretion of practitioners in this particular instance, whether from motives of gaining time by the act of turning, or through mere ignorance, it is in either case highly reprehensible. For I am persuaded irre-

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* Verum intus corpori manus injecta protinus habitum ejus sentit, nam aut in caput, aut in pedes conversum est, aut in transversum jacet; fere tamen sic, ut vel manus ejus, vel pes in propinquo sit. Medici vero propositum est, ut cum manu dirigat vel in caput, vel etiam in pedes, si forte aliter compositus est.—Celsus Lib. 7, Chap. 29.

parable injury, and sometimes death has been the inevitable consequence of such rash and precipitate conduct. See the works of *Portal*, *La Motte*, *Chapman*, *Smellie*, *Mauriceau*, and *Levret*.

Authors have detailed a great variety of causes to account for preternatural presentations of the fœtus. Such, for instance, as distortions of the pelvis; peculiarity in the figure of the uterus, and the manner of the ovum passing into it; the superabundance of the liquor amnii, and the precipitate way in which it is discharged from the bag; the irregularity of nature in implanting the funis into the abdomen of the fœtus; frights, and sudden shocks of the body. As the proximate cause of the adverse presentations of the child appear to be involved in much mystery, and we have no controul over these mechanical and adventitious events, little advantage can accrue to the accoucheur from any conjectural reasoning on the subject. Notwithstanding which, a more correct knowledge relative to the characteristic functions of the uterus has been acquired by modern physiologists, and consequently a more rational and effective mode of conducting the parturient process been adopted.

In all mal-positions of the fœtus, the difficulty of turning is augmented more or less in proportion to the action of the uterus, the extent of its orifice,

and the time which may have elapsed subsequently to the evacuation of the waters.

What chiefly renders the presentation of the shoulder perplexing, is when the liquor amnii has been long discharged, and this prominent part of the fœtus becomes wedged in the brim of the pelvis by the violent action of the uterus. In this situation the accoucheur should make himself early acquainted with the condition of the woman, and the state of the os uteri; and if the orifice of that viscus be amply dilated and the pains trifling, the position of the child may be ascertained.* He may then proceed to pass his hand cautiously along the posterior part of the uterus, and endeavour to raise the shoulder a little, while he works his fingers past it, anterior to the breast of the fœtus; and as the hand advances, the shoulder will be pushed from its situation at the entrance of the pelvis, towards one of the iliac fossa without

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* I wish it to be always understood, that when the os uteri will admit the introduction of the hand with freedom, it is sufficiently expanded for the operation of turning the fœtus, but no part of the circle of its entrance should be perceptible when instruments are used. And it may in this place be also proper to observe, that the right hand of the accoucheur is exclusively the most proper to be introduced when it is the right shoulder of the fœtus that presents, the woman being laid on her right side; and *vice versa*—the contents of the bladder and rectum being invariably first emptied.

directing much force against it. On taking a firm hold of the feet,* they are to be brought down into the vagina, by a rotatory manner of proceeding; the shoulder will retract and delivery be effected, partly by the efforts of the mother, and partly by the accoucheur, according to the urgency of the case; the success of which depends more on the prudence and dexterity of the operator, than on his strength.

If on the effusion of the liquor amnii, the shoulder be propelled low in the pelvis, and become wedged in this position, any attempts to turn the fœtus will be hazardous, and the difficulty will be commensurate with the action of the uterus, and its degree of dilatation and rigidity. During the presence of these formidable obstacles, the accoucheur should be cautious of exerting much force in attempting to introduce the hand; or what is equally dangerous, to raise the shoulder, lest a rupture of the uterus be the consequence. For it should be observed as an axiom in practice, that no attempts to turn the fœtus should be made whilst the os uteri is rigid and contracted. In these cases the precipitate and premature practice of rupturing the membranes, can scarcely be too scrupulously avoided, as this untimely event

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* Sometimes both feet cannot be seized at the same time, in which case delivery may be attained by the aid of one.

almost always exposes the woman either to a protracted labour, or other contingent and multiplied afflictions.

Under these adverse circumstances, every idea of turning the fœtus must for a certain time be abandoned; for if persisted in the cervix uteri may be lacerated, and its connection with the vagina torn asunder. A quantity of blood proportioned to the state of the patient may be advantageously taken from the arm, and a clyster injected up the rectum, containing about 120 minims of Tinct Opij, which by producing sleep or composure, will generally controul the action of the uterus sufficiently to allow the introduction of the hand with safety, for the purpose of turning and extracting the child. Yet notwithstanding our best directed efforts, when delivery has been protracted beyond due time, the child generally falls a victim, even though the pelvis be well formed, and every means used which the art can suggest.

In some rare instances, the accoucheur will be able by the touch, to perceive the presenting hand or other parts of the fœtus, through the unruptured amnion-tumor, where the os uteri is yielding, and in part dilated.

It may be proper in this place to remark, that I have witnessed, in several instances, a succession of changes in the position of the fœtus, during

my attendance on the same labour. Such an occurrence is probably not so rare as might at first view be imagined; for the attitude of the child in utero is not absolutely fixed by nature, in the majority of cases, before the membranes are ruptured; as its presentation whether natural or preternatural is greatly influenced by the quantity of surrounding fluid in which it floats, as well as by the manner of its effusion during the primary stage of labour. Under these equivocal circumstances, and where the presentation is preternatural, it may become a question whether the operator should immediately and indiscriminately proceed to turn the fœtus, or allow the labour to go on without the interference of art. Though I am no advocate for interrupting the ordinary course of nature, yet if during the period of parturition, when attended with a changeable presentation of the fœtus, the accoucheur should discover with the finger, through the unruptured membranes, the head and hand presenting in the axis of the brim of the pelvis, the sack may be immediately lacerated, and during the discharge of the waters it will naturally descend into the superior strait, and most probably prevent a wrong presentation by causing a recession of one or both superior extremities, which had previously accompanied the head. On the contrary, if the head be found to present along with one or both superior

extremities, and to remain stationary, the uterus being completely dilated, and the membranes whole, turning may be advisable. But if all these circumstances be not combined, it is better to wait, if it can be done with propriety, for a more favourable conversion of the fœtus; and thus, by a strict observance of these measures, a labour may sometimes be terminated naturally, which otherwise would have proved preternatural. Such occurrences are, however, rarely noticed by accoucheurs, and hence a very limited conception can be formed of their nature and results, unless acquired by much practical attention.

The presence of an arm in the vagina, when the shoulder occupies the superior aperture of the pelvis, with the os uteri only partially dilated and the uterine action irresistible, is an obstacle sufficient to oppose the propriety of the introduction of the hand for the purpose of reversing the fœtus, and extracting it by the feet, and this should not be attempted till the uterus has been appeased by bleeding and opiates. In such circumstances, an attempt to reduce the arm when thus protruding, or to extract the fœtus by violence, is neither necessary nor altogether practicable, even if the orificium uteri were relaxed and dilated to its full extent.

The passing of the operator's hand cautiously along the side of the arm and breast of the fœtus

in search for the feet, is almost always practicable when the violent action of the uterus has been checked by appropriate means. In this species of mal-presentation, and under the circumstances above-mentioned, the arm of the fœtus, however swollen or situated, cannot wholly resist the operator's efforts if judiciously exerted, for the trifling bulk of the accoucheur's hand, when combined with the arm of the child, can never exceed that of the body or head of a mature infant, consequently can present no powerful obstruction to the process of turning and delivering by the feet, when skilfully conducted.

On some occasions, though the shoulder of the fœtus originally presented alone, yet when the orificium uteri is become dilated and a rupture of the membranes takes place, the arm will, by the efforts of the uterus, be forced into the vagina, and the hand be protruded at the os externum, or be bent in the passage, so that the elbow will supply its place externally. In this posture of the fœtus some authors have suggested that delivery might be effected by pulling at the arm; others have directed to return it into the uterus and extract the fœtus by the feet; whilst a third has amputated the arm at the shoulder joint, or twisted it off. Another project, not less cruel and absurd than the above, has been recommended, when only one hand presented to search

for the other, and attempt delivery by pulling at both extremities at the same time: but this impediment seldom or ever calls for such inhuman interference, and the records of obstetric practice furnish us with too many examples of such wanton barbarity and ignorance.

The swelling and putrefaction of the arm, occasioned chiefly by compression when having remained long out at the os externum, is sometimes only a local affection, consequently does not authorize amputation before birth. Amongst the deplorable examples of this description, there is one related by *Chapman*, page 49, where the fœtus was supposed by the accoucheur to be dead, and who on having one arm amputated whilst in the vagina uteri, afterwards lived to be a man. An equally shocking instance is related by *Crantz*, De re Instrum, in arte obstetric, sect. 9, page 13. A man-midwife fixed a hook on the head of a fœtus and dragged out the child from the uterus; the child was much bruised, but still alive, and cried loudly; the accoucheur perceiving this immediately pressed the infant to death. More instances might be adduced from authors, of children being wantonly dismembered while in the womb, and a few of this description have fallen under my own cognizance; but it is unnecessary to recount such acts of cruelty, as they can serve no good purpose to direct our future practice.

See the works of *La Motte*, *Roederer*, *Daventur*, and *Baudelocque*. The advice of *Chamberlen* is not inapplicable in this place, "That timidity is in this case, more pardonable than temerity; and that it is better to be deceived in treating a dead infant as if it were alive, than a living one as if it were dead."

There are instances where the shoulder of the fœtus has become wedged in the superior aperture of the pelvis, by the long continued force of the uterus, in such a manner that the hand of the operator cannot be pushed by the presenting part into the uterus without using violence. To encounter this obstacle it has been judged expedient to push or raise the shoulder from its situation, by means of instruments constructed with that design. *Dr. Burton* made use of what he calls a a *Crutch*, with this view; and the *Impellens* of *Albucasis* is intended for the same purpose; but if the practitioner will in the first place endeavour to allay the impelling force of the uterus by administering opiates, and having recourse to copious bleeding from the arm, as before directed, these difficulties will then give way to the introduction of the hand during the absence of pain; and by due perseverance it will gain admission to one or both feet, and the shoulder will thereby be turned aside, and delivery be accomplished without the use of instruments. It is essentially necessary,

on all occasions where manual assistance is employed, that the contents of the bladder and rectum be previously evacuated.

It rarely happens, after every other method has been used, that the shoulder descends so low in the pelvis by the force of the uterus that it is utterly impossible to introduce the hand, or raise the projecting part of the fœtus above the brim of the pelvis; yet in some unfrequent instances when this has been the case, the powers of the uterus, aided by the abdominal muscles, have accomplished the delivery by a spontaneous evolution.

A case of this description occurred in my own practice near 30 years ago. The woman was at the full period of her first utero gestation. I was called to her on the Friday morning, after a midwife had been in attendance all that day, and part of the preceding night. On examination I found the arm of the fœtus presenting, and the hand pushed out at the os externum, and very much swollen; the waters were evacuated early on the day before, the pains were strong and frequent, and the orificium uteri was considerably distended.

I made an attempt to introduce my hand, but the uterine efforts wholly resisted my endeavours; about twelve o'clock the same evening, I gave her forty drops of Tinct Opij, but without producing any abatement of the labour pains; the

same quantity was administered in the space of two hours after the first dose, but with no better effect. After some space of time I renewed the attempt to introduce my hand, but without success, for the pains returned on every endeavour with redoubled violence; and the action of the uterus was such as to forbid any further attempts to turn the fœtus. The shoulder of the child now became forcibly pressed upon the perineum; the woman continued in this extreme misery till the following evening, when the power of the uterus was so great, that I dreaded a rupture of that organ would every moment take place. Being once more induced to ascertain the state of the case, I was agreeably surprised to find the presenting arm of the fœtus retracting, and the breech soon supplied the place of the shoulder, and was expelled in a few minutes, by the efforts of nature; after which the arms were brought down, and the head and shoulders extracted, and the placenta immediately followed. The child was dead, and notwithstanding the woman's severe and long suffering, she had a speedy recovery.

Though the spontaneous evolution of the fœtus*

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* In the 38th *chapter* of the *book* of *Genesis*, there is a curious account of *(Tamar)* bringing forth living twins; the first which presented, we are told by the midwife, had the arm so far protruded,

under certain parturient conditions, which are generally concealed from us, will sometimes take place; and granting to the inherent efforts of the uterus its full power, there is reason to believe, that were every case of the presentation of the shoulder left entirely to the efforts of nature many lives would be thereby sacrificed, which by a timely and well-regulated interference, might be preserved. It is, I presume, only a very rare occurrence when the evolution terminates the delivery, and that almost always with destruction to the child; and it is not a little surprising, that the discovery of such a phenomenon should have escaped the notice of all authors anterior to the time of *Schoenheider** and the late *Dr. Denman*, more especially during that period when the art

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that a scarlet thread was tied upon the hand, and was the latter of the two children which came forth. How this reversion of the fœtus in utero was effected, I will not attempt to explain; but it appears that the midwife was a little surprised at the occurrence, for she exclaimed, "How hast thou broken forth! this breach be upon thee!" which expression is evidently a convincing proof that such incident was uncommon in her practice: and that she was not in the habit of turning the fœtus and delivering by the feet. Does not the successful event of *Tamar's* case abundantly prove what it is my wish to establish in the following pages, namely, that the indiscriminate practice of turning in presentation of the hand, too generally adopted by practitioners of the present day, is improper?

* Acta Havn. Tom. 2, Art. 23.

of turning and delivering by the feet was unpractised ?

Such occurrences of the spontaneous conversion of the fœtus in utero, during parturition, are so rare, and their causes so obscure to the accoucheur, that I shall content myself with making but few remarks on the subject ; more particularly as it is incontrovertibly proved, that an implicit confidence in the powers of nature, in such circumstances, would be attended with danger, and can never be relied on as a general rule of practice. See the works of Dr. *Douglas* and *Kelly* on the subject.

It appears from the records of many authors in former times, and it is likewise still the practice of some modern accoucheurs, in cases where the shoulder and body of the fœtus are permanently and transversely fixed in the pelvis, to sever the head from the trunk with sharp hooks or instruments, some of which resemble a Crotchet, constructed with a cutting edge on the concave part, and similar to the one described by *Celsus.** How far this random and tragical method of operating with hooks, and beheading the fœtus in

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* " Si vero transversus est, neque dirigi potuit, uncus alæ injiciendus paulatimque attrahendus est. Sub quo fore cervix repticatur retroque caput ad reliquum corpus spectat. Remedio est cervix provisa ut separatim utraque pars auferatur. Id unco

utero, may be warrantable, I cannot absolutely determine, having never had occasion to put them in practice; but there is reason to believe, from a careful perusal of the dreadful cases recorded, and the indiscriminate use and variety of instruments invented for the purpose, that this mode of dismembering children in the womb, has been carried far beyond what appears to me either justifiable or necessary.

For in cases where such an instrument as the *Crotchet* can be used with safety to the mother, so high in the pelvis or uterus as to effect a separation of the head from the body of the fœtus, (the pelvis obviously well-formed) it is manifest that the hand of the accoucheur might with equal facility be conducted into the uterus, and the child turned by bringing down the feet. Or if this expedient fail, it may then be requisite to fix a noose over one or both ankles, and pulling at the ligature in a wriggling or reciprocal direction with one hand, whilst raising the shoulder and body of the child towards the fundus uteri with the other, the process of turning may be accom-

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sit qui, priori similis, in interiori tantum parte pertotam aciem exacuitur. Tumide agendum est, ut ante caput, deinde reliqua pars auferatur: quia fere majore parte extracta caput in vacuam vulvam prolabitur extrahique sine summo periculo non potest. Celsus, Lib. 7, Chap. 29." For a variety of such murderous instruments, see the works of Scultetus, Parey, and Aitken.

plished, and the life of the child in many instances preserved.

In these adverse presentations, if proper means have been used to abate the impetuous action of the uterus, and its orifice be fully dilated, by acting with due perseverance in the manner above-mentioned, the situation of the fœtus will be reversed, and if the pelvis be not much distorted, delivery may be obtained without having recourse to any destructive instrument for the purpose of severing the fœtus in piece-meal.

If, on the other hand, the apertures of the pelvis be so much contracted, that the head of a mature child cannot pass by the efforts of nature, and the shoulders be wedged in the superior opening, or in other words, when it appears manifest to the operator that the conjugate diameter in any part of the brim does not exceed three inches, then every attempt to turn the fœtus and extract it alive will be fruitless.

In this perilous state the child will, in all probability, have perished from the concomitant circumstances, and to rescue the mother from impending danger, the accoucheur may with propriety complete the delivery with such instruments as appear best adapted to the state of the case and safety of the woman.

It will not, perhaps, be thought uninteresting in this place, to furnish the reader with a list of

such *instruments* as have been invented at different periods by obstetrical writers, for the purpose of *perforating* and *extracting* the fœtus in cases of difficulty.

Extracting Instruments.

Name of the Instruments.	Name of the Inventors.
GRYPHON'S TALON	AVICENNA
FORMA UNCINI, SIMPLEX AND COMPLEX	ALBUCASIS
SPECULUM MATRIX, WITH HOOKS, &c.	ANDREAS A CRUCE
CRANIUM HOOK, &c.	SCULTETUS
FORCEPS LONGA ET TERSA	AMBROSE PAREY
CROTCHET, OR STRAIGHT & BLUNT HOOK	AMBROSE PAREY
HAMULA OR CROTCHET	MAYNARD
TIRE TETE, OR HEAD DRAWER.	MAURICEAU
FILLET	MAURICEAU
PURSE EXTRACTOR	AMAND
TOOTHED FORCEPS	PLENCK
EXTRACTOR, OR PINCHERS	LEVRET
SCISSARS AND SCREWED FORCEPS	LEVRET
LITHOTOMY FORCEPS	
FLEXIBLE CROTCHET	
FLEXIBLE BLUNT HOOK	
EXTRACTING HOOK	PALFYN
NARROW-FANGED, OR REFLECTED FORCEPS	RAWLINS
SWIVEL CROTCHET, OR EXTRACTOR	JOHNSON

Name of the Instruments.	Name of the Inventors.
LEVER, OR VECTIS	LOWDER
EXTRACTOR	DEASE
LEVER, THE COMMON ONE	ROONHUYSON
LIVING, OR FLEXIBLE LEVER	AITKEN
LIVING FLEXIBLE FORCEPS	

Perforating and Extracting Instruments.

Name of the Instruments.	Name of the Inventors.
ALMISDACH	ALBUCASIS
MISDACH	
FORFEX	
FORMA SPATUMILIS	
GRYPHII OR EXTRACTOR	PAREY
EXTRACTING TEREBRA, AND CONCEALED CRANINUM PIERCER	BURTON
SCISSAR FORCEPS	
TEREBRA OCCULTA	OULD
CURVED PERFORATOR	DENMAN
PERFORATOR AND DIRECTOR	JOHNSON
PERFORATOR & HOOKED KNIFE	MAURICEAU
CONCEALED PERFORATOR	LA MOTTE
RING SCALPEL	SIMPSON
SCISSARS OR STRAIGHT PERFORATOR	SMELLIE
FLEXIBLE PERFORATOR	
CURVED CROTCHET FORCEPS'	
ELASTIC EXTRACTOR	SCHLICTINGIUS & ROONHUYSON
FORCEPS WITH THREE BLADES	LEAK
FLEXIBLE PERFORATOR AND CROTCHET	AITKEN

I come now to treat more particularly on that species of preternatural presentation, where one or both of the superior extremities present with the head, resting on the brim of the pelvis, or advanced low in its cavity.

If we consult the language and directions of authors for a guide on the subject, we shall be led to regard the presentation of the hand along with the head of the fœtus, as one of the most disastrous occurrences in midwifery.

Some authors, amongst whom was *Dr. Hunter*, entertained an idea that this particular kind of presentation never occurred except when caused by the imprudent interference of the accoucheur; but this opinion is not correct, for I have found it otherwise in several instances where there had been no manual interposition. Yet I do not deny, that such an incident may be occasionally referred to some officious violation of the efforts of nature on the approach of labour.

In presentations of one or both of the superior extremities, when in conjunction with the head of the fœtus, it was the custom of the early as well as most of the modern practitioners to attempt either to push them back and adjust the head in the superior aperture of the pelvis, or reverse the position of the fœtus and effect delivery by the feet.

On this subject *Dr. Merryman* says, "There

are no presentations more dangerous, or more difficult to manage, than those of the superior extremities; for whether the part presenting be the hand, the elbow, the shoulder, or both the hands, it is clearly impossible that a full grown fœtus should pass through the pelvis, unless the position be altered." I am aware that similar sentiments to those above quoted from *Dr. Merriman's* valuable work on midwifery have been embraced and acted upon by other modern authors, yet with due deference to their opinions, I venture to state, that experience and facts have convinced me of the impropriety of implicitly complying with their respective modes of practice in these cases. I am fully satisfied, that in a well-formed pelvis, whether one or both of the superior extremities present along with the head, the powers of nature are competent to disburden the uterus of its contents with safety both to mother and child, in this species of malposition of the fœtus, without manual interference.

The cruel practice of indiscriminately turning in these cases, as exercised by almost every practitioner of the present day, is a procedure truly reprehensible, and must be founded in error, nor can it be the result of rational practical reflection. For I have satisfactorily proved the reverse in a variety of instances, by pursuing a contrary plan and relying on the efforts of nature, or retaining

the hand or hands when presenting at the brim of the pelvis by means of a plug, till the head of the fœtus had pressed that aperture.

Those who are acquainted with the dimensions of a well formed pelvis, and its relative apertures of adaptation to the head of the fœtus, must be aware that the pelvic cavity, if divested of its soft parts, would generally exceed the diameter of the fœtal cranium and integuments by at least a quarter of an inch, which provision of nature manifestly renders the trifling impediments caused by the transmission of the hand in union with the head of little moment. For if the capacity of the pelvis did not invariably exceed the bulk of the head during its progressive evolution at birth, the labour would be inevitably tedious. These respective adaptations of structure and capacity connected with the winding irregularity of the cavity, appear intended as subservient to the upright position of the human body, and materially obviate many casualties which would unavoidably await the the gravid female, were the pelvic apertures augmented much beyond their natural standard.

Among the evils which the unnatural extent of the capacity and dimensions of the pelvis would create, are the premature *descent* of the fœtus in utero, a *prolapsus* of the unimpregnated *uterus*, *retention* of *urine*, and *laceration* of the

perineum during a rapid *labour*. This last unpleasant accident, I am led to believe, is sometimes incurred by the officious application of counter-pressure unduly exerted by the accoucheur to the *frænum labiorum*, against the part where the greatest pressure is made by the head of the fœtus, as it diverges under the arch of the pubis.

In a well formed pelvis the arch of the female pubis is somewhat larger than that of the male, designed, no doubt, for an easier passage of the head of the child during parturition. But in a deformed pelvis, the *ossa ischia* generally approximate each other in a more acute angle, and expose the perineum to laceration by not allowing the vertex to occupy the arch of the pubis at birth. To prevent which, the accoucheur should apply pressure with the points of his fingers against the vertex of the fœtal head, as it emerges under the arch of the pubis during every labour-pain, and thus oppose its advancement for a given time, till the soft parts have become relaxed and distended sufficiently for the labour to terminate with safety.

By this mode of proceeding, I have never, during upwards of thirty years, met with an instance of a rupture of the perineum in my own practice, but have seen several instances, when, on enquiry of the attending practitioner, I have been invaria-

bly told *that great care had been taken to support the perineum.* Here the mischief often arises.

In cases where the event of a former labour at full time has proved the pelvis to be well-formed, and where one or both hands of the fœtus presented along with the head, nature will dispense with the interference of art, without exposing either the mother or child to unnecessary torture or danger; for the force unavoidably employed in turning will not unfrequently injure the spinal marrow of the fœtus, produce luxation of the neck, fracture of the arms, strangulation or suffocation will be the fatal consequence, and the mother sometimes share the same fate from subsequent evils.

It occasionally happens that we are not consulted early enough to correct the protrusion of one or both of the superior extremities into the vagina, or out at the os externum, and before the head is engaged in the pelvis. As this advanced position of the fœtus leaves no prospect of reposition by means of art, it is consoling to know, that even under these adverse presentations, the efforts of nature alone will effectuate delivery, though both arms protrude along with the head. Hence it is likewise a very rare occurrence, that the presentation of the hand of the fœtus, when in conjunction either with the head, feet, or

breech, tends materially to retard delivery, if skilfully managed, unless there exist a manifest distortion of the apertures of the pelvis.

The mode of delivery recommended by authors in this state of mal-position appears involved in some degree of ambiguity; for little variation of practice has been adopted, whether one or both hands present along with the head at the brim of the pelvis; or descend low in the vagina. In either case, however dissimilar the presentation be, the practice of turning is invariably pursued; nevertheless I conceive there requires much discrimination as well as diversity of management according to the different positions and stages of advancement, in which the fœtus is found under these circumstances. When called to a labour of this kind, it is always proper to deliberate on the nature of the case, and consider how far the efforts of nature may, or may not be able to complete delivery; and the deduction formed by such proceeding, will enable the accoucheur to decide on the best possible means to be adopted.

The term *preternatural* as employed by authors on midwifery, appears to me only relative; and it is to be feared that writers have made unnecessary and fanciful distinctions in the classification of labours, which have induced practitioners to resort to the art of turning in some cases where nature required no such interposition, and this

remark is peculiarly applicable to the present enquiry.

The analogy which exists between the natural and preteratural presentations in quadrupeds and bipeds may tend to illustrate this observation; the most frequent presentation in the former species of animals is with the two fore feet preceding or accompanying the head. Now taking into consideration the similarity of anatomical structure in the conformation of the bones of the brute and human pelvis, there is reason to believe that this parturient process is effected with equal facility in each species. I know from observation that delivery will take place in quadrupeds without manual assistance, whether or not the fore-feet of the young advance along with the head, for their being absent renders this position to be classed by authors (on *animal parturition,*) among preternatural presentations.

If the accoucheur has the whole management of a case from the precise time of the discharge of the liquor amnii, and the hand and head of the fœtus are found by a common examination to present together, the pelvis being well-formed and the uterus dilated, the recession of the hand may be frequently accomplished by raising it up during the absence of uterine action, and supporting it at the brim of the pelvis on the extremity of the fore and middle fingers, conducting it posteriorly

towards the face of the fœtus, and restraining it in this position till the pains push the head forwards, and the hand recedes out of the way. If this attempt prove ineffectual, the accoucheur may then introduce a piece of sponge, or other soft substance along the side of the pelvis during the interval of a pain, and wedge or support the presenting hand, or hands above the superior strait till the head has cleared the inlet of the pelvis. It may be alleged, that the introduction and retention of such substance into the cavity of the pelvis during labour, may obstruct the exit of the child or otherwise do mischief; but this objection can have little weight, for the substance introduced will either be transmitted along with the head, or otherwise be retained above the brim of the pelvis, and in either case will prove no obstacle to delivery. It will be evident that I here allude only to those cases where one or both hands present, and not where the fore-arm or arms are primarily advanced to the os externum, and the head engaged in the cavity of the pelvis.

I have in several cases completely succeeded, by replacing the hand as above directed, and likewise in instances of the descent of the funis umbilicalis, by pushing it up out of the way of compression, and introducing a portion of cotton wool, or soft sponge, in such a manner as to

wholly plug up the passage on that side of the head where the funis protruded.

The same mode of proceeding may be adopted with advantage when the breech, or any other part of the fœtus presents with the funis, provided the pulsation be perceptible in the cord.

When the head of the fœtus has descended so far in the pelvis as to become permanently wedged in that tube, and either the funis or one or both arms protrude at the vulva, then every attempt to turn the child should be abandoned, and the fore-mentioned mode of treatment, by the use of the opiates, &c. be unremittingly adopted; and eventually the uterus will unfold its orifice, and by its impelling powers, if the pelvis offer no obstruction, the presenting parts will sometimes so accommodate themselves to the figure of the different apertures of the pelvis whilst passing through it, that delivery will take place without the use of instruments with safety.

If these measures fail, then the use of the *Forceps* or *Lever* may be admissible, and delivery will, even under these afflicting circumstances, be sometimes crowned with success; for the presence of one or both arms does not preclude the use of these instruments when the extremities have been previously pushed from their situation towards the ischiatic notches; for on the other

hand, by either attempting to turn the fœtus or extract it by pulling at the arms would be useless, as there may be reason to suppose a deficiency of space in the pelvis, and if the child be dead, then, as a last expedient, the head may be opened, the brain evacuated, and delivery be terminated with the *Crotchet*.

When one arm only presents, and the head advances in a proper direction, there appears no necessity of either attempting to reduce that extremity or reversing the fœtus, for this appendage presents only a trivial encroachment on the dimensions of a well-formed pelvis ; and if its diameters are not much below the natural standard and the head ceases to advance though the pains are strong, the *Lever* may be requisite, and should be applied to the opposite side on which the arm rests.

But when both superior extremities advance in progression with the head, and occupy the upper entrance of the pelvis, the case wears a more formidable aspect, and this in proportion to the capacity of the pelvis and action of the uterus, and rigidity of its cervix. Nevertheless if these eventual circumstances, when taken collectively, have an auspicious appearance, we are justified in resigning the event of the case to *Nature*, as her efforts will be generally efficient, without having recourse to manual assistance.

As a proof of what I am advancing, I have attended three cases of this description, when both arms presented with the head of the fœtus, and the delivery was terminated without injury either to mother or child, in each instance, by the efforts of nature alone.

Another case of the same kind I was witness to, where the practitioner with great difficulty finished the delivery by turning; the child was dead, and the mother had a very narrow escape in consequence. It is, I am persuaded from long experience, best to have recourse to turning as seldom as possible, for it is only an uncertain expedient on the score of the child, even under the most favourable circumstances.

The difficulty and danger of attempting to reduce the hand or arm of the fœtus, will be proportionate to the action of the uterus; and the chief obstacle which generally opposes the introduction of the operator's hand is the spasmodic action of its cervix, and not the presenting extremity of the fœtus, as is too generally supposed.

Either the reduction of the superior extremities, when advanced with the head into the cavity of the pelvis, or the act of turning the fœtus, is frequently impracticable, and may often prove dangerous both to the mother and child when much force is used, if the uterus present much resistance. Yet the practice of reversing the fœtus in

this species of mal-position, is not necessary, nor is the reduction of either of the superior extremities absolutely requisite, when the pelvis is known to be well-formed, except by means of plugging, as before directed, under certain peculiar conditions, and previously to the head being fixed in the superior aperture. Under these circumstances it will be well to bear in mind the extent of the powers of nature; yet it may not be on every occasion the most prudent step to rely wholly on her efforts. For if when called to a woman in labour of her first child, with one or both hands presenting and the head halting on the brim of the pelvis, the liquor amnii evacuated and the os uteri amply dilated, I should not hesitate to introduce the hand, and turn the fœtus by bringing down the feet. Still I am fully aware that cases will occasionally occur, where the accoucheur may with propriety exercise a choice either of leaving the event wholly to nature, or having recourse to art; for it is extremely difficult to adapt rules of practice to every variety of presentation, and the accoucheur will on many occasions, be under the necessity of adopting measures for which writers on midwifery have not furnished him with precepts.

FINIS.

T. ROGERSON, PRINTER, BLACKBURN.

Fig. 1.

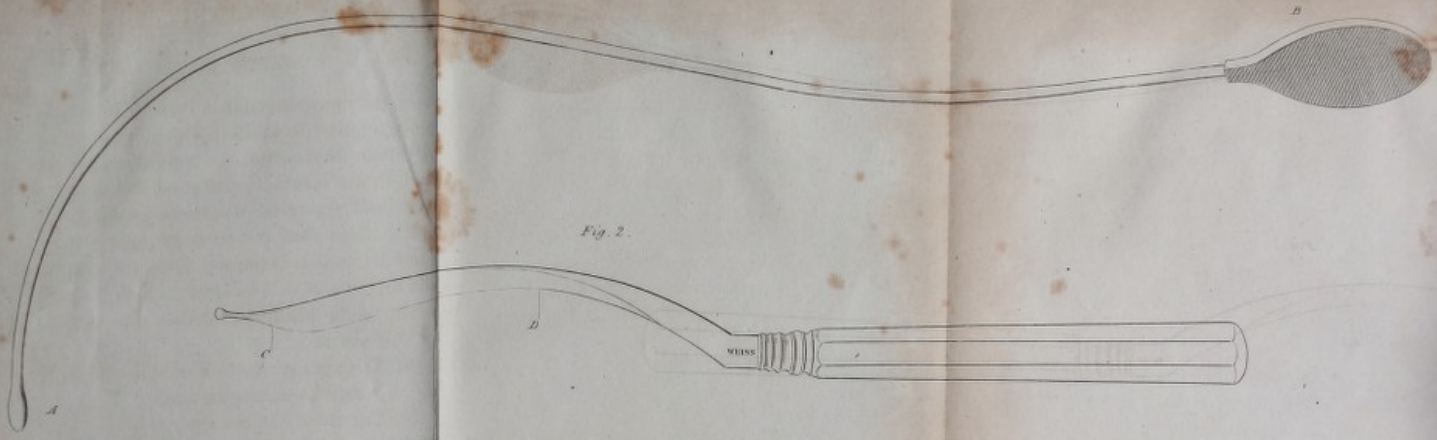


Fig. 2.

Fig. 3.

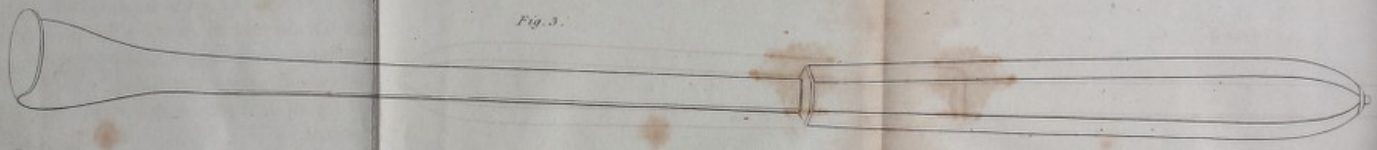
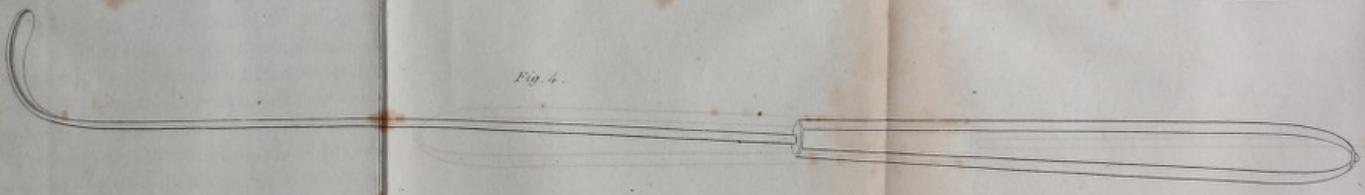


Fig. 4.



EXPLANATION OF

PLATE I.

Fig. 1. An improved sound of the common length and curvature for an adult, with all that portion of the instrument from the anterior part of the bulb to the handle, equally reduced to about one half the usual thickness or diameter; which diminished construction greatly facilitates its motion in passing down the canal of the urethra, as well as when its bulb is in the cavity of the bladder exploring the contents of that viscus.

A. The apex or bulb of the sound of the usual proportionate size.

B. The handle of the sound.

Fig. 2. A curved beaked lithotomy knife or bistoury, constructed with an elevated cutting edge on its concave side, which gives it the compound advantage of being used either as a bistoury or gorget *ad libitum.*

Between C and D, is the cutting part of the instrument.

When used as a bistoury its beak must be conducted along the grooved staff into the bladder, with the concave side directed towards the pubis of the patient; and when completely in the bladder, the surgeon withdraws the staff; and then turning the cutting edge of the bistoury a little towards the left ischium of the patient, the division of the prostate gland and neck of the bladder may be

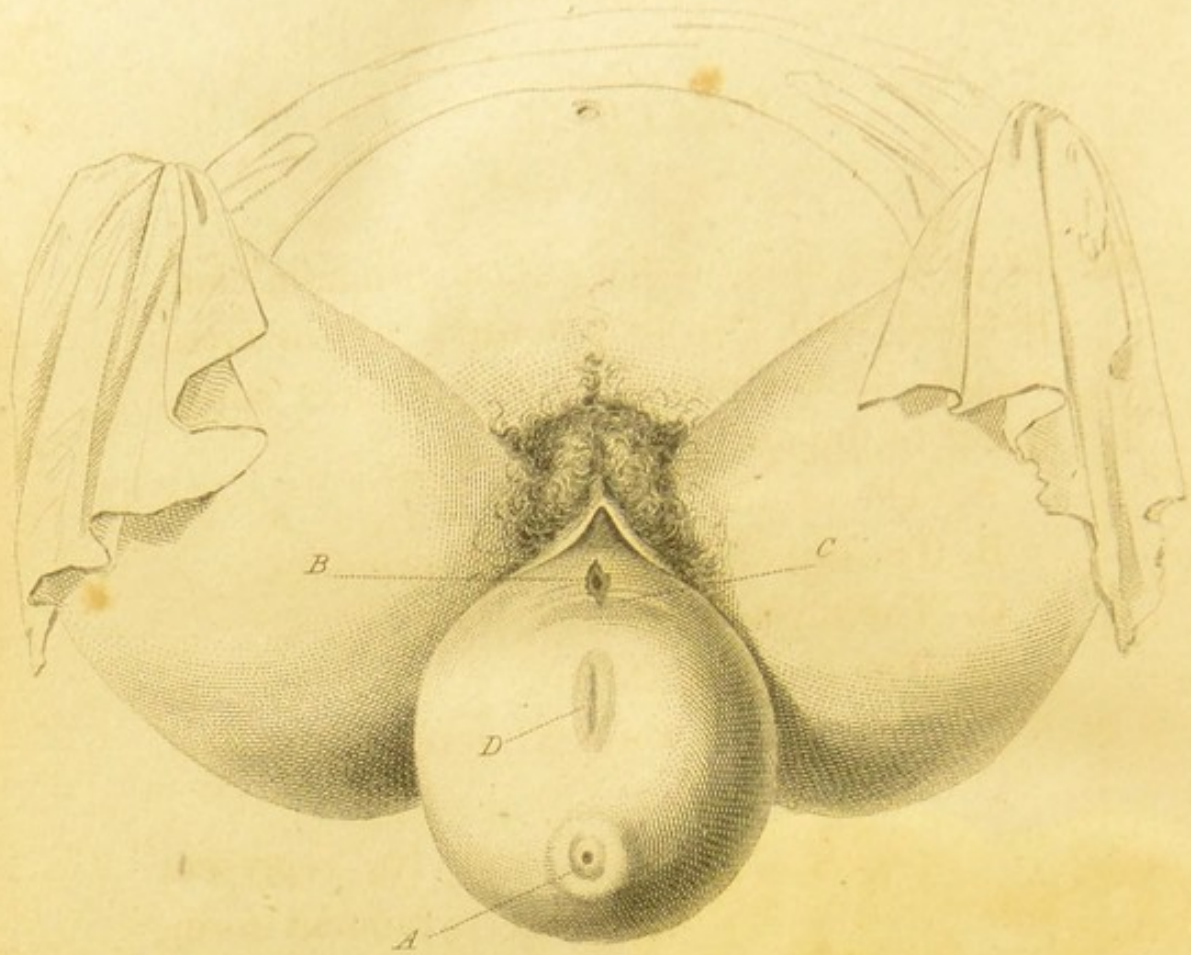
easily effected by withdrawing the bistoury downwards and outwards.

When the instrument is intended to be used as a gorget, it must be conducted into the bladder along the grooved staff with its convex side towards the pubis of the patient, and by means of the elevated cutting edge extending above the groove of the staff, the bistoury will make its way by a gentle effort into the bladder with much facility; the surgeon then with the handle of the ~~knife~~ staff rather inclined towards the right groin of the patient, keeps it steady in the bladder with the left hand, whilst with the right he turns the edge of the bistoury a little towards the left ischium of the patient, and withdraws the instrument downwards and outwards in a corresponding direction with its introduction, and thus completes the division of the prostate and bladder to an extent proportioned to the age of the patient and supposed size of the stone.

Fig. 3. Represents the front view of a scoop (uncus) of the full size, for the purpose of extracting stones from the bladder of young persons; its superiority over the forceps consists chiefly in taking up less room, and seizing the stone with greater facility.

Fig. 4. Represents a side view of the same instrument.

Fig 1.



Figures





H. Thomson del.

J. Nicho

EXPLANATION OF

PLATE II.

Fig. 1. A view of a hernia vesicæ urinariæ complicated with procidentia uteri and inverted vagina, taken from the living subject subsequent to the operation.

A. The os uteri.

B. The orifice of the meatus urinarius.

C. The rugæ of the vagina.

D. The cicatrix, shewing the part whence the stones were extracted in the operation.

Fig. 2, 3, 4, 5, 6, 7, 8, 9 and 10, represent nine stones of a triangular pyramidal form, with equilateral sides, the perpendicular height and the base of each stone corresponds in measure nearly to three quarters of an inch.

Fig. 11. is a stone about the same size, and not very dissimilar in shape.

The dimensions of the whole prolapsed tumor prior to the operation, measured nine inches longitudinally from the meatus urinarius to the os uteri, and fourteen in circumference.

The tumor measured very lately six inches and a half longitudinally, and fifteen in circumference.

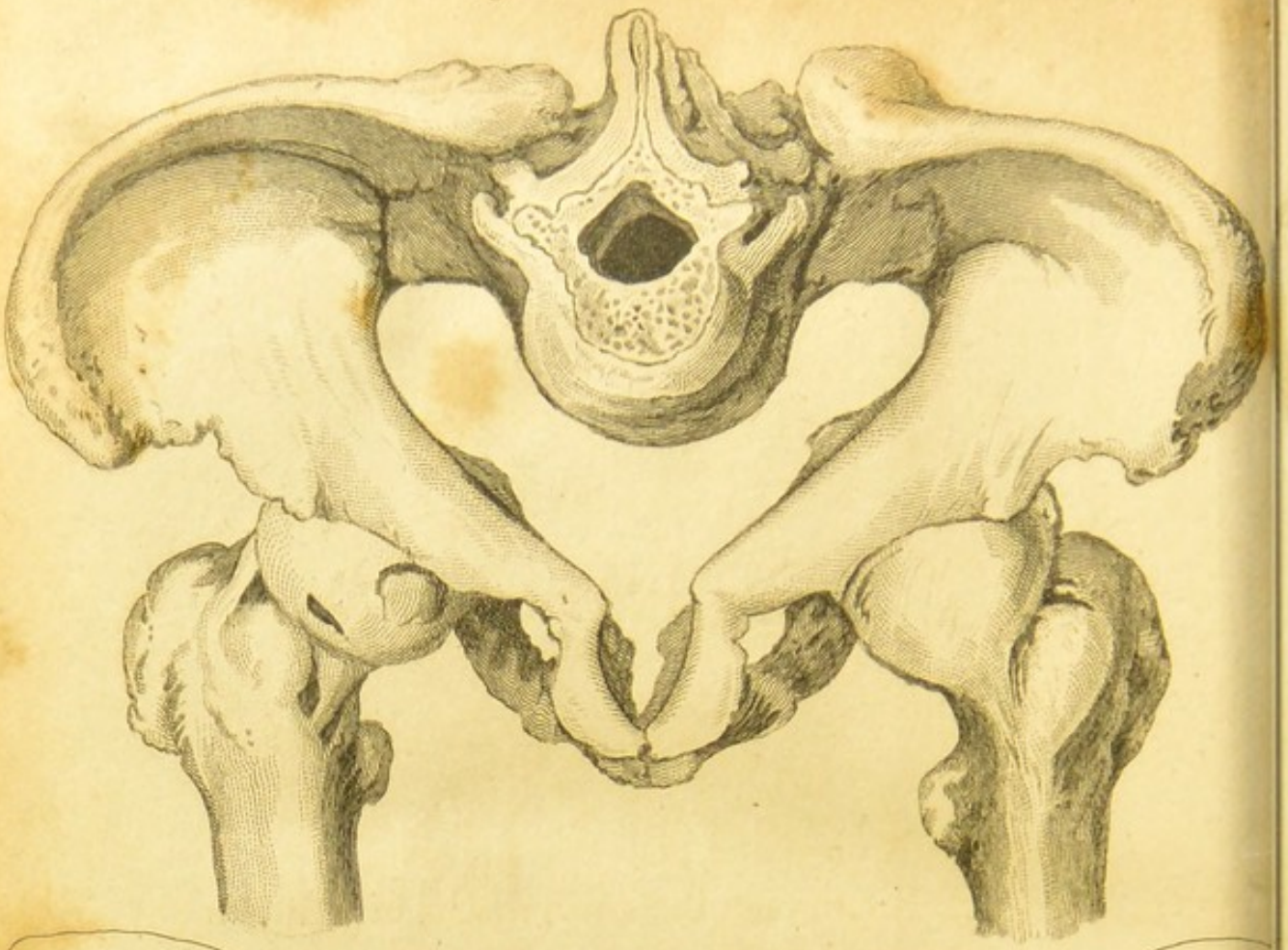
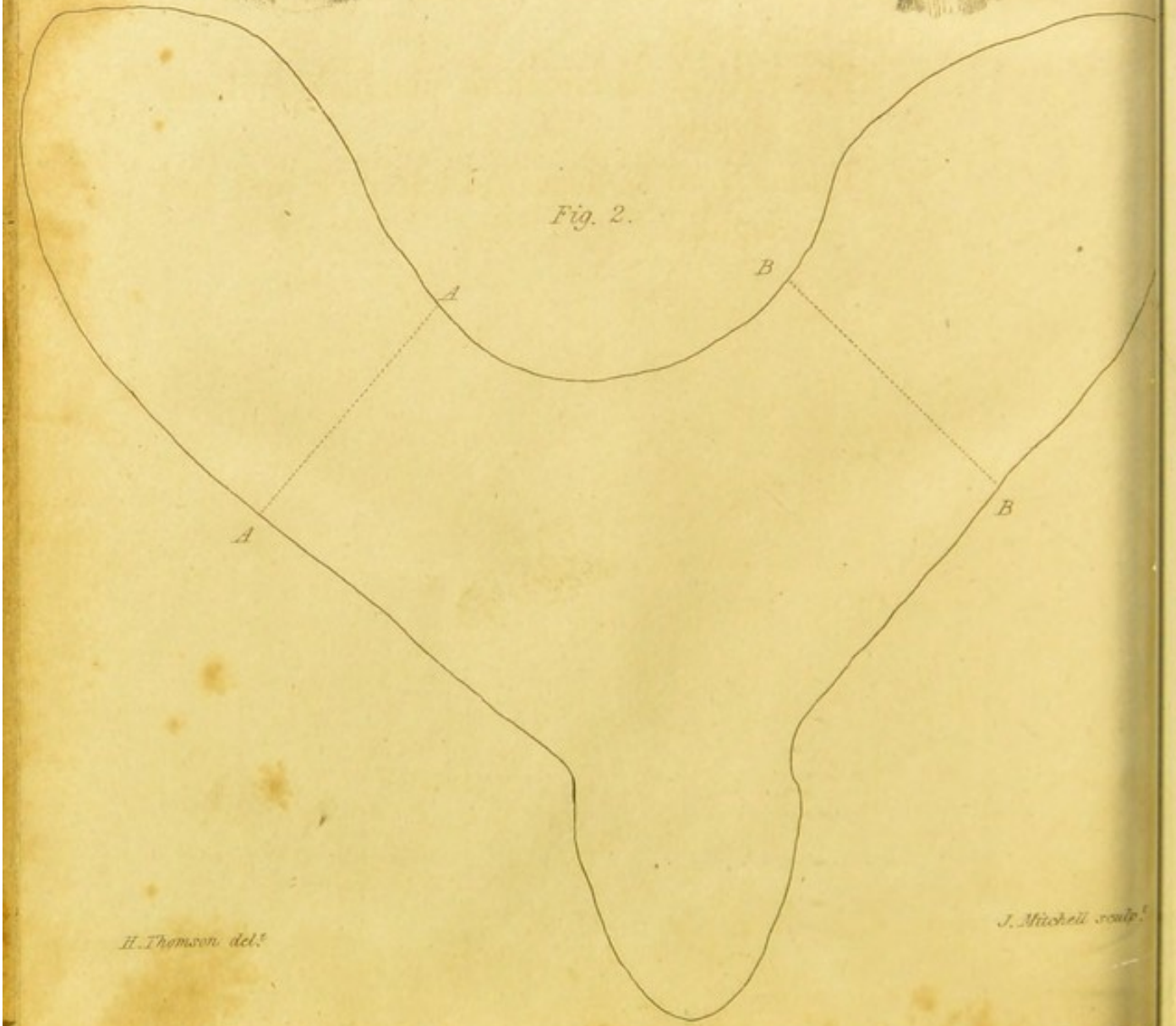


Fig. 2.



H. Thomson del.

J. Mitchell sculp.

EXPLANATION OF

PLATE III.

Fig. 1. A view of a distorted pelvis.

Fig. 2. Represents the natural size of the brim of the same pelvis.

From A. to A. measures one inch and one eighth.

From B. to B. measures one inch and two eighths.

Fig. 1.



Fig. 2.



EXPLANATION OF

PLATE IV.

Fig. 1. Represents the tumor upon the nose prior to the operation.

Fig. 2. Represents the shape of the nose subsequent to the operation.

G. WOODFALL, PRINTER, ANGEL COURT, SKINNER STREET, LONDON.

